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ENCYCLOPÆDIA

OF

GEOGRAPHY:

COMPRISING A

COMPLETE DESCRIPTION OF THE EARTH,

Physical, Statistical, Civil, and Political;

EXHIBITING ITS RELATION TO THE HEAVENLY BODIES,
ITS PHYSICAL STRUCTURE,
THE NATURAL HISTORY OF EACH COUNTRY,
AND THE INDUSTRY, COMMERCE, POLITICAL INSTITUTIONS,
AND CIVIL AND SOCIAL STATE
OF
ALL NATIONS.

BY HUGH MURRAY, F.R.S.E.

ASSISTED BY THE FOLLOWING GENTLEMEN, IN THEIR RESPECTIVE DEPARTMENTS OF SCIENCE:

ASTRONOMICAL AND MATHEMATICAL GEOGRAPHY:
WILLIAM WALLACE, A.M. F.R.S.E.
PROFESSOR OF MATHEMATICS IN THE UNIVERSITY OF EDINBURGH.

GEOLOGY AND THE DISTRIBUTION OF MINERALS:
ROBERT JAMESON, F.R.S.E.
REGIUS PROFESSOR OF NATURAL HISTORY, LECTURER ON MINERALOGY, ETC. IN THE UNIVERSITY OF EDINBURGH.

BOTANY AND THE DISTRIBUTION OF PLANTS:
W. J. HOOKER, LL.D. F.R.A. & L.S.
REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

ZOOLOGY AND THE DISTRIBUTION OF ANIMALS:
WILLIAM SWAINSON, ESQ. F.R.S. & F.L.S. &c. &c.

ILLUSTRATED BY EIGHTY-TWO MAPS,
Drawn by Sidney Hall,
AND UPWARDS OF A THOUSAND OTHER ENGRAVINGS ON WOOD,
BY R. BRANSTON,
From Drawings by Swainson, T. Landseer, Sowerby, Strutt, &c.
REPRESENTING THE MOST REMARKABLE OBJECTS OF NATURE AND ART
IN EVERY REGION OF THE GLOBE.

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Warren

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PREFACE.

The value and importance of the study of Geography are so obvious, and indeed so universally acknowledged, as to require little illustration. Nothing can be more interesting to man, or more gratify his thirst for knowledge, than a survey of the earth which he inhabits, peopled as it is by beings of the same nature with himself. To visit and observe foreign climes and regions is an object of general desire, and forms one of the most effectual means of enlarging and enlightening the human mind. This wish, however, unless in the case of a few individuals, can be gratified only to a very limited extent, and in none can embrace more than a small portion of the vast variety of interesting objects which the earth comprises. This necessary defect of personal observation may, however, be in a great measure supplied, by collecting the reports and narratives of those intelligent individuals who have explored and described its various regions, and forming out of these a general description of the world and its inhabitants.

Works of this class have always possessed a peculiar attraction. Even in ancient times, when the extent of the known world, and the information with respect to the inhabitants and productions of its remoter regions, were comparatively limited, the geographical descriptions of Herodotus, Strabo, Pomponius Mela, and Pliny, rank among the most valuable productions of the classic ages. But in modern times, and particularly in the present age, Geography has acquired a much more prominent place among the departments of human knowledge. The discovery of America in the fifteenth century awakened a spirit of enterprise, and a desire to explore unknown regions, that has continued to gain new strength. During the last half century more especially, the most civilised nations of Europe have been contending with each other for the glory of discovery; and there is now scarcely a shore however remote, or the interior of a continent however barbarous or difficult of access, which has not been surveyed and described. Materials have thus been provided for a much more complete, interesting, and authentic description of the earth, than could have been drawn up at any former period.

The extensive discoveries thus recently made have thrown a wonderful light on the structure and productions of the earth, and afforded large contributions to all the departments of natural history. They have also displayed man in every varied condition, from the highest refinement of civilised society, to the rudest and most abject condition of savage life. These representations are not only interesting in themselves, but throw light on the history of past ages. Communities are still found exactly similar to some of those described in the earliest records of antiquity. The tent of the Arab sheik differs little from that which Abraham pitched on the plains of Mamre; many of the Tartar tribes are a people exactly similar to those who roamed in early ages over the plains of Scythia; and the splendid courts of Babylon and Persepolis have their representatives in the existing world. We may thus, in fact, trace back man to an earlier and ruder stage than any represented in the ancient records; for these convey only faint and fabulous notions of what mankind had been at a very early period. But the wilds of America, and the shores of the Pacific, exhibit the state of savage simplicity, which doubtless existed in Europe before the light of authentic history had begun to dawn. Hence it is that Geography, in its present extended range, not only shows man as he actually exists, but delineates, as it were, the progressive history of the species.

Besides the gratification thus afforded to a liberal curiosity, the knowledge of even the remotest regions has, through recent events, become an object of the utmost practical importance. In many of these, colonies have been founded, political relations formed, and a commercial intercourse with them opened, by the civilised nations of Europe, and particularly by Britain. Regions the most distant to which a ship can sail form integral portions of her dominion, and have their ports crowded with her vessels. There are thousands in this country who have a more intimate connection with Calcutta or Sydney, than with towns in their immediate vicinity. The manufacturer labours to supply the markets of countries, the very existence of which, fifty years ago, was unknown; the circumnavigation of the globe is now an ordinary trading voyage. The knowledge of Geography has thus become a necessary qualification for the pursuits of commerce and industry, and for much of the ordinary and current business of life. A great proportion of the youth of Britain are trained for employments in countries which lie far beyond the limits of Europe.

The same causes have, moreover, given to the knowledge of distant countries a peculiar hold on the domestic and social affections. There are few amongst us who have not a near relation, perhaps a brother or a child, residing in another hemisphere. Oceans now separate us from those to whom we are united by the tenderest ties; the objects of our affection have their abode on the banks of the Ganges, or the shores of the Pacific; and many, whose hearts are knit in the closest friendship, are divided from each other by half the earth. In this situation, a description of the place in which our friend or relative dwells, the objects which meet his eye, the society in which he mingles, must afford peculiar gratification, and soothe the mind under this painful separation.

Deeply impressed with a sense of the great extent and difficult execution of a complete geographical work, the Editor, during nearly ten years in which he has been engaged upon it, has used the utmost exertion to procure from every quarter information and aid. He has studiously collected the most recent, authentic, and accurate accounts of the extent, natural features, population, productions, industry, political constitution, literature, religion, and social state of the various regions of the globe, with the leading details as to their districts and cities. The sciences connected with the natural history of the earth have, however, attained to such an extent and importance, that a thorough knowledge of them can only be possessed by individuals who have specially devoted themselves to one particular branch. The Editor, therefore, considered it essential to procure the co-operation of writers who had risen to acknowledged eminence in the departments of Geology and Mineralogy, Zoology and Botany. He considered that he had fully succeeded, when Professor Jameson undertook to delineate the geological structure of the globe, and the distribution of minerals over its surface; Mr. Swainson to explain the distribution of animals, and the most remarkable of those found in each particular region; and Dr. Hooker to perform the same task in regard to the vegetable kingdom. Professor Wallace has illustrated the relations of the earth as a planet, the trigonometrical surveys, the construction of maps, and other subjects connected with mathematical science. These tasks have been executed in a manner which, it is hoped, will fully support the high reputation of their respective authors. In preparing the sections relating to commerce, the editor derived much assistance from Mr. M'Culloch's Dictionary of Commerce, and he is also indebted to that gentleman for many valuable communications. Various parts relating to remote countries have been revised by gentlemen recently returned from them, particularly Barron Field, Esq. Chief Justice of Gibraltar, some years resident in Australia. It is only justice to add, that neither exertion nor expense have been spared by the Publishers, to enable the Editor to render the work as perfect as possible.

The Maps, which are so numerous as to form a complete Atlas, have been executed from drawings by Hall; and having been carefully revised by the Editor, they will, it is hoped, be found to be accurate, and to include all the most recent discoveries. Notwithstanding the smallness of the scale, they are illustrated by the letter-press in a manner which enables them to comprise equal information with others of much larger dimensions.

The other Wood Engravings are mostly original, or have been carefully selected from the most faithful representations of the objects described; and they are executed in the best style by the eminent artists whose names appear on the title-page. They exhibit the most remarkable plants and animals, the chief cities, public buildings, natural curiosities, and picturesque scenery, with the characteristic figures and costumes of the natives, in the countries described. It is not believed that any work of this kind is similarly embellished, at least to nearly the same extent. These representations are by no means introduced for the sake of mere ornament; they will be found of the greatest utility, conveying an infinitely better idea of the objects than could be derived from the most laboured description.

> Segnius irritant animos, demissa per aures,
> Quam quæ sunt oculis subjecta fidelibus.

Notwithstanding all these efforts, it is impossible to lay this volume before the Public without the painful reflection, that, in a subject involving such an infinite number and variety of details, many of which are often very difficult to procure, not a few imperfections and even errors must inevitably occur. M. Balbi, whose exertions to collect the most recent geographical information are well known, and to whose labours the present volume is much indebted, candidly observes:— "One of the greatest obstacles to be surmounted in the composition of an elementary treatise of Geography is the want of contemporary documents. Geography is almost necessarily a compound of things which are, with things which have ceased to be. How can one be informed of all the changes that take place in the course of a few years, even in the capitals of Europe, still more in those of Asia, Africa, and America? To compose a Geography which should exhibit a complete picture of the globe at a particular period, it would be necessary to have authentic documents, all of the same date, and that a recent one; which never has been, and never can be." As, therefore, the local knowledge of many into whose hands this work may fall will enable them to discover defects, an intimation of these, addressed to the Publishers, will be gratefully received, and employed in the correction of a future impression.

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ENCYCLOPÆDIA

OF

GEOGRAPHY.

INTRODUCTION.

GEOGRAPHY consists in the description and delineation of the Earth. It considers that planet in respect to its form, its connexion with other bodies in the universe, the various parts into which it is divided, their relations to each other, and the objects with which each is respectively filled. Geography indeed could not attempt a scientific analysis of all these objects, without seeking to comprehend within itself a complete circle of science. It views only their obvious and visible characters, and chiefly those features which are peculiar to each respective country and region on the face of the globe.

The great importance of this branch of knowledge must be sufficiently obvious. It embraces a vast variety of those objects which are most interesting in themselves, and with which it most concerns man to be conversant. It enables the navigator, the merchant, the military commander, to carry on their respective operations. Geography is moreover essential to the clear understanding of every branch of the history both of man and nature. The transactions of bordering states are unintelligible without a knowledge of their relative extent and position, and of the theatre on which the great events of their history are acted. Every form, both of animal and vegetable nature, is modified in the most striking manner by the climate or the country in which it is placed. Still more intimate is its relation with geology and other sciences, which investigate the materials composing the substance and crust of the earth. None of these branches of knowledge can be distinctly understood, or viewed under its proper relation and arrangement, without a previous knowledge of geography.

This important and extensive subject seems to divide itself naturally into three parts.

The *First* Part treats of the "History of Geography;" the origin and progress of the Science; and the steps by which man, who seemed fixed by nature in a local and limited position, has made himself acquainted with the immense circuit of the globe. This Part is divided into — I. Ancient Geography; — II. Geography of the Middle Ages; — III. Modern Geography.

The *Second* Part comprises the *Principles* of the Science. These are — I. *Mathematical:* those which relate to the form of the earth, its movements, its place in the Solar System, the great circles by which it is divided, the operations by which it is surveyed, and the modes in which its spherical outline can be represented on the plane surface of a map. II. *Physical:* those which treat of the substances which cover the earth's surface, the elements which compose and surround it; rock, earth, water, air, as they appear under the various forms of mountain, plain, river, sea, and present all the changing phenomena of the atmosphere. III. Geography may be considered in its relation to other objects and sciences. 1. To Zoology, or the distribution of animals over the globe. 2. To Botany, or the diffusion of vegetable productions. 3. To the human race, and the various branches into which it has been formed, considered in relation to numbers, wealth, political union, social, intellectual, and moral condition.

The *Third* Part considers Geography in detail, as it applies to the various quarters and countries into which the world is divided, the outline and extent of each, its natural features, the revolutions through which it has passed, its political constitution, the industry and wealth, the civil and social condition of its inhabitants. The description of each country will conclude with a local and topographical survey of its districts, cities, and towns.

This Part will divide itself into five general heads: — I. Europe. II. Asia. III. Africa. IV. America. V. Australia.

An Index will be added, which, being extremely copious, and containing references to all the places mentioned in the work, will answer in a great degree the purposes of a Geographical Gazetteer.

PART I.

HISTORY OF GEOGRAPHY.

1. The *History of Geography* may be divided into three books: — I. Ancient Geography. II. Geography of the middle ages. III. Modern Geography.

BOOK I.

ANCIENT GEOGRAPHY.

2. *The Geography of the Ancients* may be considered under the heads of, I. Hebrew and Phœnician Geography; the principal features of which may be found in the Jewish Scriptures. II. Greek Geography, in its early state, before the expedition of Alexander. III. The first Alexandrian school formed by Eratosthenes. IV. The Roman school, formed chiefly by Mela and Pliny. V. The second Alexandrian school formed by Ptolemy.

Chap. I.

HEBREW AND PHŒNICIAN GEOGRAPHY.

3. *The Sacred Records*, in addition to their higher claims on the attention of mankind, possess the important secondary advantage, that they enable us to trace human existence, and the forms of society, back to a much earlier period than the information derived from any other source. They were long anterior in this respect to the classic story of Greece and Rome; the faintest light even of whose fabulous history cannot be traced back to the period when Abraham was driving his flocks over the seats of future empire on the Euphrates. Among Abraham's contemporaries we discern the germ of the great monarchies which first changed the face of human affairs. Nimrod, the founder of Babylon, almost like an Iroquois chief, is chiefly celebrated for his activity and success in the chace. Modern discovery has indeed made us acquainted with tribes existing in a still ruder form; but there is no narrative in which we can trace so distinctly the gradual, yet somewhat rapid, transition made in these favoured regions, from the hunting and pastoral, to the commercial and agricultural states of society.

Sect. I. *The Patriarchal Ages.*

4. *In the early patriarchal records* we discover first the rich Mesopotamian plain, not yet covered with cities and harvests, but standing as an open common, over which the sons of Terah drove unmolested their flocks and herds. In these favourable circumstances, and surrounded by simple and rural plenty, the flocks and the shepherds multiplied in an extraordinary manner. The heads of the families became petty princes, and were as such at once respected and feared. As they went on increasing, the land became "not able to bear them;" and the most intimate friends were able to prevent dissension among their adherents only by an entire though painful separation; nay, even by striking into routes so opposite, as to prevent the possibility of future union. This, however, was rather a palliation than a cure for the evil; for, in whatever quarter each directed his course, he came into contact with other families. The difficulty was still augmented, when all the more fertile tracts began to be cultivated by a

fixed population, subject to regular government. The first regions which came under these circumstances appear to have been Lower Egypt and Gerar, on the coast of Philistia, along the Mediterranean. In the latter we find Isaac attempting to settle and cultivate the ground; but the king, though evidently afraid to offend so potent a tribe, insisted, in a determined though courteous manner, upon their quitting his territory. The family were therefore obliged finally to establish themselves in the vicinity of Hebron, collecting the somewhat scanty herbage which grew amid the rugged mountains to the west of the Dead Sea. It was, therefore, an auspicious change when they were transported into the Land of Goshen, a rich pastoral district of Egypt. The circumstances attending the captivity of Joseph enable us already to observe the activity of that interior caravan-trade, which afterwards, on so great a scale, traversed Arabia. Two caravans, destined for the supply of Egypt, appear meeting each other in opposite directions; and that cruel trade, of which men were the object, is already carried on in the same remorseless manner, and by the same unjust means, by which it has ever since been conducted.

Sect. II. *The Kingdom of Israel.*

5. *The Israelites*, after being established in Egypt for more than two centuries, were led back into the promised land, so long the seat of their ancestors. Every thing there, since the patriarchal age, had assumed quite a different aspect: it presented walled cities, and high cultivation, accompanied with that gross superstition and dissolute voluptuousness which are the too common attendants of early wealth. The guilty inhabitants of Canaan with their country were delivered into the hands of the Israelites; and the territory being divided among the ten tribes, gave occasion to a very careful topographical survey; but nothing yet occurred to attract the views of the nation beyond these limits, or towards the world in general. Still less could this take place during the subsequent period, when they were forsaken of heaven, and reduced to servitude under the neighbouring nations. It was *under the favoured reign of David* that Israel finally triumphed over all her enemies. That great prince left to Solomon, either as subject or tributary, a territory extending from the Euphrates to the Mediterranean and the borders of Egypt, forming the most powerful state then in western Asia. *Solomon*, by the terror of his father's name, and of the powerful army transmitted to him, was enabled to preserve the whole of this kingdom, during a long reign, in peaceful submission. This accomplished prince devoted himself to the arts of peace, to the extension of commerce, to the culture of science, and to the improvement and embellishment of his dominions in every direction. By the alliance with Hiram, he was enabled to accomplish voyages more remote than had, perhaps, been ever undertaken under any former sovereign. His alliance, and even his society, were courted by distant princes; and the observation of the Jews began to extend over a considerable portion of the globe.

6. *The separation of the kingdoms* after the death of Solomon, was a fatal blow to the greatness of the house of Israel. Their divided power could no longer maintain numerous tributaries in submission, nor was it adequate to distant and extensive enterprizes. All the states beyond the Jordan shook off the yoke; the attempts to navigate the Red Sea were abandoned; and all distant regions in a great measure lost sight of. Their view, however, was enlarged by unexpected and unwelcome events from another quarter.

7. *The successive invasions of Assyria and Babylon*, which terminated in the downfal of both the kingdoms, forced upon the Israelites a knowledge of the existence of these proud and powerful empires. At the same time, the colossal grandeur of Egypt, the only power capable of contending with them, was brought into prominent notice. Ample materials were thus afforded for those lofty and awful images, those pictures of the shaking of the world and the downfal of nations, which abound in the writings of the prophets during the regal times. Another and nearer object attracted wonder, and afforded the means of knowledge respecting regions still more distant. This was Tyre, the earliest seat of commerce, in whose markets were found collected the tin of Britain, the gold of Africa, the cottons of India, and, perhaps, the silks of China. This forms so grand a feature, and the descriptions of it tend so much to illustrate early geography, that it must claim some separate notice.

Sect. III. *Commerce of Tyre.*

8. *Tyre*, which under Solomon was already great and flourishing, continued to increase till, with the exception of one of its own colonies, it became the most splendid emporium of the ancient world. It appears, indeed, truly wonderful that, at this early period of arts and history, when Rome yet consisted only of a few straw-built cottages, merchants in Tyre should vie with the pomp of kings. So magnificent was the scene, that the prophet, in announcing the divine intention to destroy Tyre, considers it as implying a purpose "to stain the pride of all glory, and to bring into contempt all the honourable of the earth." (*Isai.* xxiii. 9.) Perhaps, however, commerce in its earlier efforts has a particular tendency to concentrate itself in one point, where alone it finds protection, information, and regular channels; while in the advance of society its streams begin to be more widely diffused.

9. *In the interesting picture of Tyrian commerce* drawn by Ezekiel, the foundation of the

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intercourse with Damascus and other contiguous districts, is stated to be "the multitude of the wares of her making;" that is, it consisted in the exchange of her manufactured produce for the raw produce of these rich agricultural districts. There is little specification of the Tyrian manufactures, but the returns were all made in natural products, of the first quality which the soils of Judea and of Syria afforded; from Judea, the finest wheat, honey, oils, and balsam; from Syria, white wool, and the wine of Helbon. No situation could be more fortunate than that of Tyre for the formation of a navy, with the magnificent forests of Lebanon, Senir, and Bashan, rising immediately behind. The timbers, it appears, were constructed of fir; the cedar supplied masts; while the oak was used for those long and powerful oars, which were then the chief instruments of navigation. The vessels appear to have been fitted up with a luxury unknown to modern times. The benches were of the finest cypress wood, inlaid with ivory; the fine linen of Egypt, adorned even with embroidery, was spread out in sails. Tyre, like Carthage, appears to have adopted the policy of employing mercenary troops, which she drew even from the mountainous districts of Persia and the upper Euphrates. The immediate guard of the city, however, was entrusted to its neighbours of Arvad and Gammadim, who, standing round the walls in brilliant armour, are said to have "made its beauty perfect."

10. *With regard to the distant commerce of Tyre,* the quarters to which it was carried on must become the subject of some discussion, in the course of which we shall introduce the interesting particulars given by the prophet.

Sect. IV. *The World according to the Hebrews.*

11. *No System of Geography can be traced in the sacred writers,* who, occupied with higher objects, do not even allude to any such as existing among the Hebrews. The ideas of that people with regard to the structure and boundaries of the earth may, however, be *inferred* from the genealogical chapters (*Gen.* x., repeated 1 *Chron.* i.), which contain, in fact, a view of the known divisions of the earth, agreeing in some striking particulars with the records of profane history; also from the accounts of the commerce of Tyre, and from various detached notices in the historians and prophets.

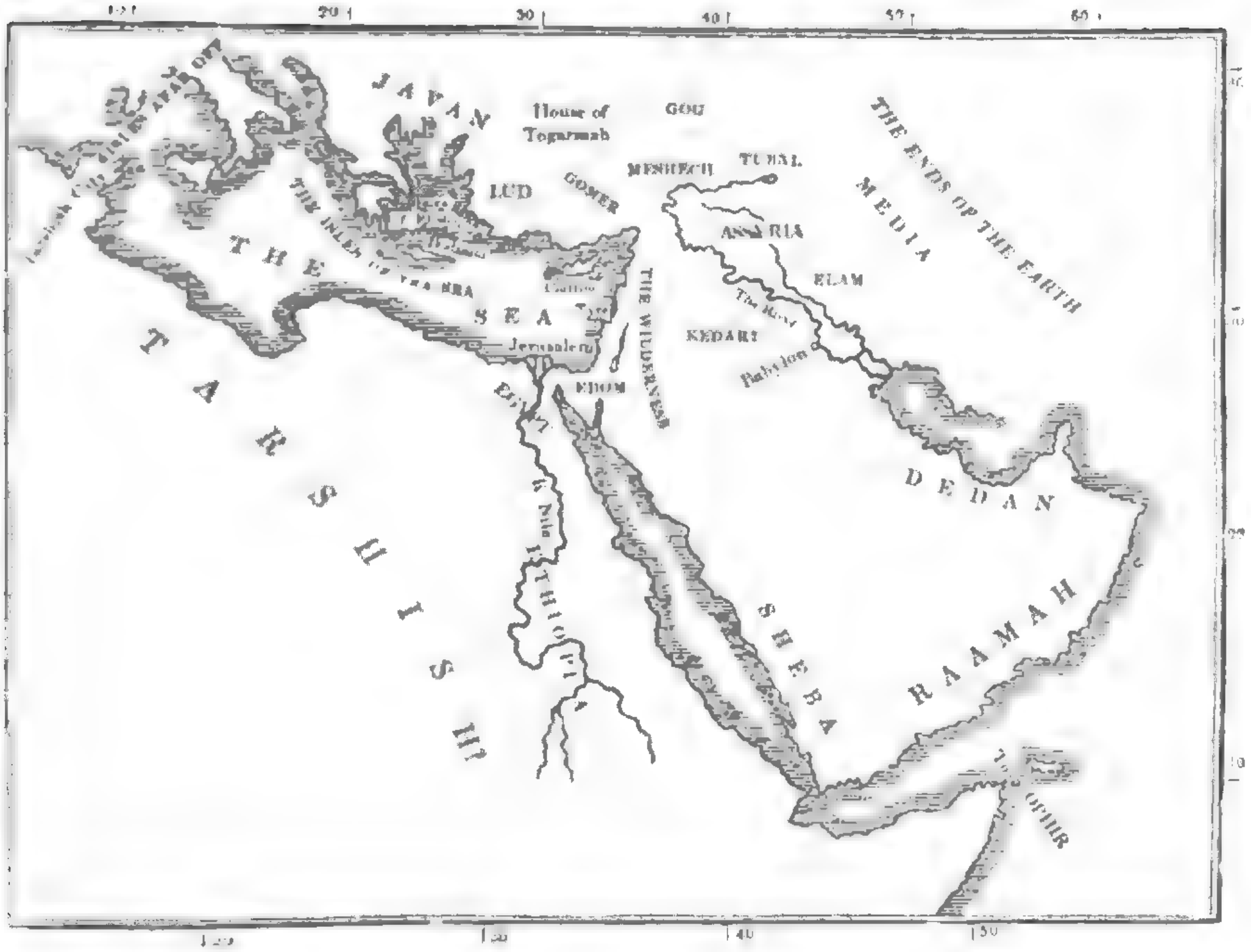
12. *The Hebrews obviously never attempted to form any scientific theory respecting the structure of the earth.* The natural impression, which represents it as a flat surface, with the heaven as a firmament or curtain spread over it, is found universally prevalent. Beneath was conceived to be a deep pit, the abode of darkness and the shadow of death. In one place we find the grand image of the earth being hung upon nothing; but, elsewhere, the *pillars* of the earth are repeatedly mentioned; and sometimes the pillars of heaven. In short, it is evident, that every writer caught the idea impressed on his senses and imagination by the view of these grand objects, without endeavouring to arrange them into any regular system. Although, however, the Jews never indulged in speculative geography, yet there are copious examples of minute and careful topography for practical purposes. Our object, however, is not to mark the divisions of Judea, but to trace the ideas of the Jews respecting the extent and boundaries of the known world. We shall at the same time be able to collect all that is now to be known of the Phœnician Geography; for it is evident that Ezekiel visited Tyre, as Herodotus did Babylon, with the eye of an intelligent observer; and he would doubtless hold intercourse with the best informed men in that great school of commerce and navigation. The objects always alluded to, as placed at the farthest limits of their knowledge, are Tarshish; Ophir; The Isles; Sheba and Dedan; The River; Gog, Magog, and the north. (*Fig.* 1.)

Subsect. 1. *Tarshish.*

13. *Tarshish* is the name which, in the annals of Jewish and Phœnician navigation, occurs most frequently, and ranks next to Tyre; yet nothing has been found more difficult than to fix that name to any precise place. The peculiar difficulty is this; that there are two voyages from Tarshish: one up the Mediterranean, bringing iron, silver, lead, and tin, the produce of Spain and Britain (*Ezek.* xxvii. 12.); the other up the Red Sea, bringing gold, ivory, and apes, the produce of tropical Africa (1 *Kings*, x. 22.). How these two voyages can be from the same place, appears at first sight to baffle research.

14. *Various places* have been suggested, among which I should not think it necessary to mention Tarsus, in Cilicia, were it not supported by such names as Volney and Malte Brun. Except the resemblance of name, it has not a single feature which can be reconciled to the Tarshish of Scripture. Besides, the name *Tarsus* is evidently of Greek origin (*See Steph. Byzant. in v. Strabo* l. 14. *Bochart's Phaleg., and Wetstein's Nov. Test.* vol. ii. p. 511. & 608.), whereas Tarshish is manifestly of oriental derivation, and is doubtless of Phœnician origin. Indeed, Malte Brun admits it to be tenable only on the clumsy and improbable supposition of there being two places of the name of Tarshish. Tartessus or Cadiz is certainly more plausible, and agrees with the Mediterranean voyage; but the distance is too great, and notice might have been expected to be taken of not a few intermediate objects, particularly of the Straits of Gibraltar. It is altogether foreign to the voyage by the Red Sea. This last objection

Fig. 1. Geographical System of the Hebrews.



appears also to hold against Carthage, which, in every other respect, seems preferable to Tartessus, and of which more will be said in the sequel.

15. *To solve the problem of the two voyages,* the only attempt, so far as I know, has been in the ingenious hypothesis of Gosselin: Tarshish, according to him, signifies the great or open sea, as distinguished even from the largest of its enclosed gulfs. The name may then be applied equally to the Atlantic and the Indian Ocean; and the voyage to and from Tarshish may equally be by the Red Sea or the Mediterranean. But though this hypothesis be supported by the signification of an old Hebrew term, and though it solve the great problem, I think any one, who attentively traces the various occasions on which Tarshish is mentioned in Scripture, will be satisfied that it has a sense quite different from the loose and vague one here ascribed to it. Let us only read the following verse:—"But Jonah rose up to flee into Tarshish from the presence of the Lord, and went down to Joppa, and he found a ship going to Tarshish; so he paid the fare thereof, and went down into it, to go with them into Tarshish from the presence of the Lord." Do not these words unavoidably suggest a precise port, to which there was a regular packet, with a fixed rate of fare? — not a mere vague setting out into the wide and open sea. If the following expressions can be reconciled to M. Gosselin's hypothesis, it is only by very strained interpretations:—"The kings of Tarshish; — the merchants of Tarshish; — pass ye over to Tarshish; — Tarshish was thy merchant: with silver, &c. they traded in the fairs; — silver in plates is brought from Tarshish, and gold from Ophir; — the daughter of Tarshish," &c. In the genealogical chapters, Tarshish is introduced as one of the sons of Javan. But the other three sons, and every other name mentioned in these chapters, are the fathers of a country and nation; and it would be quite singular if Tarshish alone should have had only *the sea* for his offspring. What a strange idea to call the sea one of the sons of Javan! Indeed, this is so glaringly improbable, that M. Gosselin has recourse to the hypothesis of interpolation — a supposition very unlikely in regard to books held so sacred, and in respect to these chapters among a people so fond of genealogy, and altogether a most unsound principle, as applied to the sacred volume. Finally, I think it very evident, from the general tenour of Hebrew writers, that they had no distinct notion of the Mediterranean as an enclosed sea, and of an ocean beyond it. The expression, "the sea," used in that vague and wide sense, will, I apprehend, be always found to signify the Mediterranean, the Red Sea being designated by that particular term. Thus, there appears to be no motive for adopting M. Gosselin's hypothesis, except the want of any

other by which the problem of the two voyages can possibly be solved. But if another can be stated, which shall solve that problem, and at the same time make Tarshish the very place it might be expected to be, this great question may, perhaps, be considered as settled in a more satisfactory manner than heretofore.

16. *That Tarshish must be, fundamentally, Carthage*, cannot, I think, admit of a moment's doubt. The strongest argument is, that if it be not, then that grand emporium of Mediterranean trade, the colony of Tyre, the place of all others with which Tyre held always the closest intercourse, must never have been named by the prophets, who give such copious and detailed accounts of Tyrian commerce. When Ezekiel was enumerating every place, even the most obscure, with which Tyre held intercourse, can it be supposed that this, the chief of all others, would have been totally omitted? But if Tarshish be Carthage, then that celebrated city holds exactly the prominent place which, according to every circumstance, it ought to have held in relation to Tyre. This general negative argument does appear to me quite irresistible. The details are equally conformable. Carthage in her glory monopolised, almost entirely, the commerce of Spain and Britain. She even took the most violent measures to prevent any maritime power from penetrating to the west of Sicily. There appears no trace of the Tyrians ever proceeding further. They found, apparently, in Carthage, a complete assortment of the commodities of all the countries to the west, and on the ocean — silver, iron, lead, and tin, which were thus naturally viewed by the Jews, and perhaps by the Tyrians themselves, as Carthaginian commodities. With regard to the name, considering that both Tarshish and Carthage are corruptions of the original Phœnician term, they have that rude resemblance which might be expected. The connection is rendered stronger by Carchedon, the Greek name of Carthage, which forms a sort of middle term between them.

17. *The voyage from Tarshish by the Red Sea*, however, which forms the grand difficulty, remains yet unaccounted for; and it can only, I think, be solved in the following manner: I conceive the name of this great African metropolis must have been generally extended to the whole of the continent of Africa. All the names of the continents, we may observe, were originally derived from one of their remarkable and frequented districts. The name of Asia was extended by the Greeks from a tract of that name immediately opposite to their shore, including Troas, Ionia, and some other of the more eastern districts of Asia Minor. Africa they called Libya from the country of that name lying directly opposite to them. With the Romans, Africa derived its name from the very district now in question, called always Africa Propria, being the finest on that coast, and including Carthage. It appears, then, quite natural that a place so very prominent, with which Tyre held such close and constant intercourse, apparently the only place much frequented by her on the coast of Africa, should be associated in her conception with the whole continent in which it was situated. On any other supposition, the Jews and Phœnicians must have had no name for Africa, which is not very probable. It is observable that Tarshish evidently does not comprehend either Egypt or Upper Ethiopia, which countries, in fact, were never by the ancients considered as decidedly African, that continent, according to their conception, having the Nile for its eastern boundary. If we admit Tarshish to be Africa, the whole difficulty respecting the two voyages at once disappears. As the voyage to the northern coast was by the Mediterranean, so that to the eastern coast was of course by the Red Sea. It is in favour of this solution that Jerome, in fact, calls the voyage to Tarshish "an African voyage." The Jews, unacquainted with intermediate countries, had probably a very inadequate conception of the distance between these coasts; at all events, they justly considered them as parts of the same vast expanse of continent.

Subsect. 2. *Ophir.*

18. *The name of Ophir*, combined, as it always is, with the most precious of metals, and the most coveted of all commodities, ranks among the distant countries known to the Jews, almost superior in splendour to Tarshish, though not equal in greatness and commercial importance. The voyages of Solomon to Ophir for gold, form the greatest naval enterprise in which the kingdom of Judea was ever engaged. Yet this name has been attended with little less difficulty, and produced scarcely less controversy, than that of Tarshish.

19. *The belief that Ophir was in Arabia* has certainly not a little to urge in its favour. In the genealogical chapters it is always combined with Sheba, or Sabea, which was undoubtedly situated at the south-west angle of Arabia. It was from Sheba that gold (doubtless, the gold of Ophir,) was regularly brought to Judea and Phœnicia. Even Bochart, who thinks himself obliged to seek in India a more distant Ophir, clumsily compounds the matter by making another Ophir in Arabia. He is followed by M. Malte Brun. M. Gosselin, with his usual zeal to restrict ancient knowledge, insists, that there never was any Ophir except the Arabian, and places it in the modern interior district of Dofar. There appear to me, I confess, vast improbabilities in this Arabian Ophir. As an interior district, it must have been nearer, or certainly as near, to Judea as Sheba; and it appears strange, that no direct land communication should ever have been opened with it. Let us consider the mighty oper-

ations of Solomon; his utmost efforts combined with those of Hiram; the materials of ship-building conveyed by land over a vast desert; the most skilful workmen transported to Ezion Geber; a fleet composed of large vessels, called ships of Tarshish, at last formed, and undertaking a series of voyages, in each of which three years were employed. What a waste of labour and expenditure to obtain a commodity which could have been conveyed across Arabia in two months on the backs of camels! Yet the repetition of the voyage shows that the article was, in fact, procured on better terms than by the usual channel. In the voyage from Ophir, also, we find new articles never mentioned in relation to Sheba or Arabia, but characteristic of equatorial Africa — ivory, apes, and peacocks. With regard to the close combination in which Sheba and Ophir are always found, it will appear natural enough, when we consider that, unless during the short expedition of Solomon, Sheba appears to have been the channel by which the gold of Ophir was transmitted to Judea and Phœnicia. This circumstance might readily lead the inhabitants of those countries to consider the two as closely connected, though Ophir might be beyond Sheba, and even be separated from it by seas and territories of considerable extent.

20. *The hypothesis which places Ophir in India*, though supported by great names, appears quite untenable. The trade of Ophir bears not the least resemblance to an Indian trade. It does not include the fine manufactures and rich spices which India has always furnished; and its staple is gold, which never, at any time, was an article of export from that quarter of Asia. India has, on the contrary, always demanded a large balance of specie, and has formed a gulf in which the gold of the west has been absorbed. If we reject India, we shall not certainly, with some *savans*, travel as far as Peru in quest of our object, notwithstanding the slight resemblance of name, and the attempt to eke it out by the expression "gold of Parvaim," which has some appearance of being synonymous.

21. *The eastern coast of Africa* is the quarter to which all the indications appear very clearly to point. In the voyage to Tarshish by the Red Sea, its name and that of Ophir are always combined; nay, the voyage, which in the Book of Kings is called the voyage to Tarshish, in the Chronicles is called the voyage to Ophir; so that it is evident the two are one and the same voyage; and, if Tarshish was Africa, Ophir must clearly be *in* Africa. There is, however, on this coast no abundant supply of gold till we reach as far south as Sofala; thus implying an extent of navigation which is certainly somewhat startling. M. Gosselin particularly urges, that in the time of Alexander there was no longer any knowledge of eastern Africa; and that even the Romans never appear to have penetrated beyond Cape Delgado. On the other hand, it is to be considered that the alliance of Hiram and Solomon united advantages which never existed again in an equal degree. The wealth, naval skill, and ample materials which those great princes could command were scarcely equalled, even by the Ptolemies. After the death of Solomon, the kingdom, split into two, and weakened by continued dissension, abandoned entirely these distant commercial enterprises. A solitary attempt to renew the trade was made by Jehoshaphat, but the vessels prepared for that purpose were wrecked in the very mouth of the port of Ezion Geber; after which the undertaking was entirely given up. In the calamities which afterwards befel Israel and Judah, and the revolutions which subverted the whole political system of western Asia, it is not wonderful that every trace of this distant intercourse should have been obliterated; and that the successors of Alexander should have had to enter on a new field of discovery. In support of the supposition of Sofala, there may also be noticed a certain resemblance of name; and the duration of the voyage, stated at three years, would afford very ample time to reach the Zambese, even under all the imperfections of ancient navigation.

Subsect. 3. *The Isles.*

22. *The Isles*, a term which occurs much in Scripture, might be supposed to describe generally those portions of the globe which come under this description; yet a careful comparison of the different passages in which the word occurs will probably show, that it is used in a much more precise and determinate sense, and is applied to a wide and connected range of territory. The whole of the southern coasts of Europe, consisting either of real islands or of peninsular tracts, appears by the Jews and Phœnicians to have been viewed as a long range of islands. Besides, the terms νῆσος and *insula* were, in periods of remote antiquity, applied loosely to peninsulas as well as islands proper. Among many examples which might be adduced, *one* will suffice — Peloponnesus. The isles, relative to Tyre, appear to have ranked only second to Tarshish as a source of wealth, and in respect of close and intimate intercourse. Tyre is called expressly, "a merchant of many isles:" and the consternation which shook the isles at the sound of her fall; the dismay of their kings, who are said to have then cast off their robes, and sat on the ground, — all point out the extent and importance of this commerce. *Tarshish*, *Elisha*, *Chittim*, and *Dodanim* are named in the genealogical chapter as the *four* who divided among them the isles of the Gentiles; but, though Tarshish is so often named in combination with "the isles" among the most distant maritime territories, there is never any indication as if it were itself an island.

The combination is probably produced by the extensive possessions and commerce of the Carthaginians in the western islands and coasts of Europe. These, including the southern point of Italy, were, as already observed, probably considered as insular, and were distinguished by the appellations of the "isles afar off," and "the distant isles of the sea." The "isle" in particular, which Isaiah mentions in such close connection with Tarshish, and which the merchants of Sidon, "by passing over the sea, had replenished," can scarcely be any other than Sicily, an island almost Carthaginian, and containing so many flourishing cities. With regard to the isles of Elisha, they are evidently Hellas, the Greek name of Greece. The only distinctive characteristic, indeed, that of furnishing Tyre with the blue and purple dye, does not recal to us any of the features under which we have been accustomed to recognise that celebrated region. But Greece was not yet the seat of arts and arms; and, had she been so, the Tyrian merchants might still have viewed her only as she served their purpose. Bochart has collected ample testimonies to show that the murex, the shell which yielded those celebrated dyes, was found in peculiar abundance on the coast of Laconia. Chittim appears very evidently Cyprus, and its early capital of Citium. The alarm being given thence of the approach of the king of Babylon, and its being considered as the natural place of refuge for the inhabitants of Tyre, where yet they would not be fully secure, mark a proximity which belongs to no other island. The name, indeed, is in one instance given to Greece, and in another to Italy; but this seems merely to be, that, as the nearest known island, its name is sometimes thus vaguely extended to the whole of that territory considered by the Jews as insular. The attempts of Bochart to find the name of Chittim in Italy have been wholly abortive; for we cannot consider as worthy of notice the observation that it and *Latium*, in the respective Greek and Latin languages, both signify "to hide." In regard to Dodanim, convertible into Rodanim (ד and ר being perpetually interchanged and confounded), though it is mentioned only once, we seem justified in fixing on Rhodes, already flourishing and commercial, though not yet become the rival of kings. Bochart seems to go much too far, when he seeks for it on the Rhone or the Ebro.

SUBSECT. 4. *Sheba and Dedan.*

23. *Of the internal trade of western Asia* during the early ages, the most extensive and important was that carried on across Arabia. It consisted, not so much in the productions of the region itself, as in those of India and Africa, which found their way by this channel to Judea and Phœnicia.

24. *Sheba*, among the Arabian states, holds the most prominent place, being undoubtedly the same with the Sabæa or Arabia Felix of the classic writers. Its imports were the precious commodities of gold and incense: the latter anciently in most extensive demand for the purpose of sacrifice. These articles appear to have been brought to Judea, not by any maritime channel, but in crowded caravans. The "companies of Sheba" are mentioned even in Job. Isaiah speaks of the "multitude of camels;" and of "all they from Sheba." Yet the incense, it is now certain, must have come chiefly from the opposite African coast of Berbera; and the gold, we have seen reason to think, must have been derived from a still more remote part of that continent.

25. *The commerce of Dedan* rivalled that of Sheba, being carried on from the opposite or eastern coast. The mention of "many isles" in combination with Dedan seems to fix it to that point at the entrance of the Persian Gulf, which is, in fact, bordered by numerous islands. One of these, Ormuz, became afterwards the seat of a kingdom, which, from a situation and commerce similar to that of Dedan, derived a splendour which made it the pride of the East. The imports from Dedan — "ivory and precious cloths" — point out the source of this prosperity. These were the commodities of India, brought to the mouth of the Persian Gulf, and thence transported across the desert to the western regions. The caravan trade of Dedan appears to have been most extensive; insomuch that the prophet, in denouncing the judgment upon Arabia, mentions the "travelling companies of Dedanim" as its most conspicuous feature. In the prophets, Edom and Dedan are almost universally named together, and the same judgments represented as affecting both. Hence they are usually considered as parts of the same country, and the ordinary maps include Dedan as a district of Edom. Even Bochart, whose learning showed him that there must be a more distant Dedan, adopts the hackneyed scheme of supposing that there were two Dedans. There is no occasion for so unskilful a theory to explain the intimate connection between these two states. When caravans came across Arabia from the Persian Gulf, it was at Edom or Idumea that they first touched on the civilised world. A depôt was thus naturally formed there of the commodities in which they traded. This traffic raised Idumea and its capital, Petra, to a high pitch of wealth and importance. So close a connection necessarily caused Dedan to be deeply affected by any calamity which desolated Edom, and rendered her no longer the channel through which this commerce could flow. But these disasters are by no means represented as touching her so closely or so deeply; and while Edom is represented as utterly spoiled, and converted into a waste and reproach, the inhabitants of Dedan are merely warned to "turn back and dwell deep" (*Jer.* xlix. 8.); and the expression, "they of Dedan

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shall fall by the sword," is more correctly interpreted in the margin, "they shall fall by the sword *unto* Dedan." These circumstances appear to mark, along with an intimate connection, a complete distance and separation between these two great Arabian states.

26. *Raamah* is mentioned among other nations of Arabia, along with Sheba, as producing the same articles, but as a much less remarkable country. It appears to be the modern Hadramauth, neither situated so commodiously as Sheba for the African, nor as Dedan for the Indian, trade. Some of the best-watered districts, probably of the Nedsjed, appear to have composed the kingdom of *Kedar*, enriched by the breeding of numerous sheep and goats, with which it supplied even Tyre, and rose to such prosperity, as to make it be considered a mighty catastrophe "when all the glory of Kedar should fail."

Subsect. 5. *Countries on the Euphrates.*

27. *The river* (for such is the import of the term) presents itself as a grand feature of the landscape after passing across the wide Syrian desert, towards the eastern extremity of the known world. This name, in preference even over the Nile and the Jordan, was always applied to the Euphrates, which, holding so immense a course through kingdoms the most celebrated in history, was considered as one of the grand boundaries of the earth. The great empires and capitals of Assyria and Babylon gave to it a lustre, which was scarcely divided by the *Tigris*, whose name was little known to the Jews before the captivity. Along this line of territory Ezekiel enumerates a number of cities, Haran, Canneh, Eden, Ashur, &c., from which great caravans proceeded to Tyre with cloths and other articles of the most valuable description. In such early accounts, however, the country from which commodities last came is seldom distinguished from their original seat. I therefore entirely agree with Dr. Vincent, that they must have been brought by a long overland voyage across Asia; that these chests of rich apparel, so carefully bound with cords, came, probably, by interior caravans from Hindûstan, and, perhaps, already from the frontier of China.

28. *Of the countries beyond the Euphrates*, only some broken fragments of knowledge appear to have reached Judea before the captivity. Elam is particularly noticed; the residence of a warlike people, occupying the long mountainous tract west of the Tigris. Media and Persia are also named on a few occasions, but so as to prove that they were only contemplated in dim and obscure distance. At a vague and indefinite distance beyond, the *ends of the earth* were imagined to exist. The early Greeks and, after them, the Arabians, viewed the habitable earth as an island, surrounded on every side by water. Ptolemy, on the contrary, places at every extremity of his map a vague expanse of unknown land. The Hebrews combined in some measure these two views of the subject. To the west, the remotest object for them was the sea, studded with numerous and distant isles; but to the east, where land was seen indefinitely extending, they formed the idea of an inland termination, without being able to attach to it any precise limits. Such a boundary was apparently supposed to exist in various directions, since "all the ends of the earth" is an expression frequently occurring. It was to the east, however, that this idea peculiarly attached itself; and "from the river to the ends of the earth," is the farthest point to which the figurative kingdom of the Messiah is made to extend.

Subsect. 6. *Gog, Magog, and the North.*

29. *The north quarter* is the only part of the circuit of the geographical knowledge of the Jews which remains to be surveyed. It presented features of peculiarly rude and formidable aspect. Ezekiel, in anticipating an approaching inroad, draws the most gloomy feature of the hordes which it poured forth: Gog, with all his bands, coming like a storm or a cloud to cover the land; Gomer with all his bands; the house of Togarmah, from the north quarter: "a great company and a mighty army," directing their course against those nations which "were at rest, dwelt safely, and had gotten cattle and goods;" and with the eager purpose "to take a prey, to carry away silver and gold, to take a great spoil." This picture, these hostile and tumultuous crowds, "all riding upon horses," with their wide-roaming and predatory habits, has always suggested the idea of Scythian invasion; and the Arabian geographers have placed the castle of Gog and Magog at the remotest extremity of Tartary. On looking narrowly into the matter, however, we shall find it difficult to suppose this inroad to have proceeded from any part of those unbounded plains. The fact is, we have no occasion to look so far; for the high table lands in the interior and north of Asia Minor, Phrygia, Galatia, Cappadocia, and Paphlagonia, have always presented the same rude pastoral aspect, and have bred tribes of migratory shepherds and warriors, very similar to those of Scythia itself. These tracts, in fact, continue still to pour forth vast bodies of irregular cavalry, which form the main strength of the Turkish armies. This view of the subject appears completely fixed by the account of the commercial intercourse maintained by these nations with Tyre. The prophet mentions Meshech and Tubal, elsewhere completely identified with Gog, who is called their "chief prince." There never has been the least doubt as to the position of these countries in Upper Armenia, and on the southern border of Caucasus. There the classical writers mention the Moschi and the Tibareni, which are, perhaps,

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the same names. The imports into Tyre are stated to be "vessels of brass, and persons of men." This somewhat curious combination is, however, altogether characteristic of the region in question, which was, in ancient time, highly distinguished for the copiousness and excellence of its copper and iron, which last is not wholly excluded by the term used in the original. The skill with which it was worked into steel by the Chalybes, a people of this region, caused their name to be generally given to this product. Even in the present state of neglect, the neighbourhood of Trebisond supplies with excellent copper all the Lesser Asia. The other article, also, is but too descriptive. The expression, "persons of men," marks the trade in slaves, with which it has always been the fate of Caucasian countries to supply the East. Horses and mules are reported as brought by the "house of Togarmah." Horses have always been a boast of Tartary; and an alliance has been imagined between this name and that of the Turcomans, who still furnish the finest horses. But there was a race called Trogmi, in the upland tracts of Paphlagonia, a region celebrated for its horses, and also for its mules, in which last respect it has a decided advantage over Tartary, to which this last breed is a stranger. Thus we seem justified in finding Gog, with all his rude and terrible appendages, in the northern extremity indeed of the civilized and classical world of Asia, but still far distant from those boundless wastes which composed the ancient Scythia and the modern Tartary.

30. *Javan*, which is described as furnishing the same objects of trade with Meshech and Tubal, but not as having any concern in the desolating invasion of Gog, is in fact, the same word with Ion, or Ionia, an extensive appellation, which comprehended all the western part of the Lesser Asia. The Jews and Phœnicians, overlooking the long range of narrow straits which separated it from Europe, not yet recognised as a separate continent, appear to have extended the name to Thrace, and the interior of continental Greece. Alexander the Great is in one place called king of Javan. That a similar extension was recognised in the early ages of Greece itself, appears by the celebrated ancient inscription at the Isthmus of Corinth. "This is Peloponnesus, not *Ionia*." The Javan slaves were probably drawn from Thrace, whose barbarous regions amply supplied the ancient markets with this cruel species of commodity.

Chap. II.

ANCIENT VOYAGES OF DISCOVERY.

31. *The early voyages of discovery* formed the most important materials for those delineations of the globe which were made by the geographical schools of Greece and Rome in their more advanced and perfected state. Before proceeding, therefore, to consider the systems of these schools, it may be proper to take a survey of the exploratory voyages performed by ancient navigators. These do not appear very considerable in the eyes of a modern mariner. There is not one of them, perhaps, which the captain of a tolerably appointed merchant vessel would not, in the course of his ordinary business, be ready to undertake. But in steering along an unexplored coast, in vessels which could scarcely rank above boats, without the use of the compass, or any correct means of astronomical observation, even these limited voyages were fraught with peril and adventure. The record of them is, however, involved in much mystery and controversy. They were not reported to the world in those regular narratives with which the modern press teems. The ancient narratives are always meagre, and in many cases we have only fragments of hearsay testimony, collected by careless or prejudiced writers. A learned investigation, therefore, is usually necessary, to discover along what coast the navigator sailed, to what point of it he reached, and sometimes whether he ever sailed along any coast. In several cases the most skilful disputants are still divided on questions, which, sunk in the deep abysses of time, must probably remain for ever undecided. Faint and dubious, however, as are these records, they will lead us over some of the most interesting problems of antiquity, and will enable us to trace, in some degree, the infant steps of maritime enterprise.

Sect. I. *Circumnavigation of Africa under Necho.*

32. *To perform the circuit of the coast of Africa* was the favourite object of ancient maritime enterprise, as it continued to be of that of modern times, till the era of its final happy accomplishment. The manner in which its coasts, beyond the Mediterranean and the Red Sea, began to converge, suggested the idea of a peninsula, the circumnavigation of which might be effected, even by the limited resources of ancient navigation. The wide sphere, both of knowledge and trade, which such a discovery would open to the enterprising maritime nations round the Mediterranean, was sufficiently obvious. The first attempt of this description originated in a quarter which had usually been accustomed to keep aloof from every species of naval enterprise.

33. *Egypt* had long held itself as a country strictly agricultural; but *Necho*, who next to Sesostris, raised its military glory to the greatest height, appears, like other conquerors, to have been animated by an active spirit, which exerted itself in every direction. Not possessing fit instruments among his own subjects, he engaged some Phœnician navigators to descend the Red Sea, and endeavour to find their way back to the Mediterranean, by the Pillars of Hercules. The narrative is so very short, that we may easily give it in the words of Herodotus: "The Phœnicians, setting sail from the Red Sea, made their way into the southern sea; and when autumn approached, they drew their vessels to land, sowed a crop, and waited till it was grown, when they reaped it, and again put to sea. Having spent two years in this manner, in the third year they reached the Pillars of Hercules, and returned to Egypt, reporting what does not find belief with me, but may, perhaps, with some other person; for they said that in passing Africa they had the sun on their right hand. In this manner Libya was first known."

34. *The authenticity of this narrative* has been in a remarkable degree the object of learned curiosity, and has produced a mass of controversy, greater, perhaps, than its short and vague nature is well able to admit. The arguments appear to have been exhausted on the believing side by Rennell, on the sceptical by Gosselin and Vincent. Formidable as the achievement was, it does not seem to involve any absolute impossibility, since the whole voyage might be performed without losing sight of the shore, or launching into the open sea, through which the ancients had no means of guiding their course; and their smaller vessels, keeping close to the shore, might even possess some advantage over our larger ones, obliged to stand out to sea, and encounter the stormy waves of the Atlantic. Herodotus seems inclined to credit the information, unless, on the ground of one general statement, which, being the very thing that should have happened, and disbelieved only through his ignorance, strongly fortifies our inclination to credit the story.

Sect. II. *The Voyage of Sataspes.*

35. *The Persian monarchs*, after their sway was established over the eastern coasts of the Mediterranean, found the exploration of Africa in some degree their peculiar province. This nation, however, laboured under an aversion and dread of the sea, greater, perhaps, than that of the other orientals. The only effort of theirs on record was one which arose in a singular and rather casual manner.

36. *Sataspes*, a Persian nobleman, having committed a heinous offence, was condemned by Xerxes to a cruel death. His friends, however, persuaded the monarch, that by commuting this sentence into that of a voyage round Africa, he would inflict sufferings scarcely less severe, and might render a national benefit. They prevailed, and Sataspes, having procured in Egypt a vessel and crew, passed the Straits of Gibraltar, and bent his course southwards. He is represented as having beat about for several months, at the end of which he probably reached the coasts of the Sahara. The view of those frightful and desolate shores, and of the tempestuous ocean which dashed against them, might well intimidate a navigator bred in the luxurious indolence of the Persian court. Sataspes was struck with a panic, and measured back his course to the straits. Yet, hoping that time and the degree in which he had accomplished his mission might efface the impression, both of former offence and of present failure, he again presented himself before Xerxes. In giving an account of his voyage, he merely related, that wherever he landed he had seen little men wearing a Phœnician dress, who immediately fled into the mountains; but his people had done them no injury, beyond carrying off the cattle of which they stood in need. The failure of the ultimate object of the expedition he imputed to the occurrence of an insurmountable obstacle, the nature of which has not been satisfactorily explained. Xerxes, however, accustomed to expect that all nature should be subservient to his will, would listen to no excuse, and ordered the original sentence to be immediately executed.

Sect. III. *Voyage of Hanno.*

37. *The Carthaginians*, as the greatest maritime and commercial people of antiquity, and as decidedly African, might have been expected to make earlier and further progress in the discovery of Africa than any other nation. In general, however, a veil of deep and awful mystery shrouded all the proceedings of that powerful and aspiring people. It is even asserted that they considered as exclusively theirs the whole Mediterranean east of a line drawn across to Sicily, and that they captured all the vessels, and put to death the crews, that were found navigating within these forbidden precincts. The Romans, on the other side, animated by inextinguishable enmity, are said to have industriously destroyed all the records of the literature and history of their fallen rivals. The only fragment that escaped is the Periplus of Hanno, which, notwithstanding the scepticism of Dodwell, its editor, the learned world are now generally agreed in considering as ancient and authentic. This celebrated document is so short, that we may find space here for a complete translation of it.

"It pleased the Carthaginians that Hanno should sail beyond the Pillars of Hercules, and should found cities of the Liby-Phœnicians. He set sail, therefore, with a fleet of sixty vessels, each of which was impelled by fifty oars. They carried with them men and women to the number of thirty thousand, with provisions and supplies of various kinds. We sailed two days beyond the straits, and founded a city overlooking an ample plain, and which we called Thymaterium. Thence we proceeded westward to Soloeis, a promontory of Libya, thickly shaded with trees, where we founded a temple to Neptune; then turning eastward for half a day's sail, we came into a lake not far from the sea, overgrown with numerous and high reeds, and on whose banks elephants and a number of wild animals were feeding. Having passed this lake in the course of a day's sail, we founded cities on the sea coast, Gaicios, Gytte, Acra, Melissa, and Arambys. Then setting sail, we made our way to the great river Lixus, which flows from Libya. On its banks the Lixitæ, a pastoral race, fed their flocks; with whom we formed ties of friendship, and spent a short interval. The country above them was inhabited by inhospitable Ethiopians, filled with wild beasts, and traversed by very high mountains, whence the Lixus is said to descend; and it was added, that these mountains were inhabited by men dwelling in caves, of a strange appearance, who outran even horses in the chase. Having received interpreters from the Lixitæ, we proceeded along a desert coast till the middle of the second day; when we sailed one day to the eastward, and in the recess of a little bay found a small island, five stadia in circuit. We left inhabitants there, and named it Cerne. This island, on taking an account of our course, we conjectured to be opposite to Carthage; for the navigation from Carthage to the Pillars, and from the Pillars to Cerne, corresponded. Then we came to a lake through which flows a great river called Chretes. That lake contained three islands greater than Cerne; by these, in the course of a day's navigation, we reached the interior shore of the lake, where very great mountains impended over it, inhabited by a rough people dressed in skins of wild beasts, who by throwing stones repelled us, and prevented us from landing. We then sailed into another river, large and broad, full of crocodiles and river horses. We then returned to Cerne; and from thence passed for twelve days along a shore, the whole of which was in the possession of the Ethiopians, who showed a trembling dread of our aspect, and spoke a language unknown to our Lixite interpreters. On the last day, we came to high mountains covered with trees, the wood of which was odoriferous and variously tinted. Passing round these mountains by a navigation of two days, we came to an immense opening of the sea, on the other side of which, joined to the continent, we saw fires of different magnitude glittering at intervals from every spot. Having watered there, we proceeded close along the shore, till we came to an immense bay, which the interpreters called the Western Horn. In it was a large island, and in that island a salt water lake, in which again there was another island. Entering this lake, we saw in the day nothing but forest; but in the night there were many fires burning; and we heard various sounds of musical instruments, and the cries of numberless human beings. Being terrified by these objects, and the prophets also exhorting us to quit the island, we made off, and reached next the fiery region of the Thymiamates, whence torrents of flame poured down into the sea. Here the heat of the earth was such, that the foot could not tread upon it. We therefore took our speedy departure from this place, and after four days' further sail, saw the earth in the night full of flames. There appeared also in the midst of them one lofty fire greater than the rest, which seemed to reach to the very stars; this, when seen by daylight, proved to be a very lofty mountain, called the chariot of the gods. Thence by a navigation of three days, having passed these fiery torrents, we came upon another bay, called the Southern Horn. In its inmost recess was an island similar to that formerly described, which contained in like manner a lake with another island, inhabited by a rude description of people. The females were much more numerous than the males, and had rough skins: our interpreters called them *Gorillæ*. We pursued but could take none of the males; they all escaped to the top of precipices, which they mounted with ease, and threw down stones; but they made such violent struggles, biting and tearing their captors, that we killed them, and stripped off the skins, which we carried to Carthage."

38. *Such is the entire narrative of this most celebrated of the ancient voyages;* but it would be impossible to comprise within the same limits even a sketch of the commentaries to which it has given rise among the learned.

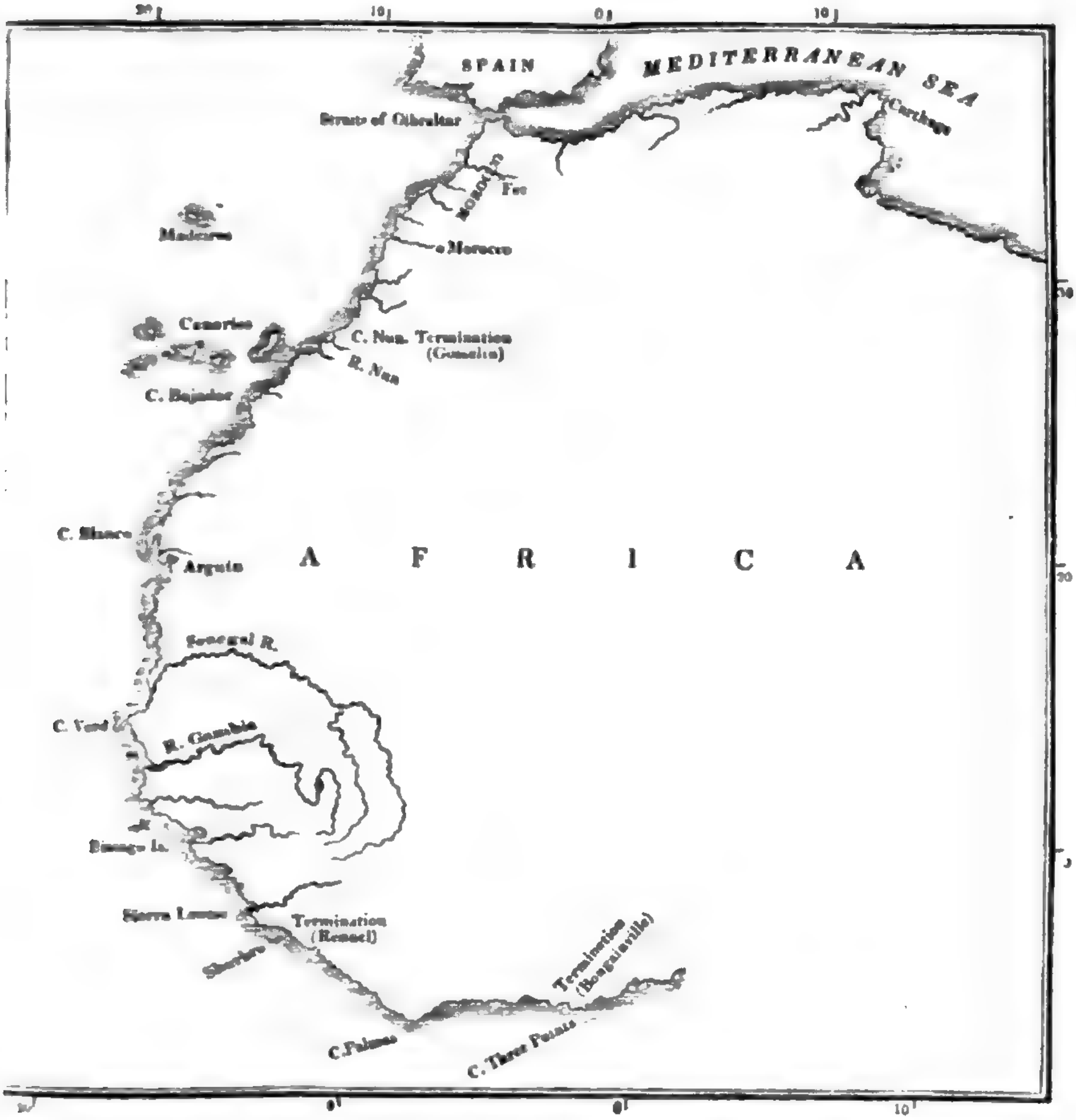
39. *Three leading hypotheses have been formed:* one, that of Bougainville, who conceives Hanno to have reached the Gulf of Benin; another, of Major Rennell, who carries his course only to Sherbro Sound, a little beyond Sierra Leone; while M. Gosselin insists upon terminating it about the river of Nun. (*Fig.* 2.) When we reflect that the first of these courses is upwards of three thousand miles, and the last under seven hundred, an idea may be formed of the excessively vague nature of these data, where all the names are changed, and no one point fixed with such certainty that the others can rest upon it.

40. *Bougainville* contends that his assigned limits do not exceed what may reasonably be supposed to have been passed over by the most skilful navigator of antiquity; in fact, the period of thirty-eight days is precisely the time employed by the squadron sent in 1641 to found the Portuguese fort of Elmina. All the grand features of man and nature described by Hanno are to be found in tropical Africa only; Ethiopians or Negroes; Gorillæ, who are evidently apes or oran-outangs; rivers so large as to contain crocodiles and hippopotami. The great conflagrations of the grass, and the music and dancing prolonged through the night, are phenomena which have been observed only in the negro territories.

41. *Major Rennell's system* retains all the arguments by which that of Bougainville is supported, at the same time that it avoids the extravagant supposition of ancient vessels having made a course of seventy geographical miles in the day. The Gulfs of Bissago and Sherbro present those numerous islands described by Hanno, and not found on any other part of the coast; and even their form seems to correspond to the appellation of Horn, applied by him to these great gulfs. If, then, Hanno's career reached central Africa, there can be little doubt that Major Rennell's hypothesis, or something near it, exhibits his real progress.

42. *M. Gosselin* restricts the voyage within much narrower limits. It was impossible, he urges, that the course could be otherwise than slow in a voyage of discovery upon an unknown sea, where the mariner could sail only by daylight, with constant precautions, and minutely examining every part of the coast. The motions of Hanno were clogged also by the large and incumbered fleet of which he was the escort. Destitute of the compass, and without the power of standing out to sea, he could never, it is alleged, have doubled Cape Bojador, which so long baffled the efforts of the Portuguese. With regard to the features supposed to be exclusively characteristic of tropical Africa, M. Gosselin conceives that Morocco, yet in no degree civilised or subdued, but in the full possession of rude native tribes, would bear a much more similar aspect than now to the interior portions of the continent. The ape tribe and the wild river amphibia might probably fill a region unoccupied by man, though

Fig. 2. Map illustrating the Voyage of Hanno.



now, it is supposed, expelled by culture and a more crowded population. The term Ethiopians has been applied, not to negroes only, but to all nations of a dark colour. He conceives, therefore, that Hanno's course could never pass much beyond the frontier of Morocco, and could have reached only a very little further than the estuary of the river of Nun.

43. *To decide a point* on which such learned men so widely disagree, is what we do not feel very forward to undertake; and really the difficulties appear very great in any view of the subject. The detail of the positions would, on the whole, lead us to prefer the most limited space. Of these positions the island of Cerne forms the key; and the identifying of it with Arguin is essential to the support of the two remote hypotheses. But though it is evident that the whole of the sailing period to Cerne is not given, the time being omitted during which the five cities were founded, yet the general tenour seems pretty inconsistent with so great a way being made along such a difficult and unknown shore. The defect is in some degree supplied by an ancient nautical guide of some authority, called the Periplus of Scylax, in which the sail from the straits to Cerne is given at twelve days, a period which Major Rennell admits to be wholly insufficient for reaching Arguin. Ptolemy, indeed, carries Cerne to almost a tropical latitude; but as he keeps it still north of the Canaries, his graduation here is manifestly erroneous, and his authority, on the whole, is in favour of retaining Cerne within the limits of Morocco. The details of Hanno do not appear to be always very satisfactory; but perhaps they might prove more so, did we possess a more accurate survey of this coast than has yet been taken. On the whole, then, the great question is, whether M. Gosselin's solutions can account for the aspect of nature and life being so different from

that of Morocco, and so like that of a negro coast: perhaps here, too, some light might be obtained from a careful observation of the ruder borders of the former empire.

Sect. IV. *Voyages of Eudoxus.*

44. *The ambition of performing the circuit of Africa,* the grand maritime problem of antiquity, was not solely confined to princes and states. Even private adventurers, animated by the ambition of achieving so great an enterprise, and hoping, perhaps, to combine with it opportunities of lucrative commerce, are found in the list of the explorers of Africa. Eudoxus was the most memorable of these adventurers, whose story, however, has come down to us through a very clouded medium. In ancient, still more than in modern times, there existed men whose habit it was to treat with doubt and derision all narratives of discovery that extended beyond the ordinary limits. At the head of this sceptical band stands Strabo, one of the greatest geographers whose works survive, and who forms the chief medium by which these narratives have reached our time; a most unfortunate circumstance to the fame of these early discoverers. However, in many instances, nature herself has stood forth as their vindicator; and our more extended knowledge has enabled us to detect the fallacy of the arguments by which Strabo has endeavoured to refute them. This is not particularly the case with regard to Eudoxus; but really, in Strabo's notices respecting the adventurous life of that bold navigator, we cannot see any thing which tends to controvert the general belief of antiquity, that he had made repeated and spirited attempts to explore the unknown coasts of the African continent.

45. *According to the narratives of Strabo, Eudoxus* was a native of Cyzicus, sent on a mission to Alexandria, then the great seat of maritime enterprise and geographical knowledge. His ardent mind was strongly imbued with the spirit which reigned there; and he offered himself to Ptolemy Evergetes, the reigning king, as a zealous instrument to be employed in any expedition having these objects in view. There was, at first, some talk of ascending the Nile, and endeavouring to reach its unknown sources; but their views received a new direction from the arrival of a person who was, or professed to be, a native of India, escaped alone from the wreck of his vessel near the foot of the Arabian Gulf. Ptolemy immediately fitted out a naval armament, with which Eudoxus proceeded on this destination. He appears to have made a prosperous voyage, and to have returned with a cargo of aromatics and precious stones, which last had either been washed down by the rivers, or dug out in a concrete state. It is scarcely probable, however, that Eudoxus ever reached the real shores of India, or went beyond the southern shore of Arabia, and, at farthest, the Persian Gulf. Of this wealth, Evergetes appears to have plundered him; which Strabo insinuates was in resentment of some dishonest conduct on his own part. We cannot, in these days, attempt to judge between the two parties. However, Evergetes dying, his widow Cleopatra took Eudoxus again into favour, and sent him on a fresh voyage. He was now driven by unfavourable winds to the coast of Ethiopia, where he was well received by the inhabitants, and carried on some advantageous trade. His return to Alexandria was again unfortunate. Cleopatra was dead; and her son, who succeeded, treated him as ill as Evergetes had done. Eudoxus brought with him, however, one trophy from the extremity of his voyage — the prow of a vessel, said to have come from the westward as the portion of a wreck, and on which was sculptured the figure of a horse. This prow being exhibited by Eudoxus on the harbour, some mariners from Cadiz declared it to be the very form peculiar to a species of large vessel which went from that port for purposes partly of trade, and partly of fishing, to the coast of Mauritania. Eudoxus listened with enthusiastic credulity, and determined now to renounce the deceitful patronage of courts, and to fit out a new expedition from the commercial city of Cadiz. He proceeded thither by way of Massilia and other maritime stations, where he loudly proclaimed his hopes, and invited all who were animated with any spirit of enterprise to accompany him. He accordingly succeeded in equipping an expedition on a considerable, and even magnificent scale. He had one ship and two large boats, on board of which he carried, not only goods and provisions, but artisans, medical men, and even players on musical instruments. A crew so gay, and filled, probably, with extravagant hopes, were ill fitted to encounter the hardships of African discovery. They took fright at the swell of the open sea, through which Eudoxus was anxious to conduct them, and insisted, according to the usual timid system, on being brought near to the shore. This led to the disaster which Eudoxus had foreseen: the ships were stranded, and the cargo with difficulty saved. The most valuable articles were then put on board one vessel of a lighter construction, and he prosecuted the voyage till he came to a race of people who appeared to him to speak the same language with those whom he had met on the opposite shore of the continent. Conceiving himself to have thus ascertained the object of his voyage, he returned, and endeavoured to procure the barbaric aid of Bocchus, king of Mauritania; but, suspecting that monarch of a treacherous design against him, he again betook himself to Spain. Here he succeeded in equipping a fresh expedition, consisting of one large vessel fitted for the open sea, and another of smaller dimensions for exploring the coast. Here, unfortunately, the narrative breaks off, referring to the Spaniards and Gaditanians, as likely

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to know more; but as nothing more is stated on any authority, we fear that this last expedition must have had an unfortunate issue. Such is the narrative given by Strabo, upon information which seems to have been originally obtained from Eudoxus himself; and really we see nothing in it unworthy of belief, or which might not very well be accomplished by a man of bold and enthusiastic character, possessed of science and talent, and devoted with such ardent zeal to the cause of discovery. Some of Strabo's own criticisms appear to be very trifling. He asks how it was possible for Eudoxus, after being repeatedly stripped of all his wealth, to fit out always new expeditions on an augmented scale; but his own narrative expressly states the foreign sources to which he had recourse. Again, it is tauntingly asked, why he turned back in his last voyage, when he found himself so near the attainment of his object; but surely when he tells us that his whole armament was shipwrecked, and that he had nothing to proceed in but a boat put together out of its remnants, there does not appear the least mystery in his finding it very expedient to return. With as little reason can Eudoxus be made responsible for the fables which antiquity has put into his mouth. He is represented by some as having actually made the circuit of Africa; by others as having come to one nation that was dumb, and another whose mouth was entirely closed, and which received food through an orifice in the nose. None of these fables are found in the report of Eudoxus himself, as coming through the mouth of Strabo his enemy; and we may therefore justly conclude them to have arisen out of the propensity to the marvellous operating upon the successive minds of those through whom the narrative passed.

Sect. V. *Voyage of Pytheas.*

46. *The voyage of Pytheas,* the Massilian navigator, is of peculiar interest, as it is the only one described in any detail, having Europe, and particularly the British Isles, for its object. It comes to us, however, still more deeply tinged by the same dim and discoloured medium through which that of Eudoxus has passed. It is known almost solely by the hostile quotations of the sceptical Strabo, adduced for the purpose of proving Pytheas to be "a liar of the first magnitude." Yet, when we find the nature of the grounds on which this conclusion is made to rest, it appears surprising that M. Gosselin, with all his propensity to doubt, should have adopted so eagerly the severe judgment of his predecessor. These grounds, in fact, are such as to place in the clearest light Strabo's own ignorance, and the superior information of Pytheas. This last will become more conspicuous, if we suppose, as seems probable, that the errors of the geographer were transmitted to him from Massilia itself; in which case, Pytheas being found possessed of knowledge of which his countrymen were destitute, there appears no mode in which he could have obtained it, except the actual performance of the voyages.

47. *The following are statements on which Strabo rests his refutation of Pytheas.* That navigator stated, that the *Calbium Promontorium,* the extremity of Bretagne, pointed to the west, while Strabo affirms it to be perfectly notorious that its direction was to the *north.* This last strange idea was connected with what we shall find to be the general error of this school, which allowed to France a southern coast only, and not a western one. Again, Pytheas represented Britain as having one of its sides much longer than five hundred miles, whereas, his adversary maintains this to be the dimensions of its longest side, which, according to him, is that opposite to and seen from the shores of Gaul. Finally, Pytheas had reached such a pitch of ignorance and impudence, as to assert that his *Ultima Thule* was farther north than Ireland; whereas, all well-informed persons, knowing Ireland to be four hundred miles north from Britain, and scarcely habitable on account of the cold, considered it as forming on that side the extreme boundary of the inhabited earth. Thus far it is necessary only to name the charges against Pytheas, to make him shine conspicuous above his enemies.

48. *There are other statements,* it must be confessed, which appear at first sight a little startling. Pytheas describes the longest side of Britain not only as more than five hundred miles in length, but as exceeding two thousand. It is to be observed, however, that while Strabo described Britain as a triangle, having its longest side opposite to Gaul, Pytheas conceived it to have only *two* sides, one of which, consequently reached from the Land's End, or the Lizard Point, to the extremity of Scotland. If we consider this vast extent of coast, with so many winding shores and deep bays, all the sinuosities of which an ancient navigator was obliged to follow, the estimate will appear not very extravagant. Again Pytheas described the coast of Kent as several days' sail from that of Gaul. But the term by which Strabo designates Gaul, is Κηλτικη (Celtica); and it appears from Cæsar, that Celtica formed only one of the three parts into which Gaul was divided, and was bounded on the east by the Seine. Pytheas probably used the term in this restricted and more proper sense; when the distance assigned became strictly correct. He moreover described the coast of Spain as inhabited by Gallic nations; it would even seem, that he considered the Calbium Promontorium as Spanish. Here he was clearly in the wrong; but the error will probably be found to have rested not in his observations and facts, but in mixing them with an erroneous theory prevalent at Massilia, according to which, France had not a western coast, nor one

facing the Atlantic; such a coast belonged to Spain only. Under this impression, Pytheas, so long as he sailed along the western coast of Gaul, and till he came to that opposite to Britain, would naturally imagine that he was sailing along the coast of Spain.

49. *Strabo at last traces Pytheas to Thule,* and "her utmost isles," when he does, certainly, present a narrative assuming somewhat of a fabulous aspect. The most daring navigator, as he approached the dreary boundaries of earth and ocean, and saw only the high billows of the North Sea dashing against a rocky and misty shore, might become liable to some sinister impressions. Pytheas, it seems, said, that beyond Thule there commenced what was neither earth, sea, nor air, but a confused blending of all the three, similar to the substance called *pulmo marinus* (a species of medusa common on our shores). He added, that this substance was the basis of the universe, and that in it, air, earth, and sky hung as it were suspended. This last was evidently a mere theory, though certainly not devoid of extravagance. M. Gosselin, however, has certainly gone much too far, when he says, "It was impossible either to walk, to breathe, or to sail in it; and yet, if we are to believe Pytheas, in it he walked, sailed, and breathed." Pytheas is evidently represented by Strabo as having merely beheld from a little distance this chaotic compound. "He saw it, and stated the rest from hearsay." Now, as to this asserted view, if we place ourselves in the situation of Pytheas, seeing before him the northern sea, overhung by thick and gloomy mists, shrouded in twilight, and darkened by tempest, we may suppose him very easily persuaded, that what he beheld was a confused blending of all the elements, not very dissimilar even to that thick viscid animal substance to which it was compared. Nor can we feel much wonder, if, after this long and difficult navigation through so many perils, he should lend somewhat of a ready ear to a *report* which represented him to have reached that farthest boundary of nature, beyond which it was no longer possible for mortal sail to penetrate. Another report of Pytheas was, that at Thule the phenomenon took place which belongs only to the polar circle, — a summer of one long day, and a winter of one long night. Antiquity is somewhat full of rumours of this phenomenon, which science had pointed as likely to take place at a certain latitude; and there was a general disposition in those who had made any progress northwards to anticipate the term. Considering the loose way in which rumour then spread, it may easily be supposed, that the partisans of this idea might support it by an exaggerated representation of the real statements of Pytheas. One of these (Geminius) merely reports him as saying that the nights appeared to him to last only for two or three hours, a statement which at midsummer would be quite correct. Indeed, we have been assured by persons who have resided in these islands, that at that season there was scarcely any sensible term of darkness. A foreigner, then, visiting the islands, might very readily imagine he had arrived at that point on the globe where the summer was one uninterrupted day.

50. *The theories, which would make Thule any other place than Shetland,* seem not to require much discussion, though there are not wanting learned partisans in favour of each. Iceland would imply too great an extent of open sea for an ancient navigator; and the period of five days' sail from the continent would be very inadequate. Some Scandinavian writers have claimed Thule as belonging to their own region; Rudbeck for Sweden; Saxo Grammaticus, and Schœnning for the Norwegian Tellemach; Malte Brun for Jutland. These theories seem sufficiently refuted by the single consideration, that Pytheas invariably considered Thule as British, and expressly calls it the "farthest of the Britains." But Jutland or the Baltic he could have only reached by a long navigation along the coasts of Germany, which could never have been performed without the clear perception of having left far behind him every thing belonging to Britain.

Sect. VI. *The Voyage of Nearchus.*

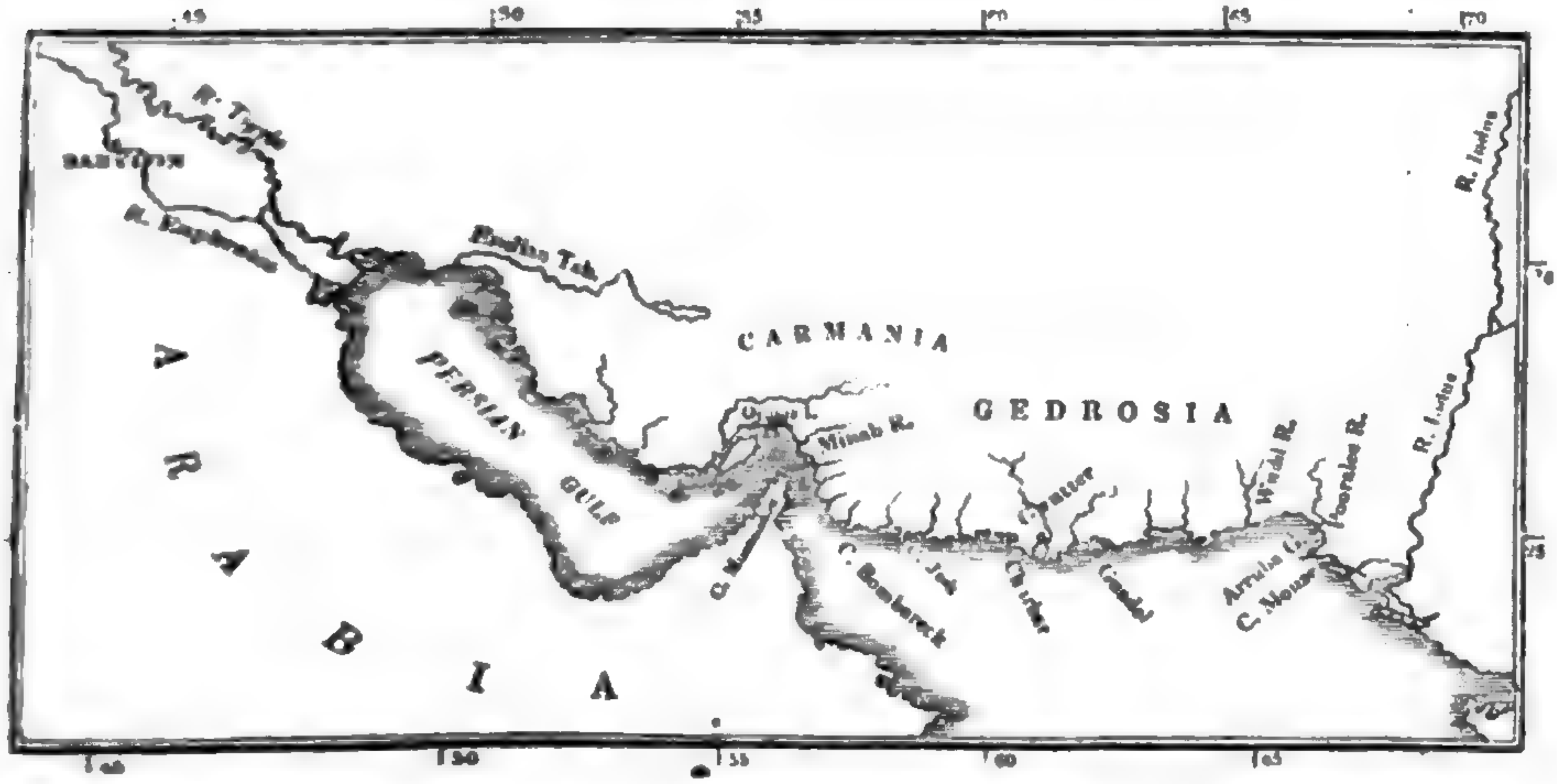
51. *Alexander the Great* was animated beyond, perhaps, any other ancient monarch or sage, with an ardent zeal for discovery. His expedition became almost as much one of exploration as of conquest. Its course was in general by land, and through the interior of the continent; but his mind was not less deeply fixed upon commerce and maritime discovery. On reaching, therefore, the banks of the Indus, and being obliged by the mutiny of his troops to fix there the termination of his career, he was seized with a desire to explore the lower course of that river, and afterwards the southern coasts of Asia; a long range completely unknown to the Greeks. The prospects of this voyage, however, were such as to appal the most enterprising of his naval officers. The perils of tempest and shipwreck on this wide and unknown ocean, with those of being driven upon a barbarous and desert coast, appeared almost to preclude the hope of reaching by this long circuit the destined station of the army on the banks of the Euphrates. The inferior officers variously excused themselves from so heavy a task; and the enterprise appeared ready to fail for lack of instruments, when Nearchus, the admiral of the fleet, came forward and proffered his own services. Alexander unwillingly committed this task to an officer so high in rank, and his intimate friend; but the earnestness of Nearchus, and the backwardness of all the others, left him at length no alternative.

52. *The voyage down the Indus* was brilliant. Alexander conveyed his army in a crowded

fleet of two thousand vessels. The sound of numberless oars, echoed by the surrounding woods, as they floated down this majestic stream, excited the admiring gaze of the natives. Alexander even accompanied his admiral down the Delta of the Indus, and took a view of the ocean, after which he returned, to lead his army by a most perilous and difficult route through Gedrosia and Karamania to Babylon.

53. Nearchus now began his arduous naval route (*fig.* 3), after the usual antique preparation of sacrifices and games. At the mouth of the river appeared a most formidable obstacle; a rock barring the passage, and against which the waves broke with fury. This was surmounted by cutting a canal across the softest part of the rock, through which the vessels were able to pass at full tide. He then passed the sandy island of Krokali (Corachie), and Mount Eirus (Cape Monze), when, being now in the open ocean, a series of gales began, so heavy and continued, as obliged him to seek the shelter of an excellent harbour formed by an island called Bibacta. The crews here landed, threw up an entrenchment to defend themselves against the natives, and remained for twenty-three days, subsisting chiefly on shell-fish. The wind having abated, they set sail, and came to a coast where water, of which they appear to have needed almost daily supplies, was only to be got by going several miles up into the country. They then passed between a range of rocks, so close to each other, that the oars struck against them on each side. After sailing a considerable space, partly in a narrow channel between a wooded island and the shore, they came to the river Arabius (the modern Pooralee). It gave name to a numerous people, inhabiting all the territory between this river and the Indus. On the other side was the coast of the Oritæ. In proceeding, however, Nearchus met with a dreadful tempest, in which three of his vessels perished, though the crews were saved by swimming, and he with difficulty brought his shattered vessels to the coast. Here he found Leonatus, whom Alexander had detached to open a communication with him, which he obtained only by very hard fighting. Nearchus here spent some time in refitting his shattered vessels, and exchanged those of his crew who had proved themselves less efficient, for fresh men out of the Greek army. Having laid in corn for ten days, they sailed with a prosperous wind, and reached the rapid stream of Tomerus (the modern Wudd). Here the natives, six hundred strong, were drawn up to oppose their landing; a barbarous race, armed with lances six cubits long, pointed not with iron, but with wood hardened in the fire. Nearchus caused a band of his light troops to swim on shore, and to make no movement till they were drawn up in a triple line, then suddenly to raise a general shout, and pour in clouds of darts and missiles. This sudden attack, their shouts, and the glitter of their armour, produced instant and total rout on the part of the natives. They are described as presenting an aspect almost incredibly savage, being covered in a great measure with hair, and having long nails like the claws of wild beasts. Their dress consisted in the skins of animals and of large fishes.

Fig. 3. Map of the Voyage of Nearchus.



54. *The expedition now steering out to sea*, and taking a southerly course, observed phenomena belonging to the midsummer of the tropic, the novelty of which struck them with surprise. When the sun was in the meridian no shadow was projected, and when there came to be a little shadow, it declined to the southward. Stars, which were wont to be seen high in the heavens, were now little above the horizon. At Bagaziri (Cape Arrubah) they left the coast of the Oritæ, and entered that of the Ichthyophagi, or fish-eaters, a food which is said to have so remarkably abounded, that even the flesh of the cattle savoured of fish, from their making it, like sea birds, their daily food. The people were hospitable, but could give only fishes and goats. It was not till the Greeks had sailed a considerable distance that at Barna they found some palms, gardens, and verdure. After passing Cophantæ (Guadel), where they obtained a supply of fine water, and Cyiza (Gwutter) on a desert and rocky shore, they came to a small town on a hill a little inland (probably Churbar), where it appeared probable that a supply of grain might be obtained. To possess himself of this, Nearchus had recourse to measures that harmonise much more with the character of a buccaneering freebooter, than with that of an officer of the first prince in the world. The people met him in the most kindly manner, and presented to him roasted fish and other victuals. Meeting their friendly advances, he expressed a wish to visit their city, and being cordially admitted, his first step was to take military occupation of it, and command the natives to lay open to him all their stores of grain. The poor citizens at first flew to arms, but having no means of effectual resistance, were obliged to yield. It proved, however, that they had little except dried fish reduced to powder, and Nearchus could get only a very small stock of grain. In sailing now along an almost desert coast, the stock of provisions became excessively scanty; and they obtained only a poor supply by landing and cutting off the leaves of wild palm-trees. The pressure became so extreme, and was so impatiently borne by the crews, that Nearchus did not think it safe to land at night, lest they should all take flight into the interior. In one place he found a paltry village, all the inhabitants of which fled; but the Greeks found seven camels, which

they killed and eagerly devoured. The same distress continued to press upon them so long as they sailed along the coast of the "fish eaters." Notwithstanding this name, few of them were fishers, or had even boats. They procured this food by immense nets, sometimes a quarter of a mile long, formed out of the fibrous bark of the palm tree. These they placed at high tide across the mouth of little bays, so that when the waters receded, the nets retained all the fish which had been carried up with the tide. The houses of the rich were built with the bones of whales cast ashore, those of the poor with the back bones of smaller fishes. Nearchus descried a number of whales, whose presence was at first made sensible only by the quantity of water thrown up into the air, and tossed as in a whirlpool, a spectacle which struck the sailors with terror, and made the oars drop from their hands. The commander, however, on being informed of the cause, made his crews raise the loudest possible sound by shouts, trumpets, and dashing of oars, which at once kept up their own spirits, and was supposed to induce these monsters of the deep to replunge into their abysses.

55. *The coast of Caramania* was next reached by Nearchus, after passing the fabulous abode of a Persian Circe, who, according to report, was accustomed to seduce the navigator by voluptuous pleasures, and then convert him into a fish. Nearchus now found his distresses nearly at an end, as the soil was tolerably productive in grain and fruits, and there was plenty of good water. After passing Capes Jask and Bombareek, they came in view of a huge promontory stretching far into the sea, called Cape Maceta (Mussendoon), and forming the entrance of the Persian gulf. The great body of the sailors, and even Onesicrotus, an officer high in command, weary of this long navigation, earnestly proposed to land, and march on foot to Babylon. Nearchus justly and strongly insisted that this was in no degree to fulfil the intention of Alexander, whose injunction it was, to survey every coast, every harbour, and every bay, between India and the Euphrates; and that besides they incurred great hazard of being involved in those arid and burning deserts, of which Arabia in a great measure consists. This wise opinion prevailed, and in ascending the Persian gulf they found for the most part a fertile and beautiful coast. In the delightful country at the mouth of the river Anamis (the modern Minab) they landed, and began to refresh themselves after so many hardships. Nay, a party having proceeded to some distance into the interior, met, with tears of surprise and joy, a man in a Greek dress, and speaking the Greek language. This proved to be a soldier who had straggled from the army of Alexander, which he reported to be at a distance of only five days' journey. On receiving this intelligence, Nearchus caused the ships to be drawn on shore, a rampart to be formed round them, and the crews to take rest and refreshment, while he and Archias set out alone for the camp. On their arrival, they presented an aspect so haggard, pale, and squalid, that the persons they met did not know them, but on being told their name, hastened to carry the first tidings to Alexander. They added (a hasty conclusion formed from appearances), that the fleet and the army had perished. Alexander received Nearchus with a kindness mingled with sorrow, and after the first salutations, began to ask particulars of the catastrophe of his favourite armament; but when Nearchus replied, "O king! thy ships and men are safe," the conqueror burst into a flood of tears, and swore by Jupiter Ammon, that he derived more pleasure from this event than from the entire conquest of Asia.

56. *The rest of the navigation of Nearchus*, when he had with some difficulty regained the fleet, was easy, care being taken that he should find on the coast every kind of supply. They passed the barren and desert rock of Organa, afterwards so celebrated under the name of Ormuz, the large and fertile Oaracta (the modern Kishme). Soon after they quitted the coast of Caramania and entered that of Persia proper (the modern Fars), which they followed till its termination at the river Arosis (the modern Endian Tab), which appeared to them the largest they had seen since they had left the Indus. They were now in Susiana, and soon reached the mouth of the Tigris, where the voyage terminated.

57. *The circumnavigation of Arabia*, and the opening of a communication between the Red Sea and the Persian Gulf, formed to Alexander an object of almost equal ambition. He accordingly appears to have sent expeditions down both seas, in the hope of accomplishing this object. Those, however, who went from Persia were never able to double that formidable promontory (the Mussendoon) which Nearchus had passed at the entrance of the gulf; while those who went from Egypt, after making a certain progress, were always obliged to return for want of water. The narrator chooses to conclude with inferring, that such an achievement must be beyond human skill or power, otherwise the daring curiosity of Alexander would certainly have accomplished it. He reinforces this argument by observing, that as caravans which crossed Arabia were able to travel only during the night, and in the day were unable to bear the intense heat of the sun, it was unreasonable to suppose that region still farther to the south should be at all habitable.

Sect. VII. *Periplus of the Erythrean Sea.*

58. *The complete establishment of the dominion of Rome* produced a long period of comparative peace. The encouragement of industry and commerce never formed part of the policy of that powerful empire; but the demand for luxuries of every description in its overgrown capital, where the wealth of the world was collected, and to procure which the remotest extremities of the earth and sea were ransacked, powerfully stimulated mercantile enterprise. Alexandria continued still the great nautical school, by whose mariners the obstacles which in the time of Alexander had been deemed insurmountable were completely overcome. Regular voyages were established across to India, and for a considerable extent along the eastern coast of Africa. The course of this commercial voyage is related by Arrian, not the historian of Alexander, but a merchant of Alexandria; and though not so much a voyage of discovery as a coasting guide, it is founded, probably, upon personal observation, and will enable us to complete the survey of the great naval routes of the ancient world.

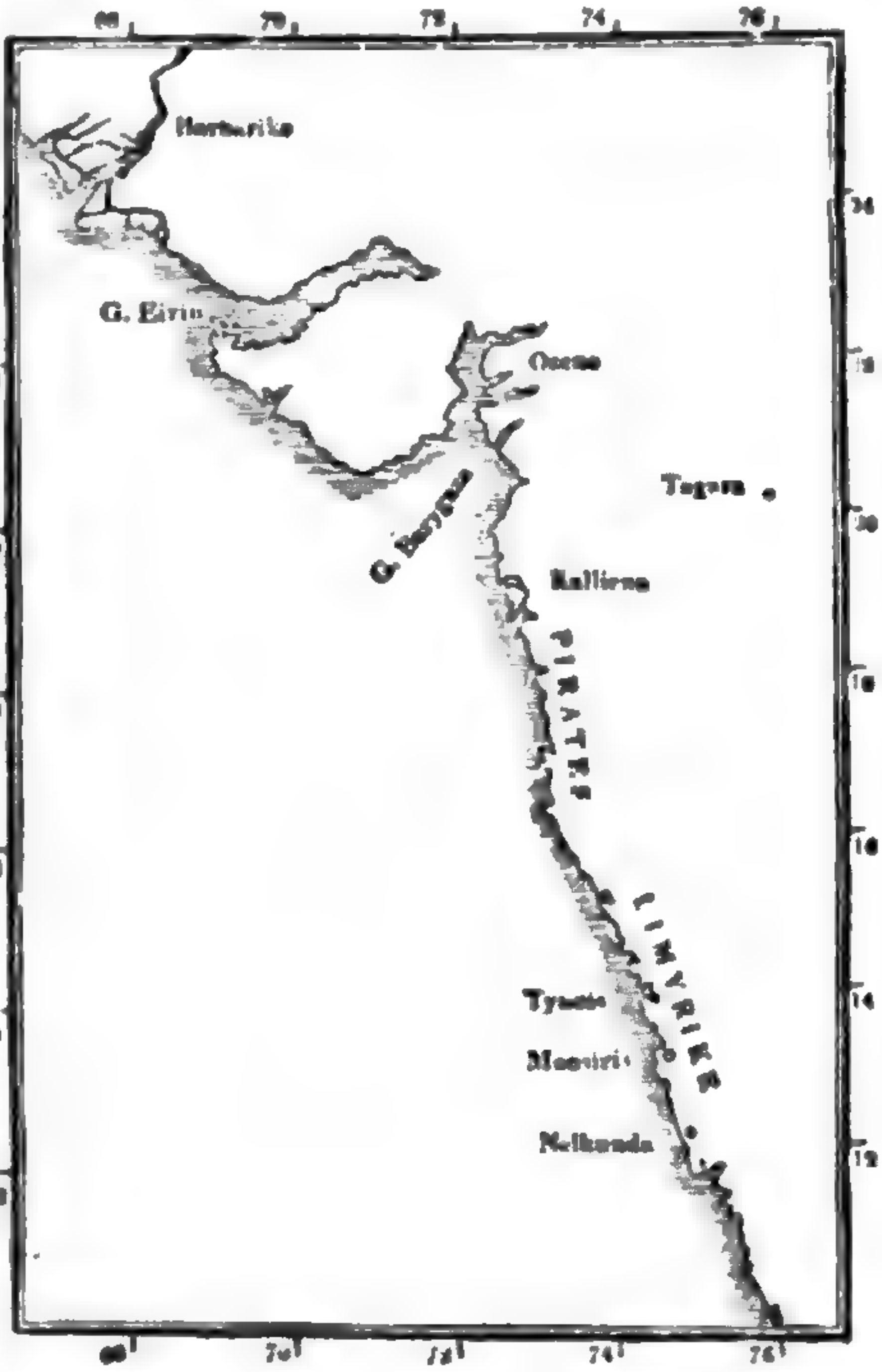
59. *The voyage down the west coast of the Red Sea* began with Berenice, founded by the Ptolemies, and the site of which, after being long sought for in vain, seems to have been nearly fixed by Belzoni. The coast on the African side was wild, and occupied only by a few rude huts of barbarous Nubians. The small port called Ptolemais Theron was the only place where refreshments could be obtained. At length, the navigator came to Aduli, a great emporium, whose site Mr. Salt seems to have ascertained in the vicinity of Arkecko. Here was a profusion of excellent ivory, collected and sent down from Axum, the metropolis, about eight days' journey in the interior. In return for this single staple of Ethiopia was exchanged that variety of commodities which is usually communicated by civilised to barbarous nations; coarse cloths, with bright showy colours, suited to a rude taste; pottery and glass vessels, the manufacture of Diospolis; brass for vessels and ornaments, iron for pointing lances, arms, and cutting instruments. Some fine cloths, and ornaments of gold and silver, were brought as presents or tribute to the king. Farther down, apparently in the Gulf of Zeyla, was the kingdom of Zoskales, a prince who is described in glowing terms as adorned with every virtue, and eminently skilled in Grecian literature; but these seeds of civilization, if they ever existed, did not ripen in so ungenial a climate. The coast now turns westward to the Indian Ocean.

60. *A view of the passage down the opposite or eastern coast of the Red Sea* must now be taken. Navigators do not seem to have ventured across the breadth of that sea from Berenice, but went by Myos Hormus, along the mouth of the Gulf of Suez, touching at *Leuke Kome*, the fair village, which formed the port of the great commercial capital of Petra. The coast downwards was most unfavourable to navigation, "full of danger, without harbours, beset with rocks, every where full of horror;" and such the whole of the Red Sea is described to be by modern navigators. If a vessel was driven too near the shore, it was immediately plundered by the barbarous inhabitants, and all who survived carried into slavery. At length they came to the Burnt Island, which seems to be Gebel Tor, on the coast of Yemen, where they found a fine country and a friendly people. The emporium of this coast was Moosa, near the modern Mocha, said to be inhabited by a race skilled in maritime affairs. The imports were of the same description as at Adulis, but of finer quality, including a considerable quantity of dye-stuffs. The exports were myrrh, gum, alabaster (no mention yet of coffee). They then proceeded downwards, and passed the straits now called Bab el Mandel.

61. *The southern coast of Arabia* formed the next object of navigation. Ocelis (the modern Ghella) was a good harbour, though with little trade; but Arabia Felix, which seems to have been near the site of Aden, had been a most flourishing port, forming a depot in which the merchants of Alexandria found all the commodities of India. It had lately, however, been destroyed by the Romans. In coasting along Arabia, they found Kane (the modern Macculla); the Gulf of Sachalites, in which is found the modern Sahar; and Syagros, described as the largest promontory in the world, usually supposed to be Ras el Had, but which Vincent appears clearly to fix in the much more westerly position of Cape Fartash. This region is described as yielding a considerable quantity of incense, but as extremely moist and unhealthy. They now passed Mosca (Morebat), Asichone (Hasec), the islands of Zenobius (Curia Muria), and came to Ras el Had, where the coast turns northward to the Persian Gulf. The writer observes, and truly, that the entrance of the gulf is bordered by very lofty and rugged mountains; he mentions the celebrated pearl fishery on its western shore, and Apologos, otherwise called Oboleh, then the emporium of the Euphrates. He does not dwell, however, on these details, and passes also, with very slight notice, the southern coast of Persia, which the observations of Nearchus had shown to be destitute of any materials for commerce.

62. *The coast of India* (*fig.* 4.) now commences, and forms the most important era in the voyage. He reaches the mouth of the great river *Sinthus*, by which name he designates the Indus. It is represented as entering the sea by seven mouths, only one of which is navigable, and on which is situated a place called Emporium Barbaricum, subject to the interior metropolis of Minnagara, which last is described as a Scythian city. The idea of Scythia attached to this part of India could only be suggested by the rude pastoral manners of the people, and combined with the circumstance of its being included in the Parthian empire, points out Minnagara as belonging to what is now called the kingdom of Caubul, to which, in fact, the Delta of the Indus is still subject. The merchants were obliged to go up to Minnagara, and to negotiate with the prince himself. After passing the Indus, navigators found successively the gulfs of Eirin (Cutch) and of Barygaza (Baroach). The narrator here remarks the dangers of every kind with which these gulfs are beset, shallows, concealed rocks, narrow and difficult entrances, but, above all, the extraordinary occasional violence of the tide; in consequence of which, unexperienced navigators often saw their vessels either sunk or driven on shore. Frequently, when they were sailing in perfectly smooth water, a sound was heard as of an advancing army; and soon the tide rushed on with such force, that no anchor could secure the vessels. Barygaza was a very great emporium, at which were found the same commodities as at Emporium Barbaricum, with much finer cloths, and a quantity of long pepper. Ozene (Ougein) was a great interior capital, the prince of which it was necessary to propitiate, by sending up handsome presents of the very best wine, rich unguents, cloth, and beautiful female slaves.

Fig. 4. Periplus — Coast of India.



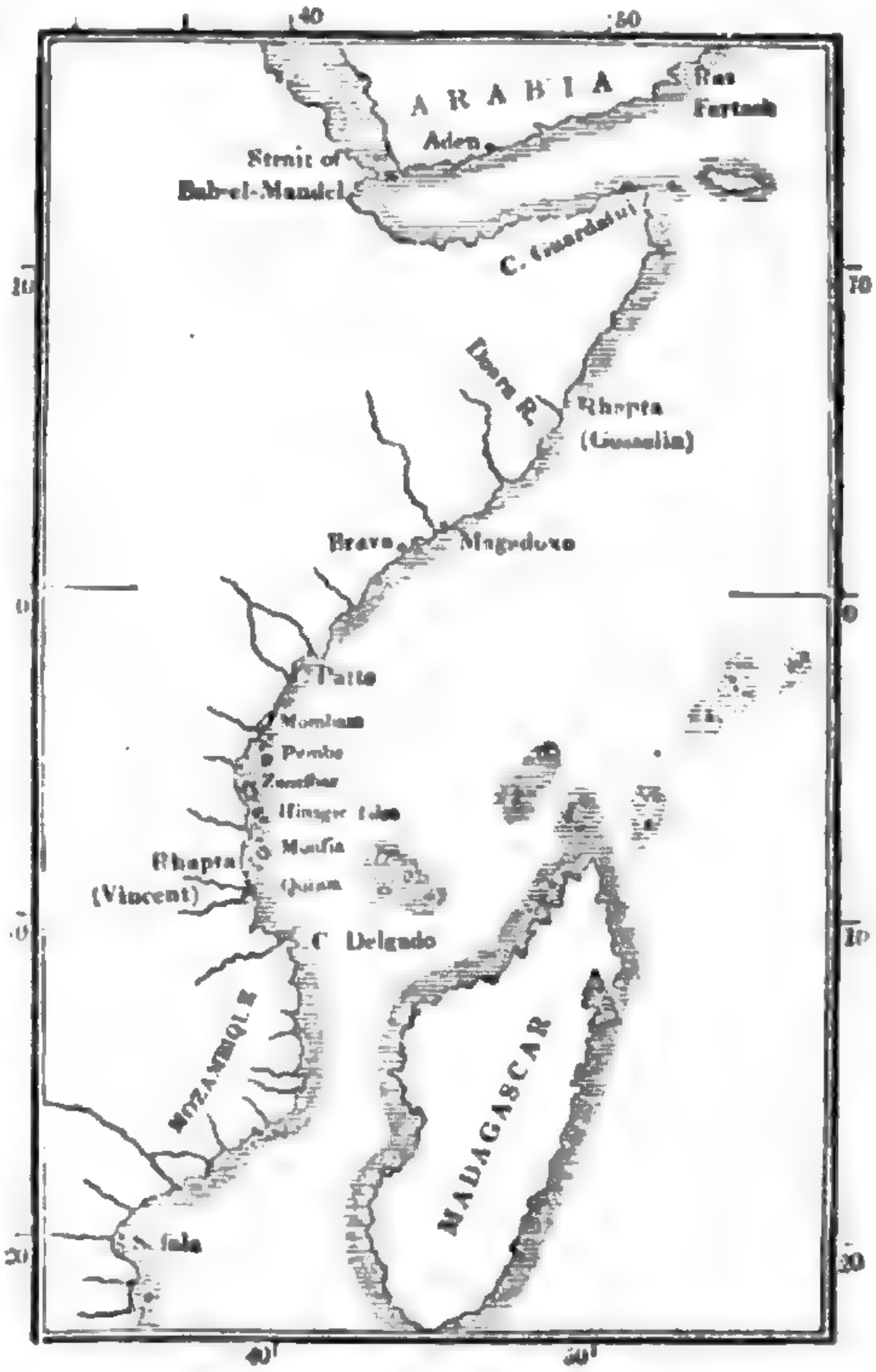
63. *The region of Dachinabades* (*the Deccan*, i. e. the South, for Arrian remarks, Δάχανος καλεῖται ὁ νότος τῇ αὐτῶν γλώσσῃ) extended to the south of Barygaza, and is described as combining "many regions, deserts, huge mountains, wild beasts of every kind, and finally, many great and populous nations." It had two large interior capitals, Plithana and Tagara; the one twenty days' journey south from Barygaza, the other ten days farther. The grandeur of both has sunk under the changes to which eastern cities are subject; but the site of the former seems recognised in Piltanah on the Godavery, that of the latter in Deoghir, now Dowlatabad, in whose vicinity are the magnificent sculptured temples of Ellora. A number of ports are now described, which cannot be very precisely determined; but Kalliena, mentioned as the seat, though with some interruptions, of a very great commerce, is pretty clearly recognised at or near the modern Bombay. Afterwards we may know the Concan by the mention of pirates. At length the Greeks reached Limyrike, a fine port, and the seat of a great trade. The three chief emporia were Tyndis (Barcelore), Muziris (Mangalore), and Neikunda (Nelisuram). This last, which has sunk into a place of very secondary importance, was then the chief southern, as Barygaza was the chief northern, emporium of western India. The larger Greek vessels had even, by availing themselves of the monsoon, been enabled, with a daring course very foreign to the usual habits of ancient navigation, to steer directly across from the mouth of the Red Sea to Neikunda. The grand staple then, as now, was pepper; to which were added pearls, and precious stones of various descriptions, among which were diamonds and hyacinths, cotton cloths, tortoise-shell, and betel leaf, from the interior. Among the imports, according to the usual course of Indian trade, stood foremost "much money," a little cloth, and a little wine; but a considerable quantity of metals and toys, brass, lead, tin, glass, coral, stibium for painting the eyes, orpiment, and cinnabar. There is much appearance that Neikunda was the farthest point to which Greek navigators actually penetrated, and that they found there a supply of the commodities produced in the more eastern regions.

64. *All beyond Nelkunda* is faint and tinctured with fable. We recognise, however, Comar (Cape Comorin), Taprobane (Ceylon), and its great pearl-fishery. The Coromandel coast is nearly a blank, till we arrive at Masalin, which, with the great abundance of its cotton cloths, speaks clearly Masuhpatan. In proceeding northwards, navigators came to strange and barbarous people, with visages sometimes of enormous length, at others resembling those of horses, and some eating human flesh: an exaggerated picture of the fierce predatory races who occupy the mountain and jungle tracts of Orissa. He describes accurately, however, the direction to the east which the coast of the ocean takes, before it receives the mighty flood of the Ganges. At its mouth there was then, it seems, a great emporium bearing the name, which no city now does, of the river itself. The staple was "superlatively fine cotton cloths, called Gangetic," and which still exist in the superb fabrics of Dacca and Moorshedabad.

65. *In the regions beyond Ganges* the author of the Periplus gropes almost in total darkness. Mention is made of an island, the farthest part of the world to the east, and which is richly stored with the most precious productions of the countries that lie on the shore of the Red Sea. This cannot seemingly be any other than Sumatra, though erroneously placed near the Ganges. The only ulterior position is Thinæ, a great interior city, situated opposite to Pontus and the Caspian Sea, and near to where the Palus Mæotis flows into the ocean. This strange site we shall afterwards find reason to consider as a combination of some actual rumours with the theory formed by the first Alexandrian school respecting the form and dimensions of the continent of Asia. There seems some reason, however, to conclude with Dr. Vincent, that this Thinæ, whence caravans came by way of Bactria to Barygaza, must have obscurely indicated the capital of China. Nor can we be easily persuaded that in the *malabathrum*, though most usually applied to betel leaf, some confused idea of *tea* is not involved. Its being so strictly characteristic of China, and being brought by persons of a broad forehead, short body, and flat nose, features decidedly Mongol and Chinese, seem all in favour of this supposition, and inconsistent with that, which would make it merely betel leaf, a product of Indostan; though there is doubtless a great and manifest confusion between the two substances.

66. *We must now look back to the Straits of Bab-el-Mandel*, and follow our author along the African coast. (*Fig.* 5.) From those straits vessels proceeded eastward along the shore opposite to Arabia, the modern Berbera. Its ports, Avalites, Mosyllum, Mundos, Daphnon, and others, cannot be easily identified on a coast, with respect to which we have scarcely any modern data. The imports were nearly the same as at Adulis; the exports were myrrh, frankincense, a species of cinnamon called casia, some other aromatics, slaves, and a little ivory. At length they doubled the promontory of Aromata (Guardaful), when they came to a coast stretching to the southward and facing the Indian Ocean. Here was a port, the seat of a considerable trade, but by no means secure; however, when the north wind began to blow with dangerous violence, the vessels found shelter in the neighbouring promontory and port of Tabai. Proceeding onwards, they found Opone, Apokapa the less and greater, Nicon, Serapion, seven successive rivers, with anchorages at the mouth of each. Soon after, at the distance of about three hundred stadia from the continent, there occurred a low wooded island, bearing the very expanded name of Eltenediom-menouthesias, which other writers wisely contract into Menuthias. It contained no wild animals, but abounded in fish, particularly tortoises, which the inhabitants were very diligent in catching. Two days' voyage farther brought them to Rhapta, a promontory and port, and the seat of a great trade. Beyond this point, the ocean was not yet explored; but it turned to the west and south, and was supposed to continue in that direction till it joined the Atlantic. The exports from this coast were ivory in great abundance, but not equal in quality to that of Adulis; tortoise-shell, superior to every other except that of India; and a number of valuable slaves, chiefly destined for the Egyptian market. The territory was governed by a number of petty kings, all owning the supremacy of Mopharites, who was himself tributary to Moosa, by the vessels of which great commercial state the trade of this coast was almost entirely carried on.

Fig. 5. Periplus—African Coast.



67. *The extent of coast thus described by the author of the Periplus* has been the subject of considerable controversy. Dr. Vincent fixes Rhapta, its farthest point, at Quiloa, thus allowing a navigation of upwards of fifteen hundred miles; while the rigid scepticism of M. Gosselin, placing it at Brava near the mouth of the Doara, allows a good deal less than half that distance. Dr. Vincent here, however, appears to carry the question triumphantly, by means of his seven mouths of rivers, of which M. Gosselin admits that no trace can be found within his limits. They are clearly presented by the estuaries of the Quillimanci, on which are the important harbours of Patte, Melinda, and Mombaza. But we cannot, with Dr. Vincent, pass by Pemba and Zanzibar, to find in the little island of Monfia the Menuthias of Arrian. Zanzibar, from its size and its proximity to the coast, appears a feature which it was impossible to overlook, and its position is in much better bearing with the seven estuaries previously passed. The next cape must then be Rhapta, and this will be that opposite to which

is situated the small group of the Hinagie Islands. Beyond it for a considerable distance the coast runs in the direction of south-west, which does not at all admit the placing Rhapta beyond Quiloa, nor, indeed, on any other part of the coast till after we pass Mosambique.

Chap. III.

GREEK GEOGRAPHY BEFORE ALEXANDER.

68. *Greece is regarded by all civilised nations as their instructress in the sciences,* many of the most brilliant of which she carried to the utmost perfection. In that of geography, however, little progress was made until the formation of the Greek kingdom in Egypt under the Ptolemies. Neither extensive commerce nor distant conquest characterised the Grecian states, otherwise so illustrious for all the arts of peace and war. It was not till the conquering career of Alexander, that the survey of the Greeks was extended over the wide circuit of the ancient world. Engaged before that era in the glorious defensive war against Persia, and the contests with each other for pre-eminence, they confined their views very much within the limits of Greece and its neighbouring coasts and islands.

69. *The first traces of Greek geography are found among its poets,* whose brilliant fancy has spread its lustre over all the regions with which Greece ever held intercourse. Homer took the lead, and his high authority gave to the geography of the Greeks a poetical cast, which they transmitted to the nations whom they taught, and of which the traces are not entirely obliterated.

Sect. I. *Geography of Homer.*

70. *It is in Homer* that we find the first trace of the widely-prevalent idea, that the earth is a flat circle, begirt on every side by the ocean. This was indeed a natural idea in a region so entirely insular and peninsular, nowhere presenting, like Judea, a vast tract stretching so far as to give the idea of immeasurable distance. The circular shape was suggested by that of the visible horizon; and until science demonstrated the globular form of our planet, the very natural opinion prevailed that the earth was a flat circle, with the vault of heaven above, darkness, and the abode of departed souls beneath.

71. *Homer, like Hesiod and the ancient poets generally, delights in topographical detail,* and scarcely allows a city or natural object to pass without applying to it some characteristic epithet. It was only, however, within a very limited range that he could give these distinct and animated notices. The Greek islands, beautiful and fertile spots, which seem to have been the first cradle of European civilisation, were the central point from which his knowledge emanated. He knew well, and had probably visited, on one side Peloponnesus, Attica, and the regions immediately adjoining; on the other, the western coast of Asia Minor, and the banks of the beautiful rivers by which it is watered. Perhaps scarcely any other tract on the globe presents within the same compass such a variety of grand and beautiful objects to rouse the imagination. Beyond this circuit the world of Homer was soon involved in mysterious obscurity. Some grand and distant features, discernible through the gloom, were exaggerated and distorted by ignorance and superstition. Thebes, the mighty capital of Egypt, when that kingdom was in its greatest glory, is celebrated for its hundred gates, and the hosts of warriors which they sent forth to battle. Beyond lay the Ethiopians, deemed the remotest of men, dwelling on the farthest verge of the earth, and to whose distant confines Jupiter repaired to hold an annual festival. In the western part of the same continent the stupendous ridges of Atlas had excited in Grecian fancy the image of a gigantic deified being, to whom was intrusted the support of the heavens. Even farther to the west, the exploits and wanderings of the great Grecian demigod had conveyed a tradition of the strait leading into the ocean, and of the rocks on each side, celebrated under the denomination of the pillars of Hercules. On the east, Colchos was distinguished by its early wealth and commerce; it was considered a city on the ocean, with which, therefore, the Black Sea must have been confounded; and being supposed to contain the palace of the Sun, where during the night he gave rest to his coursers, and whence in the morning he drove his chariot to its diurnal career, Colchos must have been regarded by Homer as placed on the most eastern verge of the earth. On the north, Rhodope, under the name of the Riphæan Mountains, was considered a chain of indefinite extent, closing in the northern limits of the world. The poet, however, had heard a vague report of the Scythians, under the description of a people subsisting on mares' milk. The vessels which conveyed the Grecian army to Troy were evidently little better than large boats; and all distant voyages, or those in which land was lost sight of, were considered as fraught with the extremest peril. A navigation to Africa or to Sicily took place only through tempest, terminating usually in shipwreck; and a return from these shores was esteemed almost miraculous. In regard to

Sicily, indeed, Homer has largely communicated his ideas, having made it the theatre of the woes and wanderings of the hero of the Odyssey. Making every allowance for poetical licence, we see evident traces of the terrified and excited state of mind in the navigators who returned from these shores. Monsters of strange form and magnitude, who watched for the destruction of the mariner, and even fed upon his quivering limbs; delusive sirens, who lured but to destroy; imprisonment under the transformed shape of wild beasts; these, probably, are only a highly-coloured repetition of the terrific rumours brought by the few whose bark had been wafted to those as yet savage coasts.

Sect. II. *Poetical Geography.*

72. *An ideal and poetical character* was communicated to the science of geography itself by the fables with which Homer thus tinged his narrative. This tendency indeed did not rest solely upon Homeric influence, but proceeded from certain secret workings of the human heart. There exist in man ideas and wishes for which, in the sphere of his actual existence, he can find no corresponding objects; these he creates for himself in that dim boundary which separates the known from the unknown world. There involuntarily arises in his breast a longing after a more exalted state of existence than the world before him presents — bright scenes, which he seeks but never finds in the circuit of realities. In a newly-discovered region, however, which possesses any share of beauty, imagination soon heightens the colours of nature, till they appear to fulfil its fond anticipations. Such were those brilliant spots celebrated by the poets under the title of the Gardens of the Hesperides — the Fortunate Islands — the Isles of the Blest — for which, when knowledge had dispelled the first illusion, and brought them down to the ordinary level, a place was still found in some more distant extremity of the globe. Northern Africa, as it stretched westward, was peculiarly adapted, by its striking and brilliant contrasts, to excite these illusions. The first site of the Hesperian gardens was at the frontier of Cyrene, where they are described by Scylax as forming a luxuriant grove, in which the lotus and the palm were mingled with the finest trees of Europe. Other and more western sites were successively found, both for them and the Fortunate Islands, which last were finally fixed, probably on very imperfect observation, at the Canaries. These islands have not altogether lost the appellation; and they are painted by Horace in glowing colours as a refuge still left for mortals from that troubled and imperfect existence which they experience in every other quarter of the globe. Independent, however, of this bright and romantic enjoyment, there are other objects of fond desire to the human heart. In this agitated world it sighs after peace — a scene of profound repose, exempt from the tumults of passion and the corrosion of care. Such a scene, indeed, would never fulfil the hopes thus formed; yet these hopes spring from a natural illusion, to flatter which Grecian poetry conjured up a fabled race, the Hyperboreans, seated in the recesses of the North, and sheltered by vast mountains from the rage of the elements. They were represented as exempted from all ills, physical and moral, the change of seasons, sickness, and and even from death. The original seat assigned to them was behind the Riphæan Mountains, which seem to have been originally Rhodope, the northern boundary of the Homeric world. The Greeks having soon acquired knowledge sufficient to ascertain that no such people was there to be found, sought them next on the banks of the Danube; but every thing there was remote from that tranquil aspect under which the poets had painted the Hyperborean world. Some traditions carry them westward; but their seat was finally fixed in that northern extremity of Asiatic Russia which the ancients never explored. They even carried with them the Riphæan Mountains, which became thus an ideal chain, delineated in modern maps as extending along the extreme frontier of Europe. Impressions of gloomy darkness, and even of the termination of existence, are, in other moods of the human mind, associated with images of distance and obscurity. These influences gave birth to the Cimmerians, a people who dwelt in perpetual darkness, and were never illumined by the cheerful rays of the sun. Their favourite seat was on the straits at the mouth of the peninsula of Taurida, the farthest point, probably, of which rumour had spoken in the poetical ages, and which was called the Cimmerian Bosphorus. It was probably from similitude of name that they were afterwards confounded with the people called Cimbri. The learned, however, have found traces of Cimmerians in the extremities both of the east and the west; and the idea of the earth as terminated by a boundary of darkness, being founded on natural impressions, has very generally prevailed. Park mentions it as the reigning belief among the Mandingos at this day; and the world, in the system of the Arabian geographers, was enclosed by a sea of darkness.

73. *Other fabulous creations*, springing from those of Homer, continued long to hold a place in geography. The one-eyed Cyclops appears under the name of Arimaspian on the frontier of India, and in the remotest extremity of Africa. The Pigmies multiplied still more extensively; they had seats on the Strymon, the Hebrus, in India, and the north of Europe. According to Strabo they were spread over the whole southern border of the earth; and this representation even induced Banier to suspect that, on that side, they have been confounded with the monkeys.

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Sect. III. *School of Miletus.*

74. *The astronomical schools of Miletus and Samos* appear, so far at least as there is any precise record, to have made the first attempts to form geography into a system, and to apply to it the lights derived from astronomy. These and other cities of Asia Minor rank high among the early seats of commerce, and they established colonies in various quarters of the Mediterranean and the Euxine. While they continued independent they were very wealthy and prosperous, and the sciences were cultivated with ardour and success. To a commercial people practical mathematics, and especially those branches subservient to geography and navigation, must have peculiarly recommended themselves. Thales, Anaximander, Anaximenes, and Pythagoras, are celebrated by their countrymen as the inventors of all the processes by which the phenomena of the globe are calculated. The gnomon or sundial, for ascertaining the progress of the sun from tropic to tropic, and finally the latitude of particular places, the division of the year into 365 days, and into four seasons, are represented as having originated in this school. It appears doubtful, however, whether these discoveries were due to their own exertions or borrowed from the Egyptians and Chaldeans, whose fame, amid the dim traditions of antiquity, stands pre-eminent for astronomical observation.

75. *The first rude mode* of forming a division of the earth was into *climates*, determined by the species of animals and plants produced in each. Thus the negro, the rhinoceros, the elephant, were considered as characteristic of the torrid zone. This very loose method gave place to another, formed by observing at each place the length of the longest and shortest days. This could only be done with accuracy by a gnomon or dial, erected on a horizontal plane, and showing, by the length or shortness of its shadow, the elevation of the sun above the horizon. There is much reason to think that this simple instrument was employed by the Egyptians, especially in the operation, which they undoubtedly performed, of adding five days and a quarter to 360, the number originally supposed to form a complete year. It has even been imagined by some, that the pyramids, those enormous structures by which this people excited the astonishment of the world, were only huge sundials; and though it might doubtless be extravagant to conclude this to have been their sole object, yet it really appears that, being placed in the direct position of the cardinal points, they are perfectly fitted for being thus employed. But, though it is clear that Thales and his disciples had largely drawn from these early sources, they probably made considerable additions to the information thence derived. Two books, one on the tropic, and the other on the equinoxes, are reported to have been written by Thales himself. The degree of knowledge thus attained enabled him to discover the error of the vulgar in supposing the earth to be a plane surface; but he could not reach the precise idea of its globular form. Anaximander viewed it as a cylinder; some compared its form to that of a boat; others to that of a lofty mountain. The details of the Pythagorean cosmography have not reached us; but the fact that they placed the sun in the centre of the system, with the earth moving round it, indicates at that infant era attainments which were lost during many ages, and only recovered at a far more advanced stage of modern science.

76. *The map* must, as soon as geography was cultivated, have occurred as the best and most perspicuous form of embodying its results. Anaximander is the first who is reported to have constructed a map of the world, embracing that limited sphere of objects which were then comprehended under that term. But the most celebrated production of this nature was that employed by Aristagoras, the prince of Miletus, to induce Cleomenes, the Spartan king, to undertake the conquest of Persia. He entered, it is said, the presence of that monarch, holding in his hand a tablet of brass, on which were inscribed "the whole circuit of the earth, the sea, and all the rivers." Under this pompous description, however, was probably included little more than a route from the Ionian sea to Susa, which was specially pointed to as that by which the Spartan prince might lead his victorious troops to the Persian capital. Even of this line, respecting which he was so deeply interested, the short detail of Herodotus shows him to possess by no means complete information. Beyond Cilicia his descriptions are very indistinct. He has omitted Media altogether, and has given to Armenia quite an undue extension.

77. *The continental Greeks*, during the era of their greatest power, did not cultivate systematic geography, nor indeed any sciences dependent upon mathematical principles, with much activity; indeed, they did not even keep them up to the state in which they had been received from the Ionian cities. One solitary observation of latitude is recorded as having been made at Athens, by Meton and Eudemon, 432 years A. C. The different states, in the course of their extensive wars, must have acquired a great portion of that topographical knowledge which is indispensable for military operations. Engrossed by these internal objects, their attention was little directed to the general system of the world. One individual alone, by extensive travels and diligent enquiries, procured an ample accession to the science of history and of historical geography.

Sect. IV. *Geography of Herodotus.*

78. *The system of geography included in the great historical work of Herodotus* is as complete as could be formed from the materials within his reach. It comprises a general summary of all that he could learn respecting the human race, and the regions which they inhabited. His information was obtained not solely or chiefly from books, but mostly by travelling, the only mode in which at that era geographical knowledge could be effectually collected. He assures us that he had visited Persia, Assyria, Egypt, Thrace, Scythia, and all the distant regions which he describes. He viewed them, however, only as tracts of territory, the abode of men, and did not attempt to combine them into any system of the earth; nor did he possess, or, at least, apply any of the mathematical or astronomical principles of the Milesian school. He even derides some of its conclusions; as that of the earth being round and encompassed by the ocean. His strange statement, that the sun in India was vertical in the morning instead of at midday, is evidently a misunderstood report of what he had been informed respecting the difference of time in the different parts of the earth's circumference. His knowledge, however, such as it is, consisting of plain facts, untinctured with theory, is both solid and extensive.

79. *The division of the earth into three quarters, or continents,* was by this time completely formed. Sea, or at least water, seems to have been the principle of separation, though not

required to be altogether complete. Setting out from Europe, for the origin of which appellation we have nothing but the fable of Europa, the Greeks seem to have named the other continents from the districts immediately beyond the intervening sea. Homer already mentions the name of Asia as applied to a large and fine tract on the coast of Ionia. Thence it spread through the spacious peninsula of which it forms part, and which Europeans continue to call Asia Minor; but soon passing these limits, it was vaguely extended through the boundless regions of the East, till it finally embraced entirely the largest of the three continents. On the other side, directly to the south, the Greeks first landed on the coast of Libya; and the name of Libya was by them applied to the entire continent. With the Romans, on the contrary, whose position and political relations attached them entirely to the district of Africa proper, in which Carthage is situated, the name of Africa soon prevailed over every other.

80. *These grand divisions of the ancient world* were already known to Herodotus; but he has astonished European readers in an extraordinary degree by the assertion, that Europe is longer and of greater extent than Asia and Africa united. The severe judgment of M. Gosselin pronounces such an assertion, made in the midst of the nations which carried on the most extensive navigation, to be a proof that they had not formed the least idea of the distance which their vessels sailed along the Mediterranean. Before pronouncing so severe a sentence we must consider attentively what, in the conception of Herodotus, was Europe, and what was Asia. He mentions two boundaries: one formed by the Black Sea and the Don, which, though it does not form a very appropriate boundary of a continent, continues still to prevail, being connected with the Northern Ocean by the mountain chain of the Urals. But in the other, which is that preferred by Herodotus, the Black Sea is continued by the Caspian; the boundary line being carried along the north of that sea, and thence indefinitely eastward. Taking Europe in this sense, we find it in the west co-extended with the opposite coast of Africa, which the ancients necessarily considered as marking the length of that continent, while, in the east, however far Asia might be prolonged, Europe was still regarded as co-extensive. With regard to the boundaries of Africa, too, there was an extreme want of precision. Our limit of the Isthmus of Suez is certainly the most accurate; but the ancients, who could not readily admit the notion of a continent bounded by any thing but water, attached themselves more to the Nile, and did not well know whether to consider Egypt as Asiatic or African.

Subsect. 1. *The Europe of Herodotus.*

81. *Scythia* was the extremity of Europe, beyond Greece, with which Herodotus appears to have been most familiar, and which, in fact, he knew better than almost any other ancient writer. This name, which became ultimately Asiatic, was restricted by him to the tracts that now form the southern provinces of the Russian empire. These regions were then, and in a great measure still are, possessed by the same description of rude Nomadic and pastoral people, who have always occupied the central plains of Asia. The attention of the historian was specially called to them by the rash and daring expedition of Darius into a region secured by its natural barriers, and the wandering and untamed character of its people, against every form of regular subjection. Darius, crossing the Hellespont, marched along the southern shore of the Euxine, reached the banks of the Volga, and after the fruitless labour of erecting there several fortresses, returned by a more inland route, in which Major Rennell even supposes him to have passed the site of Little Novogorod. The knowledge acquired by this expedition, however, did not enable Herodotus to avoid great errors in the delineation of European Scythia. He imbibed a most exaggerated idea of the dimensions of the Palus Mœotis, which he calls the "mother of the Euxine." This appears to have arisen chiefly from the false *orienting* of the side which faces Russia, and which is made to stretch almost due north, instead of west, while the sea itself is represented as forming the eastern boundary of that great space of four hundred miles square, within which Herodotus comprises Scythia. The southern boundary was formed by the Euxine, and the other two by the land, so that he does not connect it in any shape with the Northern Ocean.

82. *The details of this extensive region* are given by Herodotus with considerable accuracy. Of its rivers, after the Danube, which he ranks second to the Nile, he mentions the Tyres or Dneister, the Hypanis, or Bog (and even describes the close approach of these rivers to each other in the upper part of their course), the great channel of the Borysthenes, or Dnieper, and the Tanais or Don. Between the last he mentions several streams, the Panticapes, Hypacyris, and Gerilus, which not being recognized by modern geography, Major Rennell supposes to be creeks or branches of the greater rivers.

83. *Milesian colonies* had, by the active enterprise of that commercial people, been already formed even on these rude shores. One, called the port of the Borysthenes, is described as the centre of the trade of Scythia. On the banks of this great river dwelt a people, bearing the rare character of the *ploughing* Scythians, who renouncing the almost universal habits of their race, raised crops of grain in this fertile district, which still furnishes to the ports of Taganrog and Odessa those supplies, which render them the granary of the Mediterranean. The Milesians had also a colony established at the mouth of the Danube.

84. *The northern interior countries of Europe*, which lay beyond the limits of the Scythia explored by the expedition of Darius, were covered for Herodotus with a veil of dim obscurity. On the Scythian frontier, along the heads of the Dniester and Borysthenes, he represents several nations; the Melanchleni, "men clothed in black;" the Androphagi, "men eaters;" the Neuri, "once a year converted into foxes." These Greek names, and partly fabulous attributes, show the very imperfect nature of the notices collected on the subject. The regions beyond the Danube are expressly stated to be occupied by nations to him unknown. Two

precious commodities, the amber from the coast of Prussia, and the tin of the Cassiterides, under which last name a vague idea of the British Islands seems to be included, communicated the knowledge, that there was a great ocean in the north, but without the means of ascertaining its extent and limits. On the east, however, as already observed, he had attached to Europe a vast extent of territory which has been entirely severed from it in subsequent systems. The expanse of northern and even middle Asia, which the ancients afterwards called Scythia, and which forms the modern Tartary, inhabited by races exactly similar to the Scythians already described, appeared to Herodotus decidedly European. It was bounded by the Phasis, the Caspian, the Aral (not distinctly recognised), and the Jaxartes. The Massagetæ, celebrated for their contest with Cyrus, gave name with Herodotus to all the wandering tribes in this eastern part of Europe; but they were afterwards merged into the prevailing appellation of Scythians.

Subsect. 2. *Asia of Herodotus.*

85. *Asia, according to the conception of it formed by Herodotus*, will appear, from what has been said, to include only a small portion of the vast continent to which we assign that name. On the north it had the same seas and rivers just enumerated as the boundaries of eastern Europe; to the east it terminated with India; while, even to the south, a large portion of the desert tracts of Arabia were not yet believed to exist. When this great historian wrote, all the various kingdoms and petty states, into which, in the infancy of the world, Asia had been partitioned, were absorbed into one vast empire. The Persians claimed Asia as their own, and had distributed it into twenty-four satrapies, which have been illustrated in a very learned manner by Major Rennell. They included, with the exception of the northern part, which he considered as European, all of Asia that was known to the Greeks. In collecting therefore from Major Rennell's investigation the following table of those satrapies, we exhibit not only the outline of that great empire, but, with the somewhat dubious exception of a small part of Greece, the whole of the civilised world. The tribute paid in talents of silver will exhibit their relative wealth and importance.

TABLE OF THE DIVISION OF ASIA INTO SATRAPIES.

		Talents.
1.	Ionia, Magnesia, Caria, Æolia, Syria, Pamphylia (the whole west and south coast of Asia Minor)	400
2.	Mysia, Lydia, &c. (the western interior)	500
3.	Phrygia, Paphlagonia, Cappadocia, &c. (the south coast and the great interior table land of Asia Minor)	360
4.	Cilicia (including part of Syria, and reaching to the Euphrates)	500
5.	Phœnicia, Palestine, and Cyprus (which furnished also a third part of the naval force of the empire)	350
6.	Egypt, including Cyrene and Barca (half of the tribute paid in grain)	1400
9.	Babylon and Assyria, including Syria, and furnishing also 500 eunuchs	1000
8.	Susiana, or Southern Persia	300
10.	Media (Northern Persia)	450
11.	The Caspians, Pausicæ, Pantimathi, and Daritæ (the Caucasian provinces of Persia)	200
18.	The Matieni, Saspires, &c. (Aderbijan and the Armenian provinces)	200
13.	Armenia	400
19.	The Moschi, Tibareni, Mosynœci, &c. (the Western Caucasus, Georgia, Mingrelia, as far as Trebisond)	300
14.	The Sagartians, Sarangeans, &c. (Seistan, Caramania, Lar, and other territories along the Indian Ocean, and the eastern part of the Persian Gulf)	600
16.	The Parthians, Chorasmians, Sogdians, and Arians (Khorasan, Herat, Candahar)	300
7.	The Gandarii, the Dadicæ, &c. (Margiana, the country on the Murghab, between Khorassan and the Oxus)	170
12.	Bactria (Balk)	360
15.	The Sacæ and Caspians (Kaushkar, Pamer, and other tracts of mountainous country about the head of the Oxus)	250
17.	The Paricanii and Ethiopians of Asia (Mekran, including, perhaps, Caubul, and the Delta of the Indus)	400
20.	India, the largest of all, being 360 talents in gold, which amounts in silver to	4680

86. *Some outer tracts of this vast empire, not formed into regular satrapies*, were privileged to furnish only presents, or gifts, under an appearance of voluntary homage. Among these were ranked the Persians proper, inhabiting the modern Fars, who obtained this distinction as the conquering people by whom the empire was originally founded. The Southern Arabians, and the Ethiopians above Egypt, derived the same immunity from the difficult access to those rude regions in which they dwelt. The Southern Arabians are said to have propitiated the favour of the great king by the present of a thousand talents of incense. The Colchians, and the occupants of the neighbouring heights of Caucasus, were also numbered among the "givers of gifts;" while the inhabitants of the northern parts of that great range, secure in their mountain fastnesses, are said to have cared very little about the mighty ruler of Persia.

87. *These delineations of Asia* display, upon the whole, a surprising accuracy and extent of knowledge; yet several remarkable errors occur with regard to points of which the investigation does not appear very difficult. Thus the breadth of Asia Minor was reduced almost a half; that between Babylon and the capital of Egypt was underrated at least a fourth; and the country between the Black Sea and the Caspian was placed in the same meridian with the Persian Gulf, while it is really four degrees to the westward. These errors are the more remarkable, as the distances, instead of being in *excess*, according to almost every other ancient example, fall short of the truth. The early travellers exaggerated every space over which they actually passed; but it sometimes happened that two points were approached from different quarters, and then united to each other by a hypothetical line, which, as men usually undervalue what they know nothing of, was made generally too small. It would not appear that any regular route had been formed across the high and rugged table land in the interior of Asia Minor from Cilicia to Trebisond. These two points, being approached respectively along the southern and northern coasts of the peninsula, might be supposed nearer to each other than they really were. Egypt was approached through Syria and

Palestine, and Babylon by descending the Euphrates; but the direct line between them lying across the Arabian desert, was scarcely known or frequented, and therefore became an ideal line in the view of Herodotus. The line from Armenia to the Persian Gulf was of course measured along the Euphrates, the general course of which was south; and as the ancients oriented all their lines to a cardinal point, they overlooked the gradual but constant bend which that river takes to the eastward.

88. *The ideas of Herodotus concerning the extent of Asia*, even including all that portion of it which he assigned to Europe, could not fail to be defective. He knew nothing of India beyond the Ganges, Thibet, China, Eastern Tartary, or Siberia, more than half the superficial extent of the continent. Even his notions concerning India were most imperfect. He describes it as bounded on the east by sand, stretching into an unknown and measureless desert. From this statement it clearly appears that his India comprehended merely the western part watered by the Indus and its five tributaries; he knew nothing of its widest and richest regions, the Gangetic provinces, Delhi, Bengal, and the Decan; large portions were also cut off from the southern coasts of Asia, which were supposed to be washed by an ocean called the Red or Erythrean Sea, without any distinction of the Persian Gulf, and very little of that which we now call the Red Sea.

Subsect. 3. *Africa of Herodotus.*

89. *In his enquiries respecting Africa*, Herodotus appears to have been equally diligent as concerning the other regions of the globe; but as he never proceeded beyond Egypt, and as the formidable barriers which nature opposes to him who attempts to penetrate the interior had been very imperfectly overcome, much in what he collected is obscured with mystery or perplexed with conjecture.

90. *Egypt* is described with great accuracy, and under some features which no longer exist; for the Tanitic and Pelusiac branches of the Nile, of which little more than the channels can now be traced, were then in full flow. It appears, however, that considerable confusion prevailed respecting the quarter of the world to which Egypt was to be adjudged. As water formed the basis of the division into continents, the sandy isthmus of Suez, believed to be broader than it really was, appeared very ill fitted to form such a limit. The Nile therefore, in the opinion of all the Greeks, was the boundary of the continents: all to the east was Arabia; all to the west Libya; but a difficulty here arose in fixing the lot of Egypt itself. The Greeks, it appears, considered nothing as Egypt beyond the Delta; but this opinion is ridiculed by Herodotus, who observes, that in that case there must formerly have been no Egypt at all, since this its lower branch was evidently produced by the gradual alluvial depositions of the Nile. He contends reasonably, that all the banks of the Nile as far up as Elephantina, which was inhabited by Egyptians, was clearly Egypt. He accuses the Greeks of referring the Delta, or their Egypt, neither to Asia nor Libya. If we rightly understand his own idea, it is that the middle or Sebennytic branch was the proper point of division between those continents.

91. *In tracing the Nile above Egypt*, Herodotus states a line of two months' journey, partly along the banks, partly in boats which were dragged by ropes along the current through the rocky channel. At the end of this journey they came to Meroe, the capital of Ethiopia above Egypt, an ancient and celebrated kingdom, whose monuments were viewed with almost religious veneration, and whose monarchs had repeatedly conquered Egypt and founded dynasties. This Meroe we suspect to be Merawe, capital of the Sheygya kingdom, and including probably within its sway Dongola, situated on the opposite part of that winding course which the Nile here takes. Two months' journey farther was the country of the Egyptian exiles, a numerous body, who, having revolted from Psammeticus, sought the protection of the king of Ethiopia, and were cantoned by him in this remote district, which may be Sennaar, or rather, perhaps, the branch of the Bahr-el-Abiad opposite to it; for Herodotus shows his knowledge of this last stream by observing that it comes from the west.

92. *The long tract of desert to the west of Egypt* is also described by Herodotus in some detail, though apparently only from hearsay. The most conspicuous objects here are the oases, particularly that which contains the ancient and venerated temple of Jupiter Ammon. His statements, though on the whole in favour of Siwah, scarcely afford data sufficient to solve that difficult question. To the west he gives the names of a succession of wandering and pastoral tribes, such as still roam over these arid and sandy regions, deriving from the soil only the produce of the date tree. Many of them stand charged with morals peculiarly shameless and dissolute, the females indulging openly in the most irregular conduct, and making even a boast of the number of their paramours. Probably there may be scandal mixed in these very evil reports of the African ladies. An exception to this rude pastoral character existed on the coast of Cyrenaica, where the Greeks established flourishing colonies, which could be approached, however, only by the dangerous route of the Syrtis or quicksand, proverbial in ancient times as the scene of disastrous shipwreck.

93. *The Nasamones*, the most westerly as well as the most numerous of the wandering tribes, in general drove their herds along the sea coast, but in summer repaired to the Oasis of Ægila (Augila) to collect the dates produced in that district. A tribe among this people were called the Psylli, or devourers of serpents; and in fact appear to have a peculiar power of charming those noxious reptiles with which their deserts abound. Within their borders, on the side of Cyrene, where verdure first began to adorn the waste, Herodotus has fixed the fabled site of the Hesperian gardens.

94. *The Garamantes*, to the south-west of Augila, and the *Nasamones*, are represented by our historian as inhabitants of a region infested by wild beasts, and of a timid character, flying the view and intercourse

of other men, destitute of arms, and unacquainted with war. These characters do not apply to the people of modern Fezzan, which, however, is undoubtedly the tract pointed out. To the north-west were the Gindanes (the modern Gadamis), among whom the licence of public morals had risen to a greater height than among all the other wandering tribes of Libya. Still proceeding north-west, the traveller came to the lake Tritonis, celebrated in ancient fable as the birthplace of Minerva, who, according to one legend, was sprung from Neptune and the nymph of the lake. This lake forms the western limit of the long range of nomadic tribes. Beyond it, Herodotus gives us the Maxyes, who cultivated the ground. He had now reached that fine range of territory belonging to Carthage, stretching along the coast, watered and enriched by streams from the Atlas. It is very remarkable, however, that he should pass by entirely that mighty and celebrated state, which was not only the most powerful in Africa, but was also the centre of industry and commerce with respect to the ancient world. Major Rennell has suspected that this arose from a national feeling of enmity on account of their alliance with the Persians; but when we consider that no such feeling has prevented the fullest account from being given of the Persians themselves, it can scarcely be supposed that the being merely friends to the Persians would exclude so great a people from his notice. It seems really very difficult to conjecture his motive, unless, according to the suggestion of a learned friend, we suppose that Herodotus, writing almost entirely to illustrate what was obscure, or communicate knowledge on points respecting which the world were in ignorance, might think it superfluous to describe what must have been well known to the bulk of his readers, for the same reason that he has given no regular description of Greece. In reference to the transactions of this people with other nations, he takes repeated occasion to mention them, so that the omission could not arise from absolute ignorance.

95. *Atlas and the desert border behind it* next engages the attention of our historian; a tract reaching as far as the straits, which he calls the *high forehead* of Africa. He describes Atlas as a long and lofty range, whose highest pinnacles are wrapped in perpetual clouds; and he ascribes to the natives the origin of the belief adopted by the Greeks, which made it the pillar of heaven. Even in this extreme boundary of the continent, he mentions some peculiarities that really exist: — the enormous size and formidable character of the serpent tribe; oxen with large and crooked horns; houses of salt which would melt away if a single shower were to interrupt the continued drought. When he begins, however, to speak of people with horses' heads, and others without heads at all, it is time to take our leave; though some learned writers suppose this to be a mere exaggerated description of some animals of the desert. We must still follow him, however, to the western coast beyond the straits, where the Carthaginians, he was informed, carried on trade with the natives in a peculiar manner. The parties did not see each other, but after a signal made by smoke, one laid down his proffer, went away, and left room for the other to do the same; when the first came, and either accepted or rejected the bargain, till the terms were adjusted. There have been reports in various quarters of this mode of traffic, but all, we suspect, exaggerated representations of the timid manner in which civilised traders made their approaches to those savage people who possessed any valuable commodities. The product sought upon this shore was gold: and, as it does not exist in any latitude north of the Senegal, Major Rennell concludes that the trade of Carthage extended to that distant river. A sceptic might surmise that the gold was brought across the desert to the coast of Barbary; yet, considering the formidable character of this desert, it seems doubtful if at so early a period a commercial route across it could have been opened.

96. *The interior of Africa* could not fail deeply to attract the curiosity of Herodotus. The part already noticed as described by him forms only a belt along its northern coast, and includes none of the vast inland tracts. On this subject, however, he has only one tale to tell. Several Nasamonian youths of distinction, seized with that desire to penetrate the continent which has prevailed throughout all ages, departed on an expedition to the southward. They traversed three successive belts; first, the cultivated, or at least verdant and inhabited tract along the sea shore; then, another occupied only by wild beasts; and, lastly, a region arid and desolate. Here, while plucking some fruits, they were surprised by some men of small stature, who carried them by the way of very great lakes, to a city inhabited by black inhabitants, and situated on a large river flowing from west to east. This river Herodotus, naturally enough, judges to be the Nile. Major Rennell conceives it to be probably the river of Tombuctoo, which Europeans call the Niger; but we think, since the late discoveries, there can scarcely be any hesitation in fixing it as the Yeou, the river which rolls through Bornou, while the Tchad may be identified with the great lakes along which the expedition was conducted.

Chap. IV.

FIRST ALEXANDRIAN SCHOOL. ERATOSTHENES AND STRABO.

Sect. I. *The Expedition of Alexander.*

97. *The geography of the Greeks* became little more than a topographical delineation of military routes after the intestine wars in which they were involved caused them to lose sight of the more distant regions of the earth. Besides, as they never cultivated mathematical science with any care or to any extent, they had not the power of arranging even these limited materials into a systematic form.

98. *The expedition of Alexander* gave a much greater degree of expansion to the human mind. That monarch transferred the seat of war into the Persian empire, and carried his victorious arms into the remotest regions of the East. Whatever might be the faults and follies with which his career was stained, it cannot be denied that an enlightened curiosity animated all his proceedings. Wherever he went, he was accompanied by skilful surveyors, Diognetus and Bæton, who measured the length and direction of every route over which the army passed. Alexander himself carefully inspected these itineraries, employed all practicable means for obtaining the best materials, and his letters are even quoted by Pliny as authorities for many geographical statements. These itineraries are said to have been afterwards published by Bæton, under the title of "the Marches of Alexander." From the defective state of the science, however, which that prince could not remedy, all these materials were necessarily imperfect. They could include nothing beyond mechanical measurement, nor is there any record, throughout this long career, of a single attempt to fix the position of any spot by celestial observation. Imperfect as they were, however, these documents did not the less form a completely new era in geographical science. After the death of Alexander, they passed through the hands of Seleucus into those of Ptolemy Philadelphus, who spared no efforts to render Alexandria the greatest seat of learning and science in the ancient world; and among the sciences there cultivated, geography and astronomy held the most distinguished place.

99. *The progress of Alexander* led him at first through Syria, Egypt, and Persia, but did not bring the Greeks to the knowledge of any countries, of whose existence and limits they were not already fully apprised. But after he began the pursuit of Bessus, who had carried off Darius into Bactriana, his march became a sort of exploratory route. In his vain pursuit of the Scythian armies he reached the banks of the Jaxartes, though he did not fully trace the course either of that river or of the Oxus. On his way thence to India, he had to penetrate the narrow passes overhung by the snowy ramparts of the Hindoo Coosh, and, with much difficulty and many hardships to his troops, learned to appreciate the magnitude of that great inland barrier of Asia. In India, Alexander could not penetrate beyond the region watered by the five rivers. Yet he did not consider it as the boundary of the earth; he learned the existence and beauty of the fine regions on the Ganges, whither he in vain attempted to persuade his fatigued and refractory troops to follow him. He consoled himself by conveying his army in pomp down the Indus, to view the entrance of that great stream into the ocean, and with instructions, as we have already seen, to trace the shores of Asia round the Persian Gulf. He himself, upon very bad information, undertook to lead back his army through Gedrosia and Caramania, the greater part of which he found, as modern travellers have done, to be a desert of the most dreary and formidable character, in which his army was with difficulty saved from total destruction.

Sect. II. *Expedition of Seleucus.*

100. *Seleucus*, on the partition of the empire of Alexander, succeeded to the dominion of Syria and the East. Neither that prince nor his successors were either learned or patrons of learning; but as the owner of extensive dominions, and aiming at farther conquest, he cherished the natural wish to be acquainted with what he possessed or hoped to obtain. He employed his admiral, Patrocles, to make a survey of the Caspian Sea, which had not entered into the line of Alexander's route; but the information gained by this voyage must, as we shall see, have been far from complete. It would also seem as if he had employed the same admiral in an attempt to circumnavigate Asia; but the assertion which obtained credit in that age, that he had sailed round from India to the Caspian, sufficiently attests the failure of the enterprise. Seleucus, also, finding, probably, that the inroad of Alexander into India had been of very transient result, undertook a military expedition, the details of which are little known, and which enabled him to establish no permanent footing in the country; but he collected some further materials for the geographer, and the record of his marches appears to have been of important service to Pliny. He sent also an embassy under Megasthenes to Palibothra, capital of the great Indian kingdom situated on the Ganges, from which the ancients derived a more accurate knowledge of these eastern parts of the world than they had previously possessed.

Sect. III.— *Eratosthenes.*

101. *Eratosthenes* at length succeeded in reducing geography to a system *under the patronage of the Ptolemies*, which gave him access to all the materials collected by Alexander, his generals, and successors, and to the immense mass of documents assembled in the Alexandrian library. The astronomical observations made in this school were now sufficient to prove the globular form of the earth. Eratosthenes, proceeding upon this principle, made it his study to adjust to it all the known features of the globe. He did not, however, attend to the grand original divisions of the equator, the pole, or even the tropics. The line which formed the basis of his geography, and generally of that of the Alexandrian school, was a parallel drawn across the Mediterranean, and thence prolonged through Asia. It was formed in a very rough manner, upon no actual observation, and comprising all leading

positions which came nearly though not strictly within its sphere. It was called generally, the parallel of Rhodes. The most westerly point was the Sacred Cape of Iberia (Cape St. Vincent), after which followed the "Strait of the Pillars" (of Hercules). The next point was the Strait of Sicily, erroneously considered to be under the same meridian with Rome and Carthage. Then came Rhodes, the centre of the line. Issus, celebrated as the site of the victory of Alexander, was with little difficulty brought within the limit. Next followed the somewhat doubtful position of the Caspian gates, and the line was extended along the chain of Mount Taurus, supposed to divide Asia into two parts, till it terminated at the remote city of Thinæ, situated on the eastern ocean. This entire length of the habitable world, as it was called, amounted to about 70,000 stadia, or, according to his estimate, one hundred degrees, not quite a third of the circuit of the globe.

102. *In determining a meridian to exhibit his breadth of the habitable world,* Eratosthenes laboured under still greater difficulties. On the extreme south was "the limit of the habitable earth;" for, according to this school, a certain tract around the equator was, from the excess of heat, unfit for human habitation. The uninhabitable zone was supposed to extend 8,300 stadia, or about twelve degrees to the north of the equator. Under the next parallel were included the "Isle of the Exiles," in or near Sennaar, the cinnamon-bearing region, which appears to be Berbera, and Taproban, or Ceylon. Next come Meroe, the capital of Ethiopia, which was supposed, though with great error, to correspond as to latitude with the southern extremity of India: thence descending the Nile the geographer marks the celebrated position of Syene, which was concluded to be immediately under the tropic, since there was a well, in the depth of which at noon-day, at the precise time of the vernal equinox, the disk of the sun was seen reflected entire. The observation was very nearly correct. Next came Alexandria, of which, as the centre of all these observations, the position as to latitude was very closely approximated. Then followed Rhodes in the centre of the great parallel already described as exhibiting the length of the habitable globe. Continuing northward, though not upon the same line, were found the Hellespont, Byzantium, the mouth of the Borysthenes, and passing over the vast obscurely-known tracts of Germany, Gaul, and Britain, the farthest Thule, which, on the report of Pytheas, Eratosthenes regarded as the extreme northern boundary of the earth. As the same authority placed Thule under the Arctic circle, or at sixty-six degrees of latitude, the interval between that position and the limit of the habitable earth on the side of the equator amounted to about forty-four degrees, or according to his estimate 38,000 stadia, which formed thus the supposed breadth from north to south of the habitable earth.

Sect. IV.— *Hipparchus.*

103. *Hipparchus,* carrying still farther the system adopted by Eratosthenes, subjected the whole science of geography to astronomical principles. His labours in numbering the stars, and arranging them according to their place in the heavens, were such as appeared marvellous to the ancients, and are esteemed by Pliny as achievements that would have been arduous even for a god. In this career, however, he had been preceded by Timocharis and Aristillus, who, more than a century before, had made some observations which paved the way for the present extended discoveries. Hipparchus appears to have first conceived the idea of transferring the observed latitudes and longitudes of the stars to their corresponding places on the earth's surface, thus fixing the latter with a precision which no itinerary measurements could ever attain. He made a considerable number of observations of latitude, in addition to the very few previously existing, and he pointed out the mode in which the longitudes might be ascertained by observing the eclipses of the sun and moon. It does not appear to what extent he carried the difficult operations requisite for this investigation; but he is said to have calculated the eclipses for six hundred years, including the moments of their appearance at different places; a performance which seems to indicate a knowledge of their astronomical position. Thus Hipparchus distinctly perceived all the principles upon which an accurate system of geography might be founded, and made some progress in their application; but these important principles, like others which were beyond the comprehension of the age in which they were made, remained for a long time dormant or misapplied, and were not brought into full practical application until a much more advanced period in the progress of science.

Sect. V. *The world according to Eratosthenes and Strabo.*

104. *The application to the different parts of the earth's surface* of the principles according to which the globe was to be delineated, formed a task still more arduous than that of the first establishment of those principles. The longitudes and latitudes of the ancients are both erroneous; more especially the longitudes, to which astronomical observation was never very extensively applied; hence it is not wonderful that the errors should be great; but the regular and rapid manner in which they accumulate appears very surprising. They begin from the Sacred Cape of Iberia (Cape St. Vincent), which the ancients made their first meridian, and continue regularly increasing as we proceed eastward.

To the pillars of Hercules were assigned more than two degrees beyond the truth; to Alexandria, nearly seven; to Issus, ten; to the Caspian gates, fourteen; to Pattalena, or the Delta of the Indus, twenty-three; to the mouth of the Ganges, nearly twenty-seven. M. Gosselin, by collecting these errors, has shown, that they must arise not from single defective observations, but from some general cause. To discover it, he has had recourse to a very bold and ingenious hypothesis. He supposes Eratosthenes to have had under his eye an early map, found, probably by Alexander or his generals, in some country of the East, where astronomical observation had been pursued with a degree of accuracy never attained among the Greeks. On this map he supposes the parts of the globe to have been correctly laid down, but on the principle of a plane map, where degrees were delineated as of equal length at all distances from the equator. This mode of graduation Eratosthenes is supposed to have misunderstood, and to have considered the map as formed on the more exact plan, which made the degrees on his great parallel to consist only of 555 stadia, instead of 700, their length on the equator. Dividing, therefore, the stadia on the map by 555 and not by 700, he brought out a number of degrees much above the truth, and always the more so as the space measured became greater. This conjecture is, doubtless, highly ingenious, and the application of it produces an approximation to the real positions which is somewhat surprising. At the same time, it does not seem very probable, that so perfect a school of geography as is here supposed should have so early existed; we know not well where its seat could have been; nor does this supposed excellence seem very consistent with the imperfect mode of graduation here supposed, and with the absence of any indication of the principle on which it was constructed. A more simple and probable solution seems to be, that the graduation was calculated from the itinerary measures reduced to degrees, at the rate adopted by Eratosthenes of 700 at the equator, and 555 upon his main parallel of Rhodes. We have already had occasion to observe, and the remark is found in the best ancient geographers, that merchants and travellers of that age gave an exaggerated report of all the distances over which they passed. The windings of the route, the hardships and obstacles encountered by them, the desire to magnify their own achievements, all concurred in inducing them to view and present this particular through an amplified medium. All the itineraries continued along the line upon which Eratosthenes measured his length of the habitable globe being thus unduly extended, the degrees calculated out of them were of course equally in excess; and this excess became always the greater in proportion to the length to which the line was protracted beyond its commencement at the Sacred Cape. The latitude of the principal places in and round the Mediterranean is in general not far from the truth, probably because it was determined by such rude observations as were within the compass of Greek science at that early period.

105. *In tracing the outline of the known world*, and especially of the continents, geographers still proceeded amid obscurity and doubt. This school had laid down the fundamental principle of a great circumambient ocean, embracing the entire circuit of the three continents. This idea, inherited from Homer, was doubtless supported by facts to a considerable extent; but its application to the world in general, and especially to the northern shores of Europe and Asia, was manifestly hypothetical. Eratosthenes, in comparing the magnitude of his known world, even under its exaggerated dimensions, with the general circumference of the earth, became sensible that only a third part of this last was filled up. He indulges in conjecture as to the contents of this vast unknown region, which, he observes, might either be supposed to consist of one great ocean, the whole of which he denominates the Atlantic, or of lands and islands which might be discovered in sailing to the eastward. With a degree of caution, however, not very common in that age, he declines to give any decisive opinion on this question.—The system of Eratosthenes may now be considered in regard to Europe, Asia, and Africa.

SUBSECT. 1. *Europe.* (*Fig. 6.*)

106. *The imperfection of ancient geography* is often conspicuous with respect to countries which were very near and familiar. In regard to the very centre of the Mediterranean, Eratosthenes committed a capital error. Following the propensity to include all the leading positions under some one line to which they approximate, he placed in the same meridian Rome, the Sicilian strait (that of Messina), and Carthage. The mistake with regard to the first and last of these points did not much exceed a degree; but the middle point is nearly four degrees east from Rome, and five from Carthage. Such an error could not fail to produce others. M. Gosselin shows that it has led to a signal mistake respecting the

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References to the Map of Europe according to Eratosthenes.

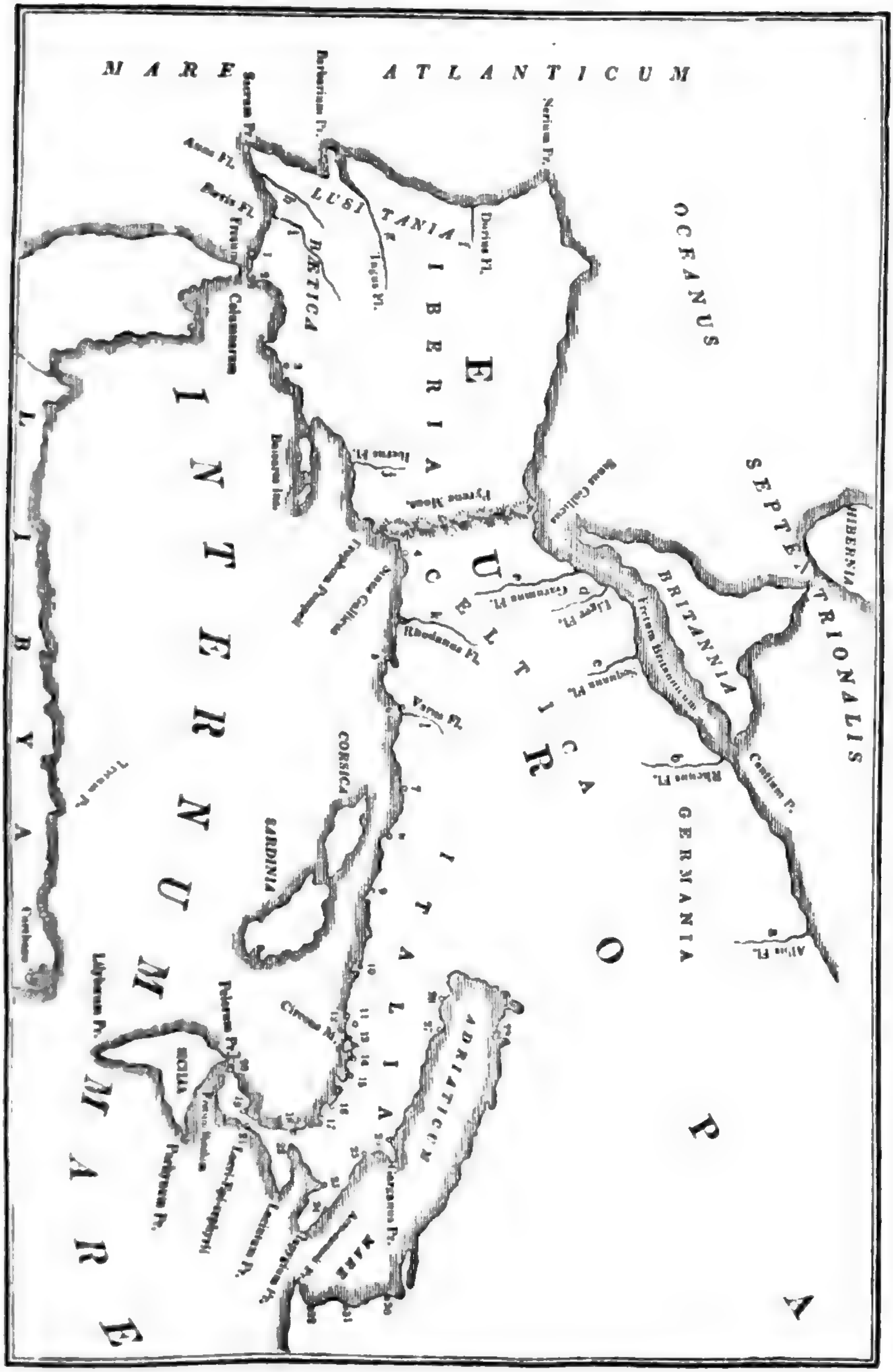
1. Gades
2. Calpe
3. Carthago Nova
4. Narbo
5. Massilia
6. Antipolis
7. Genua
8. Luna
9. Populonium
10. Cosa
11. Roma
12. Ostia
13. Circeii
14. Puteoli
15. Neapolis
16. Posidonia
17. Velia
18. Laus
19. Hipponium
20. Rhegium
21. Scylacium
22. Thurii
23. Tarentum
24. Brundusium
25. Sipus
26. Teanum
27. Ancona
28. Ariminum
29. Pola
30. Epidaurus
31. Epidamnus
32. Apollonia.

Rivers.

a Albis
b Rhenus
c Sequana
d Liger
e Garumna
f Durius
g Tagus
h Anas
i Bætis
j Iberus
k Rhodanus
l Varus.

Google

Fig. 6. EUROPE ACCORDING TO ERATOSTHENES.



position of Sicily, as the geographer, in order to retain its relative position towards Carthage, necessarily represented its greatest length as from north to south, instead of from east to west. The promontory of Lilybæum, facing Carthage, became the southern instead of the western extremity of Sicily; while Cape Pachynum, instead of the southern, became the eastern. Sicily being thus projected so unreasonably towards the south, Carthage also was made to recede too far in the same direction; and the coast leading thither from the straits of Gibraltar was supposed to bend to the north instead of the south. The same erroneous process, placing Sicily too far west, enlarged beyond measure the eastern basin of the Mediterranean comprehended between it and Asia Minor. This deformity became still more serious from another application, to Alexandria and Rhodes, of the system of placing leading points under the same meridian. As the former error had made Sicily too far west, this made Rhodes too far east, and rendered the sea between these islands too large by at least a half.

107. *Strabo*, ever alive to the faults of his predecessors, detected the mistake of Eratosthenes with respect to the relative positions of Rome and Carthage. He has been far, however, from rectifying all the wrong positions established by his predecessor. He has left untouched the false orienting of Sicily, and all the errors dependent upon it. Both he and Eratosthenes describe Italy as extending from north to south, which, allowing for the early tendency to orient all lines towards a cardinal point, may be taken as a pretty fair representation. M. Gosselin has undertaken to show that such a direction would be inconsistent with the other data given by these geographers, in conformity to which Italy must stretch from east to west. Considering, however, the imperfect state of geographical delineation at that period, it seems going too far to follow each error into all its consequences, or to suppose that all the views given can be brought into complete harmony.

108. *The outline of the central and northern countries of Europe* drawn by these geographers is excessively vague. Strabo indeed makes some approach to accuracy in comparing the Spanish peninsula to a "hide spread out," or to a parallelogram. Various countries were by the ancients denominated from a fancied resemblance to some object in nature, nor are examples wanting in modern times. But the eastern side of this figure is formed by the Pyrenees, which are thus made to extend from north to south, to form the western boundary of Gaul, and to be parallel to the Rhine. Hence arises the greatest of all these errors; for Gaul is allowed to have on the ocean only one coast, which is that looking to the north, and every where opposite to Britain. Strabo treats with derision the report of Pytheas, that the *Calbium promontorium*, the extreme point of Brittany, looked to the west, and he represents vessels as sailing to Britain as readily from the mouth of the Loire and Garonne as from that of the Rhine and the Seine. Great as these errors are, we shall easily trace their origin in considering the sources whence the Greeks derived their information respecting these extremities of Europe. Whatever may have been the case with regard to the Carthaginians, it is evident that neither Greeks nor Romans ever navigated its exterior seas. Pytheas alone performed that daring voyage; but having no witnesses to bring in support of his relation, it was denounced as fabulous, in common with others made by early discoverers. The regular channel of communication was Marseilles. The merchandise of Britain being brought across the British channel to the mouths of the Rhine and the Seine, was conveyed down those rivers, and by land carriage to that great emporium of Gaul. Hence the geography of Gaul and Britain, in that age, was ruled entirely by Massylian ideas. From the causes stated, the Massylians had no communication with Britain unless by the northern coast of Gaul, and by routes directed from south to north through that country. Reasoning only from what they knew, they might soon arrive at the conclusion, that Gaul had only a northern coast, and might apply to it the whole of the erroneous system now described. The result of this system was, that the Cassiterides, Islands of Tin, in which term the Scilly islands were evidently blended with Cornwall, were made to approach to Spain, and came to be considered as much Spanish as British. So prevalent was this idea, that even afterwards, when the conquests of Rome had made known the wide separation between the two countries, the Cassiterides are found in some maps still attached to Spain, and at a little distance from Cape Ortegal.

109. *Britain, under this system*, was represented as a triangle, of which the base, or longest side, was that along the channel and opposite to Gaul. As the coast, after passing the two extremities of this line, begins on one side to bend inward towards the Bristol Channel, and on the other to the Thames, navigators then probably considered it as continuing in these directions till it came to a point, far short of its real termination. Ierne (Ireland) appears in dim obscurity. It is said to be situated four hundred miles north from the centre of Britain, under a climate so excessively cold that there could not possibly be any inhabited country nearer to the pole. If the four hundred miles be measured from the centre of the southern coast, and allowance be made for false orienting, it will not be found so very wide of the truth. The rest of the description was probably made out by confused ideas of Scotland, and particularly the bleak mountainous tracts in the north. Eratosthenes, indeed, has derived from Pytheas a knowledge of the far northern limit of Thule, and of its appendant islands, stretching towards the Arctic sea; but, as the proud scepticism of Strabo rejected this statement, he was thrown back upon the more imperfect information afforded by the merchants of Marseilles.

110. *The eastern shores of northern Europe* occasioned still more embarrassment to the Greeks. They had, in general, the idea of this continent having the sea for its boundary; but this seems mainly to rest upon the general vague belief of a circumambient ocean, and an understanding that Germany had on the north a maritime boundary, indicated by the amber brought from the shores of the Baltic. Here, too, Pytheas, either by personal investigation or by careful enquiry, had collected some particulars which if Strabo had not disdained, he would not have been left in such total darkness. After proceeding far along the German coast, that navigator, it is said, came to a great gulf (evidently the Baltic). He found Basilia, a very large island, the same which Pliny calls Baltia; being, in fact, the peninsula of Scandinavia, which, until it was circumnavigated, must have been regarded by navigators as an island. Then, it is said, he came to the Tanais,

which appears, no doubt, a very startling assertion; but we must remember that, in this school, the circumambient ocean was supposed to have a coast only a little north of the Euxine and the Caspian, and to communicate with these seas or gulfs (as they were supposed to be) by narrow straits, one of which was the Tanais, and the mouth of one of the great Baltic rivers might very easily be imagined to form the termination of this strait.

Subsect. 2. *Asia.* (*Fig. 7. page 34.*)

111. *The limits assigned to Asia,* already too small, were contracted by the geographers of the Alexandrian school, notwithstanding the additional sources of information which they possessed respecting that continent. This error arose partly from their theory of a surrounding ocean, and partly from their neglect of the important information obtained by Herodotus respecting the countries along the heads of the Euxine and Caspian. The expedition of Alexander, indeed, and the embassy of Megasthenes, made them acquainted with the Ganges, rolling eastward through the fine plain of Upper Hindostan. Seeing it pursue this direction to the utmost limit of the then known world, they were led to conclude that its course continued eastward, and that it fell into the eastern ocean, which formed, on that side, the boundary of the continent. Connecting this with the Caspian, the only northern Asiatic sea known to them, they drew a line from one to the other, by which they excluded nearly two thirds of the extent of Asia; the Birman empire, China, the greater part of Tartary, and the whole of Siberia. On the shore of the eastern ocean was placed Thinæ, evidently known only by vague rumour, and which they fixed at the extremity of the line measuring the length of the habitable globe. What may be the import of this mysterious name, and whether it be the capital of Siam or of China, is a discussion which will be better reserved until we come to the more precise notices of Ptolemy. One other grand feature was known to this school; the cape of the Coliaci or Cape Comorin; but conceiving the coast of Coromandel to follow the line of the Ganges, and, consequently, to verge towards the west, they made it several degrees more easterly than even Thinæ.

112. *Asia within and Asia beyond Taurus* were made the grand divisions of that continent. That great mountain chain arising in Asia Minor was supposed to be prolonged by those of the Elbruz, of Khorassan, and of Hindoo Coosh, which, in fact, there is much reason to believe, may form a chain nowhere wholly interrupted. Within Taurus were all the fertile, populous, and splendid kingdoms of Asia; Syria, Assyria, Babylon, Persia, Susiana, Ionia, Cilicia; beyond, were the ruder tracts of Scythia, Bactria, Sogdiana; and more westerly, the Caucasian territory, and the part of Asia Minor situated along the shore of the Black Sea.

Subsect. 3. *Africa.*

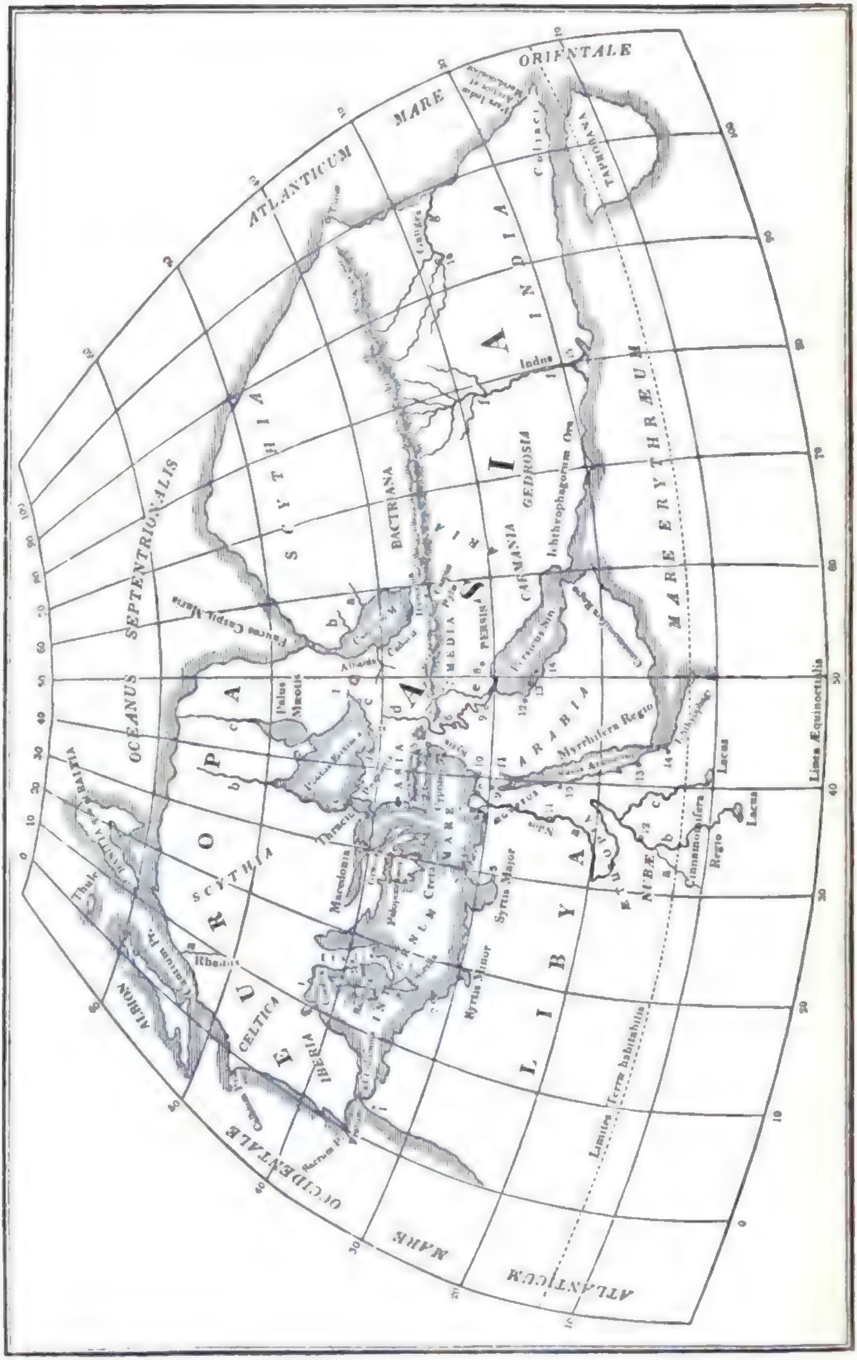
113. *In regard to Africa,* the knowledge of these geographers, though accurate in some respects, was extremely limited. They believed its boundary to be the sea; but this correct judgment proceeded rather from a casual coincidence with their theory of an encircling ocean, than from any actual knowledge; since Strabo rejected even the possibility of circumnavigation. This scepticism was founded upon the hypothesis of an uninhabitable torrid zone, which formed an essential part of the reigning system at this period. It is a belief manifestly African, founded on the observation of those vast and burning deserts, which extend indefinitely beyond the narrow inhabited stripe bordering on the Mediterranean. The Nile, then, being still considered as the eastern boundary, Africa became a sort of right-angled triangle, of which the two smaller sides were formed by that river and the Mediterranean, while the hypotenuse, or largest side, was the unexplored shore. It was upon the Nile that Eratosthenes measured the habitable world of Africa; yet he does not trace that river so high as Herodotus, his details reaching only between three and four hundred miles above Meroe. In these details, however, he is very accurate: on the eastern side, he represents it as receiving two great rivers, the Astapus and the Astaboras, the former of which flows from lakes in the south, and, when swelled by the summer rains, forms almost the main body of the Nile. He describes also the bend which the river makes in its passage through Nubia. The source, being imagined to exist in regions rendered inaccessible by extreme heat, could not be considered as within the reach of discovery. The idea, however, still prevailed, that it came from the west, and Strabo even mentions a report, that its source was in the remote region of Mauritania, south of the Atlas. This is the only statement made by geographers of this school, which can be considered as indicating any idea of the existence of the Niger.

Chap. V

ROMAN GEOGRAPHY.

114. *The Roman geographers* attained no proficiency in the mathematical branch of the science. M. Gosselin does not even hesitate to assert, that they remained always strangers to its very first elements. They made no attempt, therefore, to combine their materials into

THE WORLD ACCORDING TO ERATOSTHENES. Fig. 7.



one harmonious system, or to fix their positions with that strict accuracy, which astronomical observation alone can reach. Yet no nation employed greater diligence in the operations of practical survey. This was, indeed, absolutely requisite with a view to that incessant warfare in which they were engaged; they could not conquer the world without previously surveying it. Their geographical researches were, however, held strictly subservient to this ambitious design.

115. *Itineraries* were thus the only form in which the results of Roman investigation were presented. Vegetius informs us that when war was to be carried into any country, the first care was to procure a complete set of routes, and place them in the hands of the general. These itineraries, it is observed, ought, if possible, to contain, not merely the intervals, in paces and Roman miles, between one place and another, but the quality of the roads, the surrounding objects, mountains and rivers, delineated with the utmost possible precision. They were not only to be noted, but painted, that the commanders might not know merely, but see before their eyes, the route by which they were to proceed. The Romans became thus the surveyors as well as the conquerors of the world; and every new war in which they engaged, every new conquest which their arms achieved, produced a fresh accumulation of materials for the use of the geographer. Even after a country was subdued, the necessity of accurate survey did not cease. The empire was long held in a state of mere military occupation; camps formed at proper distances were connected by those excellent and durable roads, many of which remain to this day. An accurate acquaintance with the position and intervals of these camps, and the nature of the intervening territory, was essential to the maintenance of their dominion over the vast extent of their conquered countries. No sooner, therefore, had Julius Cæsar seated himself on the undisputed throne of the empire, than he caused a *senatûs consultum* to be passed for a general measurement of the Roman world. This task, it is said, was intrusted to "the most prudent men, adorned with every endowment of philosophy." The east was assigned to Zenodoxus, the west to Theodotus, and the south to Polycletus. In the course of twenty-five years, as we are informed by Æthicus, the whole was completed. Julius Cæsar, however, did not long survive the commencement of this great work, which the civil wars probably suspended. It was apparently resumed and completed under the reign of Augustus and the ministry of his son-in-law Agrippa, to whom it appears, from Pliny, to have been afterwards ascribed. The exact principles upon which this grand measurement was conducted have nowhere been stated. The reform of the calendar, effected by Cæsar, seems to point out that some elements of astronomy existed among those with whom he consulted.

116. *Rome*, in the most flourishing era of its literature, produced *two eminent geographers*. Mela and Pliny.

Sect. I. *Mela.*

117. *The personal history* of this eminent geographer is a subject respecting which scarcely any particulars have transpired. From the allusions, however, in his own writings, to the conquest of Britain by Claudius as a recent event, made in those flattering terms which only a contemporary would have employed, it would appear that his work was written under the reign of that inglorious prince, and is, consequently, anterior to that of Pliny.

118. *Mela, in forming his system*, does not appear to have possessed those extensive measurements and itineraries, which were probably deposited in the imperial archives. Faithful, however, to the object of his treatise, "de situ orbis," he discovers very considerable anxiety to determine the position of the globe, and trace with accuracy its general outlines. He adopts the general principles of the school of Eratosthenes, incorporating into it the new features which had been afforded by Roman conquest. He does not appear, however, to have comprehended their idea of the globular form of the earth, nor is he very perspicuous in any thing that he says upon that subject. He begins — "All that, whatever it is, to which we give the name of the world and heaven, is one thing, and in one circuit embraces itself and all things;" vague and pompous expressions, to which no determinate idea can be attached. We find him, however, adopting in its fullest extent the belief of a circumambient ocean; and when he speaks of "the high earth in this middle part of it," and describes the sea as going under and washing round it, we are led to believe, that he viewed the earth as a sort of cone, or as a high mountain raised by its elevation above the abyss of waters. Having made a vague division of the world into east, west, and north, he distributed it into five zones, two temperate, one torrid, and two frigid. Only the first two were habitable; and that on the south was inaccessible to man, on account of the torrid regions intervening. According to this system, however, there was on that side another earth, inhabited by people, whom he calls

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References to the Map of the World according to Eratosthenes.

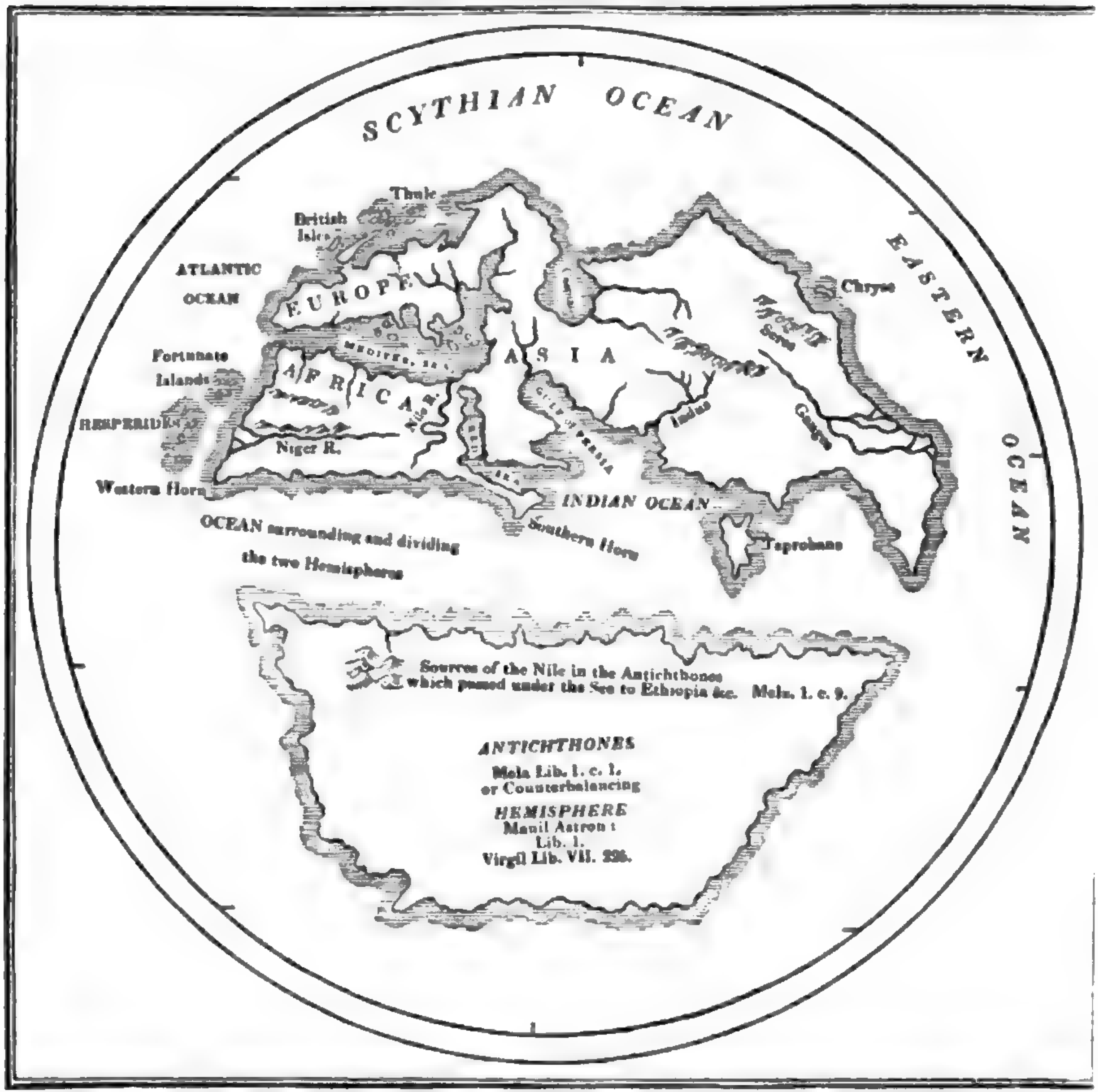
EUROPA.
1. Massilia
2. Roma
3. Athenæ
4. Byzantium

Rivers
a Rhenus
b Borysthenes
c Tanais

ASIA.
1. Dioscurias
2. Amisus
3. Sinope
4. Ephesus
5. Issus
6. Thapsacus
7. Ninus
8. Susa
9. Babylon
10. Rhinocolura
11. Ælana
12. Gerra
13. Tirus Insula
14. Aradus Insula
15. Patala
16. Palibothra

Rivers.
a Oxus
b Jaxartes
c Phasis
d Euphrates
e Tigris
f Indus
g Ganges.

Fig. 8. System of Mela.



Antichthones, from their opposite position with respect to that part which we inhabit. The form and boundaries of the known and habitable earth are thus delineated: — The Mediterranean, with its branches of the Straits, the Euxine, and the Palus Mœotis; its great tributaries, the Nile and the Tanais; — these combine, in his conception, to form the grand line by which the universe is divided. The Mediterranean itself separates Europe from Africa; and these continents are bounded on the east, the former by the Tanais, the latter by the Nile; all beyond or to the east of these limits was Asia. (*Fig.* 8.)

119. *In drawing the outline of Asia,* Mela adheres very strictly to his Alexandrian models. He describes it as bounded by an ocean on every side except the western, where it confines with Africa and Europe. It presents, he says, a huge and perpetual front to the eastern ocean, its shores being occupied by the three farthest known nations, the Indians on the south, the Seres in the middle, and the Scythians on the north; but the territory of the Indians and Scythians is rendered in a great measure uninhabitable by the extremes of heat and cold. The limited extent of his accurate information, however, is apparent from the representation he gives of this ocean, as flowing directly north from the point of Colis (Cape Comorin), the Ganges flowing into it, and the Scythians occupying its shores as far as "the Caspian *Bay*." He even inclines to credit the report of an Indian vessel having been driven round by stress of weather to the coast of Germany. Thus he gave to Asia the same truncated form which it had received from the authors whom he followed; but he certainly rendered the dimensions of its eastern shore more ample, when he made it to consist, not of India only, but also of Serica and part of Scythia. With regard to the southern shores of Asia, they were known with sufficient accuracy, ever since the expedition of Alexander, and the voyage of Nearchus. He calls the Indian ocean the Red Sea, and recognises the Red Sea of modern geographers only under the name of the Arabian gulf; but this is plainly a mere nominal difference.

120. *Europe, as described by Mela*, extends from Tanais to Cadiz, and, with the exception of its eastern river-limit, is bounded every where by seas and oceans. Its leading feature is the Mediterranean, joined to the Euxine and the Palus Mœotis, which are considered only as prolongations of that sea; while the Ægean, the Ionian, and the Adriatic seas, form its three great gulfs. The eastern part he divides into the Tuscan and the Libyan seas. His delineation of the exterior coasts marks a great advance of knowledge. He assigns to Spain a northern, and to France a western coast of great extent, and adds that the Pyrenees, after separating France from Spain, enter the latter country and penetrate to its extremity, when they face the Atlantic. Here the whole chain of the Cantabrian mountains is considered, by no very strained meaning, as Pyrenean. In treating of these outer shores of Europe, and the "huge and infinite sea" on which they border, Mela relates, with exaggerating wonder, the phenomena, unknown to a Mediterranean people, of the tides, "that mighty movement by which the sea alternately advances and returns into itself, overflowing the lands, driving back mighty rivers, and sweeping away the strongest land animals." His speculations on the cause are singular; either the world is a great animal whose breathings excite in its breast these alternate movements; or it contains deep caves, into which the waters are alternately absorbed and ejected. He does, however, mention the theory which supposes them influenced by the moon, and remarks their correspondence with the movements of that body. In treating of the Cassiterides, or islands of tin, which include, as already observed, the Scilly Islands and Cornwall, he shows considerable perplexity, only observing that they are "in Celticis," indicating their close alliance with France. In regard to Britain itself, however, he confidently undertakes to give the world better information, in consequence of the victories of "the greatest of princes" over nations hitherto unsubdued and unknown; and he certainly makes a great progress beyond the imperfect notions of Strabo. He describes Britain as presenting two extensive oblique coasts, one looking towards France, the other towards Germany; the two forming a great angle nearly opposite to the mouth of the Rhine. The coasts then began to bend inwards, and form a triangle varied with numerous points and angles, and somewhat similar in form to Sicily. The country is described as flat, large, and fruitful, but contrary to what now obtains, more favourable to the support of flocks than of men. The natives were uncultivated, warlike, and ignorant of wealth; they were accustomed to paint their bodies, and to ride in chariots. Above Britain was Inverna (Ireland), nearly equal in size, and of an oblong form, its soil scarcely fit for the production of grain, but its pastures so luxuriant, that if the cattle were allowed to feed for more than a short period of the day, they died of repletion. The relative dimensions assigned to Britain and Ireland would seem to show that the former was known only in its southern part, yet the writer discovers himself not unacquainted with the Scottish islands. He mentions thirty Orcades, in which number the Shetland Islands are probably included.

121. *In proceeding to the east and north*, Germany is described by Mela as a region of great extent, intersected by many rivers, and covered in a great measure with woods and marshes. The inhabitants were tall and remarkable for courage and strength, continually exercised in war and hard labour, eating raw flesh, and clothed partly in the bark of trees. Passing the Vistula, we enter into Sarmatia, extending to the Danube, rather a vague limit, but the term is evidently meant to comprehend the greater part of modern Poland. The people are some stages in barbarism beyond even the Germans, having no cities or even settled abodes, and carrying their fierceness to such a pitch, that hunting and bending the bow were considered the best accomplishments of their females, no one of whom, the writer even asserts, could enter the matrimonial state till she had killed her man. On this shore he represents the Codanus Sinus, a great bay filled with large and small islands; nowhere presenting an expanse resembling a sea, but dispersed and scattered in narrow channels like rivers; a description very applicable to the entrance of the Baltic and the Danish islands. In common with all the ancients, however, Mela appears to have been ignorant of any thing like a continent on the other side of this great bay.

122. *The outline of Africa, drawn by this geographer*, sufficiently shows his limited range of information. This continent he views as a triangle, the greatest length of which, measured in his system from the Nile to the Atlantic, is considerably less than the length of Europe. Of this triangle, the Nile forms the base; and from thence the southern coast, or that of the Ethiopic ocean, continually approximates to the northern, till, beyond the Pillars of Hercules, it tapers almost to a point. The origin and course of the Nile are to Mela a subject of much speculation. One account, esteemed by him as tolerably credible (*aliquâ credibile*) identifies it with a great Ethiopian river, called in the language of the natives Nuchul; which, while all other rivers tend towards the ocean, alone flows eastward to the central region, and no one knows where it terminates; a striking coincidence with the actual observations of the moderns, respecting that celebrated stream denominated the Niger. Elsewhere, however, Mela propounds an hypothesis of a much more extraordinary character. He says, that if there be another earth (on the south of the equator), and *Antichthones* opposite to us, "it might not be departing too far from the truth" to suppose that the Nile arose in that earth, and reached our side of the globe by a channel beneath the ocean. Thus it would naturally swell during the summer solstice, which, on the side of the world from which it came, was the season of winter. Bertius and Vincent, however, have perhaps dealt too hardly with the author, in embodying this wild conception into a map, and giving it to the world as the system of Mela, who mentions it merely as a conjecture. The lower part of the course of the Nile he describes with less accuracy than Strabo, the two channels of the Astapus and Astaboras being made branches of the Nile itself, first separating and then re-uniting. His ignorance respecting even the shores of the Red Sea is proved by their being filled with poetical wonders; the pigmies waging their ancient war with the cranes; the phœnix, after a life of four hundred years, dying, and reviving from its ashes. Proceeding to the interior and remoter shores of Ethiopia, he finds always new wonders, sphynxes, birds with horns, flying horses. He refers to the voyages of Hanno and of Eudoxus, to whom he ascribes a variety of fables, by which the reputation of that navigator has been much and perhaps unjustly tarnished; lastly, he comes to the Fortunate Islands, of which the soil produces all things spontaneously, and the fountains are possessed of miraculous virtues. In short, every thing that Mela says of Africa beyond the mere Mediterranean coast betrays a remarkable ignorance of the mysteries of that continent.

SECTION II. *Pliny.*

123. *Pliny*, the most learned of the Roman writers, devotes two books of his extensive work on natural history to a system of geography. He appears to have possessed a greater store of authentic materials than any former writer. From his intimate connection with the imperial family, and with many of the most eminent commanders, all the military measurements, as well as the general survey of the Roman empire, were placed at his disposal. He has introduced, therefore, a multitude of itinerary details, which are generally very accurate and valuable. But he employs no astronomical elements, and appears to have taken no pains to construct a regular system. All the general ideas which we can trace in his delineation appear to be founded on the same basis with those of Mela.

124. *Pliny begins with Europe*, which he considers as by far the most beautiful and fruitful of the three quarters of the globe; and he applauds the opinion of those who consider it not merely as a third, but as a half of the whole globe, separated from the other half by the Tanais and the Mediterranean. This capital error, however, will not appear so surprising, when we consider that the regions here compared with Europe were Asia terminated by the Ganges and the Jaxartes, and Africa extending only a few hundred miles inland from the Mediterranean. Europe had been computed by Agrippa at 3440 miles in length, by Polybius at only 2440; which last dimension is nearly correct, though M. Gosselin contends, that as it does not agree with the sum of his particular distances, it must have been derived from an earlier and purer source. Pliny discovers a clear

conception of the form of Spain, drawing the Pyrenees not from south to north, but from south-east to north-west, and observing that Spain, "where it begins from them, is narrower than France, and even than itself." The position of Britain in the map of Europe is very fairly given; though, to enumerate Spain, with France and Germany, among the countries to which it is opposite, partakes too much of antiquated theories. He states the belief of Agrippa that Britain was eight hundred miles in length, and three hundred in breadth; Ireland the same in breadth, but shorter by two hundred miles; which is a tolerable estimate, the last particular excepted. His disposal of the islands around Britain is not a little confused. He mentions the Orkneys, seven Æmodæ, and thirty Ehudæ, but without showing any precise idea of how they stand. Not only the Isle of Man, but that of Wight also, is placed between England and Ireland. He commits also a remarkable error when he mentions Cassiterim or Cattiterim, where tin is produced, as an island at the distance of six days' sail from Britain. To the remotest point, Thule, he assigns the attributes of a region beneath the Arctic circle, having only one day and one night in the year; and only a day's sail from the Cronium or Concrete Sea. Here, also, he mentions reports of other islands, Scandia, Bergos (Bergen), Nerigon, which have intercourse with Thule. These features evidently belong to the coast of Norway.

125. *In describing the north of Europe*, Pliny begins from the northern shores of the Euxine, and Palus Mæotis. The latter receives the Tanais, flowing from the Riphean Mountains, and forming the boundary of Europe. Beyond that celebrated and demi-fabulous range, he still finds the Hyperboreans, a people screened from every noxious blast, leading a happy life exempt from old age, sickness, discord, and grief; till at length, satiated with felicity, they throw themselves from a rock into the sea. These fables are, however, qualified with the saving clause, "if we are to believe them," which shows that the faith of Pliny was not implicit. The shores of the ocean, he confesses, are "marked by uncertainty." On the authority, however, of Xenophon Lampsacenus and of Pytheas, he reports Basilia or Baltia as an island of immense magnitude, three days' journey from the Scythian coast. Proceeding westward, he comes to the Cimbric Chersonese, and opposite to it another island, Scandinavia, of unexplored magnitude, but which was by many described as forming quite another world. Thus Baltia and Scandinavia, approached from different points, are considered as two distinct insular territories, the vast extent of which, however, appears to be better apprehended by Pliny than by any other ancient writer.

126. *Asia, in Pliny*, is delineated according to the general ideas of Strabo and Mela. The Caspian or Hyrcanian Sea is a gulf opening into the northern or Scythian ocean, which is in communication with that called Seric or Oriental. Pliny seems to have fuller information of the grandeur and wealth of India than any of his predecessors. Its inhabitants and its cities were innumerable, and it was reported on good authority to form a third of the whole world. It enjoyed gentle breezes, two summers, two harvests, one before, another after the periodical winds. Blessed with these advantages, this happy people were never known to emigrate beyond their own territories. He describes the marches of Alexander, from the measurements of Diognetus and Bæton, and where these fail, he continues them by those of Seleucus, and by the embassy of Megasthenes, as far as the mouth of the Ganges. These itineraries seem very good. In treating of Taprobane, he observes, that it had been believed by some to be an opposite continent or earth, but that the enquiries of Alexander had clearly proved it to be an island. His report, however, that the country of the Seres was seen from it, implies a most inadequate and erroneous conception of the eastern coasts of Asia.

127. *The Africa of Pliny* does not differ in its general outline from that of Mela. His access, however, to the archives of the empire, and his acquaintance with some of the Roman generals, enabled him to give new details as to some of its most interior tracts. The region of Atlas had been first penetrated in the reign of Claudius, by Ædemon, an adherent of the extinct family of the Ptolemies, who sought refuge there. Suetonius Paulinus, with whom Pliny had conversed, found it of immense height, covered with snow even in summer; on one side rising from the sands, rough, horrid, and bare; on the other, covered with thick groves of unknown species of trees, and sparkling with fountains. An account is given of a voyage along the western coast, which Polybius had made by order of Scipio. Only the names of the places and the distances are given. The former coincide in a great measure with those of Hanno; and if Polybius was right in this coincidence, his report tends much to confirm M. Gosselin's view of the limited extent of Hanno's discoveries. In the time of Vespasian, another expedition, under Cornelius Balbus, penetrated into and conquered Garama (Germa), and Cydamus (Gadamis). The Romans here beheld with surprise houses built of salt, and on digging to a small depth, water sprung out of the sand. A number of names of conquered places are here given, which it is difficult to recognise; for it seems too hasty to identify Boin with Bornou.

128. *A theory of the course of the Niger* was formed by Pliny from these materials with considerable pains, but very imperfect success. Its source, according to king Juba, existed in Mauritania, and it is even said to have been found by Suetonius Paulinus after a few days' march to the south of the Atlas. The Niger springs here from a lake; but soon, indignant at flowing through sandy and squalid tracts, it passes under ground for several days, and emerges into another lake of Mauritania. After a circuit, however, of some extent, it again disappears, and having pursued a subterranean course of twenty days, re-appears, dividing Africa from Ethiopia. At last, in its passage through Ethiopia itself, it assumes the character of the Nile, first in two channels, Astusapes and Astaboras, enclosing the island of Meroe, and afterwards uniting to form the entire and proper Nile. This wild and absurd detail evidently includes the course of several rivers belonging to different and widely remote regions of Africa. It may even be doubted, if any part belongs to what by moderns has been considered the Niger. It seems very probable, however, that the middle part, which divides Africa from Ethiopia, has been suggested by the river of Bornou, or the Yeou, as it has been called by our recent discoverers.

Sect. III. *Itineraries. — Peutingerian Table.*

129. *Of the itineraries* composed by the masters of the world, and employed by them as an instrument in its conquest, some fragments yet remain. The most memorable is that which bears the name of Antoninus. It has been ascribed by some to Severus, by others to Theodosius, and in fact contains many particulars which could not have been written prior to the era of the last sovereigns; but it seems probable that there were successive editions, with such amendments and alterations as time suggested. It is a mere skeleton road-book, with nothing but the names of places and their distance from each other. The same may be said of the Jerusalem Itinerary, exhibiting in great detail the route from Bordeaux to that holy city.

130. *The Peutingerian Table* (the Italian portion of which is exhibited in *fig.* 9. p. 40.) is a more remarkable monument, and may be considered, probably, as a specimen of the "painted roads" of the ancients. It forms a map of the world, constructed, however, on the most novel and peculiar principles. Its dimensions being twenty feet in length and one in breadth, an idea

may be formed of the correctness with which the proportion of the different parts is exhibited. The high road which traversed the Roman empire in the general direction of east and west is made the first meridian, and to this every other part is subjected. The objects along this line are minutely and faithfully exhibited; of those lying to the north and south of it only some general notion can be conveyed: these are all represented, of course, most enormously extended in length and reduced in breadth.

Chap. VI.

SECOND ALEXANDRIAN SCHOOL.

131. *Alexandria by her contributions to geography* supplied to a great extent the deficiencies of the Romans, who, amid the success with which they cultivated history and literature, never attained to any eminence in this science. That capital, even in its subject state, retained still the impulse received from the Ptolemies, and continued to be the second in magnitude, and the foremost in learning, of all in the empire. In the second century there was established, here and at Tyre, a geographical school, possessing more ample materials and resources than any that had hitherto existed. To the conquests and itineraries of Alexander were now added those of Rome, which, extending in a different direction, embraced many countries to the north and to the west, Gaul, Britain, Germany, Spain, and Mauritania, respecting which the Greeks had possessed only confused and imperfect notions. Thus a greater portion of the globe than at any former period was now united under one government, which, by a standing army and a regular system of laws, preserved the whole in peace and order. The terror of the Roman arms enabled travellers to penetrate with safety even beyond the limits of the empire. Lastly, the unbounded luxury of the great capitals, and above all of imperial Rome, enriched with the spoils of the globe, fired the enterprise of the merchant, who found his way into those remotest markets of the eastern world, the rich commodities of which had hitherto been either brought by caravans or found at intermediate stations.

132. *These enlarged materials were connected together* by a much more accurate and scientific arrangement than had been adopted under the school of Eratosthenes. The method suggested by Hipparchus of subjecting the whole of geography to astronomical principles, and of fixing the position of every spot upon the globe according to its longitude and latitude, was now attempted to be carried into full effect. The attempt, however, was made but in a very rude manner, and upon a very narrow basis of observation. Not only, therefore, did it present a very imperfect edition of the new system, but involved errors which caused it in some respects to retrograde even from the rude state to which it had been brought by the former school of Alexandria.

Sect. I. *Marinus of Tyre.*

133. *No Tyrian system of geography* has come down to us, notwithstanding the commercial greatness of its people at an early period. From the Hebrew writers we have accounts perhaps of nearly the whole of the distant countries with which the Tyrians held intercourse; but if those writers are supposed to have borrowed from them their ideas respecting the general structure and boundaries of the earth, geography among the early Phœnicians will not appear to have passed its infancy. As Tyre, however, even under the Roman empire, remained still the seat of an extensive commerce, some of her intelligent citizens availed themselves of the lights afforded by the learning of Alexandria, and applied them to the illustration of those subjects on which the greatness and prosperity of their city depended. If the merchants of Tyre had nothing left of that proud rule, and those monopolising profits, which enabled them to rival the pomp of princes, their commercial relations probably extended over a wider surface of the globe than ever. They seem to have been engaged in that vast caravan route which was opened from Byzantium across the whole interior of Asia, conducting the merchants by a journey of ten or eleven months to the Chinese frontier, whence they brought silk, the staple product of that great country. Collecting these enlarged materials, Marinus, a native of Tyre, sought to apply to them the astronomical principles of Hipparchus, and thus to arrange geography into a new and more accurate form.

134. *The works of Marinus* have perished, and are known to us only by the references and extracts of Ptolemy; but these are sufficient to show that his system partook largely of the imperfection of a first effort. Aware that the degree of longitude diminished as it receded from the equator, he yet did not attempt to express this difference by representing the meridians with curved lines approaching each other, although this had been already shown by Hipparchus to be the proper course. He made them parallel to each other, not at the equatorial distance, but at that which belonged to them at the meridian of Rhodes. Thus in the part of the globe which came into his immediate observation he avoided any material error; but the meridians, adjusted only to this latitude, became too near each other as they were carried southward, and too distant as they went northward. He fell into a still more pernicious error in adopting the geodesic measurement of Posidonius, according to which the circumference of the earth was made to consist of only 180,000 stadia, and consequently the degree to contain only 500 stadia. This short degree, being calculated out of the exaggerated itineraries upon which the maps of those days were constructed, enormously amplified all the dimensions of the globe. Marinus appears also to have admitted with excessive credulity the extravagant reports of the mer-

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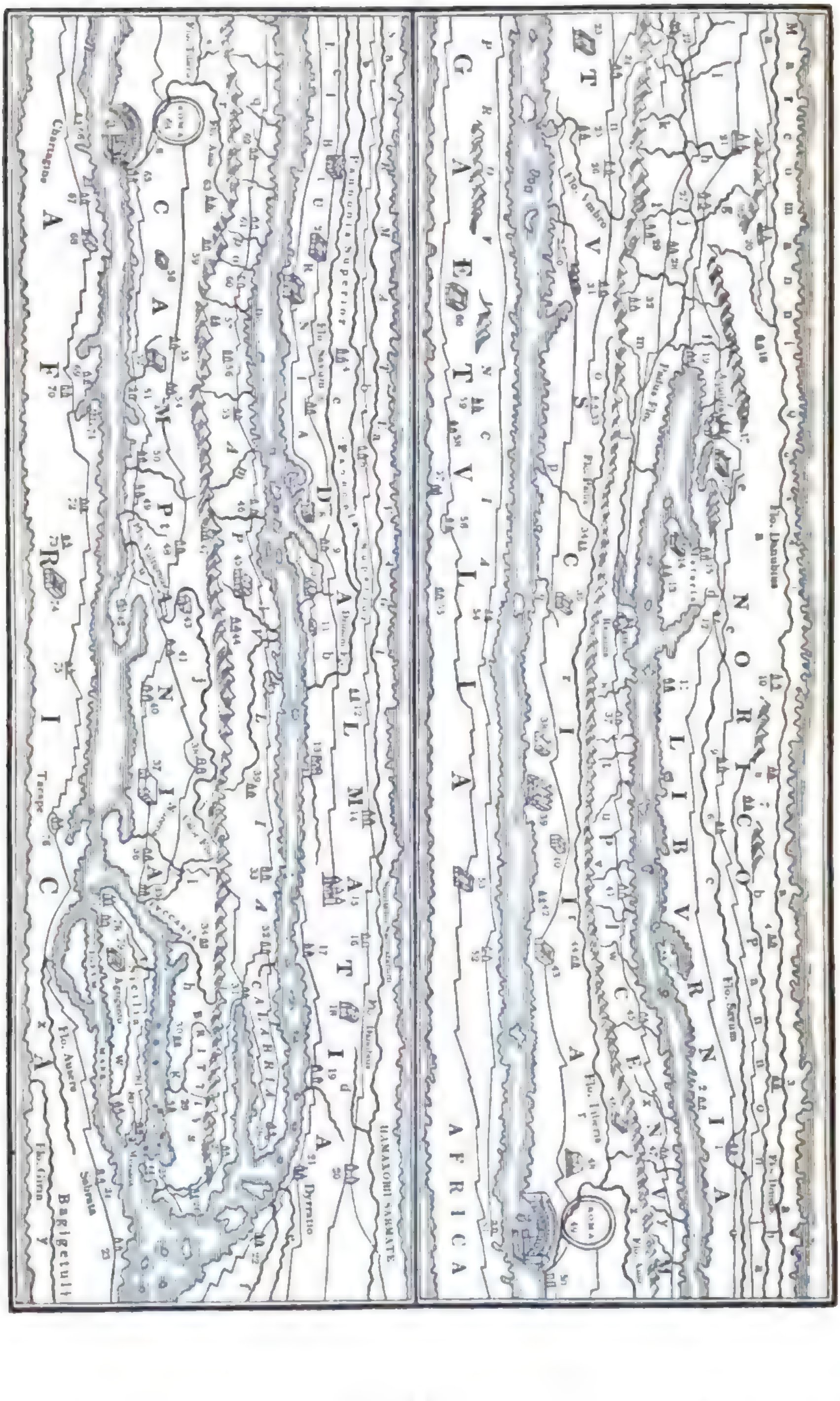
ROMA
Fl. Danubius
NORICUM
Fl. Savum
AFRICA
Fl. Tiberis
Dyrratio
HAMAXOBII SARMATE
ROMA
Fl. Aufidus
Sicilia
AFRICA

chants who had penetrated across the vast mountain and desert tracts in the east of Asia. The rugged and difficult character of the region, the circuitous route which they were frequently obliged to follow, and the obstacles often encountered from the rude inhabitants, caused this journey to occupy a much longer time than those performed through districts better known; and time, as already observed, was the element out of which the ancients were chiefly accustomed to calculate space. Ptolemy also accuses the merchants of vain-glorious propensities, which led them to magnify beyond truth the extent and vastness of the regions which they traversed. Hence the great line upon which Marinus measured the length of the habitable globe, instead of one hundred and twenty-nine degrees given to it in the measurement of Eratosthenes, is swelled out to two hundred and twenty-five degrees, not much less than two-thirds of the globe; whereas the actual length, placing Thinæ even at the eastern extremity of China, is not much more than one third. The exaggeration is enormous chiefly with respect to the country beyond India, which is made to comprise one hundred degrees. This being probably a new route opened through the Himalleh, and across the vast deserts of Eastern Tartary, had been affected by all the sources of amplification in a remarkable degree.

Sect. II. *Ptolemy.*

135. *Ptolemy,* the last and greatest of the geographers of antiquity, and equally illustrious as an astronomer, instituted a complete reform of the science, and undertook to purify it from all the false elements with which it had been alloyed. The principles, in fact, which he adopted were strictly correct; for though, as an astronomer, his theory of the universe was substantially false, yet, in admitting its globular form, and the revolution of the heavenly bodies, he admitted all the elements which were requisite for the less lofty sphere of earthly delineation. He adopted the system of Hipparchus in its utmost extent, subjecting every spot on the known globe to astronomical data, and constructing his tables, never according to itinerary distance, but according to the supposed latitude and longitude of each place. He saw and corrected the error of Marinus in making the degrees of longitude equal under every latitude. Thus, though Ptolemy did not actually introduce any new principle into geography, he was the first who combined together all the sound views of his predecessors, and formed out of them a just and harmonious delineation. Yet he was far from reaching his aim of forming a perfect system. He still retained the erroneous measurement of the degree formed by Posidonius, and of which Marinus had made so unfortunate a use. Hence, while he felt the extravagance of the distances assigned by his predecessor, in consequence of the adoption of the degree of 500 stadia, he extricated himself but partially from the same error. All his longitudes, extended along the length of the known world, present a similar accumulation of errors, only somewhat diminished in amount. These errors, beginning from Cape St. Vincent, constantly increase till, in India, they amount to upwards of forty degrees. M. Gosselin has even accused him of an error which, as he justly observes, would mark a strange departure from every principle, and a neglect of what ought to be the first care of a geographer. This consists in giving to his degrees of latitude a different dimension from that of the degrees of longitude, and retaining, with regard to the former, Eratosthenes's standard of 700 stadia. I suspect, however, that M. Gosselin has been somewhat precipitate in advancing so serious a charge against the first geographer of antiquity. The ground on which he proceeds seems to be, that while Ptolemy has changed materially all the longitudes of Eratosthenes, the latitudes along the great line continue unaltered and generally correct. The real cause of this, however, appears to be, that the latitudes of Rhodes and several other leading points of this great line were determined by

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References to the Peutingerian Table (*page* 40.).

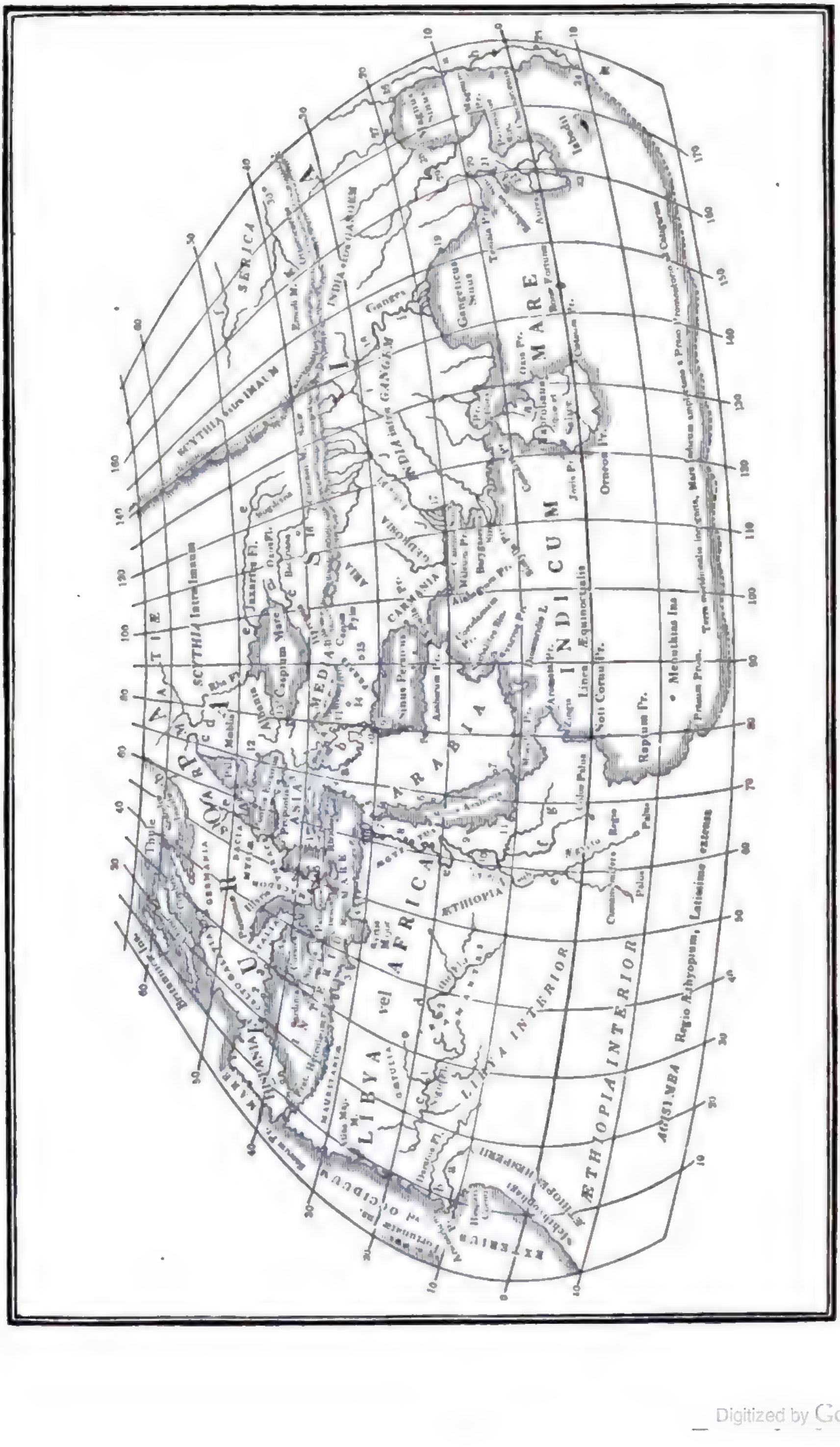
NORTH PART.
1. Steria
2. Sardona
3. Aquinco
4. Brigantio
5. Jadera
6. Ragandone
7. Sabarie
8. Carnunto
9. Celeia
10. Vindobona
11. Tarsatica
12. Emona
13. Pola
14. Silva
15. Parentio
16. Fonte-timavi
17. Aquileia
18. Ovilia
19. Altino
20. Regino
21. Tridente
22. Placentia
23. Aquas Populanie
24. Florentia Tuscorum
25. Sena Julia
26. Biturgia
27. Verona
28. Mantua
29. Mutina
30. Cosa
31. Adretio
32. Bononia
33. Clusio
34. Volsinis
35. Aquas Passeris
36. Ravenna
37. Arimino
38. Gravisca
39. Centum cellis
40. Aquas-tauri
41. Ancone
42. Castro-novo
43. Aquas Apollinaris
44. Soleto
45. Potentia
46. Reate
47. Castello Firmani
48. Ad Scm. Petrum
49. Roma
50. Hostis
51. Chartagine
52. Utica Colonia
53. Aquis
54. Ippone diarito
55. Capsa Colonia
56. Ad Medera
57. Thelepte Col.
58. Theveste
59. Sicca-veria
60. Ad Aquas Caesaris

Rivers.
a Danubius
b Drinum
c Savum
d Arsia
e Frigido
f Licenna
g Aflata
h Clevsis
i Umatia
j Padus
k Paula
l Arnine
m Isex
n Umbro
o Pallia
p Armenita
q Marta
r Tiberis
s Rubicum
t Nelurum
u Matena
v Miso
w Flosis
x Tuma
y Nevalnum
z Anio

SOUTH PART.
1. Ad Pretorum
2. Servitio
3. Ad Pretorum
4. Mursa Major
5. Indenea
6. Tittoburgo
7. Ragurio
8. Siclis, rum.
9. Salona
10. Epetio
11. Inarona
12. Sirmium
13. Narona
14. Taurano
15. Ad Matricem
16. Singidana
17. Epitauro
18. Stanedi
19. Lissum
20. Viminatio
21. Dyrratio
22. Aulona
23. Oea Col.
24. Sabrata
25. Regio
26. Caulon
27. Lacenium
28. Castra Minerve
29. Vibona Valentia
30. Temsa
31. Tarento
32. Brindisi
33. Gnatie
34. Nerulos
35. Salerno
36. Nuceria
37. Oplontis
38. Benevento
39. Venusie
40. Neapoli
41. Capua
42. Cumas
43. Syllas
44. Acerus
45. Pretorium Laucrianum
46. Siponto
47. Esernie
48. Teano Scedicino
49. Sinuessa
50. Menturnis
51. Fundis
52. Terracina
53. Ferentinum
54. Febraterie
55. Istonum
56. Corsinio
57. Marrubio
58. Tres Tabernae
59. Carsulis
60. Ostia eterni
61. Pinna
62. Castro nova
63. Prenaste
64. Roma
65. Hostis
66. Chartagine
67. Maxula
68. Ad Aquas
69. Missua Clipeis
70. Gurra
71. Ad Horrea
72. Lepteminus
73. Thiforo Col.
74. Ad Aquas
75. Taparura
76. Tacape
77. Drepanis
78. Lilybeo
79. Aquas Labodes
80. Siracusis
81. Aethna Mons
82. Messana

Rivers.
a Danubius
b Drinum
c Savum
d Margum
e Genesis
f Hapsum
g Tasino
h Crater
i Silarum
j Color
k Aveldium
l Aufidenus
m Larinum
n Clocoris
o Sannum
p Cumara
q Nernum
r Arno
s Tiberis
t Safo
u Vulturnus
v Himera
w Niranus
x Aussre
y Gerin

THE WORLD ACCORDING TO PTOLEMY. *Fig.* 10.



observations which, though not perfect, at least approached to the truth, while the longitudes were calculated merely out of the itineraries. This central line, therefore, bisecting the breadth of the known world, was fixed upon sound data, and the errors could accumulate only to the north and south of it. In fact, we shall find that they did accumulate as rapidly as in the longitudes, when the sphere of observation was passed, which was bounded by Syene on the south, Marseilles and Byzantium on the north. The mouth of the Seine is placed one degree too far north; that of the Rhine, nearly two degrees; that of the Elbe, more than two degrees; York is three degrees; and the farther accumulation is only prevented by that singular conformation which we shall find given by Ptolemy to the northern part of Britain. To the south, again, Axum is placed three degrees too far south; Cape Aromata (Guurdafui), nearly six degrees; and, as M. Gosselin will surely admit, from that point the errors continually become greater. Thus it appears, that as soon as Ptolemy quits the sphere of observation, his latitudes are calculated exactly as his longitudes, out of itineraries, and exhibit the same accumulation of errors.

136. *The manuscripts of Ptolemy* are clearly shown by M. Gosselin to have reached us in a very imperfect state. In collating with care the different editions, that learned writer has found a greater number of variations than in those of almost any other ancient writer. These variations were of course very likely to occur in copying cyphers where there was no connection of sense to check the copyist. The manuscripts and the maps appear to have been copied by different hands, holding no communication with each other; and accordingly these two parts of the same work do not, in many instances, correspond. Lastly, the work of Ptolemy appears, for several centuries, to have been carried about as a guide by mariners and travellers, who, wherever they found any feature which did not agree with their observations, altered the writing or the map accordingly. This process appears in the numerous variations of the Latin copies with regard to the western part of the Mediterranean, and of the Greek with regard to the eastern. The alterations thus made would often, and indeed, most generally, be improvements; but the great discrepancies which they introduced into the different copies, must have greatly bewildered the public.

137. *In delineating the geographical system of Ptolemy,* we can only consider the general outline, which is pretty much the same in all the editions. Ptolemy begins with rejecting the theory of his predecessors, from Homer to Strabo downwards, who represent the whole earth as enclosed by a circumambient ocean. Mercantile caravans, especially in the east of Asia, had now proceeded considerably beyond the line of coast which, according to the last school, had marked the eastern bounding ocean. They had passed that line without reaching the distant corresponding one by which the Pacific and Arctic seas were actually drawn around this vast continent. The eastern Atlantic, and the Northern Oceans were, therefore, effaced from the delineation of Asia, and an indefinite expanse of *terra incognita* (unknown land) was substituted as the boundary of the world. This proceeding must certainly be considered as more precise and philosophical than the gratuitous theoretical one for which it was substituted. Men, however, seldom know exactly where to stop: Ptolemy, having once formed the idea of a bounding terra incognita, extended it round nearly the entire circuit of the known world. All the reports of the circumnavigation of Africa were rejected; that continent was represented as stretching indefinitely south, and it was even carried round to join the east of Asia, and form the Erythrean or Indian sea into a vast basin. Thus the whole system and structure of these two continents underwent, in the hands of Ptolemy, a complete transmutation.

Subsect. 1. *Europe.* (*Fig.* 10.)

138. *In regard to all the remoter boundaries of Europe,* Ptolemy displays an advancement in knowledge, which M. Gosselin considers as truly wonderful, considering the short period which had elapsed since the days of Strabo. The facts which we have stated under the head of Roman geography show the vast additional mass of information derived from the conquests of Cæsar, and from the imperial surveys. This having been incorporated into the writings of Mela and Pliny, a century before the age of Ptolemy, would easily, through these and other channels, reach his knowledge. It is not surprising that the crude delineation of the exterior coasts of Europe under the Strabonic system should have been materially amended; that Spain should have now a southern, and Gaul a western coast; and that the Bay of Biscay should appear clearly under the appellations of the Cantabrian Ocean and the Aquitanian Sea. In regard to Britain, also, or, at least, England, a great reform had been effected. Its coast, after passing the promontory of Kent, bends inward toward the estuary

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References to the Map of the World according to Ptolemy.

EUROPA.
1. Carthago Nova
2. Massilia
3. Genua
4. Roma
5. Athenæ
6. Byzantium

Rivers.
a Rhenus
b Chesinus
c Tanais
d Rha
e Borysthenes

ASIA.
1. Ephesus
2. Sinope
3. Amisus
4. Issus
5. Elana
6. Zaaram
7. Musa
8. Gerra
9. Teredon
10. Babylon
11. Ninus
12. Dioscurias
13. Gagara
14. Susa
15. Persepolis
16. Bactra
17. Patala
18. Palibothra
19. Baracura
20. Besynga
21. Berabe
22. Tacola
23. Sabana
24. Cattigara
25. Thinæ
26. Aspithra
27. Tomara
28. Sinda
29. Daiona
30. Sera

Rivers.
a Euphrates
b Tigris
c Oxus
d Polytimetus
e Jaxartes
f Œchardes
g Bautisus
h Senus
i Ganges
j Indus

Taprobana Insula.
a Ganges

LIBYA VEL AFRICA.
1. Nigira
2. Gira
3. Carthago
4. Phycus
5. Cyrene
6. Alexandria
7. Heroopolis
8. Syene
9. Ptolemais
10. Meroe
11. Adulis

Rivers.
a Trachir
b Daratus
c Nigir
d Gir
e Nilus
f Astapus
g Astaboras.

of the Thames, called here Idumanus. Still more decided, on the opposite side, is the "*Sabrina estuarium*" (the estuary of the Severn), a very appropriate appellation for the Bristol Channel. The projection of Wales, and its entire outline, appears then drawn in a very unexceptionable manner. With regard to Ireland, Ptolemy has not been able wholly to shake off the erroneous impressions of the first Alexandrian school, according to which that country lay to the north of Britain. He makes it west, indeed, but at the same time greatly too far north, its southern coast being on a line with that of Lancashire, or, at least, with the north-western point of Wales. The consequence is, that the island of Mona (Man) is placed off the south-eastern point of Ireland, not far from Wexford. Having pointed out this great error, we must add, that the whole form and circuit of Ireland is given with a correctness which appears very surprising, when contrasted with so great a mistake as to its relative position. Again, the eastern coast of England proceeds correctly till it reaches the vicinity of York, when an aberration takes place of the most extraordinary nature. The rest of the English coast, with the whole of that of Scotland, instead of ranging from north to south, runs from west to east. The eastern coast becomes thus the southern, the western becomes the northern; and the coast of Germany appears opposite and parallel throughout its whole extent. The most northerly extremity of Britain is thus fixed at a point which Mr. Pinkerton supposed to be the Mull of Galloway, but which seems more probably to be some point near Port Patrick, which might be supposed the most westerly, for the west is here the north. It is part of this arrangement, that the Æbudæ (Hebrides) are placed in the Deucaledonian Ocean, which washes the western coast of Scotland, made here the northern; and the Orkneys are in the same ocean; for, instead of following the line of the main land, they are placed, as, indeed, they ought to be, north, becoming thus at right angles to that line.

138. *To account for this strangely distorted form of northern Britain*, M. Gosselin has, formed a very ingenious theory. The southern extremity of the island being in lat. 52° N., and Thule, the remotest extremity, in 63°, Ptolemy could not, within these limits, find space for that vast expanse of coast, which the itineraries represented to him as belonging to Britain. To make out this space he had no alternative but to give to the northern part the form it actually bears in his maps, and under which the latitude is augmented only by the breadth of Scotland, a much smaller dimension than the length. The question, however, is, by what circumstance Ptolemy was checked in his latitude of Thule, and why he should not have driven it out to the north as far as his itineraries seemed to require. We at one time thought it possible that this grand boundary point might have been fixed by some rude observation which was not applied to the intermediate points. But it appears very improbable, that any expedition which should have made an observation of latitude at Shetland, should not have done the same in the southern and much more accessible parts of Britain. I rather incline to adopt the following solution. We have seen, that, in the ideas of the Roman navigators, Thule was in a great measure separated from Britain, and attached to the east of Germany, or rather to Scandinavia; whether its existence was made known to them by Scandinavian navigators, or whether a part of the coast of Norway was actually fixed upon by them instead of Shetland for this most northern limit of the earth. This idea, which attached Thule to Scandinavia, appears to have been combined in Ptolemy's mind with that of Pytheas, who made it the remotest extremity of Britain. Such a combination could be accomplished only by stretching Scotland across the German ocean in that strange direction.

140. *The details of Scotland*, if we pass over this radical error, are given in a manner much more tolerable than could have been expected in a country unsubdued by the Romans, and with their imperfect navigation. Thule, in Ptolemy, is not a cluster of islands, like those of Shetland, but one large island, upwards of a hundred miles in length: this circumstance more and more strengthens the suspicion that Norway, to a considerable extent, entered into the idea attached to that celebrated name.

141. *Under the heads of great Germany* and of Sarmatia, Ptolemy has given all the knowledge he had acquired of the north and east of Europe, which was not inconsiderable. The line of the German coast is very well formed, and the Amasius or Ems, the Visurgis or Weser, the Albis or Elbe, the Vedra or Oder, and the Visaula or Vistula, appear in regular succession, and almost under their modern names. Jutland appears as the Cimbric Chersonese, and the southern coast of the Baltic is carried on very correctly; but, in regard to Scandinavia, he fails entirely. Evidently ignorant that the Baltic is an enclosed gulf, he calls it "the Sarmatic Ocean," and places in it four islands. Three of these, close to the Cimbric Chersonese, are clearly recognised in the islands of Denmark; but the other, of greater extent, farther to the east and opposite to the mouth of the Vistula, is probably part of Sweden, and perhaps Gothland. It is clear, that navigators had not then rounded Jutland, and passed through the Skagerrack or Cattegat, otherwise they must have noticed these straits, and the great extent of continent opposite the Cimbric Chersonese. The Alocian islands, however, situated off the northern extremity of Jutland, must have been suggested by some part of the Norwegian coast, as there are no islands in that quarter. The more northern part of the Norwegian coast was probably, as already observed, identified with Thule.

142. *The coast of Sarmatia* is described by Ptolemy on passing the Vistula, and he traces with accuracy the great bend which it takes northward to the gulf of Riga. Four rivers are given, which cannot be recognised by their names, but which M. Gosselin conceives to be the Pregel, the Niemen, the Windau, and the Dwina. Beyond this he places "the end of the sea of the known land," and immediately commences that boundary of *terra incognita* which he carries around the whole of Asia.

143. *In regard to the south of European Russia*, Ptolemy recovers much of the knowledge which had been wholly or partially lost under Strabo. He appears indeed to have gone back in a great measure to Herodotus, whom he imitates in giving most unreasonable extension to the Palus Mæotis. There is little room for complaint as to the Tanais, the Borysthenes, and the other great rivers which fall into the Euxine. In this remote and

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wild extremity of Europe, however, he has found a place for certain poetical and historical fictions, which experience had banished from better known quarters, but which could not find a place here with any propriety; — the grove of Diana, the race-course of Achilles, the altars of Cæsar and of Alexander; neither of whom ever carried their arms into this part of the ancient Scythia.

144. *In tracing the Mediterranean*, Ptolemy improves considerably upon the labours of his predecessors. Sicily, in particular, is much better constructed, and the straits of Messina are placed nearly in their true latitude. He still, however, merits deep reproach for the utterly barbarous form, as M. Gosselin justly terms it, which he has given to Italy, that ruling country, which must of all others have appeared to him the most interesting, and for which he must have possessed the most ample materials. Yet Italy, with the exception of a slight bend at its extremity, is oriented almost entirely east and west, having the Adriatic for its northern, and the Tyrrhenian for its southern boundary. I cannot find any account of an error so strange, except by supposing that Ptolemy must have been led into it by one of those itinerary maps which, like the Peutingerian, made every thing subservient to the direction of the Roman high road, and drew it in a straight line from one extremity to the other. It is easy to suppose that he might not comprehend the very odd principle upon which this map was constructed, and might conceive that being made with regard to Italy, a country so near, and so completely within reach, it might be implicitly relied on. This suspicion is strengthened when we find, after passing Dyrrachium, the port of embarkation for Greece, this being the direction of the great road of the empire, that the coast of Italy suddenly resumes its just form, and the peninsula of Campania makes even too abrupt a bend to the south.

Subject. 2. *Asia.*

145. *In regard of Asia also,* important discoveries had been made since the time of Eratosthenes. Immense territories, included by that geographer within the domain of the ocean, were known to Ptolemy as occupied by the wandering hordes of Scythia, or by the peaceful and industrious nation of the Seres or Chinese. This advantage might be partly due to the military itineraries, especially that of Trajan in his victorious expedition into Parthia. The grand source, however, evidently was that bold spirit of commercial enterprise, to which an impulse was given by the vast consumption of Rome, when the wealth of the world centred in that mighty and voluptuous capital. The East was the region mainly resorted to for the supply of the boundless wants which arose in that artificial and luxurious state of society. The merchants soon learned to trace routes, both by land and sea, much longer and more adventurous than had been achieved by their predecessors at any former period. Under the narrative entitled "the Periplus of the Erythrean sea," we have followed the maritime career by which the merchants of Alexandria were led to the coast of Malabar. Whether, in the time of Ptolemy, the Greek navigators had actually proceeded farther, it may be difficult to say with certainty. He has certainly, however, obtained a considerable accession of knowledge with regard to this eastern extremity of the known world. He goes far beyond the mouth of the Ganges, at which we have observed the termination of all precise knowledge in the author of the Periplus. After delineating a coast, with a succession of ports which it is difficult to identify, he comes to a grand feature, which he calls "the Golden Chersonese," formed by three great estuaries discharging their waters into the sea. These phenomena are actually presented by the mouths of the Irrawaddy at the southern extremity of Pegu. This is followed by an extensive feature, the *Magnus Sinus*, or Great Bay, penetrating far inland, and receiving some considerable rivers. The gulf of Malacca is not nearly so large or so deep as this *Magnus Sinus;* but its mouth being very broad, and its shores very winding, it is not very improbable that, in the eyes of ancient and unskilful navigators, it might assume this exaggerated form and dimension. Beyond the *Magnus Sinus* the coast, in continuity with its eastern shore, stretches due south to the farthest known extremity of the world. On this coast the leading features are Thinæ, a great interior metropolis, and Cattigara, its sea-port at the mouth of the river Cotiaris. This coast, it should seem, can only be that of Malacca and the Isthmus of Kraw, which runs exactly in the direction here assigned by Ptolemy. Gosselin identifies Thinæ with Tenasserim; but there seems more reason for acceding to Dr. Vincent's opinion that it is Siam. This exposition, which is supported by Vossius, Gosselin, and Vincent, appears to me undoubtedly preferable to the more general one supported by the authority of d'Anville, which makes the coast of the Sinæ extend along the gulf of Siam and the sea of China. Such a line would involve Ptolemy in the strange and incredible blunder of making a coast face the east which really faces the west. Sumatra, indeed, is so land-locked that it might easily enough have been taken for a part of the continent, and have been called the Golden Chersonese. But it seems inconceivable how the straits of Malacca and of Sunda, so important and so critical to navigators, and by one or the other of which they must have entered the sea of China, could have been overlooked. On this supposition, indeed, the coasts are swelled very far beyond their due dimensions; but we have often remarked how enormously this is apt to be the case, in regard to routes, and above all coasts which are traversed for the first time, and by inexperienced navigators. Ptolemy, as we have seen, after retrenching the eastern itineraries of Marinus one half, left them still greatly too large; and he does not mention any similar retrenchment in regard to the coasts. If, on the other hand, those of Ptolemy extend to the Chinese sea and to China, then, contrary to every ancient example, he must have immensely underrated the extent of these imperfectly discovered tracts; an error which would be contrary to all precedent: — this, however, does not imply that there may not, within this line of positive knowledge, have been a confused blending of features that lay in reality beyond.

146. *The increased knowledge of Ptolemy respecting the eastern part of the Asiatic continent* was chiefly derived, as we have already remarked, from the great caravan which proceeded from Byzantium, having the country of Serica for its ultimate destination. This caravan, having traversed Asia Minor, crossed the Euphrates at Hierapolis, and journeyed through Media, by way of Ecbatana (Hamadan), to Hecatompylos (Daumghaun), the capital of Parthia. It then advanced north to Hyrcania (Horkan or Jorjan), thence south, to take in the fine province of Aria (Herat). It now again turned north, to include the capital of Margiana (Meru Rood), thence due east to Bactria (Balk), which then formed, as at present, the main centre of the commerce of interior Asia. The caravan now quitted the easy and level tract through which its route had hitherto led, and began to ascend that vast and rugged mountain world which fills the eastern interior of Asia. After accomplishing the steep ascent of the *Montes Comedorum*, which seems to be the chain of the Beloor, it reached a station called the "Stone Tower," which there is nothing to identify, except that the direction towards it is north-east, and it may be either Ladauk or Yarcund, the great modern emporium of this part of the East. From the Stone Tower to the frontier of Serica, Marinus, on the authority of the merchants, reported a journey of seven months, which Ptolemy considers as monstrous and incredible, though he admits that the road is exposed to the greatest hardships and difficulties. The question, what is the country described by Ptolemy and his contemporaries as Serica, is the most curious in the ancient geography of Asia. The earliest modern opinion identified Serica with northern China, while the country of the Sinæ composed the southern part. D'Anville, however, who transported the Sinæ into the coast of Cambodia, carried westward also the Seres into the country of the Igours, or Eygurs, including in their territory only the small projecting portion of the Chinese province of Shensee. Mr. Pinkerton places it still farther west, in Little Bucharia. M. Gosselin, followed generally by the present French school, contends that Serinagur, in the north of Hindostan, is the real Sera metropolis of Ptolemy. I can see no reason for altering the grounds on which I concluded formerly, and endeavoured to prove, Serica to be simply China. (See *Edinburgh Phil. Trans.* vol. viii. On the Ancient Geography of Central and Eastern Asia.) All the natives of India whom Ptolemy saw assured him that the Seres lay beyond the Sinæ, and China is beyond Siam. The Sinæ (Siam) had to the south Scythia beyond Imaus, which country had Serica on the east. Serica is described as traversed by two great rivers, flowing westward, as the Hoang-ho and Yang-tse-kiang actually do. Serica, according to Ptolemy's graduation, was fourteen hundred miles from north to south, and eleven hundred from east to west, a very close approach to the dimensions of modern China. Serica, then, in form, extent, geographical features, and relations to the neighbouring countries, exactly corresponds to the modern China. Not less conformable is the report given of the national character. The Seres are represented as frugal, quiet, sedate, and tranquil beyond all other nations; as of all others the most unwarlike, and the most averse to the use of arms; as shunning, with the most studious care, the society and intercourse of strangers, and scarcely ever allowing them to enter their territory; as carrying on trade at a fixed frontier station only, and under the strictest precautions; as selling their own commodities without receiving the commodities of other nations in return. Silk was the staple of Serica, and it is of China. With regard to M. Gosselin's Indian theory, it must now, we suppose, be on all hands given up, since Thibet and Northern India, instead of being connected by the valley of the Ganges, have been found separated by the unbroken continuity of the loftiest ridge of the Himalleh, which can be penetrated only by a few most perilous and tremendous passes.

147. *Respecting Indostan, and its limitary regions*, the details given by Ptolemy include a great mass of sound information. In some important particulars, indeed, his map is decidedly superior to those possessed by the moderns, previous to the late important accessions to their knowledge. He describes the Ganges rising, as it really does, on the southern side of the Himmaleh, and in the outer limits of Indostan, while, prior to the mission sent by Col. Colebrooke, in 1808, its origin, and a considerable part of its early course, were supposed to be in Little Thibet. The mission to Caubul first found that all the great western rivers emptied themselves by one channel into the Indus, as they had been represented by Ptolemy, while modern maps had exhibited them entering by two great separate channels. The same mission discovered two very considerable rivers, western tributaries of the Indus, the Kaumeh and the Suaut, of which no trace had yet appeared in modern delineation; but, on turning to Ptolemy, we find them accurately traced under the names of the Coe and the Suaste. Thus we find him delineating with success geographical features in the most secret recesses of Asia, which remained unknown till lately to the best-informed of modern geographers.

148. *The site of Palibothra* is one main point in which, after much discussion, geographers have in vain endeavoured to form an unanimous opinion. It was found by Megasthenes the proud capital of the Gangetic kingdom, and the greatest city of all India. Yet modern geographers have not been able to agree within several hundred miles upon this marked and celebrated position. Arrian states that it is situated at the junction of the Ganges with the Erranaboas, the third river of India as to magnitude, being surpassed only by the Ganges and the Indus. This scale of magnitude suggests the Jumna, and at the confluence of the Jumna

with the Ganges actually stands Allahabad, a city of great magnitude and high antiquity, which is even revered by the Hindoos as the "king of holy cities." Upon this general idea d'Anville and, after him, Robertson, have considered Allahabad as occupying the site of Palibothra. On examination, however, this is found in contradiction to the most positive statements of Pliny and Ptolemy. Pliny, in express words, states Palibothra to be 425 miles *distant from* the junction of these two rivers. Ptolemy makes the distance somewhat greater still. In considering Allahabad, then, as Palibothra, we abandon altogether the authority of these two great geographers, a step in which we should be very little justified, either by a reference to their general character, or by our knowledge of their remarkable accuracy with regard to the other features of central and northern India. Their account of Palibothra, too, is given upon the authority of Greek ambassadors, who actually visited that capital. The river next in magnitude is the Gogra or Sarayu. But the junction of this river with the Ganges is not nearly so far from that of the Jumna as the above statements would require. Besides, Ptolemy actually gives us the Sarabus (Sarayu), with its junction in the due relative position to that of the Jumna, but Palibothra much farther down. Major Rennell has made choice of Patna, and considers the junction of the Soane, at present thirty miles above that city, as having taken place formerly by a different and nearer channel. This theory stands on much higher ground than the other; yet it by no means closely corresponds with the ancient data. Pliny mentions both the Sonus and the Erranaboas as quite distinct tributaries of the Ganges, and he places the city considerably farther down than Patna is. Ptolemy also, in giving the junction of the Soa and the Ganges, places Palibothra more than two hundred miles below. Major Rennell's theory, then, brings us considerably short of the point at which this great capital ought to be situated.

149. *Another point which appeared to me to unite the name and position of Palibothra* has been mentioned (*Discoveries in Asia*, v. i. p. 491.), and, without being inclined very confidently to dogmatise, it still appears to me to combine better the different requisites than any other yet named. The name of *Boglipoor* may be considered identical with Paliboor; for, in transferring Indian terms into our characters, P and B, O and A, are always used promiscuously; and the termination attached by the Romans is evidently according to their system of harmonising foreign sounds with their own. A name is of little consequence when it is not accompanied with a corresponding position; but here this appears to coincide nearly, though not indeed quite exactly, with Pliny. He makes Palibothra 430 miles from the junction of the Ganges and Jumna, and 600 from Gange, a capital situated at the mouth of the former. Boglipoor, however, instead of being only two-fifths of the distance between these two points, is about exactly midway. The space lower down the river, being less known, might more readily have been exaggerated, and Gange being on the most easterly branch of the Ganges, might occupy nearly the position of Islamabad. The place assigned by Ptolemy is exactly midway, and therefore coincides strictly with the position of Boglipoor. Near it the Ganges receives the Coosy, or river of Nepaul, certainly not the third in India as to magnitude; but the ambassadors might not have very precise means of ascertaining the relative dimensions of the Indian rivers. There is, therefore, a great weight of evidence, as to name and position, in favour of the theory here proposed. I must confess, however, that I find no description of any monuments, such as might be expected to mark the ancient site of so splendid a capital. Indian structures, however, are not usually composed of materials sufficiently solid to resist the ravages of sixteen centuries. If the local data could at all have allowed us to fix upon the thrice ancient and holy Benares, its character would have given it at once a pre-eminence; but this is impossible. Rajemahl, suggested, is not very distant from Boglipoor; but besides losing the coincidence of name, it agrees less than the other position with the statements both of Ptolemy and Pliny.

Subsect. 3. *Africa.*

150. *In the delineation of Africa*, Ptolemy, himself an African, had obvious advantages. Accordingly his delineations of several of the most interior features have, as in the case of southern India, proved to be more accurate than those given by modern geographers down to a very recent period. The course of the Nile, up to its highest probable source in the central range of the mountains of the Moon, has been justified by recent enquiry, in opposition to the Portuguese missionaries, who drew it from the mountains and lakes of Abyssinia. This original fountain-head has not yet been traced by the daring foot of the modern traveller; but the description given to Brown, of its descent from the great mountain chain south of Darfoor, corresponds very exactly with Ptolemy, making allowance only for his erroneous graduation. With equal fidelity, he delineates the Astabóras, or Atbara, the Astapus, or river of Abyssinia, successively falling into it from the east. He has, indeed, made Meroe an island, enclosed by branches of the Nile; but modern discovery has shown it to be so very nearly insular, in consequence of the great bend taken to the south, that the error cannot be considered excessive.

151. *In regard to central Africa*, Ptolemy had not equal advantages, on account of the distance, because no track had yet been formed across the vast ocean of desert which intervened. It appears to me a matter of some difficulty to ascertain the precise extent of his knowledge as to this region. M. Gosselin has not hesitated to assert, that he knew nothing of Africa south of the desert, and that all the features which he has assigned to interior Libya, and the course of the Niger, belong in fact to Fezzan and that region behind the Atlas which we call the B'led el-Jereede, or Land of Dates. This opinion certainly receives much countenance when we find the Garamantes and the Garamantica vallis placed on the same line with the Niger, the lake of Nigritia, and the other leading central features. I still, however, think it probable that Ptolemy might, by way of the Upper Nile, have obtained intelligence respecting a portion at least of these vast regions, the approach to which by way of Dongola and Sennaar was not obstructed by any very insurmountable barriers. Besides the agreement of several names, as Gana, Tagana, Panagra, the general picture of this region as one of lakes, rivers, and mountains, agrees much better with the interior than with the arid tract between Atlas and the desert. My suspicion therefore is, that Ptolemy, unacquainted with any route across the great desert, was not aware of the wide interval between the features to the north and those to the south of it, and linked them together in his description as contiguous and connected. As his knowledge of central Africa was thus obtained only in a westerly course from the Nile, it was not likely to extend beyond the eastern part of the vast breadth between the Nile and the ocean. The Mons Mandrus, his most western feature, with a great river flowing from it into the lake of Nigritia, may perhaps be recognised in the mighty range of the mountains of Mandara and the river Shary flowing from them into the lake or sea of the Tchad. About this quarter I should conceive the knowledge which reached Ptolemy by inland channels probably terminated; and the Atlantic coast, known to exist by the voyages of Hanno, Scylax, and Polybius, was united to these objects by a merely hypothetical construction. In regard to the course of the Niger, it is difficult to say very precisely what were Ptolemy's views, and we only perceive that he made it an inland river, neither flowing into the Atlantic, nor by the Nile into the Mediterranean.

152. *Respecting this great central region of Africa*, however, Ptolemy had obtained some notices from which he might have estimated its magnitude. Two Roman expeditions had been reported to him, one made by Septimius Flaccus from Garama, and the other by Julius Maternus from the coast of Cyrene. The former in three, and the latter in four months, had penetrated into the country of the Ethiopians. Ptolemy expresses himself very sceptical as to the possible length of this march; nevertheless he lays down the country of

Agisymba as that farthest region of interior Ethiopia into which these commanders had penetrated. Agisymba we suspect to be Agadez; at least as the march comprehends no rivers or lakes, it cannot well have reached the line of the Niger. Nevertheless Ptolemy places it considerably to the south of Nigritia; which is doubtless in favour of the limited extent which M. Gosselin allows to his information. But we may observe that, supposing Ptolemy to have formed, in the manner above supposed, his idea of the plain of the Niger as little removed to the south of Fezzan, he must, in protracting marches of three or four months, necessarily have carried the line much farther to the south.

153. *In regard to the western coasts of Africa*, Ptolemy's delineation is not very luminous, but appears on the whole to favour M. Gosselin's views respecting the extent of Hanno's voyage and of the knowledge of the ancients. He does indeed present two rivers, the Daradus and the Stachir, flowing on a line with the plain of Nigritia. But I have no idea that Ptolemy could have any precise information reaching across the entire breadth of the continent, and conceive, as already hinted, that the coast and the interior were here hypothetically united. As Ptolemy placed the plain of the Niger much too far north, he might make these rivers on a line with it, without identifying them with the Senegal and Gambia. His position of the Fortunate Islands (Canaries) opposite to their mouths, and south of Cerne, is not at all in favour of the opinion which carries these last features deep into central Africa.

154. *On the eastern coast of Africa*, Ptolemy adds to the line described by the author of the Periplus a coast extending from the promontory of Rhaptum to that of Prasum. At this point the coast, hitherto running south-west, changes to south-east. No details are given of this coast, which is described as rough and difficult to navigate. We can neither, with M. Gosselin, limit Prasam to Brava, nor with Vincent carry it so far as Mosambique. There is no part of the coast to which the direction assigned to it belongs, except from Quiloa to Cape Delgado; and if Rhaptum be at or near Quiloa, the latter, allowing for some exaggeration of distance on a coast so little known, will be the promontory Prasum. Five degrees east and three degrees south of this promontory is the island of Menuthias. The Menouthesias of the Periplus appeared pretty plainly to be one of the smaller islands near the African coast, and probably Zanzibar; but none of these could be the Menuthias of Ptolemy, which is manifestly Madagascar.

BOOK II.

GEOGRAPHY OF THE MIDDLE AGES.

155. *Under the "geography of the middle ages"* may be comprehended that of the Arabian or Saracen nations, during the period when science was successfully cultivated among them; and the geographical ideas prevalent in Europe, during that long darkness which preceded the revival of learning, and the commencement of maritime discovery.

Chap. I.

ARABIAN GEOGRAPHY.

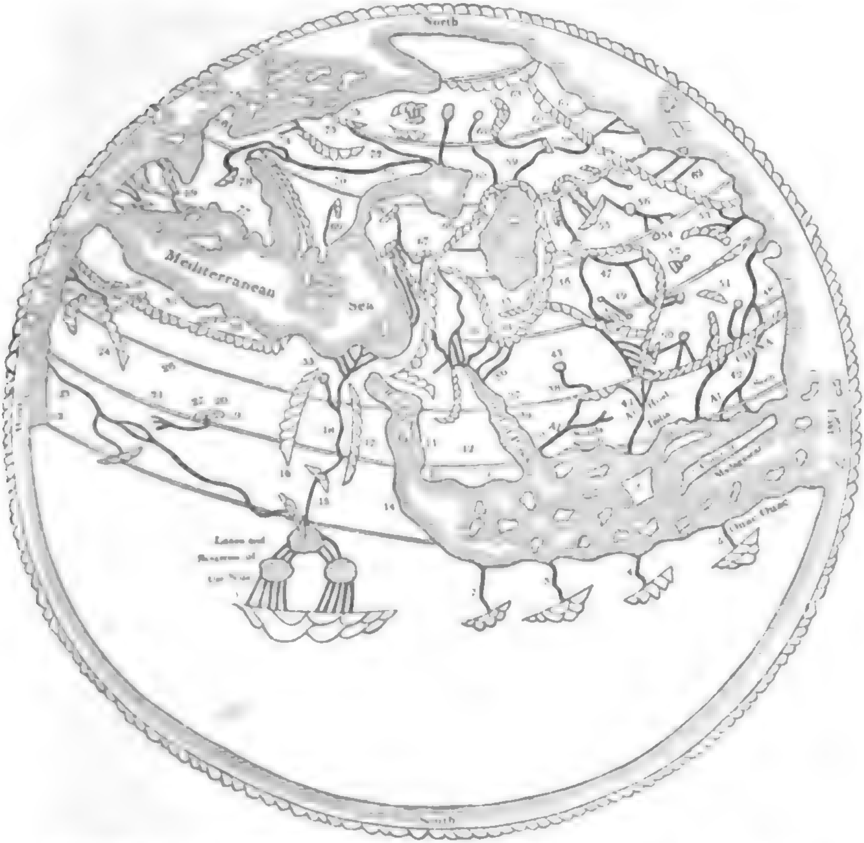
156. *The Arabs* were for some time the most learned of nations. As the mantle of science dropped from the sages of Greece and Rome, it fell upon this wild and strange race, sprung from the bosom of bigotry and barbarism. The fanatic hordes, who, under the guidance of their false prophet, rushed from the heart of Arabia, at first owned no law but the Koran and the sword. When they had conquered half the world, however, and founded splendid capitals on the banks of the Euphrates and the Guadalquivir, there arose a race of humane and polished princes, who studiously sought to relumine the almost extinguished lamp of science. Almamoun above all, in the ninth century, may rank among the most distinguished of its patrons who have ever filled a throne.

157. *Geography, among the Arabian states*, appears to have been studied with greater ardour than at any other place or country, except at Alexandria. It employed the pens of several of their most eminent writers; Masudi and Ebn Haukal in the ninth and tenth centuries; Abulfeda and Edrisi in the twelfth and thirteenth; to whom may be added the respectable names of Ibn-al-Vardi, Bakoui, and Scheabeddin. Although none of their works have become at all familiar to the European reader, yet learned men have translated portions, which not only convey a general idea of their system, but have enabled geographers to delineate some districts of the globe which otherwise would have long remained unknown.

Sect. I. *General System. Fig.* 11.

158. *The mathematical sciences, and above all astronomy*, were among the most favourite pursuits of the court of Bagdad; and the ample resources which they afforded were applied with considerable care to the improvement of geography. In 833, the caliph Almamom endeavoured, by observations of latitude made at Kufa, and at a point in the desert of Palmyra, to measure the circumference of the globe. In all the countries subject to the Mahomedan arms, numerous observations are recorded which, though not always rigorously correct, appear at least to have been real, and not merely calculated out of itineraries, like those of the Alexandrian geographers. The tables of Abulfeda, of Ulug Beg, and of Nazir Eddin,

Fig. 11. Map of the World taken from an Arabian Manuscript of Al Edrisi, in the Bodleian Library.



1. Mountains of the Moon and Sources of the Nile
2. Berbera (kingdom of Adel)
3. Al Zang (Zanguebar)
4. Sofala (Sofala)
5. Al-Wak Wak
6. Serendeeb (Ceylon)
7. Al Comor (Madagascar)
8. Al-Dsai
9. Al-Yemen (Arabia Felix)
10. Tohama
11. Al Hejaz (Arabia Deserta)
12. Al-Shajar (Seger)
13. Al Imama (Yamama)
14. Al Habesh (Ethiopia, Abyssinia)
15. Al Nuba (Nubia)
16. Al Tajdeen
17. Al-Bejah
18. Al-Saeed (Upper Egypt, Said)
19. Al-ouhat-whas (Oasis)
20. Gowas
21. Kanun
22. Belad Al-lemlum
23. Belad Mufrada
24. Belad Nemaneh
25. Al-Mulita a Sinhajeh
26. Curan (Karosan, Kurene)
27. Negroland
28. Al-Sous Nera
29. Al-Mughrub Al Amkeen (Mogreb the West)
30. Afreekea (Africa)
31. Belad el Gerid (Date Country)
32. Seharee, Bereneek (or Desert of Berenike)
33. Missur (Egypt)
34. Al-Sham (Syria)
35. Al-Irak (Persian empire)
36. Fars (Persia Proper)
37. Kirman (Carmania)
38. Alfazeh
39 Mughan
40. Al-Sunda (Scindi)
41. Al-Hind (India)
42. Al-Seen (China)
43. Khorasan
44. Al Beharus
45. Azerbijan (Media)
46. Khuwarizm
47. Al-Shash
48. Khirkeez
49. Al-Sefur
50. Al-Tibut (Tibet)
51. Al-Nufuz Iza
52. Kurjeen (Georgia)
53. Keyimak
54. Kuibera
55. Izzea
56. Askush
57. Turkesh
58. Iturab
59. Bulghar (Bulgaria)
60. Al Mutenah
61. Yajooj (Gog)
62. Majooj (Magog)
63. Asiatic (Russia)
64. Bejerrut
65. Al-Alman
66. Al-Khuzrus Khozr (Caspian Sea)
67. Turkea (Turkey)
68. Albeian (Albania)
69. Makeduneeah (Macedonia)
70. Baltic Sea
71. Jenuisea (probably Sweden)
72. Germania (Germany)
73. Denmark
74. Afranseeah (France)
75. Felowiah (Norway)
76. Burtea or Burtenea (Britain)
77. Corsica, Sardinia, &c.
78. Italy
79. Ashkerineah (part of Spain, Q. Andalusia).

edited by Graevius, and republished by Hudson, afford materials that are still useful for the construction of the maps of interior Asia.

159. *Many countries, hitherto unknown and barbarous*, were explored, and in some degree civilised, by the Moslem arms. Those on the Oxus and the Jaxartes, the Asiatic Scythia of the ancients, and occupied then only by Nomadic hordes, were covered by them with great and flourishing cities. Among these, Samarcand became afterwards the capital of an empire that extended over half of Asia. At the opposite extremity, Mauritania, which had been regarded by the Romans as almost beyond the limits of social existence, became a flourishing kingdom, and possessed in Fez an eminent school of learning. Even beyond the limits of the Mahomedan world, missions were sent to explore the remotest limits of the east and

west. One interesting result of these has been communicated in the relation of two Mahomedan travellers, Wahad and Abuzaid, who in the ninth century penetrated into China; and gave a description of that country; which, though only recently known to us by the translation of Renaudot, must have been the earliest ever communicated to the nations of the west. From Lisbon, also, the brothers Almagrurim sailed, endeavouring to anticipate the discoveries of Columbus, by exploring unknown countries beyond "the sea of darkness." For ten or eleven days they steered westward; but seeing a storm approaching, the light faint, and the sea tempestuous, they dreaded having come to the dark boundaries of the earth. They turned therefore south, sailed twelve days in that direction, and came to an island, which they called Ganam, or the island of birds; but the flesh of these birds was too bitter to be eaten. They sailed on twelve days farther, and came to another island, the king of which assured them that their pursuit was vain: that his father had sent an expedition for the same purpose; but that, after a month's sail, the light had wholly failed, and they had been obliged to return. The adventurers, therefore, made their way back to the coast of Africa, which they reached in three days. The bearings stated seem to point out Madeira and the Canaries as the two islands visited in this expedition.

160. *In regard to the general outline of the earth,* the Arabs seem to have closely adhered to ancient theories. They revived the early impression of an ocean, which, like a zone, encompassed the whole earth. This, according to a natural feeling, was characterised as the "Sea of Darkness," an appellation most usually given to the Atlantic; but the northern sea of Europe and Asia, inspiring still more mysterious and gloomy ideas, is called the "Sea of pitchy Darkness." Edrisi has even imaged the land as floating in the sea, and only part appearing above, like an egg in a basin of water. At the same time he divides it into seven seas, fancifully appropriated to the seven climates into which the earth was divided. According to these climates, he describes the earth beginning at the western and proceeding to the eastern extremity; an ill-judged arrangement, which, by a mechanical section, separates portions of territory the most intimately connected. The knowledge of the Arabs was subjected to another and a voluntary limitation. They studiously desisted from all enquiry respecting those blinded nations, whose minds had never been illumined by the light of the Koran. Ibn Haukal even makes it a subject of glory, that he had found nothing worthy of remark among nations who could not be viewed without horror by men who had any innate principles of virtue, wisdom, or religion. These views of the subject greatly restricted their means of knowledge in respect to Europe, and rendered it of little value, unless with regard to those two continents, which their arms had rendered to a great extent Mahomedan.

Sect. II. *Asia.*

161. *The Asia of the Arabs* comprised a wider range than had belonged to that continent under any former system. China is distinctly marked, partly under the appellation of Seen, and partly under that of Cathay; the former term appearing to comprehend India beyond the Ganges. Lamery, productive in camphor, gold, ivory, and dying-woods, appears by these products to be Sumatra, and mention is even made of Al Djavah. The countries on the Oxus and Jaxartes having become the seat of an extended Moslem empire, of which Samarcand was the capital, Tartary both eastern and western was, for the first time, delineated with tolerable accuracy; many of the leading positions, in this hitherto inaccessible part of the continent, were even fixed by astronomical observation; and some positive though faint and indistinct notice appears to have been received respecting the people situated along the shores of the Northern Ocean. Unfortunately the main objects of curiosity and enquiry were Gog and Magog. The authentic application of these names has been observed under the Hebrew system as belonging to a devastating race from the shores of the Euxine and Caspian. Oriental fancy had transformed them into two enormous giants, who had erected an impregnable castle on the borders of Scythia. The efforts made by the court of Bagdad in pursuit of this chimera were very extraordinary. The first expedition was undertaken with the hope of finding it somewhere on the shores of the Caspian; but as their conquests soon embraced the whole of that region, without the slightest trace of this tremendous castle, the more southern country of Bokhara was the next object of search. When that also had been surveyed in vain, the court was involved in much perplexity, and scarcely knew to what ulterior region their view was to be directed. At length one of the caliphs despatched a mission, with strict injunctions on no account to return without having discovered the castle of Gog. The envoys, according to Edrisi's report, proceeded first along the shores of the Caspian, then through a vast extent of desert, probably the country of the Kirghises, when they arrived at a stupendous range of mountains, which must have been the Altai. Here they did actually find or pretend to find something which they concluded to be the castle of Gog and Magog. Perhaps they reached some of those ancient monuments which have been found along this range, and gladly embraced this pretext to rid themselves of so troublesome a commission. The picture they drew of it was certainly very highly coloured, according to Oriental taste. The walls were of iron cemented with brass, and a gate fifty cubits high was secured by bolts and bars of enormous magnitude. The minds of the Arabs were thus set at

Google

rest, and in all the future delineations of Asia this mighty castle was seen towering at its farthest extremity.

Sect. III. *Africa.*

162. *In regard to Africa, the wide-extended settlements of the Arabs* afforded them new sources of information. The Mediterranean coast, indeed, as far as Numidia, had been fully explored by the ancients, and had even formed a more intimate part of their political system than it has done of that of the moderns. By the Arabs, however, who had established here a succession of kingdoms, it was described in greater detail than ever; and as the most western of these kingdoms was the flourishing one of Morocco, this region, comprising the nearly unknown tracts of ancient Mauritania, formed an almost entirely new acquisition to knowledge. But their grandest achievement consisted in forming a road across the Great Desert, and in colonising a considerable part of the central regions of Africa. They here founded a series of powerful kingdoms: Ghana, the modern Kano; Tocrur, which we conceive to be Sackatoo; Kuku and Kauga, which recent travellers have found in and near the modern region called Bornou. They described those countries as situated on the Nile of the Negroes, which, contrary to ancient opinions, they represented as rising indeed from the same fountain with the Nile; but as flowing westward across all Africa, and falling into the Atlantic ocean or sea of darkness. At its mouth they placed the island of Ulil, whence salt was conveyed to all the Negro territories, which were entirely destitute of that necessary of life. This view of the subject, though erroneous, was naturally suggested by the course of the rivers within the region with which they were alone intimately acquainted; but we reserve this discussion for a separate chapter, when we propose to give a succinct view of the successive theories respecting this great African river. We shall at present only observe, that, as Tocrur is described to be only eighteen days' journey from the ocean, it is plain that the knowledge of the Arabs did not extend to Tombuctoo; that they knew nothing of the Senegal or Gambia, or the countries upon these rivers; and that the ocean into which they represented the Nile of the Negroes as falling was either a hypothetical feature altogether, or was at least hypothetically connected with all that they knew of the eastern tracts of interior Africa.

Chap. II.

EUROPEAN GEOGRAPHY DURING THE DARK AGES.

163. *Even the imperfect knowledge possessed by the ancient geographers* became involved in the general progress of that intellectual darkness, which ensued on the decline of the Roman empire. Europe, overwhelmed with a deluge of barbarism, no longer cultivated art or science; and the rude states into which it was divided had only a vague idea of each other's situation. The advance of this darkness may be observed in an anonymous work, published at Ravenna in the eighth century. The writer presents only confused fragments of the information contained in Ptolemy and Pliny. The coast of India, indeed, the mercantile route to which appears to have been kept open, is still delineated with some degree of correctness. But the whole interior of Asia, from China to Bactriana, is included under the name of "Seric India:" the Caspian re-appears as a gulf of the Northern Ocean; in short, all these distant regions are viewed, in the manner natural to ignorance, as a dim and indefinite expanse, the features of which were all confusedly blended with each other.

164. *The monasteries during the dark ages* afforded an asylum for all that remained of ancient knowledge; in them the manuscripts of many of the classic writers were still preserved, though little consulted. The reading aloud of histories, and descriptions of neighbouring, and even of distant countries, formed a mode of beguiling the tedious hours; but these being recorded under the title of "Wonders of the World," and crowded with the most extravagant fables, served rather for the amusement of the fire-side, than for any real instruction.

165. *The missions undertaken for the conversion of the northern pagans* were the principal channel by which any geographical knowledge was conveyed. The missionaries did not, at this time, attempt to pass the limits of Europe; but directed their efforts towards the conversion of the Slavonic tribes, who occupied Poland, Prussia and Livonia. *Other* appears even to have penetrated through the interior of Russia to the White Sea; he undertook also an extensive voyage along the coasts of Norway. The Anglo-Saxon Wilfrid, named by the pope the apostle of the Germans, appears to have been the person who transmitted the most full details relative to the Slavonic tribes. St. Otto, bishop of Bamberg, and Anscaire, a monk of Corbie, penetrated to the kingdoms of Sweden and Denmark; but the details of their mission have not been preserved. Although, however, the monks thus did something to illustrate the geography of Europe, there is sufficient evidence that they laboured,

in many instances, under the grossest ignorance; some of them knew not even the capital of their own country, or the cities nearest to their own.

166. *The great monarchs* made some efforts to rescue the age from this state of profound ignorance. The two illustrious monarchs, Charlemagne and Alfred, distinguished themselves by their endeavours to promote geography: the former constructed a silver table of large dimensions, on which was delineated the whole world so far as known to him; unfortunately the materials were too costly, and the silver world was soon melted down to supply the necessities of one of its kingdoms. Alfred produced a more valuable monument in a description of the north of Europe, from the best materials which could be then collected, and which forms still the best record of the geographical knowledge of that age. Under the direction of William the Conqueror was drawn up that important document called Doomsday Book, in which the population, the culture, and the taxes paid by each district, are exhibited in the greatest detail. A similar survey of Denmark was made in the thirteenth century, by its sovereign Waldemar II.; and of the Mark of Brandenburg, in the fourteenth century, by the emperor Charles IV.

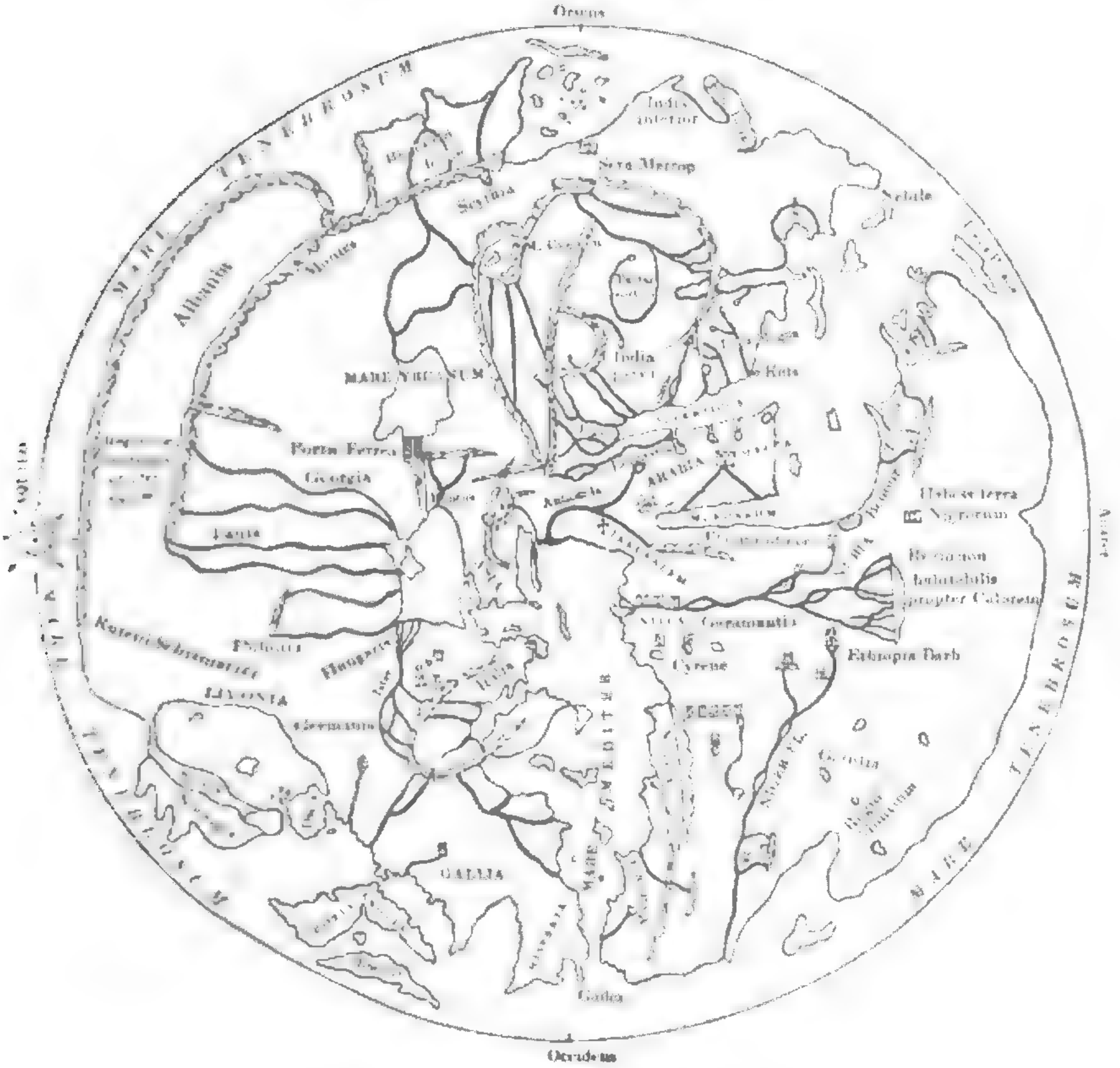
167. *The Danes and Norwegians, the Northmen* as they were called, while under their mighty sea-kings they spread desolation over the maritime districts of Europe, necessarily acquired a very extensive knowledge of its seas and coasts. Such knowledge, though nowhere formed into any regular system, may be traced in the sagas, or metrical histories, in which they celebrate the gallant exploits of their countrymen. They were, of course, familiar with all the countries bordering on the Baltic. They knew by conquest Orkney, Shetland, the Hebrides, and the western coast of Ireland. Their fleets reached even the shores of Italy and Sicily. Towards the north, they established colonies in Iceland and Greenland. But the most important discovery of the Northmen was, undoubtedly, America, if their claim to the merit of that discovery shall be admitted to be made good. In the beginning of the eleventh century, Thorwald and Leif, two natives of Iceland, having sailed far to the south-west, came to a country which appeared to them, doubtless by comparison, to be mild and agreeable; the natives were of dwarfish stature, and maintained with them sometimes a hostile, but oftener a friendly intercourse. Finding that the rivers abounded with fish, and that the finest furs could be procured, they and their countrymen repeated their visits; and, in 1211, Bishop Eric is said to have repaired thither with the view of converting the natives. The name given to the region is Vinland, from the *vines* growing in it; a feature which certainly occurs to us as very foreign to this part of the world; but, in fact, wild vines are found growing in all the most northerly districts of America. After the most careful examination of this subject, I have endeavoured to show in my late work on American discoveries, that America could not have been reached by the Icelandic adventurers, and that Vinland must have been merely a southerly district of Greenland.

Chap. III.

GEOGRAPHICAL KNOWLEDGE DERIVED FROM THE CRUSADES.

168. *The crusades formed* a series of events which roused the European mind from its local and limited range, and directed its ken into the regions of another continent. The high-wrought enthusiasm which impelled Europe to pour itself, as it were, in one mass on the eastern world, however blind might have been the zeal which inspired it, was, on the whole, highly beneficial: it drove back the tide of Saracen and Turkish conquest, which might have swallowed up the whole West, and involved it in the same gloom of barbarism and superstition that pervaded the East. Above all, the crusades had a powerful influence in dispelling the mental darkness in which the western regions were involved, and in preparing that light of science and intelligence which was so soon to dawn upon them. The attention of Europe was thus directed to these interesting and memorable regions, known hitherto only by the meagre report of some occasional pilgrims. Not only the Holy Land, with the kingdoms of Jerusalem and Edessa, founded by the victorious crusaders, but the extensive domains belonging to the Saracen and Turkish empires, became objects of enquiry; search was now made in the writings of the ancient geographers, and perhaps some lights were derived even from the Arabian writers. Sanudo compiled a map of the world, annexed to Bongar's "Gesta Dei per Francos," (*fig.* 12.) in which the ideas formed out of the crusading expeditions are fully exemplified: Jerusalem is placed in the centre of the world, as the point to which every other object is to be referred; the earth is made a circle surrounded by the ocean, the shores of which are represented as everywhere nearly equidistant from that spiritual capital, the site of which is, indeed, remarkable for its relation to the three continents, Asia, Europe, and Africa. Persia stands in its proper place; but India, under the modifications of Greater and Lesser, is confusedly repeated at different points, while

Fig. 12. Sanudo's Map of the World.



the river Indus is mentioned in the text as the eastern boundary of Asia. To the north, the castle of Gog and Magog, an Arabian feature, crowns a vast range of mountains, within which it is said that the Tartars had been imprisoned by Alexander the Great. The Caspian appears, with the bordering countries of Georgia, Hyrcania, and Albania; but these features stand nearly at the northern boundary of the habitable earth. Africa has a sea to the south, stated, however, to be inaccessible, on account of the intensity of the heat. The European countries stand in their due place, not even excepting Russia and Scandinavia; though some oversights are observable in the manner in which the two are connected together.

Chap. IV.

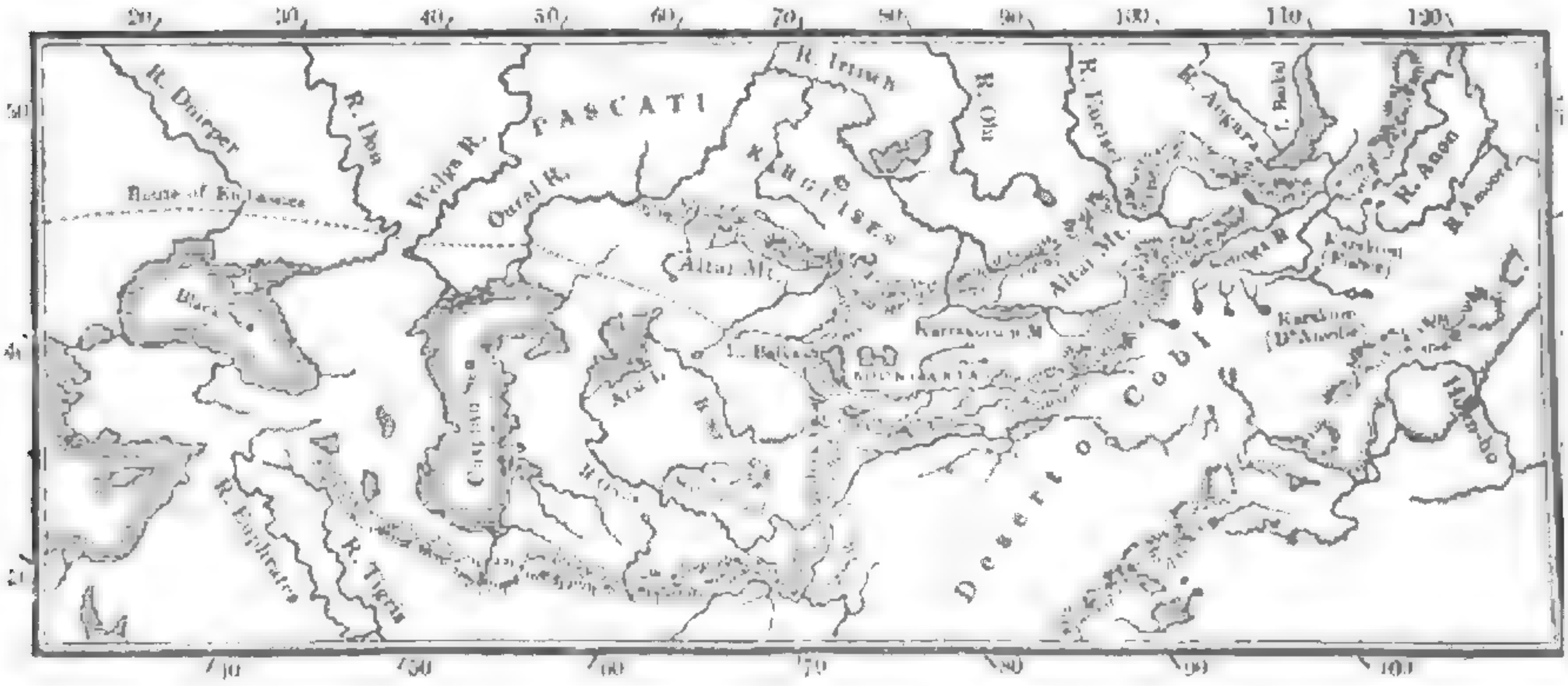
TARTAR GEOGRAPHY.

169. *The revolutions of the north of Asia* next attracted the eyes of Europeans to the distant quarters of the world. The roaming tenants of those boundless wilds, known under the ancient name of Scythia, and the modern one of Tartary, have at various periods conquered and desolated the civilised world of Asia. The offspring of Tartar chiefs sat for many centuries on the thrones of Pekin, of Delhi, of Ispahan, and of Constantinople: but, of the Tartar rulers, none ever raised so terrible a name, or established so wide an empire, as Gengis or Zingis; originally an individual chief of the Monguls, he attained the general sway over that warlike race, and led them as conquerors from empire to empire. His first and most signal

exploit was the conquest of China; having thence crossed the whole breadth of Asia, he died on the shores of the Caspian. His successors pressed on eastward, overran Russia, and penetrated through Poland into Hungary and Silesia; their approach, their rapid movements, and the exaggerated reports of their ravages, struck the nations of Europe with inexpressible terror; this was greatly heightened by the prevailing ignorance of geography, which was such that none knew when they might arrive, or where they might be encountered. The Danes were thus deterred one season even from going to the herring fishery, on the coast of Scotland. The Tartars defeated and killed the Duke of Silesia; but a general muster of the German chivalry being made to oppose them, they retreated into the interior of Poland, and even farther to the east, leaving only a numerous vanguard; but it was suspected that they were only mustering their strength, again to invade Europe, in more dreadful and destructive array.

170. *Embassy*, at this crisis, was deemed the expedient most likely to appease the fury of these dreaded invaders. According to the ideas of the age, the pope appeared the most respectable character, in whose name a mission could be undertaken, and monks the most fitting ambassadors. The choice was injudicious: these envoys, ignorant of the political relations of countries, of the usages of society, and the mode of treating with mankind, obtained no respect in the eyes of the fierce conquerors of Asia. They returned without fulfilling any object of their mission; and if Europe was not again exposed to this barbarous inundation, it owed its safety only to the division of the immense empire of Kaptchak, and the dissensions among its princes. These ambassadors, however, traversed a large portion of the continent, before unknown to Europeans. One mission, indeed, under Ascelin, which met the Monguls on the frontier of Persia, does not communicate any geographical information; but the journey of Carpini, and after him of Rubruquis, (*fig.* 13.) led them through the north of Russia, along the shores of the Black Sea, and the Caspian, and thence into the very heart of the immense plains of interior Asia, where they found the great Tartar capital of Karakorum, the chief seat of the posterity of Zingis. Here the masters of the world, while embassies and presents were waiting them from all the courts of southern Asia, were living in the rudest Scythian fashion, feeding scantily on horse-flesh and mares' milk, roving about in tents, destitute of arts, and occupied only with war and plunder. The Tartars, however, treated with a proud disdain all other nations, over whom they held themselves as commissioned by heaven to rule, while they paid the most abject submission to their own Khan, revering him as the appointed representative of deity on earth.

Fig. 13. Map of the Journey of Rubruquis.



171. *Karakorum was found scarcely entitled to the name of city*, being little larger than one of the suburbs of Paris, and its most sumptuous edifices scarcely suitable to a European country town. The situation of this capital of so great an empire has been a subject of some controversy. D'Anville places it at a point to the north of China, near the eastern limit of the great desert of Shamo or Cobi, while Fischer fixes it on the Orchon, one of the rivers which unite in forming the Selingha. I have elsewhere endeavoured to show (Discoveries in Asia, I.) that both these positions must be about a thousand miles to the eastward of the real site. It is true that upwards of four months was occupied in passing from the western frontier of Russia to this capital; and the missionaries complain of the grievous rapidity with which they were conveyed. They estimate the daily rate as equal to the distance from Paris to Orleans, or about seventy miles; and this time and route would doubtless be sufficient to carry them to the most eastern extremity of the continent. But whenever they give us the time actually employed in travelling between known points, a rate is found which does not even approach to the above. Two months are spent by Carpini in travelling from the Dnieper to the Volga, and by Rubruquis from the Danube to the Don, "riding post as the Tartars do;" yet neither of these spaces exceeds in direct distance six hundred miles. Then from the Volga to the Ural, which may be two hundred and fifty miles, we have twelve days; while the journey from the Ural to the inland sea of Balkash, or Palcati, occupied above forty-three days. Thus down to that point it required four months to travel not quite eighteen hundred miles. From the Balkash to Karakorum, the journey was performed in three

weeks. Is it possible to suppose that they could in that time have travelled fifteen hundred miles, the space which would be necessary to enable them to reach the Karakorum either of D'Anville or of Fischer? They could not have passed the great table plain of Soongaria, compared by the Oriental histories to a great sea of verdure, and consequently of all others the best fitted to form the central encampment of this great pastoral and military empire. All the geographical indications given by Rubruquis agree with this position; and disagree wholly with the other two. He says all the rivers observed by him flowed to the westward, which is true as far as Soongaria, but directly contrary to what takes place in the other positions, both of which are even placed upon rivers that flow to the eastward. China is said to lie to the south-east, as it does from Soongaria; but from the two other positions it would be directly south. The Kirghises are said to lie to the north, and the Baschkirs to the west; but these, according to the ordinary site, would have been at a distance quite immense, and could have had no relations with Karakorum. The hypothesis which places that city in Mongolia is founded upon the latter having been the original seat of Zingis; but Rubruquis expressly states, that this arrangement had now ceased, and that Tartaria was "the chief and royal city." Such a change was, indeed, almost necessary to an empire which was to embrace at once the East and the West; to hold China in one hand, and Russia in the other.

Chap. V.

VENETIAN GEOGRAPHY.

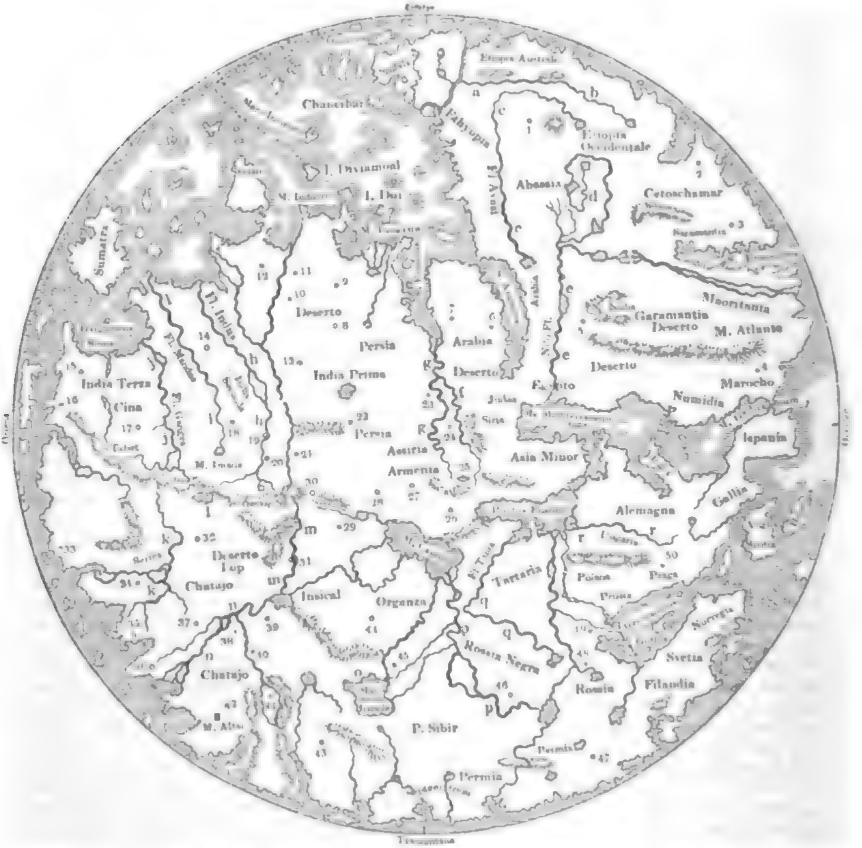
172. *The republics of Italy, and above all that of Venice,* were the states in which the spirit of commerce and enquiry, after being long dormant, revived with the most brilliant lustre. The commerce which they carried on was one which connected them with the most distant regions: they traded in the jewels, the spices, and the fine cloths of India, a country situated at a distance really vast, and which then appeared almost immeasurable. It was not by Venetians, however, or by any Europeans, that the vast intervening space was traversed. They found the Indian commodities in the ports of the Mediterranean or the Black Sea, to which they were brought by the Arabs up the Red Sea, or by the interior caravans across central Asia. It was impossible, however, that they could see these precious and profitable commodities continuing to enter their ports, without feeling some curiosity as to the splendid and beautiful regions whence they came; and, in that age of enterprise, it was likely that some would be impelled to brave even the obstacles presented by this vast unknown space, occupied by people of a hostile and bigoted faith. The Abbé Zurla has collected notices of a considerable number who, actuated by this spirit of discovery, penetrated to a considerable depth into the interior of Asia. But the fame of all these is eclipsed by one, whose travels extended far beyond the rest, and who has always ranked among the greatest of discoverers of any age.

173. *Marco Polo* was a noble Venetian, whose family, like many others of the same rank, was engaged in extensive commerce. His uncles, Maffeo and Nicolo, had visited Tartary, and afterwards China, though without leaving any narrative of their observations. The pope, however, being apprized of their discoveries, sent out an ecclesiastical mission, accompanied by the young Marco Polo, then only nineteen. They spent twenty-four years in traversing the most remote regions of Asia. The result of their religious mission is not stated; but they returned laden with precious jewels, with which they dazzled the eyes of their countrymen, by whom they were not at first recognised. Marco being afterwards made prisoner by the Genoese, was persuaded to amuse the hours of confinement by dictating a narrative of his travels, which was read with avidity, and soon translated into all the European languages. He has suffered, like many other eminent travellers, under those injurious suspicions which arise in the minds of persons unwilling to believe any event or object which goes beyond the sphere of their ordinary experience. His name even furnished the nickname given to a personage introduced into the comedies of the age, to recite every species of extravagant fable. But modern information has verified in all its most essential points the narrative of Marco Polo, leaving only a slight tincture of that credulity which was characteristic of the age, and is confined to what was told him by others of countries which he did not himself visit. He appears to have first proceeded along the northern shore of Asia Minor, then the seat of a flourishing Turkish dynasty. He passed through Armenia, along the lofty ridges of Ararat, and descending the Euphrates through Curdistan came to Bagdad, no longer the capital of the caliphate, but still a flourishing and civilised city under its Tartar conquerors. He visited the great commercial capital of Ormuz, and thence proceeded eastward through the southern part of Persia by Kerman and Kubbees, across the great salt desert. At length he reached Balkh, which, though still a considerable emporium of central Asia, presented only in its ruined temples and spacious squares the vestiges of its ancient grandeur. Then passing along the borders of Cashmire and the mountain tract of Balashan (Budakshan), celebrated for its mines of rubies, he ascended to the elevated plain of Pamere, forming the summit of that cross branch of the Hemalleh, called the Beloor. On this, which appeared to him the highest ground in the world, he felt that difficulty in respiration, and in producing combustion, which is peculiar to the most elevated mountain sites. He afterwards reached the large Tartar cities of Yarkund and Cashgar, and entered on that great eastern table land which, before and since, has formed the *Terra Incognita* of Asia. He then entered Northern China, which he calls Cathay, and visited its capital Cambalu, his description of which strikingly coincides with that of the modern Pekin. He afterwards visited Mangi or Southern China,

and found in its capital, Quinsai, a scene eclipsing all that he had beheld either in Europe or in the East. It is described as a most immense, and, from its splendour and the beauty of its situation, almost a magic city. In fact Hangtchoofoo, which corresponds, with Quinsai, though it has long ceased to be the capital of China, is still a very large city, very charmingly situated. From China, Marco Polo passed through the Indian Archipelago, hearing only of Great Java, but visiting Sumatra, which he calls Little Java. He touched at the coasts both of Malabar and Coromandel, and learned many particulars respecting India and its people, which have since been confirmed by modern observation. He returned by the Red Sea to Europe.

174. *A map of the world on a large scale, (fig. 14.) by Fra Mauro,* which is preserved at Venice, and of which a highly finished copy exists in the British Museum, exhibits a view of the geographical ideas formed by the Venetians, founded upon the information derived from their Asiatic travellers, and prior to the discovery of America.

Fig. 14. Map of the World by Fra Mauro.



1. Barara
2. Dafur
3. Fundan
4. Marocho
5. Siene
6. Mecha
7. Thad
8. Thate
9. Soltanfur
10. Peti gondi
11. Rhenega
12. Turmilli
13. Deli
14. Ava

15. Charazan
16. Charaian
17. Mihen
18. Mognan
19. Sizchone
20. Selfeton
21. Candur
22. Thanchain
23. Babilonia
24. Mesopotamia
25. Archa Noe
26. Tiphilis
27. Armenia
28. Spahan

29. Zaclavo
30. Here
31. Balch
32. Tangui
33. Chansay
34. Nangin
35. Quanzu
36. Cambelech
37. Archanara
38. Silan
39. Otrar
40. Chatajo
41. Segenach
42. Sepulture

43. Sepolcro Uncam
44. Samargant
45. Nograt
46. Moschovia
47. Permia
48. Novogrado
49. Riga
50. Praga.

Rivers, Lakes, &c.

a Galla
b Xebe
c Avasi
d Abavi
e Nilo
f Eufrates
g Tigris
h Indus
i Mandus
j Ganges
k Quian
l Mare Breunto
m Amn
n Polisanchin
o Mare Biancho
p Edil
q Tanai
r Danubio.

BOOK III.

MODERN GEOGRAPHY.

175. *Geography was now to assume a new aspect,* and worlds before unknown were to be comprehended within her domain. Although the Italian states produced, almost exclusively, eminent astronomers, skilful pilots, and hardy navigators, their attention was nearly engrossed by land conveyance, and the navigation of the interior seas of Europe: they did not originate, or even attempt to follow, out any trains of oceanic discovery. The rulers of the exterior coasts of Europe, and especially of the Iberian peninsula, carried off all the prizes in this new and brilliant career. Between 1492 and 1498, the American continent, and the passage to India by the Cape, were discovered by Gama, and Columbus: the face of the world was changed; and all the daring and enterprising spirits of the age embarked in this career of discovery, conquest, and commerce.

Chap. I.

DISCOVERY OF AMERICA AND THE EAST INDIES.

176. *The progress of discovery over the globe,* when the first steps had been taken, was astonishingly rapid; no cost, no peril, deterred even private adventurers from equipping fleets, crossing the oceans, and facing the rage of savage nations in the remotest extremities of the earth. Columbus had not yet seen the American continent, and the mouth of the Orinoco, when Cabot, of Venetian descent, but sailing under English auspices, discovered Newfoundland, and coasted along the present territory of the United States, probably as far as Virginia. In the next two or three years, the Cortereals, a daring family of Portuguese navigators, began the long and vain search of a passage round the north of America: they sailed along the coast of Labrador, and entered the spacious inlet of Hudson's Bay, which they seem to have mistaken for the sea between Africa and America; but two of them unhappily perished. In 1501, Cabral, destined for India, struck unexpectedly on the coast of Brazil, which he claimed for Portugal. Amerigo Vespucci had sailed along a great part of Terra Firma and Guyana, and he now made two extensive voyages along the coast of Brazil; services which obtained for him the high honour of giving his name to the whole continent. Grijalva and Ojeda went round a great part of the circuit of the coasts of the gulf of Mexico. In 1513, Nunez Balboa, crossing the narrow isthmus of Panama, beheld the boundless expanse of the Pacific Ocean. These discoveries afforded the impulse which prompted Cortez and Pizarro to engage in their adventurous and sanguinary career; in which, with a handful of daring followers, they subverted the extensive and populous empires of Mexico and Peru. Expeditions were soon pushed forward on one side to Chili, and on the other to California, and the regions to the north. Nearly a full view was thus obtained, both of the great interior breadth of America, and of that amazing range of coast which it presents to the southern ocean.

177. *In the Eastern world,* the domain which the papal grant had assigned to Portugal, discovery was alike rapid. Twenty years had not elapsed from the landing of Vasco de Gama, when Albuquerque, Almeida, Castro, Sequeira, Perez, and many others, as navigators or as conquerors, had explored all the coasts of Indostan, those of Eastern Africa, of Arabia, of Persia; had penetrated to Malacca and the Spice Islands; learned the existence of Siam and Pegu; and even attempted to enter the ports of China. But the characteristic jealousy of that power was soon awakened: the Portuguese embassy was not admitted into the presence of the emperor; and a mandate was issued, that none of the men with long beards and large eyes should enter the havens of the celestial empire. After all these discoveries, the grand achievement yet remained, of connecting together the ranges of eastern and western discovery; and of laying open to the wondering eyes of mankind that structure of the globe, which, though demonstrated by the astronomer, seemed to the generality of mankind contrary to the testimony of their senses.

178. *Magellan, in 1520, undertook,* by circumnavigating the earth, to solve this mighty problem: he passed through the straits which bear his name, and crossed the entire breadth of the Pacific. He himself was unhappily killed at the Philippine Islands, but his companions sailed on, and presented themselves to the astonished eyes of the Portuguese at the Moluccas. They arrived in Europe, after a voyage of three years; and it could no longer be doubted by the most sceptical that the earth was a spherical body.

CHAP. II.

EARLY SYSTEM OF MODERN GEOGRAPHY.

179. *The systematic arrangement of the immense regions* thus discovered, their adjustment to each other, and to the mass of knowledge previously possessed, was a task as yet beyond the resources of modern geography. It was to Venice that the results of discovery were still referred to be arranged and systematised; but the Venetian geographers, however skilful, laboured under many difficulties. The navigators seldom furnished them with any celestial observations, or even accurate surveys; for which, indeed, science had as yet provided no suitable instruments: they gave only rude delineations, on which the geographer was obliged to trace his uncertain way; most of the countries formerly known were touched at new points, and recognised under new names; and the continents, being made to contain both the old and the new features, were swelled to a preposterous magnitude. The east of Asia was obliged to contain at once the Serica of Ptolemy, the Mangi and Cathay of Marco Polo, and the China of the Portuguese, all as separate empires. The relative site of the two continents of Asia and America, the presentation of the west coast of the one to the east coast of the other, was of course the problem which they had the fewest means of solving. In a series of Venetian maps, preserved in the king's library, the two continents are described throughout their whole extent as either united, or separated only by the narrow Strait of Anian: the former delineation is retained even in a map by Bertelli, dated 1571; and in one by Cimertinus (1566), Cathay is placed upon the Gulf of Mexico. The expedition of Magellan, it might be supposed, would already have opened their eyes to the extent of that vast ocean which here intervened: but Magellan scarcely penetrated into the northern Pacific; and his ill-understood course was probably supposed to reach direct from Cape Horn to the Moluccas, which did not interfere with the hypothesis of the two continents meeting each other in a different latitude. The breadth of America, like all unknown spaces, was vastly exaggerated in the early maps; while eastern Asia, by the process above pointed out, was tripled in all its dimensions, and thus made to cover an ample portion of the Pacific.

180. *Sebastian Munster*, in 1572, produced a delineation of the world, which is cleared of some of the grossest mistakes, and which very tolerably delineates the general outline of the earth. He commits, however, a very discreditable mistake, in taking Ptolemy for his guide in regard to Scotland, and consequently representing that country as extending from west to east; a blunder the more singular, as his forms of Scandinavia and Ireland are liable to little exception. Singular flights of fancy are found in the works of these early geographers. Munster undertakes to describe, not only the surface of the earth, but also its interior: this is stated to be occupied by hell, a huge cavern two or three thousand German miles in length and breadth, and "capable of holding many millions of damned souls." Its existence was proved by the spirits which, in the depth of mineral caverns, as he had been assured by Cornelius Agrippa, often killed instantly a great number of men. The inflammatory gases, which are still frequently producing such disasters, afford certainly no unplausible ground for that strange conclusion.

181. *Ortelius*, in the commencement of the sixteenth century, exhibits a remarkable improvement in geography. In his maps, all the parts of the globe begin to assume their real form and dimensions; America and Asia are widely separated, the expanse of the South Sea interposing between them. The south pole is invested with a *Terra Australis Incognita*; which, as it relates to New Holland, is said to rest on the authority of Marco Polo and Barthema, and in regard to the West, on that of Magellan. *Terra del Fuego* is made a portion of this Austral continent: while in lat. 41° S., and long. 10° west of Ferro, is *Promontarium Terræ Australis*. There is a *Terra Septentrionalis Incognita*, nearly as extensive, and seeming to include Nova Zembla. Greenland, however, exists distinct from it. In the interior of Asia, the Caspian, under the appellation of Mer de Bachu, presents the same form and dimensions as in Ptolemy, and receives all the rivers falling really into the Aral, the existence of which seems not to be suspected by this geographer.

182. *Mercator* advanced considerably farther, particularly by showing the imperfections of Ptolemy, and the injudicious manner in which the delineations given by him had been mixed with those furnished by modern authority. Mercator retains the Austral continent, including in it *Terra del Fuego*. The lakes of Canada appear for the first time in his maps, as a sea of fresh water, the termination of which is unknown. In Africa, Abyssinia, enormously amplified, is made the principal and almost sole feature; it extends southward to the vicinity of the Cape, comprehending Mozambique, and bordering on Caffraria: the Nile rises only about ten degrees north of the Cape, and consequently traverses all Africa from south to north. With respect to the extreme northern regions, this very learned man has indulged in some extraordinary flights of imagination. The ocean resumes, as in Homer, the character of a river, and is seen rushing by four mouths into the Polar gulf, to be absorbed, it is said, into the bowels of the earth. On one of the river branches are placed pigmies, scarcely four feet high; a notion suggested, perhaps, by the diminutive stature of the Laplanders and Sa-

moyedes: on another is placed a sort of northern paradise, while the Pole itself, a black and immense rock, towers to a prodigious height.

183. *From the time of Mercator modern geography* made rapid and continued progress, till it attained the state approaching towards perfection, in which it now exists: this will appear, when we consider it as astronomical, critical, or statistical; and when we view it in its relation to the different quarters of the globe.

Chap. III.

MODERN ASTRONOMICAL GEOGRAPHY.

184. *The astronomical geography* of the Greeks rested on a basis exceedingly narrow. M. Gosselin has, indeed, endeavoured to show, that they possessed a series of early and accurate observations, which they misunderstood and perverted; but this point can scarcely be considered as established. It was only at Alexandria, Syene, Rhodes, and a few other leading points, that observations of latitude appear to have been made with a tolerable approach to accuracy; all the others seem to have been only extended from rude itineraries. With regard to the longitudes, although the mode of calculating them by means of eclipses appears to have been understood, only one or two actual observations of this nature are recorded; nor does it seem to have exerted any important influence on geography in general. The Arabs made much greater progress in this department; but, through the separation produced by religious antipathy, their works were scarcely at all known in Europe at the period of the revival of letters. At that time, the pompous display of latitudes and longitudes made by Ptolemy, venerable as it had become from its antiquity, commanded universal assent.

185. *Modern observations* have gradually shown the magnitude of Ptolemy's errors. The first great shock to his authority was given by the latitude of Constantinople, which Amurath III. caused to be taken in 1574, when it proved to be two degrees lower than ancient authorities had assigned: the idea of such a difference, however, was treated with derision by some European geographers, till it was confirmed, in 1638, by Greaves, who had been sent to the East by Archbishop Laud. Even then, many, rather than renounce the authority of Ptolemy, believed that a change had taken place in the position of the earth; but this notion became no longer tenable to any extent when Alexandria and other points were found very nearly to coincide with ancient observation. But the great alarm as to the unsoundness of ancient graduation was given in 1635, when M. de Peiresc caused an eclipse of the moon to be observed at Marseilles and at Aleppo; and the difference of longitude, instead of 45° as it had been represented, was found to be only about 30°: such an enormous error, in a dimension which ought of all others to have been most exactly ascertained, shook altogether the blind confidence hitherto reposed in the longitudes of Ptolemy. It was at last perceived, that an entire reform of his graduations must be effected, before geography could rest on any secure basis. Numerous observations upon eclipses now began to be made; but it was then discovered, that this only known mode of ascertaining the longitude was attended with many imperfections. In the observation of fifty-six eclipses, collected by Ricciolus, there were no two, observed in the same two places by the same men, which exhibited the same quantity of longitude: even the same eclipse gave different results, when observed at its four critical periods. As it was found impossible to guard against errors amounting even to three or four degrees, an opinion became prevalent, in the middle of the eleventh century, that unless for very great distances, even itinerary measures would give the result with greater accuracy; yet Galileo, in 1610, had already pointed out a source of more accurate knowledge: he had in that year discovered three of the satellites of Jupiter, and in his Nuncius Sidereus, pointed out the use to which they might be applied. As his hints did not meet with the attention they merited, he communicated them more fully, in 1631, to Philip II. of Spain; but that bigoted prince was unable to estimate their importance. Galileo met with a more favourable reception from the Dutch, who sent Hortensius and Bleau to Florence, to communicate with him on the subject. They found that great man involved in the storm of persecution which the ignorant bigotry of the Romish church had raised against him: he was thrown into prison; and, after having asked pardon on his knees, for asserting that the earth moved round the sun, obtained only a mitigation of his confinement. This discovery was therefore of little use till 1668, when Cassini published his tables of the revolutions and eclipses of these satellites; and three years afterwards, he and Picard made joint observations at Paris, and in the observatories of Tycho Brahe at Copenhagen, by which the longitude of these two important points, which had been the subject of long controversy, was finally fixed.

186. *The French government* now took the most active measures for extending geographical observation. Two academicians, Picard and De la Hire, were employed to construct a new map of France upon astronomical principles. In this operation they almost every where reduced the previous dimensions, which had been founded upon itinerary measures,

and were liable to their usual excess: they took off a whole degree from the western coast between Britany and Gascony, and half a degree from the coasts of Languedoc and Provence; so that on their return, Louis XIV. facetiously reproached them with having robbed him of a part of his kingdom. Other academicians were employed to determine the longitude of Goree on the coast of Africa, and of Guadaloupe and Martinico in the West Indies; and M. Chazelles was sent up the Levant on a similar mission. Expeditions on a much grander scale were despatched, under Maupertuis to the Arctic circle, and Condamine to the equator. The primary object of these was to determine the figure of the earth by the application of the pendulum; but the opportunity was taken of making various observations of longitude and latitude, in regions which had been formerly delineated only by processes of the most vague description.

187. *In the operation of determining the position of places* on the globe, important improvements have been made since the above eras. Although there can be no more accurate mode of determining the longitude, than by the eclipses of Jupiter's satellites, these are of too unfrequent occurrence to answer the practical purposes required. Observations of the transits of Mercury and Venus over the sun, of the occultations of the fixed stars, and of what are called lunar distances; processes, the nature of which will be fully explained in the following book, have been employed with success. Nay, to such perfection have chronometers been brought, that, by showing the difference of time between known and unknown points, they serve many of the ordinary purposes of navigation. The voyages undertaken by Capt. Cook, under the auspices of George III., afforded the means not only of exploring many islands and regions of the Pacific and Polar seas, but of throwing much light upon the general structure of the earth. The expeditions of Capt. Parry, and the nautical surveys executed under the direction of the British government by Flinders, King, Owen, and other officers, have gone far to fix the outlines of the great continents. The trigonometrical surveys of France and England, executed within the last thirty years, have almost completed the delineation of those countries. Still this branch of geography remains very imperfect.

Chap. IV.

MODERN CRITICAL GEOGRAPHY.

188. *The application of a sound criticism* to geographical materials cannot be discerned in the rude and infant stages of the science. There is no branch in which the enquirer is so likely to be misled by false and fabulous rumours. The persons from whom he must draw his information, — the navigator, the merchant, the traveller, — make observations often only in a rough and superficial manner, and are swayed in their reports by fancy or vanity. The results of their own observation, or the authentic relations of well-informed persons, are confounded with the most vague rumours which float among the vulgar. Hence almost all the early systems have a portion of truth, mingled with many ideal and fabulous creations. The human mind unwillingly owns its ignorance even to itself. The geographer was reluctant to stop short at the point where his authentic information ceased. Having to delineate a kingdom or a continent, he filled up the really unknown parts from vague rumour, or a fanciful prolongation of those that were known. Whatever object had once found a place was copied mechanically without any enquiry, until modern maps and descriptions became crowded with objects, for the position of which no reason could be assigned.

189. *Strabo, among the ancient geographers*, was alone endowed with a critical spirit: but not having a sufficiently ample stock of materials, he exercised his judgment with a blind severity, which appears to have done injustice to several individuals whose exertions in the infant cause of discovery were highly meritorious. This extreme of scepticism, opposite to that of credulity, has indeed thrown unjustly into shade the merits of some of the most eminent discoverers, both ancient and modern. It is only by the collation of numerous authorities, accumulated by time and extended intercourse, that the just medium can be observed, and an equitable sentence pronounced on the reports of each party.

190. *D'Anville*, in the seventeenth century, possessed of ample materials, endued with indefatigable patience and sound judgment, undertook to revise the whole system, upon which the world and its regions had been hitherto delineated. The maps of the age were still covered with many obsolete and many fanciful particulars; and large portions of the world, concerning which absolutely nothing was known, were filled with imaginary cities and countries. D'Anville subjected every geographical feature to the strictest revision, and expunged without mercy those which rested on no positive and actual authority. The world, under his hands, assumed a new, and in some respects, a less flattering aspect. Maps, which had before been amply and regularly covered, now exhibited vast and unseemly blanks, which, amid the boasted learning of this age, implied a mortifying confession of ignorance. It was impossible, however, to deny, that this was the sound system upon which to proceed. Geography rested at last upon sure bases, and proceeded in a regular course of improvement.

191. *Major Rennell*, with a skill and sagacity not inferior to that of D'Anville, arranged and illustrated the mass of important materials collected respecting India and Africa; and, though additional contributions of vast importance have in some degree superseded his actual delineation, his example has introduced a still greater precision into the mode of treating the subject.

192. *The comparison of ancient and modern Geography*, and the tracing of the infant steps of early discovery, constitute an interesting field of enquiry, which has been much cultivated during the present age. Vossius, Bochart, and other learned scholars of the sixteenth century, had exercised much diligence in these researches; but they were not always guided by the soundest judgment, nor were they sufficiently acquainted with the objects actually existing, to be able to recognise them under the early descriptions. Rennell, Vincent, and Mannert, seem to have carried this research nearly as far as it can go, though without being able to dispel that impenetrable darkness in which some questions are still involved. Gosselin has applied to the science an extent of investigation, and a critical acumen, which, perhaps, none of his predecessors have equalled; but animated by too *Strabonic* a spirit, and seeking to subvert all the bases on which ancient geography had before rested, he has in many instances rather given lustre to bold and ingenious paradoxes, than made solid additions to the science.

Chap. V.

MODERN DESCRIPTIVE AND STATISTICAL GEOGRAPHY.

193. *The mere outline of the globe*, its continents and countries, the leading features of mountains, rivers, and cities, their distance and position with respect to each other, constitutes all that in the very strictest sense can be called geography. But the mind cannot pass these in review, without feeling its interest excited, in even a superior degree, by other objects, for which these only serve as the basis. The productions of the earth, whether natural or artificial; the treasures hid in its bosom; the animals which roam or are bred on its surface; above all, the men by whom each region is peopled, — their manners, laws, industry, commerce, the revolutions through which they have passed, — these possess the strongest claim on our attention, and are of an importance superior to that of the mere geometrical outline.

194. *The ancients* did not occupy themselves with much more than the simple and fundamental bases of the science. The delineation of these formed alone an arduous task, which the geographer was required to accomplish before he could attend to the accessary and ornamental parts. Eratosthenes does not appear to have extended his research beyond those branches which were connected with astronomy. The work of Ptolemy forms a mere naked tabular list of positions, rarely enlivened by any historical or descriptive notices. Pliny does not go much farther. Strabo alone has enriched his work with numerous anecdotes and descriptions which, though not given on any complete or systematic principle, constitute a great portion of its value.

195. *Early modern writers* confined themselves, like the ancient geographers, to mere outlines. All the first treatises were formed on the model of Ptolemy; D'Anville, the head of the French school, applied himself solely to the boundaries and positions of countries, which he fixed with a precision before unknown, but without directing much attention to their physical and social relations.

196. *Statistics*, the science which treats of kingdoms and states in their relations of population, wealth, productions, commerce, and public force, is, as a separate branch of knowledge, only of recent origin. From the first it had a natural alliance with geography. Busching may be considered as the father of statistical geography: his vast research, strict fidelity, and access to the best sources, enabled him, in his description of Europe, to assemble a mass of information unequalled by any of his predecessors. He has arranged it, however, nearly in the same mechanical manner in which they had drawn the mathematical outlines of the globe. His writings, instead of conveying to the mind striking general views, are loaded with minute and burdensome details, which can be useful only as matter of reference, and would therefore have most properly appeared in the form of a dictionary. His successors have been numerous, and their labours are of similar character and value. Bruns, with regard to Africa, and Ebeling to Asia, continued the series. The great geographical work recently completed by Hassel, Cannabich, Gaspari, and Gutsmuth, in twenty-five octavo volumes, each equal to three or four of ordinary size, comprises, probably, the largest mass of statistical information ever assembled into one work.

197. *The English compilations of Bowen, Guthrie, Salmon*, and others of the same school, were, perhaps, the first works which embraced nearly all the objects that can give interest to a system of geography; and though indifferently executed, and devoid of any charms of style, they acquired a very extensive popularity. Mr. Pinkerton has executed a work on the same plan, in a superior manner, adding notices of the different branches of natural history,

and of the different languages of nations. M. Malte-Brun, by his acquaintance with the eastern and northern literature of Europe, and by an animated and interesting style, has produced a work in some respects superior. M. Balbi has distinguished himself by the industry with which he has collected geographical facts.

We shall now take a view of modern discovery in the remoter quarters of the globe.

CHAP. VI.

MODERN GEOGRAPHY OF ASIA.

198. *Asia* was the first continent which attracted the attention of Europeans, and the journies of all the early travellers. The enterprise of the Venetians penetrated into some of the wide and perilous tracts of its interior, which the boldest of more modern travellers have in vain essayed to reach. Since the passage of the Cape, the career of discovery has been chiefly maritime. We have seen how rapidly the Portuguese fleets explored all the southern coasts and islands. The eastern shores beyond Japan, as they presented nothing tempting to commercial avidity, were left to be examined by expeditions having science and curiosity for their object. This task was effected by Cook, Perouse, Broughton, and Krusenstern. Jesso, which had figured as a large continental tract, stretching between Asia and America, was reduced by them to its insular form and dimensions, and its separation from Saghalien established; the range of the Kurile islands was also traced; but some questions respecting this very remote and irregular coast remain yet to be solved. Along its northern boundary, beset by the almost perpetual ices of the polar sea, the progress of navigation was slow and laborious. The English and Dutch, the chief maritime states, made extraordinary efforts, and braved fearful disasters, in the hopeless attempt to effect by this route a nearer passage to India; but though they penetrated beyond Nova Zembla, they never could pass the formidable promontory of Severovostochnoi, the most northern point of the Asiatic continent. The Russians now claimed for themselves the task of advancing farther. They had most rapidly discovered, and conquered the whole south and centre of Siberia, and reached the eastern ocean at Ochotzk; but the frozen bounds of the north for some time defied their investigation. Proceeding in little barks, however, they worked their way from promontory to promontory. Behring and Tchirikof, early in the last century, sailed through the Northern Pacific, discovered the American coast, and the straits, bearing the name of the former, which divide Asia from America. Deschnew and Shalaurof, by rounding the Asiatic side of this Cape, and discovering the coast stretching away to the westward, were supposed to have established the fact of the entire separation of the two continents. There still remained a portion of coast on the side of Asia, which, it was alleged, might, by an immense circuit, have connected the two together; but the late voyage of Baron Wrangel seems to have removed every ground on which such conjecture could rest, and to have established beyond doubt or dispute, the existence of Asia and America as continents altogether distinct.

199. *Respecting the interior of Asia*, the British obtained much additional information from India, after they became undisputed masters of that region. This information was in many respects only a revival of ancient knowledge. The mountain boundary of India was traced, and found to rise to a height before unsuspected. The sources and early courses of the Ganges and the Indus, were found in quarters quite different from those which modern geography had long assigned to them. The mountain territories of Cabul and Candahar, the vast sandy plains of Mekran, were illustrated by the missions of Elphinstone and Pottinger; while Turner and Moorcroft penetrated into the high interior table land of Thibet. Recent and authentic information has also been acquired respecting Bochara and Samarcand, those celebrated capitals of the early masters of Asia: but there remains still a great central Terra Incognita, respecting which our information rests chiefly upon the desultory and somewhat clouded reports of Marco Polo, and the meagre narrative of Goez; though some important and more precise information has recently been afforded by the researches of Humboldt and Klaproth.

CHAP. VII.

MODERN GEOGRAPHY OF AFRICA.

200. *Africa*, more than any other quarter of the globe, has defied the research, and humbled the pride, of modern enquiry. After accurate surveys had been made of the remotest oceans and shores, this continent, placed almost in view of Europe, still baffled every attempt to penetrate the mighty secrets which it held in its bosom. This vast and unbroken region, enclosed by huge expanses of desert, and occupied by barbarous and predatory tribes, for a

long period proved fatal to every daring mortal who attempted to penetrate into its depths. The Portuguese, however, at an early period, made very extraordinary exertions, impelled by the odd chimera of Prester John, a Christian prince, whom they expected to find in the interior. With this view they explored Abyssinia, of which they vastly exaggerated the dimensions, making them extend even to the Cape, in the vicinity of which, according to their idea, the Nile took its origin. In their progress also along the western coast, they sent repeated embassies into the interior, to discover, if possible, the abode of Prester John; and though that favourite object always eluded their search, they appear to have reached on one occasion as far as Timbuctoo, and learned at Benin some particulars respecting the great interior kingdom of Ogane or Ghana.

201. *The great interior river called by Ptolemy the Niger*, was the object which from the first excited the chief interest in respect to the African interior. All the early European navigators, on coming to the two broad estuaries of the Senegal and Gambia, concluded that one or both formed the termination of the long course which the Niger had been described as taking across the entire breadth of Africa. For several centuries the European nations, intent only on the trade in slaves, merely touched at different points of the coast, to which those unhappy victims were brought down by large caravans. In the beginning of the seventeenth century, however, the French and English having respectively settled on the Senegal and Gambia, were tempted, by the report and view of the gold brought from the interior, to push up these rivers and endeavour to reach Timbuctoo. They had not ascended far, when they became sensible that the extraordinary magnitude and distant origin ascribed to both was altogether chimerical. They were traced so near to their sources as to be little more than rivulets; yet still the explorers were far from Timbuctoo, and from the great central plain, through which the main course of the Niger was understood to flow. At the same time, notices were transmitted to the French geographers Delisle and D'Anville, which led them to infer that there was in that region another and greater river, which flowed eastward towards the interior, and of which they were unable to learn the termination. Yet this delineation of these great geographers had been in a great measure lost sight of, even among their own countrymen.

202. *The information obtained by the African Association* at first tended to confirm this impression. The persons who had crossed the Niger at the most eastern part of the central African plain, described it to Mr. Lucas as flowing westward: but these conflicting statements were silenced by the first expedition of Mr. Park, who at Sego beheld it a broad and majestic stream, flowing through the plain of Bambarra from west to east, and directing its course into the depths of interior Africa. From that time, the termination of the Niger became the grand problem which the science and the enterprise of the age were exerted to solve. A boundless field was open to conjecture. By one theory, the Niger was lost in some great inland seas or lakes of the interior; by another, it bent to the south and west, and reached the Atlantic either in the gulf of Benin, or by the estuary of the Congo; lastly, it rolled to the eastward, till, under the name of the Abiad, or White River, it became the principal head of the Nile of Egypt. At last, by the persevering exertions of the British government, an expedition fairly succeeded in penetrating into the hitherto unknown interior of Africa, and in throwing a wonderful addition of light upon its structure. This mission, however, broke up the grand question. They discovered, flowing through the great African plain, not one river in one direction, but several in different directions; all of which, it appears, have been considered at different times, and under different circumstances, as the Niger. These rivers are four: — 1. The Senegal, considered by the Arabians and modern Europeans as the embouchure by which the Niger entered the ocean. 2. The Joliba, which ever since it was visited, and its course ascertained, by Park, has been fixed in the mind of Europeans as the only Niger; though I question if it was known to any of the ancient geographers who used that term. The termination of this river is yet unknown. 3. The Quarrama, or river of Zirmie, first discovered by the late mission, flowing from east to west, and falling into the Joliba or Quolla. This is evidently the Arabian Nile of the negroes, on or near which are situated all their great cities — Ghana, now known under the name of Cano; Berissa, under that of Bershee; Tocrur, as I apprehend, under that of Sackatoo. 4. The Yeou, flowing eastward into the great lake of Bornou, and which appears to have been the western Nile of Herodotus, visited by the Nasamonian adventurers from Tripoli. The mission also ascertained the site of the kingdom of Bornou, which had been very erroneously placed; they discovered the fertile kingdom of Loggun, perhaps the Cauga of Edrisi, and the great mountain region of Mandara, which appears to be the *Mons Mandrus* of Ptolemy. The subsequent expedition of Clapperton from the Gulf of Benin showed the connection between the Atlantic coast and the interior, and completed the diagonal section made across the greatest breadth of the African continent. It showed also the continuity of large and populous kingdoms extending in this direction: Eyeo, the Gago of Leo and the early geographers; Zegzeg, with its large capital Zaria; Nyffé, the most industrious of the African states; Boussa, Koolfu, and other flourishing cities. The Niger of Park was here seen holding a southerly direction towards the Gulf of Benin; but it was reserved for Lander finally to solve the grand

problem by tracing the Niger down to its termination in the Gulf of Benin. This discovery, with that of its numerous tributaries, opens to British commerce the prospect of being able to penetrate into the most interior and finest regions of the African continent.

203. *Among partial but important contributions* to the knowledge of Africa, may be mentioned the observations of Bruce and Salt in Abyssinia; those of Brown in Darfur; of Waddington and Caillaud in the upper part of the Nile; and, lastly, of Lichtenstein, Campbell, and Burchell, upon the countries which lie in the interior northward from the Cape of Good Hope. Yet a vast field still remains for future discovery. In particular, all the southern interior, from the equator nearly to the Cape, has scarcely been the subject even of rumour. The sources of the Nile, after the search of so many ages, are yet unexplored; as well as that wide range of territory which intervenes between it and the series of rivers which we have just noticed as assuming the name of Niger. The continuity and structure also of that vast chain of mountains, which, according to recent travellers, appears to cross Africa at its greatest breadth, and gives rise to so many mighty streams, has yet by no means been completely traced.

Chap. VIII.

MODERN GEOGRAPHY OF AMERICA.

204. *The discovery of America*, as formerly observed, was made in the first instance with extraordinary rapidity. The thirst for gold and the spirit of adventure urged nation after nation to explore its coasts, and penetrate its interior. Within twenty years was formed a full and tolerably precise outline of the whole western coast, from the mouth of Hudson's Bay to the Straits of Magellan. The conquests of Cortez, of Pizarro, and of their immediate successors, soon conveyed a pretty accurate idea of the western coast of South America, of Mexico, and even of the peninsula of California. But the northern regions, stretching into the ices of the Pole, presented barriers of a formidable description, which long baffled the utmost efforts of navigators. America on this side resisted for a longer time the attempts to complete its delineation than any other continent.

205. *To explore the North-western coast* seems to have been an undertaking properly belonging to Spain, the possessor of all the vast and opulent regions which extend along the Pacific. Recent notices have shewn that they did not altogether neglect that enquiry, for Cortéz and several of the other viceroys sent expeditions along this coast, to which they gave the name of New Mexico. The Spaniards, however, as usual, shrouded in deep mystery even these limited discoveries, and were long able to prevent the other nations of Europe from visiting this coast, the most remote and inaccessible of any in the circuit of the globe. Europeans, therefore, were not aware of the vast breadth to which this continent expanded towards the north. They rather supposed that, like South America, it narrowed to a point or cape, upon passing which the navigator would enter upon the expanse of the Pacific, and might bear down upon Japan, China, and the East Indies. The commercial nations therefore made vigorous and almost ceaseless efforts to turn this point, and effect, as they imagined, a nearer and more direct route into the eastern seas.

206. *The English took by much the most decided lead in this important career.* Under the reign of Queen Elizabeth, Frobisher and Davis made each three successive voyages. One discovered the entrance into Hudson's Bay, the other found the entrance into the great sea which bears the name of Baffin's Bay; but, partly arrested by the well known obstructions to which these seas are liable, partly diverted by a chimerical search after gold, they could not penetrate beyond the numerous islands and inlets by which these entrances are beset. Hudson, in 1610, steered a bolder course, and entered the vast bay, which has received its appellation from that great navigator, who there unfortunately terminated his adventurous career. The treachery of a ferocious and mutinous crew exposed him on these frozen and desolate shores, where he miserably perished. Sir Thomas Button followed in 1612, and finding himself in the middle of this capacious basin, imagined himself already in the Pacific, and stood full sail to the westward. To his utter dismay he came to the long continuous line of shore which forms the western boundary of Hudson's Bay. He expressed his disappointment by giving to the coast the name of "Hope checked." Bylot and Baffin, who followed three years after, were stopped by the ice at Southampton Island. Baffin, however, made afterwards a more important voyage, in which he completely rounded the shores of that great sea which bears his name, and which, appearing to him to be inclosed on all sides by land, has been denominated Baffin's Bay. The error involved in this appellation deterred subsequent navigators from any further attempt; for Baffin, in passing the great opening of Lancaster Sound, had concluded it to be merely a gulf. From that period the English navigators, though they ceased not to view this object with ardour, hoped to fulfil it only by the channel of Hudson's Bay. In 1631, two vessels were sent thither under Fox and James.

The latter, entangled in some of the southern bays, returned after dreadful sufferings from the cold of the winter; but the former, quaintly calling himself North-west Fox, explored a part of that great opening called Sir Thomas Roe's Welcome, which appeared now to afford almost the only hope of a passage; but he stopped short at a point which he termed "Fox's farthest." Under Charles II. a company was formed for the purpose of settlement and commerce in Hudson's Bay, and engaged to make the most strenuous exertions to discover a western passage; but it is believed that the only exertions really made by the Company tended to prevent any such discovery. Middleton, an officer in their service, was sent out in 1741, sailed up the Welcome, and believed himself to have discovered that the head of that channel was completely closed. He was strongly charged with having received a high bribe from the Hudson's Bay Company to stifle the discovery, and Moor and Smith were sent out in the following year with the most sanguine hopes; but when they returned without having effected any thing, the public expectations were greatly abated. It became the general impression that America, on this side, formed a mass of unbroken land, and that the long sought passage had no existence.

207. *New views of the extent and form of the northern extremities of America* were opened by the discoveries of Cook, corroborated by those of some other English navigators in the Northern Pacific. It appeared that America there stretched away to the north-west, till it reached a breadth equal to one fourth part of the circumference of the globe. Cook penetrated, indeed, through the strait which bounds the continent and separates it from Asia; but the coast appeared there extending indefinitely north; and it became a general impression that America formed a huge unbroken mass of land approaching the Pole, and perhaps reaching that ultimate point of the globe. This belief received a sudden shock from Hearne's voyage down the Copper Mine River, and his discovery of the sea into which it fell, in a latitude not higher than that of the north of Hudson's Bay. Soon after, Sir Alexander Mackenzie traced also to the sea another river twenty degrees farther west. There was now a strong presumption that a sea bounded the whole of America to the north, and that there really was such a passage as had been so long sought, and might be found, were it not too closely barred by ice and tempest. The British administration, animated with an active and laudable zeal in the cause of discovery, determined that no possible effort should be omitted by which this important and long agitated question might be brought to a final decision.

208. *A series of exploratory voyages was now begun.* Capt. Ross, in 1818, made the circuit of Baffin's Bay, and returned with the belief that no opening existed: Lieut. Parry, second in command, formed a different judgment, and having satisfied the Admiralty as to his grounds of belief, was sent out with the command of a new expedition. In this memorable voyage, Capt. Parry penetrated through Lancaster Sound, which he found to widen gradually, until it opened into the expanse of the Polar Sea. He did not touch on any part of the American coast, but found parallel to it a chain of large islands; and his progress through these was arrested, not by land, but by straits and channels encumbered with ice. In consideration of these obstacles, his next attempt was made through Hudson's Bay, by the yet imperfectly explored channel of the Welcome. Struggling through various obstacles, he reached at length a point considerably beyond that where Middleton had stopped, and found a strait opening from Hudson's Bay into the Polar Sea. This strait was, however, so narrow, and so completely blocked with ice, that there appeared no room to hope that it would ever afford an open passage. Capt. Parry was therefore again sent out in his first direction; but he made no material addition to his former discoveries. Meantime a land journey, under Capt. Franklin, following in the footsteps of Hearne, reached the sea, and discovered a considerable extent of the hitherto unknown northern coast of the American continent. A tolerably clear glimpse was thus obtained of its extent and boundaries; and the zealous efforts of government were employed to verify the whole by actual survey. A second expedition under Capt. Franklin extended this survey over three fourths of this boundary coast, and reached beyond the 146th degree of longitude. Meantime an expedition, under Captain Beechey, sent to meet Captain Franklin from the westward, passed the Icy Cape of Cook, and arrived at nearly 156° W. longitude; between which point and Captain Franklin's farthest limit there intervened only 7°, or 160 miles.

209. The belief was hence entertained, that the whole coast extended in a line not varying much from the 70th degree of latitude; but the important expedition, which Captain Ross has just achieved through so many difficulties, proves the existence of a large peninsula, extending as far north as 74° N. latitude. It remains still probable that a naval passage may exist farther north, in the line of Captain Parry's first voyage. But the encumbering ice is so thick, and so wedged into various straits and channels, that probably no vessel will ever be able even once to work its way through; and certainly a ship could never set out with any assurance of thus finding its way from the Atlantic into the Pacific. Britain has, however, reaped an ample share of glory in contributing so essentially to delineate the boundaries and dimensions of this great and important continent.

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Chap. IX.

MODERN GEOGRAPHY OF THE AUSTRAL SEAS AND ISLANDS.

210. *More than half the surface of the globe, including long groups of islands and vast expanses of ocean,* remained unexplored, even after regular naval routes had been formed round the Cape of Good Hope, and Cape Horn; yet there soon arose the belief of an Austral continent, as extensive and as abounding in wealth as that which had been discovered by Columbus. An ideal balance was fancied, which it was supposed must exist between the lands of the northern and those of the southern hemispheres; and the more disproportionate the extent of sea which existed in the known parts of the latter, the greater it was supposed must be the mass of southern continent which was to establish this ideal, imaginary balance. In all the early maps, a huge continental mass encircles the Antarctic pole, and presents to the great ocean a continuous circuit of shore reaching round the globe: the above analogies were doubtless aided by discoveries made on great insular tracts of the South Sea, so partial that they might be mistaken for promontories, or portions of a great mass of Antarctic land.

211. *The Portuguese,* so long the most skilful and intrepid navigators of the ocean, appear to have been the first who threw any light upon this fifth and most remote portion of the earth: in less than twenty years after their passage of the Cape they had reached the most extreme islands of the Oriental Archipelago, including Java and the Moluccas, and appear even to have observed some parts of the coast of New Guinea. There are no records of their having proceeded farther; but maps have been found in the British Museum, and other collections, which exhibit an extensive land to the south of Java, under the title of Java Major, on which occur a number of names, some of them Portuguese: one of these maps, partly translated into French, has the "*Côte des Herbages,*" a name somewhat curiously coinciding with Botany Bay. None of these discoveries, however, have been embodied in any known narration.

212. *The Spaniards also,* during their early and adventurous career, made strenuous efforts to explore the southern seas: Magellan, as already observed, by his first circumnavigation of the globe, effected a grand step in geographical discovery. Alvaro Mendana, in 1568, sailed from Lima, and, after crossing the breadth of the Pacific, discovered a group of large maritime lands, to which, from a chimerical reference to Ophir, he gave the name of "Islands of Solomon:" they appear to be part of that great group which forms the outer range of Australasia. Mendana set out on a second voyage, and reached the same quarter, but, by some fatality, could not again find the islands formerly discovered. Quiros made a still more important expedition: he passed through the Polynesian group; and Sagittaria, one of the islands discovered by him, appears clearly identified with Otaheite: he terminated his voyage, like Mendana, among the exterior islands of Australasia; and with him expired the spirit of Spanish enterprise.

213. *The Dutch,* when they had expelled the Portuguese from Java and the Spice Islands, and had established in them the centre of their Indian dominion, were placed in such close proximity with New Holland, that it was scarcely possible for a great maritime nation to avoid extending their search to that region. Van Diemen, the Dutch governor of India about the middle of the seventeenth century, greatly promoted this object, and sent successive vessels to explore the coast of New Holland. Hertog, Carpenter, Nuytz, and Ulaming made very extensive observations on the northern and western shores, but found them so dreary and unpromising, that no settlement of any description was ever attempted. Abel Tasman, however, went beyond his predecessors; he reached the southern extremity of this great mass of land, to which he gave the name of Van Diemen, without discovering it to be an island: he then sailed across, surveyed the western coast of New Zealand, and returned home by the Friendly Islands. This important range of discovery was not followed up; it refuted, however, the delineation by which New Holland had been made part of the imagined Austral continent. In the newly arranged charts, that continent still remained, but with its position shifted farther to the south, and New Zealand probably contributing to form part of its fancied outline.

214. *The English nation,* by the voyages of several navigators, and particularly of Cook, secured the glory of fully exploring the depths of the great Pacific. The previous voyages of Byron, Wallis, and Carteret had already made known some of the interesting groups of islands with which its vast surface is studded. Cook fully traced the great chains of the Society Islands, and of the Friendly Islands; he discovered and surveyed the eastern coasts of New Holland and Van Diemen's Land. He settled the form and relations of New Zealand, New Caledonia, and the other great Australasian lands and islands. This side he passed thrice the Antarctic circle, and ranging along the yet unvisited borders of the southern pole, solved, by refuting, the famous modern hypothesis of an Austral continent. He navigated also through the northern Pacific, observed carefully the group of the Sandwich Islands, and established, in the manner before pointed out, the relation between the continents of Asia and America. Many eminent navigators, among the French, La Perouse, Marchand,

D'Entrecasteaux; among the Russians, Kotzebue and Krusenstern; among the English, Vancouver and Beechey, followed; and, though the grand prizes of discovery had been carried off, found still some gleanings in so vast a field. The circumnavigation of the globe has ended in becoming a mere trading voyage, which conveys neither name nor glory to him by whom it is achieved. Captain Weddell, however, has lately, in New South Shetland, found a tract of land situated nearer to the Antarctic pole than any previously supposed to exist.

215. *New Holland*, much the most extensive of the lands belonging to the southern hemisphere, and rendered doubly interesting by its recent relations with Europe, has formed the theatre of the latest southern discoveries. Mr. Bass, in an open boat, found the strait which bears his name, separating New Holland from Van Diemen's land, and making the latter a separate island. Baudin and Flinders, contemporaneously employed by the French and English nations, made a continuous survey of the vast circuit of its coasts, which had been before touched only at partial points. At a later period, Freycinet made some additional observations; and King found still a great extent of north and north-western coast to survey for the first time. More recently, the discovery of Swan River and its shores promises to redeem the reproach of sterility which had been attached to the whole western coast of this continent: the interior on the eastern side also, though guarded by steep and lofty barriers, has, through the exertions of Mr. Oxley and others, been penetrated to a considerable depth, and found to contain extensive plains traversed by large rivers. Still the explored tracts form only a small proportion of the vast surface of this southern continent.

PART II.

PRINCIPLES OF GEOGRAPHY.

216. *Among the various branches of human knowledge* there is so intimate a connection, that no science can be truly said to be independent of all others. Some, indeed, may be regarded as primary, because, to a certain extent, they have had an independent existence, and because other sciences have sprung from them. Such, for example, are arithmetic and geometry, the prolific parents of all the branches of modern mathematics. Other sciences, again, are connected by collateral relationship, in respect of their affording mutual aid: and in this manner all the branches of human knowledge depend one on another, each repaying the advantages which it has received.

217. *The subject of this treatise*, GEOGRAPHY, which in common with other sciences owes its origin to the wants of man, joined with his inherent desire of knowledge, has arrived at its present state of improvement by the aid of several sciences, and of a very great number of the arts which are the fruit of human ingenuity. It is more particularly indebted to the mathematical sciences, either directly, as furnishing rules and methods by which the magnitude of the earth, its figure, and the position of the different parts of its surface, may be determined; or indirectly, inasmuch as it has been improved by astronomy, navigation, and other sciences which owe their perfection to the mathematics. To the arts its obligations are innumerable: for every step of progress which has been made in the construction and management of ships, in the fabrication of mathematical, optical, and nautical instruments, and in the collateral arts on which these depend, has contributed to the advancement of geographical knowledge.

218. *The doctrines of geography* strongly support, and have a close affinity with, those of astronomy. It is only by the application of this latter science that we have been able to discover the true figure of the earth, and its magnitude: and some of the most important divisions of the earth's surface are marked out by astronomical phenomena. On the other hand, an exact knowledge of the figure and magnitude of the earth is of the highest importance in the explication of the more recondite doctrines of astronomy. Hence, while the doctrines of astronomy involve the principles of geography, it holds equally true that the principles of geography can only be understood by a due application of some of the more simple theories of astronomy.

219. *The science of geology* has, if possible, a still more intimate connection with the description of the earth. While astronomy delineates the form and movements of that planet, and its relation to other bodies in the universe, geology describes the materials which compose its surface, and the order in which they are arranged, with the composition and phenomena of the surrounding atmosphere. The various inequalities into which it is formed, the distinction of land and sea, with their origin and effects, come all within the sphere of this important science.

220. *The organised and living beings* which cover the surface of our planet, form a most interesting feature in its delineation. For the support and nourishment of these, the whole

of its vast structure was originally destined. In taking a survey of this interesting range of objects, we may begin with plants; then ascend to animals; and, lastly, to man, who holds the chief rank in the constitution of this lower world.

221. *Three divisions, comprehending each a separate book,* will, on the grounds now stated, comprehend the Principles of Geography: these are — I. Astronomical Principles. II. Geological principles. III. Geography considered in relation to the organised living and rational natures which cover the surface of the earth.

BOOK I.

ASTRONOMICAL PRINCIPLES.

Chap. I.

GENERAL VIEW OF THE PHENOMENA OF THE HEAVENS, APPARENT MOTIONS, FIXED STARS, PLANETS, &c.

222. *The succession of day and night brings under our observation the sun, the moon, and an innumerable multitude of luminous bodies,* which appear like points on the concave surface of the heavens. Of these the sun and the moon are the most remarkable. The sun at all times presents to us a circular disc: the disc of the moon is also at certain periods circular, but she undergoes a succession of changes in the appearances of her luminous part, which are denominated *phases.* With regard to the distances of the sun and moon from this earth, we are certain that they are very remote; for we observe that their apparent magnitude is not sensibly affected by any change in our local position. We may with probability suppose the stars to be bodies of the same nature with the sun and moon, appearing smaller only because they are at a greater distance.

223. *The apparent motion of the heavens from east to west* about a fixed point in the northern quarter of the sky, as seen in this country, is a phenomenon quite familiar to every one. If we change our position on the earth by going always south, this fixed point appears to descend, and at last it sinks below the horizon: but we now perceive that there is another fixed point in the southern region of the heavens, exactly opposite to the former, about which the diurnal motion is also in like manner performed. These two points are the NORTH and SOUTH, or the ARCTIC and ANTARCTIC POLES of the heavens.

224. From what we see on the earth's surface, we learn by experience that *the real and apparent motions of bodies may be very different.* An observer in a vessel carried along by the current of a river, will feel disposed to believe himself at rest; and then, if he were to judge from appearances, he would suppose that trees and fixed objects on the banks were in motion, because of the apparent change in their relative positions. Hence we may infer, that we cannot judge immediately respecting the absolute motions of the heavenly bodies from their apparent motions. It has only been by a series of nice observations, and the application of the doctrines of mathematics, that the former have with absolute certainty been deduced from the latter.

225. *The general phenomena of the apparent motions* have, however, been discovered by the ordinary observation of mankind from the remotest ages. To a spectator in any place of the earth, the whole system of the celestial bodies appears as if placed on the surface of a concave sphere, the centre of which is the place where he stands; and this sphere appears to revolve daily on an ideal line which passes through the poles of the heavens, and is called the AXIS of the world. Although the supposition that the celestial bodies are all situated in the surface of a sphere, of which the eye is the centre, be perfectly consistent with the appearance of the heavens, it is easy to understand that this may be a consequence of their immense distances. To an observer standing on an extensive plane, objects very remote around him, though at unequal distances, would appear in the circumference of a circle having his eye in the centre.

226. Besides the diurnal motion of the heavenly bodies, which is common to them all, we discover that some of them have *peculiar motions by which they change their apparent places in respect of one another.* Thus we see the MOON in the course of about a month describe a circle quite round the heavens from west to east. The SUN also appears to change his position daily, and to go round the heavens from west to east in a year. It is in consequence of this peculiar motion of the sun, that we find different stars at different seasons of the year set immediately after him, or rise immediately before him; and that the appearance of the heavens through the course of the year is continually changing.

227. From the remotest antiquity *five* stars had been observed to change their position; and in modern times five others have been discovered. These "wandering stars" have been appropriately denominated PLANETS; and, generally speaking, they can be seen at all times, except when their feeble light is rendered insensible by the effulgence of the sun. The planets have received particular names, and are distinguished by particular characters; these are Mercury ☿, Venus ♀, Mars ♂, Vesta ⚶, Juno ⚵, Ceres ⚳, Pallas ⚴, Jupiter ♃, Saturn ♄, Uranus ♅.

228. *There are other luminous bodies* having a proper motion, which are seen for a short time and afterwards disappear. Their existence, however, is permanent. They are distinguished from the planets by their being visible only for a short period, and also by a train of light proceeding from them on one side, forming a *tail;* these bodies are called COMETS. Their number is not known, but it appears to be very considerable.

229. *Besides the sun, moon, planets, and comets,* there are other luminous bodies visible every clear night; these retain always the same position in respect of each other, and for this reason are denominated FIXED STARS. Their apparent motion about the axis of the celestial sphere is perfectly uniform, and a complete revolution is performed in about 23 hours 56 minutes.

230. *By the permanence of the relative situations of the fixed stars* on the concavity of the celestial sphere, we are enabled to determine the apparent motions of the other heavenly bodies. Of these the motions of the sun and moon are the most conspicuous and simple. The motions of the planets appear more complicated, and are considerably different from one another. This dissimilarity might well lead to a conjecture, that the real motions of the heavenly bodies are very different from the apparent motions, and that these last are modified by the real motion of the earth. This conjecture we shall afterwards find fully verified.

231. *All the heavenly bodies* which this general survey has brought under our notice, with their motions and mutual relations, form the subject of ASTRONOMY, which of all the natural sciences presents the most extensive series of discoveries. By observing for ages, and determining with exactness the positions of the sun, moon, and stars; by tracing and measuring with precision their various motions; and by employing all the resources of mathematical science in investigating the constant laws to which these motions are subject, the human mind has succeeded in passing from the first cursory view of the heavens, to that comprehensive survey by which, in the present state of astronomical science, we contemplate the past and future states of the system of the universe.

CHAP. II.

THE HEAVENS AS SEEN THROUGH THE TELESCOPE.

232. *From the discovery of the telescope,* and its application to the purposes of astronomy, a new era may be dated in that science. The number of stars visible to the naked eye is about three thousand, which appear scattered over the concave surface of the heavens. Even in the clearest night, and in the absence of the moon, seldom more than two thousand are seen at once. They are not distributed indiscriminately over the heavens, but are disposed in groups, which from the remotest antiquity have received distinct names, and these have been employed to facilitate the description of the heavens, and the reference to any particular star. The ancients imagined the figures of various personages of their mythology, and of animals, &c. to be traced on the concave surface; these figures they called *constellations,* and considered a group of stars to belong to each. To some of the brighter stars, and to those more remarkable for their position, proper names have been given.

233. *The distinction founded on the different degrees of brightness* of the fixed stars, is the most obvious which occurs to the spectator while his vision is unassisted by the telescope, and has, accordingly, been employed for the purpose of classifying them. The stars visible to the naked eye have been, on this principle, arranged under six *magnitudes.* The brightest are reckoned to be of the first magnitude, the next in brightness of the second, and so on to the sixth magnitude. The arrangement of the stars has been still farther facilitated by combining the principle of this last-mentioned arrangement with the method of constellations. In maps of the heavens and on celestial globes the constellations are delineated, and the stars in each constellation are marked with the letters of the Greek alphabet according to their degrees of brightness.

234. The use of the telescope has greatly increased *the number of visible stars;* and has at the same time discovered to us many particulars before unknown respecting those that are visible to the naked eye. Many of the stars which to unaided vision appear single, are found, when observed through a telescope of high magnifying powers, to consist of two, sometimes of three or more stars extremely near to one another. Seven hundred of these

multiple stars were observed by Sir William Herschel, and the number has been increased by the joint labours of his son and Sir James South, also by the German astronomer Struve. In some of them the small stars are different in brightness and in the colour of their light. Thus α Herculis is double; the larger of the stars is red, the smaller blue: ε Lyræ is composed of four stars; three white, and one red: γ Andromedæ consists of two stars very unequal, the largest a reddish white, the smallest a sky-blue inclining to green. Some single stars evidently differ in their colour: Aldebaran is red, Sirius of a brilliant white.

235. *Nebulæ* are small luminous spots of a cloudy appearance and irregular shape, seen in many places of the heavens. The most remarkable appearance of this kind is the Galaxy, or Milky Way, which encompasses the whole heavens, and is visible to the naked eye. The Sword of Orion contains a beautiful nebula. Two occur in the head of the Great Bear, one of an oval shape, the other round like a comet without a tail. Viewed through a telescope of great magnifying power these luminous spots are resolved into a multitude of small stars, distinctly separate, but apparently very near one another, whose light being blended together produces the luminous appearance. In a portion of the Galaxy, about fifteen degrees in length, and two in breadth, Dr. Herschel found no fewer than fifty thousand stars large enough to be distinctly counted. The number of nebulæ is very considerable, Herschel discovered two thousand; before his time only one hundred and three were known.

236. Continued observation has shown that *the fixed stars are not altogether exempt from change.* Several stars mentioned by the ancient astronomers are no longer visible, while some are now seen by the naked eye which are not in the ancient catalogues. Some stars have suddenly appeared, and after having been seen for a short time have ceased to be visible. In 1572 a new star appeared in Cassiopeia's Chair; and in 1604 another appeared in Serpentarius. These stars did not change their places: but having gradually increased in brilliancy, until they exceeded Venus or Jupiter in brightness, and were even seen in the day-time, they diminished in the same gradual manner, and in a few months entirely disappeared. Some stars are observed to have periodical changes of brightness. Of this description is Algol, or β Persei: when brightest it is of the second, and when least bright of the fourth magnitude. It goes through all its changes of lustre in four days, twenty-one hours. Other stars, like β in the Whale, have gradually increased in brilliancy; or, like δ in the Great Bear, have continually diminished in brightness.

237. *The fixed stars,* when viewed through the telescope, appear like luminous points on the concave surface of the heavens; but the planets are found to exhibit the appearance of discs of greater or less diameter. Mercury and Venus accompany the sun, appearing at one time on the east, and at another time on the west of that luminary, and never receding from him beyond a certain distance. The other planets recede from the sun to all possible angular distances. Connected with this circumstance is a distinction which it is useful to make of *inferior* planets and *superior* planets; the former appellation being applied to Mercury and Venus, and the latter to the remaining planets.

238. *Mercury and Venus,* as they oscillate about the sun, exhibit all the phases of the moon. From having the appearance of a crescent they gradually assume that of the half moon. The illuminated part of the disc increasing, they become gibbous, and at last present a complete circular disc, like the full moon. From this state of illumination they again pass through the same appearances in an inverted order, until they disappear altogether. Sometimes these planets are seen like black spots in the sun; these appearances are called *transits* of the planets over the sun's disc. They are rare, but when observed, particularly the transit of Venus, they give the best means of determining the magnitude of the solar system. In all the phases of Mercury and Venus the convexity of the illuminated portion of the disc is turned towards the sun.

239. *The discs of the other planets* are always nearly circular. Mars, however, in certain positions with regard to the sun, assumes a gibbous appearance; but he never becomes cornicular like Venus. He has no satellite. As viewed from the earth, he is known by his red and fiery appearance. Dr. Herschel observed that the polar regions of Mars, after having been turned from the sun, appeared brighter than the rest of the planetary disc; just as if these regions had in the absence of the sun's heat been covered with snow.

240. *Certain spots appear* on the discs of the sun and the four planets Venus, Mars, Jupiter, and Saturn, when they are viewed through the telescope, and are distinguished from other parts of the discs by the colour or intensity of their light. Similar spots are seen on the moon with the naked eye. Jupiter has also his disc marked with several parallel belts or stripes, which stretch across it. They are subject to considerable variation with regard to number, breadth, and distance from each other. Mercury is too much immersed in the solar rays; Vesta, Ceres, Juno, and Pallas are too small; and Uranus is too distant to allow points of unequal brilliancy to be observed on their surface. The spots upon the sun are very variable in their number, position, and magnitude. Often they are numerous, and of great extent. Each of them, in general, consists of a dark space, or *umbra,* surrounded by a *penumbra,* or fainter shade, beyond which is a border of light more

brilliant than the rest of the sun's disc. Sometimes, though seldom, the sun has been without spots for several years: this was the case from 1676 to 1684. The dark nucleus of the spot is seen to form and disappear amidst the greater brilliancy that surrounds it. After the nucleus ceases to be seen, the umbra continues visible for some time: the place where it at length disappears becomes like the other parts of the solar surface, unless it be succeeded, which is sometimes the case, by a luminous spot. Umbræ of great extent have, with few exceptions, a nucleus in their centre; but small umbræ are often seen without it.

241. *The solar spots* are never stationary, but are seen to move slowly over the sun's disc from east to west. Their paths across the disc, when accurately traced, are found to be rectilineal in the beginning of June, and in the beginning of December; but in the intermediate seasons they are found to be elliptic. Between June and December the convexity of the path is towards the upper part of the disc, and between December and June it is towards the lower part.

242. *The planet Jupiter*, when viewed through the telescope, appears to be attended by four small stars, ranged nearly in a straight line, which are seen sometimes on the same side, and at other times on opposite sides of the planet. These small stars occasionally pass between us and Jupiter, and then they are found to project shadows which are seen to traverse his disc. On the other hand, they are often immersed in the shadow of Jupiter, and exhibit the phenomenon called an *eclipse*. The planets Saturn and Uranus are also similarly attended, the former by seven, and the latter by six, little stars. These accompanying stars are called satellites, and also *secondary planets*, in contradistinction to the others, which are called *primary*.

243. *Saturn* is distinguished from all the other planets, in being surrounded by a circular *ring* concentric with itself. When first examined by the telescope, this planet was almost always seen between two small luminous bodies of an irregular form, which seemed to be attached to it, and which, as they suggested the idea of handles, were denominated *ansæ*. Sometimes the ansæ disappeared, and then Saturn appeared round like the other planets. By tracing with care these singular appearances, and combining them with the positions of Saturn relatively to the sun and the earth, Huygens at last discovered that they are produced by a ring which encompasses the body of the planet, and which is every where separated from it. Being seen obliquely, the ring appears of an oval or elliptic form. Before the time of Herschel the ring of Saturn was supposed to be single; but this distinguished astronomer discovered that it is double: so that two rings concentric, and in the same plane, constitute what was formerly supposed to be a single ring. The ring, which is very thin, is inclined to the plane of the ecliptic. It revolves from west to east in 10ʰ 39′ 54″. Its breadth is nearly equal to its distance from Saturn; that is, about one third of the diameter of the planet. The interval between the rings is very little; yet Dr. Herschel saw a star through it. The inner ring is somewhat broader than the outer.

Chap. III.

APPROXIMATION TO THE FIGURE AND MAGNITUDE OF THE EARTH.

244. *The true figure and exact magnitude of the earth* are elements of the highest importance in geography. Their determination, however, has required the aid of astronomy in its most improved state; yet it is necessary, to the explanation of the general doctrines of astronomy, that we should, in the outset, know nearly its figure and magnitude: we shall afterwards explain by what means the first conceptions have been corrected, and its true figure and magnitude found. Having now pointed out, generally, the phenomena of the heavens — taking into view the more remarkable discoveries made by aid of the telescope — we are next to consider *the causes and mutual dependence of these phenomena*. The first step towards obtaining an explication of the motions of the heavenly bodies, is to form some notion of the figure and magnitude of the earth which we inhabit, and from which all the celestial phenomena are observed. To a person placed in an elevated situation in an open country, where the view is unconfined on all sides, the earth appears an extended plane, with the concave sphere of the heavens resting upon it, — the horizon being the common boundary. This appearance is, however, altogether illusory.

245. *The earth is a round body*, and is isolated in space. This is sufficiently established by the following facts: —

1. To an observer who travels from north to south the nocturnal heavens appear continually to change their aspect. The stars, indeed, retain the same relative position in respect of each other, and the points on which the heavens appear to revolve remain unchanged; but the angle, which the axis of their motion forms with the horizon, continually decreases; so that stars which, at the place from which he set out, appeared to reach their greatest elevation to the south of the point directly over his head, now that he has changed his position,

appear, when highest, on the north of that point. This clearly indicates that his path on the earth's surface has not been a straight line, but a curve of which the convexity is turned towards the sky.

2. The convexity of the earth is quite apparent to a spectator in a ship receding from the shore. At first low objects disappear; then those more elevated; and at last the highest points of the land sink in the horizon, on account of the direct visual ray being broken by the interposed curved surface of the ocean. In like manner, when two ships approach each other, the navigators in each see at first the upper part of the rigging of the other vessel, the hull being still invisible: as the distance becomes less the body of each vessel comes gradually into view. The reverse happens if the distance between the vessels is increasing. From these appearances it is evident, that a straight line joining any two points of the earth's surfaces passes within the body of the earth.

3. That the horizon of the sea, which, to the eye, terminates its surface, is only an apparent limit in reference to the position of the observer, is evident from the fact, that if we advance towards it we find it recede; and, at the same time, we still imagine ourselves placed in the centre of an extended plane, bounded by the line in which the heavens and earth appear to meet. This is what the navigator uniformly experiences; while, to an observer on the shore, his vessel appears to sink below the horizon; and by continuing to sail in the same direction, he will at last arrive at the same port from which he set out, — having thus circumnavigated the earth. This enterprise has, it is well known, in numerous instances, been accomplished by navigators, who have left the shores of Europe and returned home, some by sailing always towards the west, and others by holding an easterly course. This great experiment demonstrates that the sea and land have a curved surface which returns into itself, so that no part of it is touched by the heavens.

246. *There are other phenomena* which prove that the earth, if not an exact sphere, is at least nearly of that figure. The various appearances of the moon, in the course of her revolution round the earth, show that she is an opaque body, and is visible only by the reflected light of the sun. The earth being also an opaque body, must project a shadow in a direction opposite to the sun. It will afterwards be shown that the moon, when full, must sometimes pass through this shadow. In this case, when the moon begins to penetrate, or is about to leave, the shadow, the greater part of the disc is still illuminated by the sun; and it is found that this luminous part is always of the form of a crescent, having its concave side bounded by an arch of a circle. The section of the earth's shadow, shown by its projection on the moon, is, therefore, as to sense, circular, — a proof that the earth is a sphere, or nearly of a spherical figure; whence we may conclude that there is a point within the earth which is its centre.

247. *That the earth is a round body, is thus completely proved* by experience and observation; yet, when this doctrine is presented to the mind for the first time, there is some difficulty in believing that the earth is balanced, as it were, on its centre, without any visible support; while all things at rest on its surface require to be supported. We must, however, consider that the bodies which we see fall towards the centre of the earth are mere atoms in comparison to the earth itself; and that, although their tendency to its centre is another fact established by experience, yet it does not thence follow that the earth itself should move towards one point of space rather than towards another. A little reflection will show that there is no inconsistency in supposing the earth, an immense mass, to be at rest, and all things to be retained on its surface by some force analogous to that by which a piece of iron is drawn towards a magnet. This is really the fact; and a consequence of it is, that on opposite sides of the earth its inhabitants stand in opposite directions, with their feet towards each other, for which reason they are called *Antipodes;* and every country has its own Antipodes.

248. *The knowledge of the true figure and magnitude of the earth* is of the greatest importance in geography, and on this account we shall treat of them in a particular manner. In the mean time, as a near approximation to the truth, the earth may be considered as differing but little from a sphere, 7916 miles in diameter, and consequently nearly 24,870 miles in circumference. In geometry, the circumference of every circle is supposed to be divided into 360 equal parts, called degrees; and each of these into 60 equal parts, called minutes, and so on. A degree, therefore, of any circle on the earth's surface, whose centre is the same with that of the earth, will be rather more than 69 miles; and a minute of a degree will be about 1$\frac{3}{20}$ mile.

Chap. IV.

DOCTRINE OF THE SPHERE.

249. *The motions of the celestial bodies being in appearance all performed on a sphere,* of which the eye of the spectator is the centre; with a view to describe the nature of these mo-

tions, it has been found expedient to suppose certain circles to be traced on this sphere, to which, also, the positions of the heavenly bodies in space are referred.

250. *The distance of the fixed stars* is immensely great in respect of the earth's semidiameter: for it is found that, when viewed from any two points of the earth's surface, they have the very same relative position, and the same apparent distances, at a given instant of time. Hence it follows, that the appearance of the heavens, and the angular distances of the fixed stars, will be, as to sense, the same, whether they be viewed from the centre of the earth, or from a point on its surface. We may, therefore, conceive the axis of the diurnal revolution to pass through the centre of the earth, which will be also the centre of the celestial sphere.

Definitions.

251. *A great circle* of the sphere is that whose plane passes through its centre: and all others are called small circles.

252. *A circle of the celestial sphere,* whose plane passes through the earth's centre, and is perpendicular to the axis, is called the Equator. The line in which this plane meets the earth's surface is called the Equator of the earth, or the Equinoctial.

253. *To illustrate this by a diagram,* let c be the centre of the sphere (*fig.* 15.), which we suppose to coincide with the centre of the earth, and let $P c p$ be the axis; then the circle, whose diameter is $E Q$, which passes through c, and is perpendicular to $P p$, is the *Equator.* The circles which the stars describe by the diurnal revolution, are all parallel to the Equator. Such is the circle whose diameter is $A B$.

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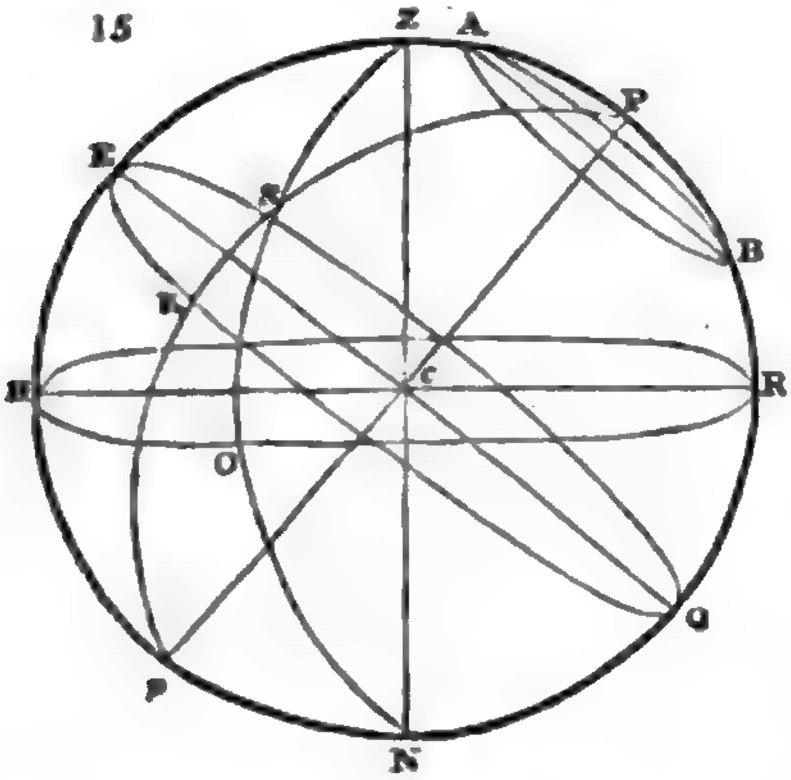

254. *A circle,* whose plane passes through the poles, is called the Meridian, and the section of the earth's surface made by this plane is called the Meridian of all the places through which it passes. Thus $P E p Q$ is a meridian circle in the heavens. The number of these circles is indefinite.

255. *By the geometrical properties of a sphere,* the plane of any meridian cuts the planes of the equator and all circles parallel to it at right angles.

256. *We know by observation,* that any body at rest, and let fall from a point above the earth, will, by its weight or gravity, descend in a straight line. This line is the *direction of gravity:* it is also indicated by the direction of a cord to which a plummet is suspended, and is every where perpendicular to the surface of water at rest. If, now, a line in the direction of gravity at any point on the earth's surface be produced indefinitely upward and downward, this line, called a Vertical, will mark, on the celestial sphere, two points called the Zenith and Nadir. The former is the point in the heavens immediately over head. A plane conceived to pass through any plane on the earth's surface at right angles to the line joining its zenith and nadir, will, when extended to the heavens, meet the sphere in a circle, which is the Horizon of that place. A plane that passes through the earth's centre, and is parallel to the plane just now defined, will meet the sphere in a circle, which is also called the Horizon; but, to distinguish the one from the other, the former is called the Sensible, and the latter the Rational Horizon. On account, however, of the smallness of the earth's semidiameter, when compared with the immense distances of the fixed stars, the two horizons are, as to sense, the same.

257. The zenith is at Z (*fig.* 15.), and nadir at N. The circle H O R is the horizon.

258. *If the earth were a perfect sphere,* the direction of gravity being every where perpendicular to its surface, all bodies would tend towards its centre. But if there be *any deviation from the exact spherical figure,* (and this is really the case,) then the direction of gravity will not, in general, pass through the centre; though, if the deviation be small, it will nearly pass through that point.

259. *The plane of the horizon* of any place touches the earth's surface, and divides the whole expanse of the heavens into two Hemispheres; one of which, *viz.* that above the horizon, is Visible, and the other Invisible. To an eye placed close to the earth's surface, or to the surface of the sea, the two hemispheres will appear exactly equal. A spectator, however, on the top of a mountain, can see more than half of the heavens; because, if a line drawn from his eye to touch the earth's surface were carried round, it would generate the surface of a cone. The portion of the heavens within this cone would be invisible; but he would see all the space without the cone, which would manifestly be the larger portion.

His apparent horizon would still be a circle; but it would be below the plane passing through his eye perpendicular to the vertical. The depression of the horizon of a spectator so situated below this plane is called the Dip.

260. *Circles whose planes pass through the zenith and nadir of any place* are called Vertical Circles. Such, for example, is the circle Z O N. These, by the properties of a sphere, are all perpendicular to the horizon. The meridian is, of course, a vertical circle; and the vertical circle whose plane is perpendicular to the meridian is called the Prime Vertical.

261. *The meridian* cuts the horizon in the North and South points, and the prime vertical cuts it in the East and West. These four are the Cardinal Points. They divide the horizon into four equal parts.

262. *Let a vertical circle* be supposed to pass continually through a star, or any point of the heavens, the arc of that circle between the star and the horizon is called the Altitude of the star; and the arc of the horizon between the vertical circle and the meridian is called its Azimuth, which may be measured either from the north or south. Thus, in *fig.* 15., suppose a star at S, then its altitude is the arc S O, and its azimuth the arc H O.

263. *Vertical circles* are called Circles of Azimuth.

264. *The altitude of a star* will evidently be greatest when it is on the meridian, and it will have equal altitudes when it is at equal distances from the meridian; that is, when its eastern and western azimuths are equal.

265. *Suppose a meridian to pass through a star*, then the arc intercepted between the star and the equator is called the Declination of the star. Thus P S *p* being a meridian that passes through the star S, and meets the equator in K, the arc S K is the declination of the star.

266. *If a meridian circle pass through the zenith of any place*, the arc intercepted between the zenith and the equator is called the Latitude of that place. Thus Z being the zenith of any place, and EKQ the equator, the latitude of the place is the arc ZE.

267. *Assuming the meridian circle* that passes through the zenith of any particular place as the First Meridian, the arc of the equator intercepted between the first meridian and the meridian circle passing through the zenith of any other place, is called the Longitude of that place. It is usual, in this country, to reckon the longitude of places from the meridian circle that passes through the zenith of the Observatory at Greenwich.

268. *Because the arcs* ZR, the distance of the zenith from the horizon, and PE, the distance of the pole from the equator, are each one fourth of the circumference of a circle or a quadrant, they are equal, and consequently, leaving out the common arc PZ, the arcs ZE and PR are equal. Hence it appears that PR, the distance of the pole from the horizon of any place, called the *elevation* or *altitude* of the pole, is equal to the latitude of that place.

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Chap. V.

ROTATION OF THE SUN, MOON, AND PLANETS ON THEIR AXES. THEIR FIGURE.

269. From the phenomena of the spots which, by aid of the telescope, are visible on his disc, we are led to conclude that *the sun revolves from west to east*, on an axis, in about twenty-five days and a half. Though these spots are subject to many variations, they are sufficiently permanent to enable us to discover that they have regular motions across the disc, exactly the same as must belong to corresponding points on the surface of the sun, supposing him actually to have a motion of rotation from west to east on an axis nearly perpendicular to the plane of the path or orbit, which, in virtue of his apparent motion, he describes round the heavens in the course of a year. When a spot is first discovered on the eastern edge of the disc, it appears like a fine line: as it approaches the centre of the disc its breadth increases: as it advances towards the western edge the breadth again diminishes, until the spot at length entirely disappears. The same spot is sometimes again observed, after fourteen days, on the east side of the disc; but more frequently the spot is dissolved, and is no more seen. By careful observation of the time occupied by a spot in crossing the disc, taking also into account the proper motion of the sun from west to east during that period, the time of the sun's rotation on his axis is found to be about twenty-five and a half days.

270. *That the moon, and the planets Mercury, Venus, Mars, Jupiter, and Saturn, have each a motion of rotation* from west to east, on an axis inclined to the plane of the sun's orbit, is inferred in like manner from the spots that are seen to traverse their discs. The moon presents always nearly the same side to the earth; and must, therefore, revolve on her axis in the same time in which she is carried round the heavens by her apparent motion, namely, in $27^d\ 7^m\ 43^s$. Mercury revolves in $24^h\ 5^m$; Venus in $23^h\ 30^m$; Mars in $24^h\ 39^m$; Jupiter in $9^h\ 56^m$; Saturn in $10^h\ 29^m$. In the remaining planets no appearances have

been discovered which enable us to ascertain whether or not they revolve on axes: though, from analogy, it is highly probable that they do.

271. *With regard to the figure of the sun and of those planets which are known to revolve on axes,* we may conclude that they are nearly spherical; because no other but a spherical body can, when revolving on an axis in the manner of the planets (with the exception of the moon), present in every position the appearance of a circular disc. The spherical figure of the moon, and, indeed, of the other planets which exhibit phases, may be inferred from the fact, that the concavity of the crescent which they from time to time display is bounded by an elliptic line. The planet Uranus always presents a disc that is nearly circular, and it has not been ascertained that he revolves on an axis; but it is very improbable, when we consider how very irregular his motions among the fixed stars appear when seen from the earth, that he should keep the same side always turned towards us. His apparent motion is sometimes direct, that is from west to east, sometimes retrograde, or in the contrary direction; so that to present constantly the appearance of a circular disc, the planet would require, were it not spherical, to have motions in opposite directions about the same axis. The same reasoning will apply to the remaining planets. We may conclude, therefore, that the sun, moon, and planets, are bodies nearly spherical.

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CHAP. VI.

DISTANCES AND MAGNITUDES OF THE HEAVENLY BODIES.

272. *Distances of the fixed stars.* From whatever point of the earth's surface we observe the fixed stars, they always appear to preserve the very same relative positions. We may hence conclude that these bodies are situated at immeasurable distances from the earth; and that though to us who inhabit it the dimensions of the earth appear very great, they are insensible when compared with these immense distances. The earth is in reality but as a point in space. But though the fixed stars are vastly too remote to admit of their distances being determined, we have reason to believe that they are placed at very different degrees of remoteness. They shine with very various degrees of brilliancy; multitudes are not visible without the aid of the telescope, and it may reasonably be supposed that many more have not yet been discovered by the most powerful instruments which have been directed to the heavens.

273. *The distances of the fixed stars* being unknown, we can only form conjectures from hypothesis and analogy respecting their true magnitudes. When viewed through the best telescopes, they have no apparent diameter, but appear like points in the heavens.

274. *Mode of determining the distance of the sun, moon, and planets.* In reference to the sphere of *the fixed stars,* then, the earth is to be regarded as a point. To a spectator, at the sun, moon, and planets, however, it would present a disc subtending an angle of greater or less magnitude, and, even when smallest, admitting of measurement. This angle can be determined by an observer on the earth's surface; and as we know the true magnitude of the earth, it affords us the means of estimating the distances of these bodies. Let O *o* be the places of two observers under the same meridian, but very distant from each other. Let P be a planet in the meridian of these places, and let some fixed star which comes to the meridian at the same time with the planet, be seen by the observers at O and *o*, in the directions O S, *o s*. Join O P, *o* P, and produce O P, to meet *o s* in A. Then, because O S, *o s* are parallel (the distance of the star S being regarded as infinite), the angles O A *o*, A O S are equal: and, because O P *o* is the exterior angle of the triangle *o* A P, it is equal to the sum of the two interior and opposite angles A *o* P, *o* A P. Wherefore the angle O P *o* is equal to the sum of the angles A *o* P, P O S: that is, the angle subtended at the star by the chord of the terrestrial arc intercepted between the points of observation, is equal to the sum of the apparent distances of the planet from the star, provided the planet is seen (as we have here supposed) on opposite sides of the star by the two observers. If the star is seen on the same side by both, the angle at the planet will then be equal to the difference of the apparent distances.

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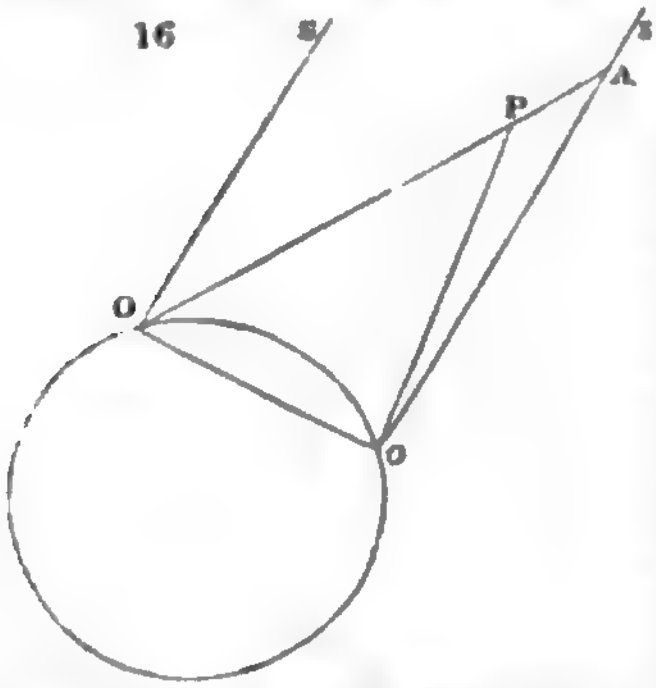
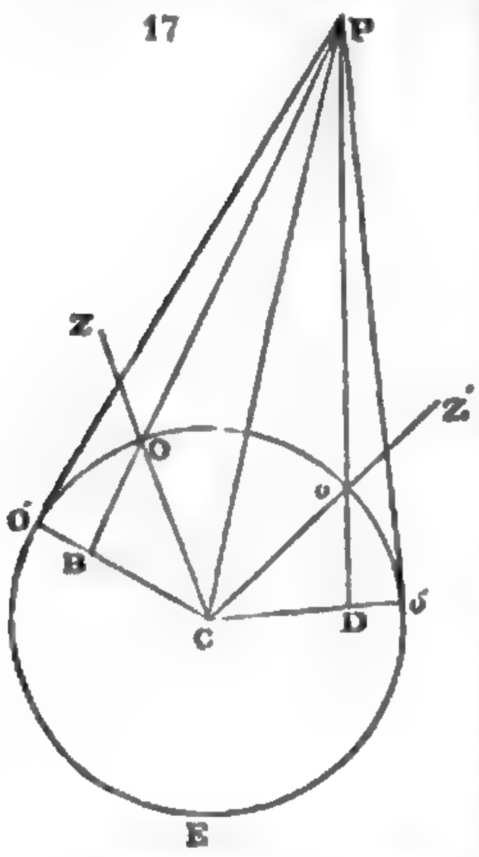


275. If the observers are so situated that P O, P o are tangents to the circle O E o at the points O and o, the angle O P o will be the angle subtended by the disc of the earth at the planet. But if P O, P o are not tangents, draw P O′ and P o' tangents to the circle O E o, and from C the centre draw C O′, C o' to the points of contact: draw also the vertical lines C Z and C Z′ through O and o the places of the observers, and produce P O, P o to meet C O′, C o' in B and D. Now, for the sun and planets the angle O P o is very small, and even for the moon it is not very considerable. The distance P C may therefore be regarded, in every case, as much greater than C O′, or C o'. Hence the lines C O′, C B, C D may without sensible error be considered as proportional to the angles C P O′, C P B, C P D; so that we have $\angle CPO' : \angle CPO = CO' : CB$ and $\angle CPO' : \angle CPo = CO' : CD$; wherefore $\angle CPO' : \angle CPO + \angle CPo$ or $\angle OPo = CO' : CB + CD$. But the angles at B and D are very nearly right angles, and therefore, to radius C O′, we have $CB = \text{Sin. } COB = \text{Sin. } POZ$; and $CD = \text{Sin. } CoD = \text{Sin. } PoZ'$: Hence we obtain $\angle CPO' : \angle OPo = (CO : CB + CD =)$ Rad. : Sin. P O Z + Sin. P o Z′ : And $2 \angle CPO'$ or $\angle O'Po' = 2 \angle OPo \times \dfrac{\text{Rad.}}{\text{Sin. } POZ + \text{Sin. } PoZ'}$.

17



276. If the planet be on the same side of the zenith to both observers, then the difference, instead of the sum of the sines of the zenith distances, must be taken for the denominator. Expressing the above formula in words, we give the following simple rule: — *Divide the arc,* (*expressed in parts of the radius,*) *which measures the observed angle at the planet, by the sum of the sines of the zenith distances of the planet, if it is between the zeniths of the two observers; or by the difference of these sines if the planet is on the same side of the zenith to both observers; and twice the result will be the arc, expressed in parts of the radius, that measures the angle subtended at the planet by the disc of the earth.*

277. *Since small angles,* that require for their measurement only the use of the micrometer, can be determined with much more accuracy than large angles requiring the whole telescope to be moved, it is best to employ, in finding the angle O P o a star which is near the planet: a small error in taking the zenith distances of the planet will produce no sensible error in the result.

278. *Another method of determining this angle,* is by observations on the transit of Venus over the disc of the sun; a phenomenon in which the planet is seen like a dark spot on the disc; but the method now explained is sufficient for our present purpose.

279. The following are *the angles subtended by the earth's disc at the sun, moon, and planets,* when the earth is nearest to each:

	Seconds.		Seconds.
Angle at the Sun	= 17	Angle at Uranus	= 1
Mercury	= 28	Vesta Juno Ceres Pallas	= 9
Venus	= 62		
Mars	= 42		
Jupiter	= 4		
Saturn	= 2	Moon	= 2° 2′

280. *To determine, now, the distance of the sun or moon, or of a planet:* — In the right angled triangle P O C we have given the angle P equal to half the angle subtended by the earth's disc at the body whose distance is to be found; also O C the earth's semi-diameter: therefore the distance P C may be determined by the proportion Sin. P : Rad = C O : P C. Since the angle P is small, its sine must be nearly equal to the arc which measures it. Observing therefore that the arc to which the radius is equal, expressed in seconds, is 206265″ we have $\angle$ P (in seconds) : $206265 = CO : PC$. Hence $PC = 2CO \times \dfrac{206265}{2P}$. Whence we derive the following rule: — *Divide the constant number 206265 by the number of seconds in the angle subtended by the earth's disc as seen from the body whose distance is to be determined; multiply the result by the diameter of the earth, and the product is the distance required.* In the case of the sun; assuming the diameter of the earth as unity, we have the distance equal to $\dfrac{206265}{17}$ or 12133 diameters of the earth. In like manner, taking 4″, 2″, 1″ for the angles subtended by the earth's disc at Jupiter, Saturn, and Uranus, the distances of these planets from the earth, when least, will be 51566, 103132, 206265 diameters of the earth respectively. The mean distance of the moon is about sixty semi-diameters of the earth.

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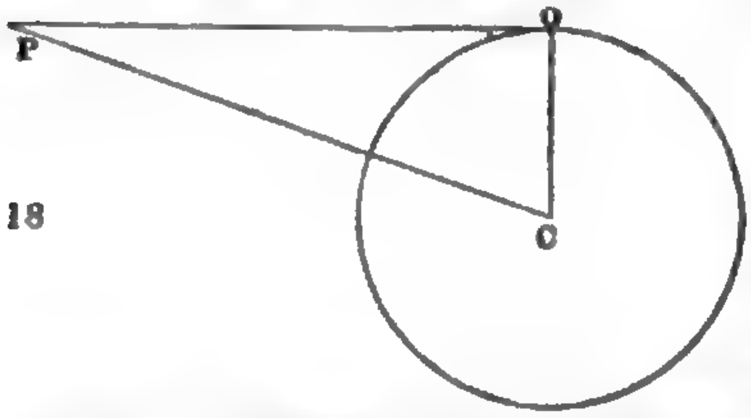

281. *The apparent diameter* of any one of the heavenly bodies, is the number of seconds in the measure of the angle under which its circular disc is seen by a spectator upon the earth. When measured by a micrometer, the apparent diameters of the sun, moon, and planets are found to be, when greatest, as follow:

	Seconds.		Seconds.
Diameter of the Sun	= 1923	Diameter of Jupiter	= 46
Mercury	= 12	Saturn	= 18
Venus	= 61	Uranus	= 4
Mars	= 18	Moon	= 2020

The four remaining planets, according to the most careful observations, appear to subtend only a small part of a second.

282. Now, for deducing the real diameters from the apparent, we have this rule: — *As the apparent diameter of the earth, (or the seconds in the angle which its disc subtends,) as seen from the planet, is to the apparent diameter of the planet as seen from the earth, so is the true diameter of the earth to the true diameter of the planet.*

283. Calling the diameter of the earth unity, or 8000 miles in round numbers, we obtain,

		Diameters of the Earth.		Miles.	
Diameter of the Sun	=	111·454	=	882,000	nearly.
Mercury	=	0·398	=	3,140	—
Venus	=	0·9	=	7,200	—
Mars	=	0·517	=	4,100	—
Jupiter	=	10·860	=	90,000	—
Saturn	=	9·982	=	76,068	—
Uranus	=	4·332	=	34,500	—
Moon	=	0·273	=	2,160	—

284. *As the sun, moon, and planets* are spherical bodies, *their magnitudes* compared with the magnitude of the earth, may be found upon the principle that similar solids are to one another as the cubes of their similar dimensions; so that *as the cube of the diameter of the earth is to the cube of the diameter of the sun, moon, or a planet, so is the magnitude of the former to the magnitude of the latter.*

285. Assuming the magnitude of the earth as unity:

The magnitude of the Sun	=	1384472·000
Mercury	=	·063
Venus	=	·927
Mars	=	·139
Jupiter	=	1280·900
Saturn	=	995·000
Uranus	=	80·490
Moon	=	·020

Having now ascertained the distances and magnitudes of the heavenly bodies, we proceed to enquire whether the diurnal motion which we observe in them be a real or only an apparent motion; and whether the earth is the centre to which the proper motion of any of them is to be referred.

Chap. VII.

ROTATION OF THE EARTH.

286. *The diurnal motion of the heavenly bodies* suggests the existence of some cause, under the influence of which they either perform or appear to perform a revolution from east to west round the axis of the celestial sphere in the space of a day and a night. Now, there are two suppositions, on either of which the diurnal motion may be explained. We may suppose the heavens to be carried round the earth, while the latter remains immoveable in the centre; or we may suppose the heavens to be at rest, and the earth to revolve on an axis in an opposite direction; that is, from west to east. To which of these hypotheses the preference is due, will be evident if we consider that the heavenly bodies are independent one of another, and are placed at very different distances from the earth; that variations in the apparent diameters of the planets indicate great changes in their distances, while the comets traverse the heavens in all directions; so that it is difficult to conceive that one and the same cause should impress on all these bodies a common motion of rotation.

287. *Since the earth* is a globe of about 8000 miles diameter, it is small when compared with the immense mass of the sun. Were the centres of the sun and earth brought into coincidence, the former body would fill the orbit of the moon and extend as far again beyond it. Besides, the sun is distant from us about twelve thousand diameters of the earth; so that to revolve round the heavens in the interval of twenty four hours, he must move at the immense velocity of about twenty five millions of miles in an hour. It is therefore more reasonable to suppose the earth to have a motion of rotation on an axis, than to suppose the sun, a body so distant and of such immense magnitude, to move with the vast rapidity that would be requisite to carry him round the heavens in so short an interval. With regard to the fixed stars, we may reason in the same manner with still greater force: for the velocity necessary to carry the sun round in twenty-four hours is really insensible when compared with the rapidity with which the fixed stars must move to accomplish a like

revolution. In order to account for the diurnal motion of the heavens on the hypothesis that the earth is at rest, it must be supposed that the sun, moon, and stars have their velocities so adapted to their respective distances, that all of them complete their revolutions round the earth in exactly the same number of seconds. Such an adaptation among innumerable independent bodies, placed at such a variety of distances, it is impossible to admit.

288. *There are other phenomena of the heavens* which serve still farther to confirm the conclusion, that the diurnal motion of the heavenly bodies is not a real motion. Every difficulty, however, disappears, if we suppose the earth to have a motion of rotation on an axis from west to east. Carried round with a velocity common to all the objects which surround us on the earth's surface, we are in a situation similar to that of a spectator placed in a vessel in motion. At the first careless glance he imagines himself at rest, while the shore, and all the objects which he sees, unconnected with the vessel, appear to be in motion. By reflecting, however, on the extent of the shore, on the magnitude of the mountains, and other objects on land, when compared with the vessel from which he observes them, he frees his mind from this momentary illusion, and becomes convinced that the motion of these objects is only apparent, and that it is produced by the real motion of the vessel. The multitude of stars scattered over the heavens are, with respect to us, what the shore and the objects upon it are with regard to the spectator placed in the vessel: and by the same considerations, by which his first impressions are so corrected that he becomes assured of the reality of his motion, we are led to the conclusion that the rotation of the earth on an axis produces the apparent diurnal motion of the heavens.

289. *An argument for the rotation of the earth* may also be drawn from analogy. Several of the planets are known to have a motion on an axis similar to that which we have supposed to belong to the earth. Jupiter, for example, which is many times greater than the earth, revolves on his axis from west to east in less than half a day; and to an observer on his surface, the heavens would appear to revolve round that planet in the same manner as we see them revolve round the earth, but in about half the time. This motion of the heavens in reference to a spectator on the planet Jupiter would, however, be only apparent; and hence we may reasonably conclude, that the case is the same in reference to a spectator on the earth.

290. Lastly, if the earth is actually in motion, there will be generated *a centrifugal force*, or a tendency to throw off objects from its surface, which must diminish the force of gravity, particularly at the equator, where the motion is most rapid. Now, by observations made with the pendulum, this diminution of the force of gravity has been found to exist. The same cause affects also the figure of the earth, which has been found to be flattened somewhat at the points of rotation, and elevated at the equatorial regions. The same is observed to be the figure of Jupiter, — a circumstance which greatly strengthens the argument drawn from analogy. The evidence which has now been adduced leaves no doubt respecting the earth's motion of rotation; and thus we are enabled to ascertain the true place which the globe that we inhabit holds in the universe.

291. *The points* in which the axis of rotation meets the surface are called the POLES of the earth; and it is evident that the axis, if produced, must pass through the poles of the heavens.

Chap. VIII.

APPARENT ANNUAL MOTION OF THE SUN. VICISSITUDE OF SEASONS.

292. *While the sun participates in the diurnal motion of the heavens*, he also appears to move eastward among the fixed stars. This motion it will be of importance now to trace out, and to explain the change of seasons to which it gives rise. If we observe each day of the year the meridian altitude of the sun, and note the time which elapses between his passage over the meridian and the passage of any particular star, we shall have the apparent motion of the sun in the direction of the meridian, and of the circles parallel to the equator in which he appears daily to be carried by the diurnal motion of the heavens. The result of the composition of these two motions will give the true motion for each day. In this manner it has been found that the sun moves in a path or orbit which cuts the equator in two opposite points, and makes with it an angle equal to 23° 28′ nearly.

293. *The name of ecliptic* is given to the circle which the plane of this orbit marks out on the sphere of the heavens. It passes through twelve constellations, which are called the TWELVE SIGNS. This has given rise to the division of the ecliptic into twelve equal parts, called SIGNS, each containing, of course, 30°. The twelve signs are contained in a zone of the starry heavens, called the ZODIAC. The names of these constellations, with the characters by which they are usually denoted, are as follow: — Aries ♈, Taurus ♉, Gemini ♊,

Cancer ♋, Leo ♌, Virgo ♍, Libra ♎, Scorpio ♏, Sagittarius ♐, Capricornus ♑, Aquarius ♒, Pisces ♓.

294. *The vicissitude of seasons* arises from the combination of the apparent motion of the sun in the ecliptic with his apparent diurnal motion. When the sun is in either of the points in which the ecliptic intersects the equator, he describes the equator on that day in virtue of his diurnal motion; and as by the properties of the sphere this circle is divided into two equal parts by the horizon, at whatever point of the earth's surface the spectator is situated, the day is then equal to the night over all the globe.

295. *The points of intersection of equator and ecliptic* are called the EQUINOCTIAL POINTS. The first point of the sign *Aries* is supposed to coincide with the point of the vernal equinox; and from that point the signs of the ecliptic are reckoned: the first point of the sign *Libra* will therefore coincide with the point of the autumnal equinox. As the sun, when he leaves the point of the vernal equinox advances in the ecliptic, his meridian altitude above our horizon daily increases, and a larger portion of the parallel which he daily describes becomes visible. Hence arises a gradual increase in the length of the day in all countries to the north of the equator; until the sun having reached his greatest altitude, the day acquires its greatest length, and begins to shorten. As the variations of the altitude on each side of the points at which it is greatest are insensible, the sun, if we attend only to his altitude, appears stationary, and the day continues, for some time, very nearly of the same length. The point of the ecliptic at which the *maximum* takes place is therefore denominated the point of the SUMMER SOLSTICE. The sun, having reached this point, now returns towards the equator, which he crosses at the point of the autumnal equinox. His meridian altitude gradually diminishes until it reaches the *minimum* at the point of the WINTER SOLSTICE. The day, which has been gradually shortening from the summer solstice, is then the shortest in the year, and for some time does not sensibly lengthen. The sun, however, again gradually approaches the equator, and reaches it at the vernal equinox.

296. Such is the *constant progress of the sun in the heavens, and such the succession of the seasons* of the year. The SPRING is the time comprised between the vernal or spring equinox, which falls about the 21st of March, and the summer solstice, which happens about the 21st of June: the interval between the solstice and the autumnal equinox, which falls about the 23d of September is the SUMMER: the time between the autumnal equinox and the winter solstice, which occurs about the 22d of December, is the AUTUMN: and, lastly, the WINTER is the time that elapses between the winter solstice and the spring equinox.

297. *The two circles parallel to the equator,* which the sun describes on the longest and shortest days, are called, one the summer or northern TROPIC, and the other the winter or southern TROPIC. They are also respectively denominated the tropic of Cancer and the tropic of Capricorn, in reference to the points in which they touch the ecliptic.

298. *The presence of the sun above the horizon being the cause of heat,* and the temperature increasing as the altitude increases, it might be inferred that the temperature should be the same in summer as in spring, and in winter as in autumn; because the altitudes of the sun in these seasons exactly correspond. But it is to be observed that the temperature is not an instantaneous effect of the sun's presence; but is the result of the continued action of his rays. On this account it is not greatest on the day when the altitude is greatest, but some time between the summer solstice and autumnal equinox. In like manner, the greatest cold of winter does not occur on the shortest day, but some time between the winter solstice and the spring equinox.

299. *With regard both to temperature and the length of the day, great differences* arise from the different elevations of the pole above the horizon, as we proceed from the equator towards either of the poles. The horizon of an observer at the equator passes through the poles, and by the geometrical properties of the sphere it divides the equator and all the circles parallel to it into two equal parts. It also cuts them at right angles; and hence the position of the celestial sphere, in reference to the horizon of an observer at the equator, is called the RIGHT position of the sphere. In whatever point of the ecliptic the sun is situated, his diurnal course is therefore at right angles to the horizon, and one half of it is in the visible hemisphere, and the other half in the invisible; hence, at the equator, the day is at all seasons equal to the night.

300. *When the sun is in either of the equinoctial points,* he passes through the zenith at mid-day. When he is in either of the solstitial points his meridian altitude is the least, and is equal to the complement of the inclination of the ecliptic to the equator. In these two positions of the sun the shadows of objects fall, at mid-day, in opposite directions, — a phenomenon which at no season occurs in our climate, where the solar shadows are at mid-day always directed towards the north: there are, then, properly speaking, two summers and two winters in the year at the equator. The same thing takes place in all the countries where the elevation of the pole above the horizon is less than the obliquity of the ecliptic. In every country beyond this region there is only one summer and one winter in the year, with the intervening seasons of spring and autumn: the sun is never in the zenith: the length of the longest day increases, and that of the shortest day diminishes, as we advance

towards either of the poles; and when we have reached such a position, that the zenith is distant from the pole by an arc of the meridian equal to the obliquity of the ecliptic, the sun does not set at the summer solstice, nor rise at the winter solstice.

301. *The polar circles.* About each of the poles of the celestial sphere, suppose a circle to be described distant from it by an arc equal to the obliquity of the ecliptic; these two circles are called the Polar Circles. In the region of the earth situated around either of its poles, at every point whose zenith lies within the polar circle, the time of the sun's presence above the horizon and of his absence below it, at certain seasons, exceeds twenty-four hours: it increases as we approach the pole, and may amount to days or even to months. Thus, when the sun's declination north, increasing, becomes equal to the distance of the zenith of any place in the northern polar region from the north pole of the heavens, he ceases to set at that place, and continues above the horizon until he has reached the same declination in returning towards the equator. From that time the sun rises and sets in the course of twenty-four hours, until the sun's declination south becomes equal to the distance of the zenith from the pole, and then he ceases to rise and continues below the horizon till he has again acquired the same declination in returning northward.

302. *At the pole, the equator coincides with the horizon,* and all the circles parallel to the equator are also parallel to the horizon. This is called the Parallel position of the sphere. To an observer, placed at the pole, the heavenly bodies would appear to move round, either in the horizon or parallel to it. Hence the sun is constantly above the horizon when he is on the same side of the equator with the pole, and constantly below it when on the other side; so that at either of the poles of the earth there is only one day and one night in the year.

303. *At any point on the earth's surface,* between the equator and either of the poles, the equator and the circles parallel to it are oblique to the horizon. This is called the Oblique position of the sphere; and by the geometrical properties of the sphere, the horizon, in this position, divides all the circles parallel to the equator into two unequal parts; hence arises the inequality of the days and nights at all places between the equator and either pole. In this country, for example, in summer, when the sun is on the north side of the equator, the larger portion of his diurnal course lies in the visible hemisphere, and the less in the invisible, so that the day is longer than the night. The reverse is the case in the winter when the sun is on the south side of the equator.

304. *If two places are situated on opposite sides of the equator,* the spring and summer of the one will, it is evident, correspond to the autumn and winter of the other.

305. *With regard to the temperature,* it is higher in the equatorial regions than in any other part of the earth, because there the action of the sun's rays is most direct. To every point of the earth's surface, whose zenith lies between the tropics, the sun is vertical twice in the year; so that his rays, acting perpendicularly, produce their greatest effect. In the polar regions the temperature is lowest, in consequence of the obliquity with which the sun's rays fall on the earth's surface, and the great length of the winter night. In the countries situated between the equatorial region and the two polar regions, there prevails a medium temperature, increasing as the zenith approaches the nearer of the two tropics, and diminishing as it approaches the nearer of the polar circles.

306. *A division of the earth's surface into five zones* has been suggested by this difference of temperature from the equator towards either pole. In the adjoining figure let P p represent the earth's axis, P E, p Q, a meridian, and E Q the equatorial diameter. Let E C Q be the representation of a circle on the earth's surface equally distant from the poles, which will therefore be the *equator:* and F G H, $f g h$ circles on the earth's surface parallel to the equator, and at the distance of about 23½ degrees; on each side of it, and A B D, $a b d$ circles round the poles P, p, and at the same distance of 23½ degrees.

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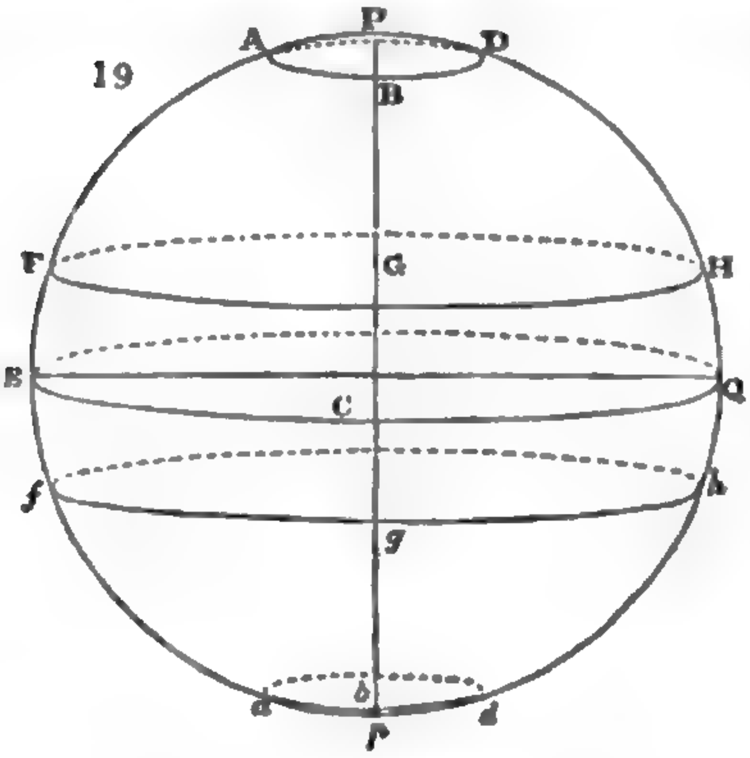

307. *At the times of the year* when the sun is in the tropics of Cancer, he will, in his apparent revolution, be vertical to all places on the circle F G H; and when he is in the tropic of Capricorn, he will be vertical to the circle $f g h$. The space on the earth's surface between these circles is the *Torrid Zone.*

308. *When the sun is in the southern tropic* he will not be seen any where in the space bounded by the circle A B D. This is, therefore, the northern *Frigid Zone:* and when he is in the northern tropic there is a like tract, bounded by the circle $a b d$, round the south

pole, where he will then be invisible. This is the southern *Frigid Zone.* The two tracts between the torrid zone and the frigid zone are the temperate zones.

309. *Another division of the earth into zones* was used by the ancient geographers, founded on the different lengths of the longest day, as we proceed from the equator towards either of the poles. These zones were denominated Climates, and were each of such a breadth, that the longest day at the boundary nearer the pole exceeded the longest day at the boundary nearer the equator by some certain space of time, as half an hour or an hour. Within the polar circle, the climates were supposed of such a breadth as to make the longest day at the opposite sides differ by a month.

310. *The points in which the equator and ecliptic intersect each other* are not immoveable, but appear, with respect to the fixed stars, to recede towards the west at the rate of $50\frac{1}{10}''$ nearly, annually, or about 1° in 72 years. This motion is called the Precession of the Equinoxes. When the constellations of the zodiac were first delineated by the ancient astronomers, the middle of the sign *Aries* was at the point of the vernal equinox, from which it is now distant more than 58° towards the east. In consequence of the precession of the equinoxes, the time in which the sun moves from the vernal equinox to the vernal equinox again, is less than the time in which he moves from any star to the same star again; — the point of the vernal equinox moving westward, so as to meet the sun, and thus anticipate the time of his crossing the equator in the preceding year.

311. *The intervals of time which separate the equinoxes or the solstices* are unequal. Almost eight days more elapse from the spring to the autumnal equinox, than from the latter to the former. We may therefore conclude, that the motion of the sun is not uniform. From precise and multiplied observations, it has been ascertained that his motion is most rapid at a point of the ecliptic situated near the winter solsticial point, and slowest at the opposite point towards the summer solstice. At the former point the sun describes daily $1^\circ\ 1'\ 10''$, at the latter only $57'\ 11\frac{1}{2}''$. The distance of the sun from the earth is also variable. This is proved by variations observed in his apparent diameter, which increases and diminishes at the same time with his angular velocity, but not in the same ratio. The angular velocities at any two instants of time are, to one another, as the squares of the apparent diameters.

If v and v' be the angular velocities of the sun, or his daily advances in the ecliptic at any two seasons of the year, and d and d' his apparent diameters at the same time, then $v : v' = d^2 : d'^2$.

312. *To diminish the apparent motion of the sun,* it would be sufficient to suppose that body removed to a greater distance from the earth, without altering his true angular velocity. But if the diminution of his motion depended entirely on this cause, the apparent velocity would diminish in the same ratio with the apparent diameter. Since it diminishes, however, as the square of the diameter, there must necessarily be an actual diminution of the velocity of the sun while he recedes to a greater distance from the earth.

His distance being reciprocally as his apparent diameter, if D and D′ be his distances at the two seasons when his diameters are d and d', we have $v : v' = D'^2 : D^2$; and $vD^2 = v'D'^2$.

Hence it appears, that from the combined effect of the two causes influencing the sun's apparent motions, — namely, the diminution of his velocity and the increase of his distance, — his daily angular motion diminishes as the square of his distance increases; so that the product of the square of the distance by the velocity is a constant quantity.

313. *Let us imagine a straight line* to join the centres of the sun and of the earth. This line is usually called the Radius Vector. It is not difficult to prove that the small sector, or the area which the Radius Vector traces in a day, in consequence of the sun's motion, is proportional to the product of the square of this radius by the sun's daily motion, that is, to $v\,D^2$. This area is therefore constant; and the whole area, described by the Radius Vector, setting out from a fixed radius, increases as the number of days reckoned from the epoch when the sun was at the fixed radius.

Since $vD^2 = v'D'^2$, we have $D' = D\sqrt{\frac{v}{v'}}$. Assuming, therefore, any line whatever for D, and finding, by observation, the sun's angular velocity for every day of the year, the value of D′ for each day may be found.

Hence we shall be able to trace a curve line representing the orbit of the sun. This curve is found to be not exactly circular, but a little elongated in the direction of the straight line passing through the centre of the earth, and joining the points in the orbit at which the sun is at his greatest and least distances. The resemblance of this curve to an *ellipse* having given rise to a comparison between them, their identity has been discovered. Hence we conclude, that *the apparent solar orbit is an ellipse having the centre of the earth in one of its foci.*

314. *The solar ellipse* is not much different from a circle; for its excentricity, which, from the geometrical properties of the ellipse, is equal to half the difference of the sun's greatest and least distances from the earth, is a quantity which bears but a very small proportion to the distance of the sun. It appears, from observation, that there is a small diminution of the excentricity, — so small, indeed, as scarcely to be perceptible in a century.

315. *The position* of the greater axis of the solar ellipse is not constantly the same. Its

extremities have an annual motion eastward, in reference to the fixed stars, of about 12″ in the direction of the sun's motion.

316. *The obliquity of the sun's orbit*, or of the ecliptic to the equator, is also subject to change, and appears to have been continually diminishing from the remotest date of astronomical observation. Its present rate of diminution may be stated at nearly 48″ in a century.

317. *The apparent elliptic motion of the sun* does not represent, with perfect exactness, the results of modern observation. The great precision now attained in the art of observing has made known to us small inequalities, the laws of which it would have been almost impossible to determine by mere observation. These laws can be investigated only after the physical cause has been discovered upon which the phenomena depend.

Chap. IX.

DIVISION AND MEASURE OF TIME.

318. *The notion of time* is suggested by the succession of phenomena in the universe. When two events exactly correspond in all their circumstances, they are conceived to occupy equal portions of time. The descent of a heavy body to the earth, for example, from a given height, if repeated under precisely similar circumstances, will in every case be performed in the same interval of time. Suppose then that a number of heavy bodies fall to the ground one after another from the same height, — the descent of the second and of each succeeding body commencing at the instant in which the body that preceded it has reached the ground: the whole time occupied by the fall of these bodies will be divided into equal portions, one of which may be assumed as the measuring unit of time. The vibrations of a pendulum, performed under precisely the same circumstances, are employed for estimating the smaller portions of time: the larger portions are determined by the motions of the sun; from which arise the vicissitude of day and night, and the change of seasons.

319. *The Day*, in civil life, is the time that elapses between the rising and setting of the sun; and the Night the time between his setting and rising. The Astronomical or Solar Day, on the other hand, comprehends the whole period of the sun's diurnal revolution, and is reckoned from the time of his passing any particular meridian, to the time of his returning to the same meridian. The pendulum usually employed is of such a length as to divide the mean astronomical day into $24 \times 60 \times 60 = 86400$ equal parts called *seconds*; 60 of these parts make a *minute*; 60 minutes make an *hour*; and 24 hours complete the day.

320. *As the apparent* motion of the sun carries him eastward among the fixed stars, the time that elapses between his passing the meridian, and his returning to it again, is longer than the time that intervenes between two successive passages (called transits) of any particular star. This latter period is the exact time of the earth's revolution on its axis, and is called a Sidereal day: it is about $23^h\ 56^m\ 4^s$ in length.

321. The motion of the earth on its axis being perfectly uniform, *the length of the sidereal day* is always the same. This is not, however, the case with respect to the astronomical or solar day, which is affected by the unequable motion of the sun, and by the obliquity of the ecliptic. At the summer solstice, towards which the sun's motion in the ecliptic is slowest, the solar day is more nearly equal to the sidereal day than at the winter solstice, when the sun's motion is quickest.

322. *With regard to the effect of the obliquity of the ecliptic* in reference to the length of the solar day, it is to be observed, that, by the geometrical properties of the sphere, equal portions of any circle, whose plane is perpendicular to the axis of revolution, pass over the meridian in equal times; but if the plane of a circle is oblique to the axis, the arcs that pass over the meridian in equal times are not equal. Hence, if the sun moved uniformly in the equator, the solar day would be always of the same length: but as he moves in the ecliptic, whose plane is oblique to the axis, even if he did proceed with a uniform motion, the equal arcs which he daily described would pass over the meridian in unequal times; so that the solar day would be longer or shorter according to the sun's place in the ecliptic.

323. *The motion of the shadow on a sun-dial* marks out time as measured by the sun's motion in the ecliptic: but if the sun moved uniformly in the equator at such a rate as to complete the annual circuit of the heavens, in the same time as he does by his actual motion in the ecliptic, time measured by his motion would then correspond with that of a well-regulated clock.

324. *The difference between the time shown by the sun-dial, and that shown by the clock, is called the* Equation of Time. The part of this equation which depends on the obliquity of the ecliptic, vanishes at the equinoxes and at the solstices; because at these seasons the sun comes to the meridian at the same moment as he would do if he moved in the equator.

325. *From the vernal equinox till the summer solstice*, and from the autumnal equinox till the winter solstice, the time as shown by the sun-dial is in advance of that indicated by the

clock; because then the sun's distance from the first point of *Aries*, and first point of *Libra*, passes sooner over the meridian than the equal arc upon the equator, which the sun would have described had he moved in that circle.

326. *Again*, the hour shown by the sun-dial is behind that shown by the clock, from the summer and winter solstices, till the autumnal and vernal equinoxes; because at these two seasons the distance of the sun from the first point of *Aries*, and from the first point of *Libra*, requires longer time to pass over the meridian, than the equal arc upon the equator.

327. *The part* of the equation of time which arises from the unequable motion of the sun, will vanish when he is at his greatest and least distances from the earth; because he is in these two points of his orbit at the same instants of time as he would be if he moved uniformly with his mean velocity; that is, with a rate of motion by which he would describe equally the ecliptic in the same time in which he describes it by his unequable motion.

328. *The dial, during the time* when the sun is moving from the point of his greatest, to the point of his least distance from the earth, is faster than the clock; because the sun is then at no instant so far advanced in his orbit, as he would have been if he had been moving uniformly with his mean velocity. The reverse is the case while the sun is moving from the point of his least to that of his greatest distance. Time measured by the dial is called APPARENT time; that shown by a well-regulated clock is called TRUE time. The effect of the obliquity of the ecliptic, and that of the sun's unequable motion, in rendering the dial faster or slower than the clock, sometimes combine with and at other times counteract each other. The amount of each is given in the two following tables for every fifth day of the year; and by taking the sum or difference, according as the obliquity of the ecliptic and the sun's unequable motion produce similar or opposite effects, a table may be formed of the equation of time.

329. *Table showing the Part of the Equation of Time that arises from the Obliquity of the Ecliptic.*

Dial Faster.				Dial Slower.				Dial Faster.				Dial Slower.			
		M.	S.			M.	S.			M.	S.			M.	S.
March -	21	0	0	June -	21	0	0	September	23	0	0	December	21	0	0
	25	1	39		26	1	48		28	1	39		26	1	48
	30	3	15	July -	1	3	32	October -	3	3	15		31	3	32
April -	4	4	46		7	5	8		8	4	46	January -	5	5	8
	9	6	[illegible]		12	6	35		13	6	9		10	6	35
	14	7	22		17	7	48		18	7	22		15	7	48
	19	8	23		22	8	45		23	8	23		20	8	45
	24	9	9		28	9	26		28	9	9		25	9	26
	30	9	40	August -	2	9	49	November	2	9	40		29	9	49
May - -	5	9	53		7	9	53		7	9	53	February	3	9	53
	10	9	49		12	9	40		12	9	49		8	9	40
	15	9	26		17	9	9		17	9	26		13	9	9
	20	8	45		22	8	23		22	8	45		18	8	[illegible]
	26	7	48		28	7	22		27	7	48		23	7	22
	31	6	35	September	2	6	9	December	2	6	35		28	[illegible]	9
June -	5	5	8		7	4	46		7	5	8	March	5	4	46
	10	3	32		12	3	15		12	3	32		10	3	15
	16	1	48		17	1	39		17	1	48		15	1	39
													20	[illegible]	[illegible]

330. *Table showing the Part of the Equation of Time that arises from the Inequality of the Sun's Motion.*

Dial Faster than Clock.								Dial Slower than Clock.							
		M.	S.			M.	S.			M.	S.			M.	S.
July - -	1	0	[illegible]	October -	3	7	43	December	31	0	0	March -	30	7	43
	7	0	40		8	7	42	January -	5	0	41	April -	4	7	40
	12	1	19		13	7	37		10	1	22		9	7	34
	17	1	57		[illegible]	7	29		15	2	2		14	7	24
	22	2	35		23	7	18		20	2	41		19	7	12
	28	3	12		28	7	3		25	3	19		24	6	56
August -	2	3	47	November	2	6	45		29	3	56		30	6	36
	7	4	21		7	6	24	February	3	4	30	May - -	5	6	14
	12	4	52		12	5	39		8	5	2		10	5	50
	17	5	22		17	5	32		13	5	32		15	5	22
	22	5	50		22	5	2		18	5	39		20	4	52
	28	6	14		27	4	30		[illegible]	[illegible]	24		26	4	21
September	2	6	36	December	2	3	56		28	6	45		31	3	47
	7	6	56		7	3	19	March -	5	7	3	June - -	5	3	12
	12	7	12		12	2	41		10	7	18		10	2	35
	17	7	24		17	2	2		15	7	29		16	1	57
	23	7	34		21	1	22		20	7	37		21	1	19
	28	7	40		26	0	41		25	7	[illegible]		26	0	40

331. *The difference between the apparent and the true time,* is very observable about the season when the day is lengthening or shortening with most rapidity. It is a common remark, that when the day is shortening, the change is more observable in the evening than in the morning; but that the reverse is the case when the day is lengthening. This arises from the clock being before or after the sun. Thus, in the end of October, the dial is upwards of sixteen minutes faster than the clock; so that the time of sun-rise, and the time of sun-set will each, as indicated by the clock, appear earlier by 16 minutes, than as indicated by the motion of the solar shadow. Hence the instant of noon, as shown by the clock, appears not to divide equally the time during which the sun is above the horizon: the time from sun-rise till noon, appears longer than from noon till sun-set. Again, about the middle of February, the dial is about 15 minutes slower than the clock; so that the time of sun-rise and the time of sun-set will each, as indicated by the clock, be later by 15 minutes than as indicated by the dial; and the time from sun-rise till noon, as shown by the clock, will appear shorter than the time from noon till sun-set.

332. As the return of the sun to the meridian marks out the day, so his return to the same equinox marks out *another portion of time* of much importance to be determined with accuracy; namely, *the* Year. This period comprehends the seasons which divide it into four parts. Within this period also, the moon goes twelve times through all her phases, which occupy the space of nearly twenty-nine and a half days: hence the year has been divided into twelve months, three of which are allotted to each season. By accurate observation it is found, that the time which elapses between the instant at which the sun passes the vernal equinox, and the period of his return to it, is 365^d 5^h 48^m 48^s. This period is called the Tropical year. It is found to be shorter than the interval between two successive returns of the sun to the same star by 20^m 29^s. This last-mentioned period is called the Sidereal year, and consists of 365^d 6^h 9^m 11^s.

333. *In order to make such a distribution* of time as is accommodated to the purposes of life, it is necessary so to adjust the reckoning of the solar revolution to the length of the mean solar day, that the beginning of the year may coincide with the beginning of the day, and the seasons may always recur in the same months. If the solar revolution consisted of an exact number of days, there would be no difficulty; but as it includes a fraction of a day, it is evident that one year cannot be made equal to one revolution, without incurring the inconvenience of making the year commence at a different point of time from the beginning of the day. But though one year cannot be made equal to one revolution, a certain number of years may be made equal to a like number of revolutions.

334. *Julius Cæsar introduced* the first near approximation to accuracy on this subject, in the 45th year before the commencement of the Christian era. The Romans had before that time estimated the year according to the course of the moon, in imitation of the Greeks; dividing it into twelve months, which consisted in all of 354 days; but as an odd number was thought the more fortunate, one day was added which made the year consist of 355 days. To make the lunar year correspond with the course of the sun, on which depends the vicissitude of seasons, an intercalary month was inserted every other year, between the 23d and 24th day of February. The intercalation of this month was left to the discretion of the priests, who, from interested motives, inserted often more or fewer than the proper number of days, so as to make the year longer or shorter, according as it suited their own purposes. This caused the months to be transposed from their stated seasons, the winter months being carried back into autumn, and the autumnal months into summer. When Julius Cæsar became master of the state, he resolved to put an end to this disorder, by abolishing the use of intercalations which had been the source of it; and for that purpose, by the assistance of Sosigenes, a celebrated astronomer of Alexandria, he adjusted the year to the course of the sun, and assigned to the respective months the number of days which they still contain. That matters might proceed with regularity from the beginning of the ensuing January, he made the current year, which was called the last year of *confusion,* consist of fifteen months, or 445 days.

335. *The* Julian *year* is founded upon the supposition that the solar revolution is exactly 365^d 6^h. For three successive years the six hours are omitted; but in the fourth year an additional day is inserted in the month of February, which makes the four years correspond with four solar revolutions. This fourth year, consisting of 366 days, is called Bissextile or Leap year. But as the true length of the solar revolution is not 365^d 6^h, but only 365^d 5^h 48^m 48^s, the Julian year is too long by 11^m 12^s; so that before a new year begins, the sun has passed the point of the ecliptic where the preceding year began. The error thence arising is, however, so small, that it was long before it was observed. The Julian Kalendar was introduced into the church at the time of the Council of Nice, in the year 325 of the Christian era; and the vernal equinox was at that time fixed to the 21st of March. In the year 1582, however, it was found that the vernal equinox fell, not on the 21st of March, but on the 11th of that month; so that the Julian year had fallen about ten days behind the sun. If this erroneous reckoning had been continued, the seasons would have entirely changed their places. *It was therefore resolved to reform the kalendar,* which was

done by *Pope Gregory* XIII., and the first step was to correct the loss of the ten days, by counting the day after the 4th of October, not the 5th, but the 15th day of the month. The error in the Julian year reckoning, being about eleven minutes yearly, amounts to nearly three days in four centuries. Hence to prevent its accumulation in future, it was agreed to suppress three intercalary days in the course of four hundred years, by considering the last of three successive centuries common, instead of leap years. The years in which the intercalary days are omitted are 1700, 1800, 1900: and, in general, the last year of every century not divisible by four, is reckoned a common year, which in the Julian account is bissextile. The degree of accuracy thus attained is very considerable; for taking the annual error at 11⅕ minutes, in four centuries, it will amount to 4480 minutes, or to $3^d\ 2^h\ 40^m$. Of this error, the fractional part, $2^h\ 40^m$, is all that remains uncorrected; and this error will require the lapse of 3600 years before it amounts to a day.

336. *Other modes of intercalation.* If the tropical year were $365^d\ 5^h\ 49^m\ 12^s$, the Gregorian intercalation would be perfectly exact. Accurate observation proves, however, that the year is shorter by about 24 seconds. If scientific principles had been strictly followed, they would have pointed out other modes of intercalation still more accurate, though perhaps not more convenient, than that which has been adopted. The determination of the methods of intercalation best suited to make the computations in the kalendar correspond as nearly as possible with the real motions of the sun, requires all the integer numbers to be found, which most nearly express the ratio of $5^h\ 48^m\ 48^s$ to a day. These numbers are easily determined by the method of *continued fractions.* In the Gregorian kalendar, 97 days are intercalated in the course of 400 years; but it would be much more exact to intercalate 109 days in the course of 450 years. If the tropical year were precisely $365^d\ 5^h\ 48^m\ 48^s$, this intercalation would, indeed, be quite accurate: for $5^h\ 48^m\ 48^s$, multiplied by 450, give exactly 109 days.

337. *The reformation of the kalendar, or the change from the* Old Style *to the* New Style, did not take place *in England,* till the year 1752, at which time it was established by an act of parliament. The alteration was ordered to be made on the 2d of September; and as the error of the Julian reckoning now amounted to 11 days, the 3d was to be counted the 14th of September.

338. *Correspondence between the days of the week and month.* As the common year consists of 52 weeks and one day, it is evident that the beginning and end of each common year will fall on the same day of the week. In a series of years, therefore, if no leap years occurred, the first day of each month would, year after year, be one day farther advanced in the week, till, in the course of seven years, the same days of the month would return to the same days of the week. But since leap year contains 52 weeks and 2 days, and occurs every fourth year, it follows that the days of the week cannot correspond to the same days of the month, till after the lapse of four times seven or twenty-eight years. This period is called the Cycle of the Sun. When this period is completed, the sun's place in the ecliptic returns to the same signs and degrees on the same months and days, so as not to differ a degree in a century; and the leap years, as well as the common years, begin the same course over again with respect to the days of the week on which the days of the month fall. The year of our Saviour's birth, according to the vulgar era, was the ninth year of the solar cycle: hence, to find the current year of that cycle, we must add nine to the given year of the Christian era, and divide the sum by twenty-eight; the quotient will be the number of cycles which have been completed since the birth of Christ, and the remainder will be the current year of the present cycle. Thus, for the year 1829, the cycle of the sun is found to be 18. The first seven letters of the alphabet have been employed to mark the several days of the week. As one of those seven letters must necessarily stand against Sunday, it is printed in the kalendar in a capital form, and called the Dominical Letter: the other six letters are inserted in a different character, to denote the other six days of the week. When January begins on Sunday, A is the Dominical letter for that year: but because the next year begins on Monday, the Sunday will of course fall on the seventh day, to which is annexed the seventh letter G, which will therefore be the Dominical letter for all that year: and as the third year will begin on Tuesday, Sunday will fall on the sixth day, so that F will be the Dominical letter for that year, and so on. Hence it is evident that the Dominical letters will succeed each other in a retrograde order, viz. G, F, E, D, C, B, A. As the days of the week correspond to the same days of the month only once in twenty-eight years, it follows that it is only after the lapse of the same period, that the series of Dominical letters can proceed in the same order in reference to the days of the month. Every leap year has two Dominical letters; one answering from the beginning of January till the end of February; the other being the letter immediately preceding, answering for the remainder of the year. The Dominical letter may be found for any year of any century by the following rule: *divide the centuries by 4, and take twice what remains from 6: then add together this last remainder, the odd years above the even centuries, and the fourth part of these odd years, neglecting the remainder if any: divide the sum by 7, and the excess of 7 above the remainder is the number answering to the letter required.* Thus, for the year 1830, the Dominical letter

is C. For the centuries 18 divided by 4 leave 2; and twice this remainder taken from 6 also leaves 2; by adding to which the odd number of years 30, and their fourth part 7, we obtain 39: this sum divided by 7 leaves the remainder 4, which taken from 7 leaves 3, answering to C, the third letter of the alphabet.

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Chap. X.

PROPER MOTION OF THE MOON. HER PHASES. ECLIPSES OF THE SUN AND MOON.

339. *The moon*, next to the sun, is the most interesting to us of all the heavenly bodies. Her phases, or that series of changes in her figure and illumination which she undergoes in the course of about a month, are one of the most striking of the celestial phenomena; and present a division of time so remarkable that it has been the first in use among all nations.

340. *The moon has an apparent motion among the fixed stars* similar to that of the sun, but much more rapid: it carries her eastward at the rate of nearly 13° 10⅓′, at an average, in 24 hours. When this motion is accurately traced out, it is found, that the moon describes round the earth, in $27^d\ 7^h\ 43^m$, a path or orbit inclined to the ecliptic at an angle of nearly 5° 9′. The line in which the plane of the orbit cuts the plane of the ecliptic is called the Line of the Nodes. The point in which the moon crosses the ecliptic when *ascending* to the north, is called the ascending node; and the opposite point, in which she crosses it when *descending* to the south, is called the descending node.

341. *The figure of the lunar orbit* is determined in the same manner as that of the solar, by observing the changes in the apparent diameter of the moon, and comparing these with the variations in her angular velocity. It is thus found, that the moon's orbit, like that of the sun, is in appearance an ellipse, having the centre of the earth in one of the foci, and that the radius vector, or the line joining the centres of the earth and moon, describes areas proportional to the times. Neither the line of the nodes nor the greater axis of the lunar orbit is fixed. The former has a slow retrograde motion, by which it makes an entire revolution in something more than 18½ years; the latter has a progressive motion, by which it completes a revolution in something less than 9 years. The elliptic orbit is liable, indeed, to so many changes, that the full investigation of the lunar motion has been found one of the most difficult problems in astronomy. At the same time it is one of the most useful, as connected with the finding of the longitude of places on the surface of the earth. Accordingly, the efforts of astronomers have been assiduously directed to the perfecting of the lunar theory; and by employing the resources of modern science, and combining these with continued and accurate observation, their labours have been crowned with wonderful success.

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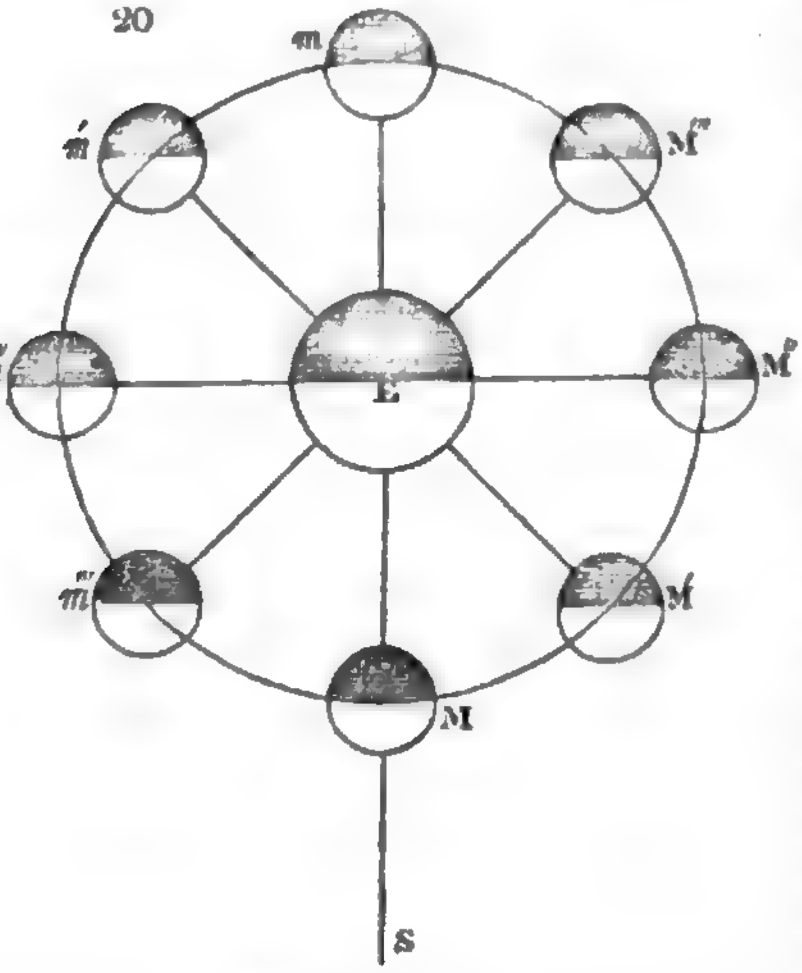

342. *The phases of the moon* depend on her position with regard to the sun. Let E be the earth, M the moon revolving in her orbit round the earth, E S the direction of the sun, and let us suppose all the solar rays which illuminate the moon to proceed in straight lines parallel to S E. The moon is an opaque body like the earth, and is visible only in consequence of reflecting the light of the sun. When she comes to the meridian, therefore, about the same time with the sun, that is, when she is at M, she must be invisible, on account of the unenlightened side being turned towards us. It is then said to be new moon: and, in reference to her position with regard to the sun, the moon is said to be in conjunction. Again, when the moon comes to the meridian about midnight, that is, when she is at *m*, she is said to be in opposition, and in that position she presents an entire circular disc; because the whole of the enlightened side is then turned towards the earth. It is then said to be full moon. At any point of her orbit, between the points of conjunction and opposition, the moon turns more or less of her enlightened side towards the earth, according to her angular distance from the sun, and presents exactly the same appearances as an opaque spherical body, of which one side is illuminated, would exhibit, if viewed from a distance, and in the same positions in

which the moon is seen from the earth. After the conjunction, as soon as she has emerged sufficiently from the solar rays, she is seen in the western sky, after sunset, in the form of a Crescent, as at M′, having the convex side turned towards the sun, and the concave bounded by an elliptic line. On every succeeding night the luminous part increases, while the elliptic boundary continually approaches to a straight line. On the seventh night from the time of new moon, the moon reaches the position M″, where her distance from the sun is 90°: she is then said to be in her first Quadrature, and exhibits the appearance of half moon; that is, the disc is a semicircle. The enlightened part still continuing to increase on the same side, the rectilineal boundary of the semicircular disc passes again into an elliptic line, and the moon becomes gibbous, as at M‴: on all sides the disc is convex, though it does not become entirely full orbed until she reaches the point of opposition, at *m*, about the end of seven days from the time of half moon. From the instant of opposition the moon begins to return to the sun on the western side; and in her progress towards the conjunction she goes through the same series of changes in an inverted order, becoming first gibbous, as at *m*′; then half moon at the time when she reaches the position *m*″, her second quadrature; then a crescent, as at *m*‴, which, continually diminishing, at last disappears altogether. Thus, on the supposition that the moon is an opaque body and nearly spherical, and that she revolves in an orbit round the earth, the phenomena of her phases are easily explained.

343. *Strictly speaking*, the moon is not exactly 90 degrees distant from the sun when she presents the appearance of half moon. This phasis occurs at the moment when the moon is in such a position that two straight lines drawn from her centre, — the one to the centre of the earth, the other to the centre of the sun, — form a right angle. By observing, therefore, the moon's distance from the sun, at the instant when the boundary between the enlightened and dark part exactly bisects the lunar disc, we should have in the right-angled triangle S M F the angle at F; and hence, since the side F M is also known, S F, the distance of the sun, may be determined. This was the first method employed for finding the sun's distance from the earth; but, from the nicety of the observations required, it cannot be expected to lead to any very satisfactory result.

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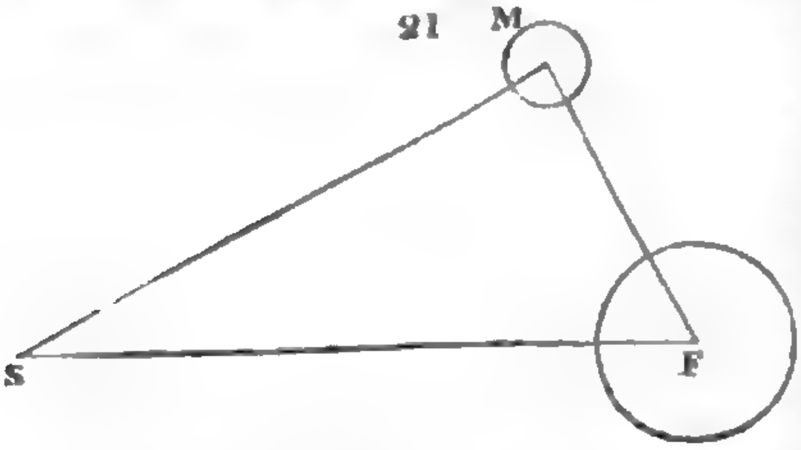

344. *To a spectator on the moon* the earth must evidently exhibit a series of changes similar to the lunar phases as seen from the earth. At the time of conjunction the moon is on the illuminated side of the earth, so that the earth must then appear, as seen from the moon, an entire circular disc. Again, at the time of opposition, the moon is on the dark side of the earth; so that the earth must then be invisible. When the moon is seen as a crescent, the earth will appear gibbous; and when the moon appears gibbous, the earth will be seen as a crescent.

345. *The fact of the earth appearing to a spectator on the moon* an entire luminous disc, at the time of the moon's conjunction with the sun, furnishes an explanation of a phenomenon with which every one is familiar. In clear weather, when the moon is three or four days old, her whole body is visible. The horns of the enlightened crescent appear to project beyond the old moon as if they were part of a sphere of considerably larger diameter than the unenlightened part. Now, the part of the moon not directly illuminated by the sun is seen by the light reflected from the earth. The appearance of a lucid bow, connecting the horns of the crescent, is produced by the circumstance of the eastern edge of the moon's disc being more luminous than the adjacent regions towards the centre. With regard to the enlightened crescent appearing a portion of a larger sphere, this is an optical deception, and furnishes a remarkable proof that of two objects of equal magnitude, but of different degrees of brightness, the brighter appears larger.

346. *A lunation or lunar month is formed* by the time that elapses between one new moon and another. It consists of $29^{d}\ 12^{h}\ 44^{m}\ 3^{s}$ nearly; and therefore exceeds the period of her mean sidereal revolution, which is $27^{d}\ 7^{h}\ 43^{m}\ 11\frac{1}{2}^{s}$. This excess arises from the proper motion of the sun in the ecliptic; for it is evident that the period in which the moon goes through all her phases must be equal to the time required to describe 360°, with an angular velocity equal to the difference between angular velocities of moon and sun.

347. *Cycle of the moon.* In 19 Julian solar years there are 235 lunations, and about one hour and a half more. Hence, after 19 years, the conjunctions, oppositions, and other aspects of the moon recur on the same days of the month, and only about an hour and a half sooner. This period is accordingly called the Cycle of the Moon, and has been found of so much use in adjusting the lunar to the solar year, in order to know the time of new and full moon, and to determine the time of Easter, and other moveable feasts, that the numbers of it have been called Golden Numbers. The year of our Saviour's birth, according to the vulgar era, was the first year of the lunar cycle: hence, to find the golden number, or the

current year of that cycle, we must add one to the year of Christ for which the golden number is required, and divide the sum by 19: the quotient will be the number of cycles which have elapsed since the birth of Christ, and the remainder will be the golden number or current year of the cycle.

348. *The epact* is the difference between the solar and lunar periods at the end of each year, or the moon's age on the first of January. Since the Julian solar year is $365^d\ 6^h$, and the lunar year, or twelve lunations, $354^d\ 8^h\ 48^m\ 36^s$, if we suppose new moon to have happened on the first of January, so that the epact for that year is 0, it follows that the epact for the next succeeding year will be $10^d\ 21^h\ 11^m\ 24^s$, or nearly 11 days. For the third year, the epact will be nearly 22 days. For the fourth year it will be 33 days, or (rejecting 30 days for a complete lunation) 3 days, and so on.

349. *The following table* contains the *golden numbers* with the corresponding *epacts* adapted to the Gregorian kalendar, till the year 1900. The epact for each month of the year is, in like manner, the moon's age on the first day of the month, supposing new moon to have happened on the first of January.

Golden Numbers.	Epacts.	Golden Numbers.	Epacts.	Golden Numbers.	Epacts.
I.	0	VIII.	17	XV.	4
II.	11	IX.	28	XVI.	15
III.	22	X.	9	XVII.	26
IV.	3	XI.	20	XVIII.	7
V.	14	XII.	1	XIX.	18
VI.	25	XIII.	12	I.	0
VII.	6	XIV.	23		

350. *The epacts* for the months of the common and leap year are as follows: —

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
Common year -	0,	1,	0,	2,	2,	3,	4,	5,	7,	7,	9,	9.
Leap year -	0,	1,	1,	3,	3,	4,	5,	6,	8,	8,	10,	10.

351. *It is evident that the moon's age* will be found by adding together the epact of the year, the epact of the month, and the day of the month, rejecting thirty if the sum amount to that number. Thus, if it is required to find the moon's age on the 11th November 1829; by adding 1 to 1829 and dividing by 19, we obtain a remainder 6, which is the golden number for the year 1829. Now, against VI. in the table, we find 25 for the epact of the year, and 9 is the epact for November: hence $25 + 9 + 11 - 30 = 15$, which is the moon's age; so that the moon is full on that day.

352. *The lunar cycle of* 19 *years*, though remarkably simple, is however far from being accurate. Nineteen years contain about an hour and a half more than 235 lunations; so that at the termination of that period the moon has advanced about an hour and a half in the next lunation. This error amounts to a day in the course of 16 cycles, or about 300 years. But, to compensate this excess, the epacts may be advanced one day every 300 years, and in this manner the lunar and solar periods will be made to agree. In consequence of her apparent motion eastward, the moon is about 48 minutes later after every diurnal revolution of coming to the meridian. As 48 minutes is equal to $\frac{4}{5}$ of an hour, an approximation is made to the time of her southing, by multiplying her age by 4, and dividing by 5. This gives the time, nearly, before or after noon, according as the moon is past the opposition or conjunction.

353. *The time of her rising and setting* is affected by the same cause. In one part of the orbit, however, this is in a great measure counteracted by the smallness of the angle which the orbit makes with the horizon. For facilitating the illustration of this phenomenon, let us suppose the moon to move in the ecliptic, from which she never deviates much more than 5°. By turning round the celestial globe, it will be seen that the ecliptic makes with the horizon very different angles, as the points of their intersection vary. If the first point of *Aries* be brought to coincide with the east point of the horizon, the angle which the ecliptic makes with the horizon is equal to the difference of the obliquity of the ecliptic and the complement of the latitude: but if the first point of *Libra* be brought into coincidence with the east point, the angle between the ecliptic and the horizon is equal to the sum of the obliquity and the complement of the latitude. When the moon is in *Pisces* or *Aries*, her motion in her orbit will therefore produce a considerable change, each succeeding night, on the distance between the east and the point of rising, but the time of rising will not be much affected. The reverse will be the case when the moon is in *Virgo* or *Libra*. Hence it is obvious that in every lunation, at a certain time, the moon must rise nearly at the same hour for several days together. This phenomenon, however, for the most part, passes unobserved; but in the harvest season it attracts attention, as being then much more conspicuous than at any other time of the year. In the autumnal months the moon is *full* in the signs *Pisces* and *Aries*, (the sun being at that season in the opposite signs *Virgo* and *Libra*,) and on that account rises an entire orb (or nearly so) for about a week, almost at the time of sunset, thus affording a supply of light very beneficial to the husbandman, in gathering in

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the fruits of the earth. This lunation has accordingly been distinguished by the name of the HARVEST MOON.

354. *The inclination of the moon's orbit to the ecliptic* makes the *harvest moon* rise, more or less, nearly at the same time that she would if she moved in the ecliptic, according to the position of the line of the nodes. If we suppose the ascending node to be in *Aries*, the moon's orbit makes with the horizon an angle upwards of 5° less than the angle which the ecliptic makes with it, and consequently the harvest moon will rise more nearly at the same time than if the moon had been in the ecliptic. In a little less than 9½ years, however, the line of the nodes will have made half a revolution, and the descending node will be in *Aries*. The moon's orbit will then make with the horizon an angle more than 5° greater than that which the ecliptic makes with it; and, consequently, the harvest moon will not rise so nearly at the same time as if the moon had been in the ecliptic.

355. *The quantity of moonlight* which we enjoy in winter is much greater than in summer. As the moon is always on the same side of the heavens with the sun, at the time of new moon, and on the opposite side at the time of full moon; it is evident that at midsummer the moon, when seen as a crescent, will rise at a point of the horizon to the north of east, and set at a point to the north of west, and will be seen high in the heavens when she passes the meridian. As she approaches full moon, however, she will rise farther and farther to the south of east, will appear low in the heavens when on the meridian, and will set farther and farther to the south of west. The reverse takes place at mid-winter: the moon is low when seen as a crescent, and rises higher and higher in the heavens as she approaches full moon. She also rises to the south of east when a crescent, and sets to the south of west; but, when full, rises and sets to the north of these points. Thus the great quantity of moonlight during the long nights of winter arises from the moon being full in the northern signs of the ecliptic, and is analogous to that of sunshine in the long days of summer. As we approach the pole, the quantity of moonlight in winter becomes still more remarkable; and at the pole itself, at mid-winter, the moon does not set for fifteen days together, namely, from the first to the last quarter.

356. *The lunar disc is diversified with a great variety of spots*, which are quite permanent, but differ very considerably from each other in degrees of brightness. These inequalities of illumination are visible to the naked eye. Since the discovery of the telescope, they have engaged the particular attention of several astronomers, by whom their relative positions have been carefully ascertained, and laid down in maps of the lunar surface. From an attentive examination of the lights and shades seen on the moon's disc, it has been inferred that her surface is very irregular, being diversified by lofty mountains, precipitous rocks, and deep caverns. The existence of these irregularities of surface is strikingly evident from the serrated appearance of the line which separates the enlightened from the dark part of the moon, and by a variety of bright detached spots, almost always visible on the dark part and near the line of separation between light and darkness. These bright spots are the tops of mountains illuminated by the sun, while his rays have not yet reached the bottom of the intervening valleys. The dark spots of the moon are smooth, and apparently level, while the luminous parts are elevated regions, which either rise into high mountains or sink into deep and immense cavities. The general smoothness of the dark spots naturally led to the conclusion that they were collections of water; but more careful observation has made it appear that the line which separates the enlightened from the dark part of the moon is not smooth and regular, even when it passes over a dark spot; so that there is no reason to suppose that there is any large collection of water in the moon: and this conclusion is strengthened by the constant serenity of her appearance, which seems undisturbed by any of those atmospherical phenomena which arise on our globe from the existence of water. The mountainous scenery of the moon, and more especially the immense caverns with which her surface is broken, bear little analogy to what we see on the surface of the earth. The resemblance may, however, be conceived to be considerably increased if all the waters of the earth were removed, and the beds of the ocean, seas, and lakes were left dry with all the inequalities of their surfaces exposed to view. The earth would then be diversified, not only with the rocks and mountains now seen upon its surface, but likewise with deep caverns of immense extent, and having detached mountains and rocks rising from the bottom, similar to the cavities discovered in the moon. From certain light spots which have sometimes been seen on the dark part of the moon, at such a distance from the enlightened portion that they could not arise from the light of the sun, astronomers have inferred the existence of volcanoes in the moon. Dr. Herschel, in particular, two or three different times, observed such spots.

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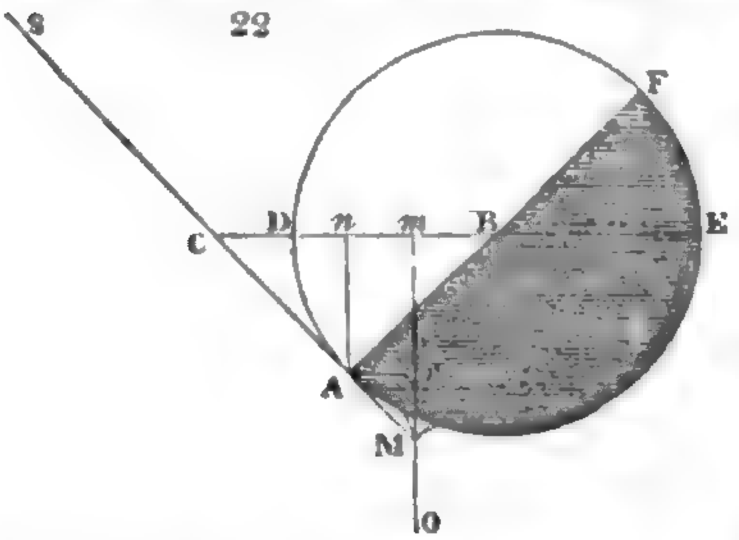

357. *The height of a lunar mountain* may be measured by the following method. Let DAE be a section of the moon made by a plane passing through O, the eye of an observer on the earth, M the summit of a mountain situated in the dark part of the lunar disc, and S the sun. It is evident that this plane will be perpendicular to the line which joins the horns of the moon. Let DA be the arch of the circle DAF, which passes over the visible portion of the enlightened hemisphere. Whenever the point M becomes visible to a spectator at O, it must be illuminated by a ray of the sun SAM, which will be a tangent to the circle DAF at the point A, and therefore at right angles to the diameter AF. Produce OM to meet the diameter DE in *m*, and draw A*r* and A*n* parallel to DE and M*m*; also produce ED to meet SM in C. Because DAE is a section of that hemisphere of the moon which is turned towards the earth, the visual ray OM*m* is perpendicular to DE: hence the angles *m*MC, MC*m* are together equal to two right angles. But because CA is perpendicular to AB, the angles ABC and ACB (or MC*m*) are also together equal to two right angles: whence it is evident that the angle *m*MC is equal to ABC; and that the triangles AM*r*, AB*n* are similar. We have, therefore, A*n* : AB = A*r* : AM. Hence $AM = \frac{Ar \times AB}{An}$.

Now, A*r* is the projection of AM on the lunar disc, and will be found by measuring, with the micrometer, in a direction perpendicular to a line joining the horns of the moon, the distance of the illuminated summit M from the enlightened disc at A; also $\frac{An}{AB} = \text{Sin.} \angle ABC$, radius being unity, and angle ABC is equal to SM*m* the moon's distance or elongation from the sun: wherefore we obtain $AM = \frac{Ar}{\text{Sin. elongation}}$, a given quantity.

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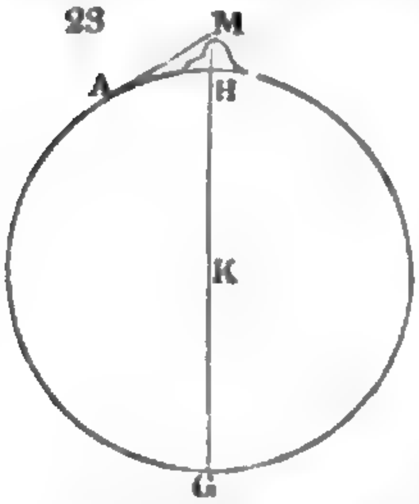

358. Next, let AGH be a section of the moon made by a plane passing along the tangent AM, and through the centre K: draw MKG; then, by a well-known property of the circle, $AM^2 = GM \times MH = MH \times (GH + HM)$, or, HM being much smaller than GH, we have $AM^2 = MH \times GH$, and $MH = \frac{AM^2}{GH}$ nearly. Now, AM and GH are both given; therefore HM, the height of the mountain above the general surface, may be determined.

Suppose, for example, that when the apparent diameter of the moon is 31′ 15″, and her elongation from the sun 93° 57½′, the distance between the enlightened part of her disc and the summit of a mountain situated in the dark part of it is found to be 41½″; and let it be required thence to determine the height of the mountain.

The diameter of the moon is about 2180 miles; hence 31′ 15″ or 1875″ : 41½″ = 2180 : 48·25, which is the number of miles in 41½″ on the lunar disc; so that we have A*r* = 48·25 miles.

Again, the Nat. Sin. of the elongation 93° 57½′ = ·9976; therefore $AM = \frac{Ar}{\text{Sin. elongation}} = \frac{48{\cdot}25}{{\cdot}9976} = 48{\cdot}36$ miles.

Lastly. The height $= \frac{AM^2}{GH} = \frac{(48{\cdot}36)^2}{2180} = 1{\cdot}07$ mile.

Thus the height of the lunar mountain in question is found to be about a mile. The principle now explained is correct in theory; but with regard to the results obtained from the practical application of it, a greater difference of opinion exists than might have been expected. These results are, however, highly curious and interesting.

359. *Moon's motion round the earth.* The moon's surface, when viewed through a telescope, is so strongly characterised by the spots visible upon it, as to leave no doubt of its being always the same. From this the inference is obvious, since we are certain from the moon's motion round the earth, that she must revolve on an axis nearly perpendicular to the plane of her orbit in the same time that she revolves about the earth, namely, in 27¼ days nearly. Her rotation on her axis is equable; but this is not the case with her motion in her orbit, which is periodically variable: and hence there are parts of the eastern and western edges of the moon which are seen occasionally. This appearance is called the LIBRATION OF THE MOON IN LONGITUDE. It is entirely optical, and argues no inequality in the moon's motion on her axis.

360. *The moon's axis of rotation* is not altogether perpendicular to the plane of her orbit, but inclined to it at an angle of 88° 29′ 49″. In consequence of this position of her axis her poles are alternately visible, and a small portion of the polar regions; this phenomenon is called the LIBRATION OF THE MOON IN LATITUDE.

361. *The diurnal libration of the moon* is another optical appearance arising from the moon being viewed from the surface instead of the centre of the earth. At rising, a part of the western edge is seen, which is invisible at setting; and, at setting, a part of the eastern edge is seen, which is invisible at rising.

362. *The explication of the lunar phases leads to that of* ECLIPSES — those occasional obscurations of the sun and moon which have, in ages of ignorance, been objects of superstitious terror to mankind, and at all times objects of curiosity to the philosopher. At the time of new moon, the moon is upon the same side of the heavens with the sun, but, for the most part, passes either above or below the solar disc without obscuring any part of it. This

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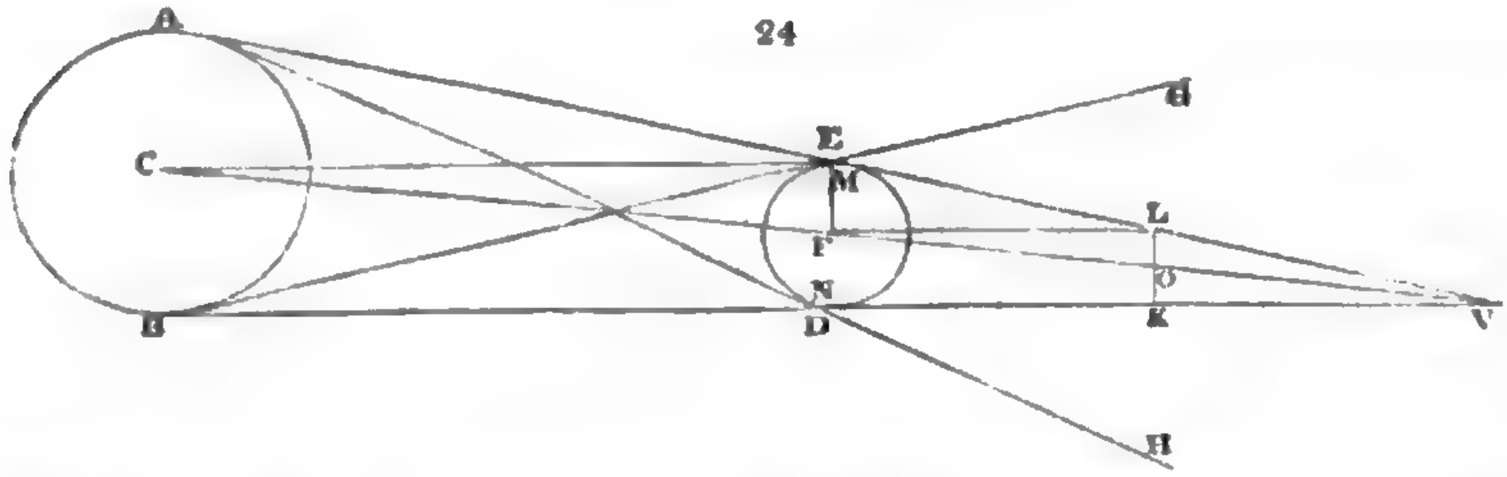
arises from her orbit being inclined to the ecliptic: for it is evident that if the planes of the orbit and ecliptic coincided, the centres of the sun, moon, and earth would, at every new moon, be in the same straight line; so that the moon would be seen to pass over the sun's disc, and the sun would appear to be totally or partially eclipsed, according to the position of an inhabitant upon the earth's surface. Again, at the time of full moon, the moon is on the opposite side of the heavens from the sun; and therefore she is on the same side of the heavens with the shadow, which the earth, as an opaque body, projects into space. In most cases, however, the moon passes above or below this conical shadow; so that she is not deprived of the sun's rays. But if the plane of the orbit coincided with that of the ecliptic, the centres of the sun, moon, and earth would evidently be in the same straight line at every full moon as well as at every new moon: the moon would therefore fall into the earth's shadow, and would be eclipsed to all the inhabitants on that side of the earth which is turned towards the moon at the time.

363. *Though the inclination of the lunar orbit to the ecliptic* prevents the occurrence at every new and full moon of these phenomena, there are certain distances from the nodes of the moon's orbit, called ECLIPTIC LIMITS, within which, if the moon is situated at the time of new or full moon, there will be a solar or lunar eclipse.

364. *To illustrate the general phenomena of lunar eclipses.* Let A B, D E be sections of the sun and earth, by a plane perpendicular to the plane of the ecliptic. Draw A V, B V touching the circles A B, D E on the corresponding sides in E and D, and meeting each other in V: also draw B G, A H, touching these circles on the opposite sides in M and N. Then, if we suppose the figure A B H G to revolve about the line C F, which joins the centres of the circles, as an axis, the cone generated by the line E V represents the shadow which the earth projects into space; and from every point of that conical shadow the light of the sun is entirely excluded. The spaces between E V, M G, and between D V, N H, will receive the light of a part of the sun: and hence the space round the shadow, which is generated by the motion of the lines G M, E V, is called the PENUMBRA.

24



Join C E. It is evident that the angle E V F is equal to the difference of the angles A E C, E C F. But A E C is the angle under which the sun's semidiameter is seen from the earth; and E C F is the angle under which the earth's semidiameter is seen from the sun. Both of these angles being known, their difference E V F is a given angle. Now, in the right angled triangle E V F we have given the angle at V, and the side E F, which is the earth's semidiameter: hence F V, the height of the earth's shadow, may be determined. The height of the shadow varies from 213 to 220 semidiameters of the earth.

Again, let F O be the distance of the moon from the earth: draw K O L perpendicular to F V, and join F L. The angle L F O, under which the semidiameter of the section of the earth's shadow is seen from the earth, is equal to the difference of the angles F L E, F V L. But F L E is the angle under which the semidiameter of the earth is seen from the moon, and F V L is, as has been shown, equal to the difference between the angle under which the sun's semidiameter is seen from the earth, and the angle under which the earth's semidiameter is seen from the sun: hence, to find the angle under which the section of the earth's shadow through which the moon passes in a lunar eclipse is seen from the earth, we must add together the two angles under which the semidiameter of the earth appears when seen from the sun and moon, and from the sum subtract the sun's apparent semidiameter, the remainder is the angle required. The angle L F O, when greatest, is about 46′: but the inclination of the lunar orbit to the ecliptic is upward of 5°, and to this distance the moon may recede from the ecliptic. It is evident, therefore, that an eclipse of the moon can take place only when she is near her nodes.

365. *Let the circle* A H B be the section of the earth's shadow at the moon; A B a portion of the ecliptic, and D F a portion of the moon's orbit near the ascending node. Draw C G from the centre of the shadow, (which must be the point of the ecliptic directly opposite the sun,) perpendicular to A B, and let it meet D F in G; then G is the point

of opposition at which the moon will be 180 degrees of the ecliptic distant from the sun.

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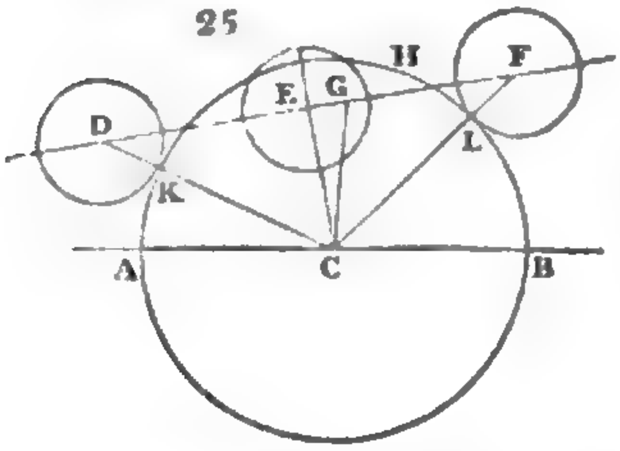

Now, in moving from D to G, the moon must enter the earth's shadow, and will therefore be eclipsed. The beginning of the eclipse will be the moment that she enters on the shadow at K: the middle of the eclipse will be the moment when her centre reaches the point E, the extremity of the perpendicular drawn from C to D F; and the end of the eclipse will be the moment when she leaves the shadow at the point L. The portion of the moon's disc that is obscured will depend on the distance between E and C, which will vanish when the point of the opposition coincides with the node. It is evident that had the eclipse happened on the other side of the node, the opposite edge of the moon would have been immersed in the shadow.

366. *In eclipses there are various degrees of immersion.* When this is entire, it is said to be *total;* when only a part of the moon is immersed, the eclipse is said to be *partial;* and when the centre of the moon passes through the centre of the shadow, the eclipse is said to be *central* and *total.* The breadth of the shadow at the moon is about three times her diameter, so that in the case of a total central eclipse, the moon may be entirely obscured for nearly two hours.

367. *The time when eclipses shall happen may be computed* from the laws which regulate the motions of the sun and moon. This computation requires astronomical tables, and is performed with considerable labour. But it may be observed that in 223 lunations, or 18 years 10 days (or 11 days according as four or five leap years occur in the interim), 7 hours 43 minutes, the moon returns to the same position nearly with regard to the sun, and the lunar nodes, and therefore the eclipses, will return nearly in the same order and circumstances. This is thought to be the period called the Chaldean *Saros,* being used by the Chaldeans in predicting eclipses.

368. *When it is known that a lunar eclipse is to happen*, it is easy to compute its general circumstances. The distance of the moon from the ecliptic at opposition, the time of opposition, the angles under which the earth's semidiameter is seen at the sun and moon, also the apparent diameters of these two luminaries, are known from the tables. In the right angled triangle C E G we have given C G, and the angle G C E, which is equal to the inclination of the moon's orbit to the ecliptic, nearly; hence we find C E and E G. From C E and C F, the sum of the semidiameters of the section of the earth's shadow and the moon, we find E F, which is equal to E D; thence D G, G F become known. We can compute from the tables the angular motion of the moon in her orbit relatively to the sun, the latter body being supposed at rest. Her motion relatively to the opposite point C is evidently the same: hence we can determine the time of describing D H and G F; that is, the time that elapses between the beginning of the eclipse and the opposition, and between the opposition and the end of the eclipse. But the time of the opposition is known, therefore the times of the beginning and end of the eclipse will also be known.

369. *For estimating the quantity of an eclipse,* the diameter of the solar or lunar disc is conceived to be divided into twelve equal parts called DIGITS; and according to the number of those parts which are obscured, so many digits are said to be eclipsed.

370. *Let it be supposed that the edge of the moon's disc* just touches the edge of the section of the earth's shadow at P, and that at the same time the diameters of the moon and shadow are each at the *maximum,* and we shall find the ecliptic limit for lunar eclipses. Produce E D and B A to meet in N: then N C is the limit of the distance of the node from the opposition at which an eclipse can happen. Since the line in which the centre of the moon moves (which for a short distance may be considered as a straight line) must be supposed parallel to the tangent to the circle A P B at the point P, the angle at E is a right angle. The angle N, is the inclination of the lunar orbit to the ecliptic: also C E is equal to the sum of the semidiameters of the moon and shadow. Hence from the spherical triangle C E N, C N may be determined; and is found to be about $11\frac{1}{2}°$. Unless when the node and the point of opposition, which are both liable to continual change of position, come within this distance, there cannot possibly be a lunar eclipse.

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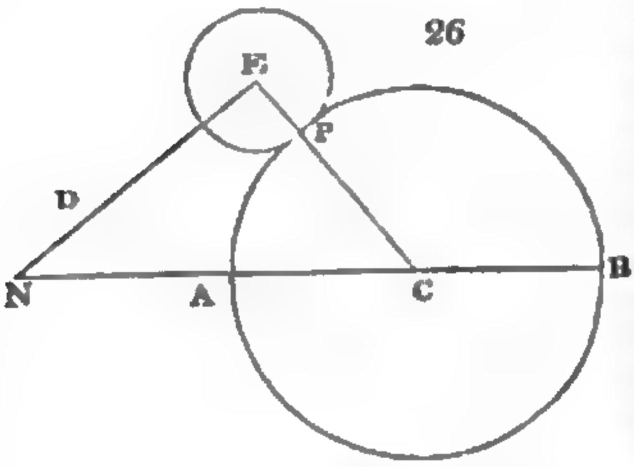

371. *Calculation of longitude.* The penumbra makes it very difficult to observe, with precision, the beginning or end of a lunar eclipse; so that though these periods may be employed for determining the longitude of places on the earth, no great degree of accuracy is to be expected. The best method is to note the time of the arrival of the boundary of the shadow at the different spots on the lunar surface, which may be considered as so many different observations.

372. *The moon seldom disappears entirely* in lunar eclipses, but is seen of a dusky red colour: even the spots on the lunar surface may be distinguished through the shade. This

effect is to be attributed to a portion of the sun's light, which enters the conical shadow in consequence of being refracted by the atmosphere of the earth. The nature and effects of atmospherical refraction will afterwards be explained.

373. *Eclipses of the sun.* With regard to the general phenomena of solar eclipses, we may begin with remarking, that when the sun's light is intercepted by the moon, so that at any place on the earth's surface he becomes partly or wholly invisible, properly speaking, it is an eclipse of *that portion of the earth* on which the moon's shadow or penumbra falls.

374. *The semi-angle* at the vertex of the moon's shadow is determined in a similar manner to that on which the semi-angle at the vertex of the earth's shadow was found. It is equal to the difference of the angles under which the semi-diameters of the sun and moon would be seen, if each of these bodies were viewed from the other at the time of their conjunction; and will therefore not be very far from being equal to the apparent semi-diameter of the sun as seen from the earth. Computing, then, the length of the conical shadow of the moon, we shall find it vary from about 60⅓ to 55½ semi-diameters of the earth. The length of the shadow at the time of the conjunction may therefore at one time exceed, and at another time fall short of the moon's distance from the earth, which varies from 64 to 56 semi-diameters. In the former case, if the conjunction happen when the moon is within a certain distance of the node, the lunar shadow will reach the earth, and a section of it will traverse a portion of the earth's surface, producing, wherever it falls, a total eclipse of the sun.

375. *Wherever the penumbra falls,* the sun will appear partially eclipsed; more or fewer digits being eclipsed according as the place is less or more removed from the shadow. Beyond the penumbra the sun is not eclipsed at all. The section of the lunar shadow is so near the vertex, that, even when greatest, the portion of the earth's surface which it covers is not very extensive, being only about 180 miles in diameter: the penumbra, however, extends over a considerable part of that hemisphere of the earth which is turned towards the sun. A total eclipse in any place cannot exceed 7′ 58″. If the vertex of the lunar shadow just reaches the surface, the total eclipse then produced will be instantaneous.

376. When the vertex of the lunar shadow falls short of the earth's surface, at no place will there be a total eclipse: but at places near the axis of the cone, there will be seen *an* ANNULAR *eclipse;* that is, the central parts of the sun's disc will be obscured, but a bright ring will be left visible round the dark body of the moon. Thus let A B, C D be sections of the sun and moon, and V the vertex of the lunar shadow which is supposed not to reach the earth. Produce F V the axis of the shadow to meet the surface of the earth in E. From E draw E C G, E D H tangents to the moon, and intersecting the sun's disc in G and H. The circle of which the line joining G, H is the diameter, marks out the portion of the sun that is hid by the body of the moon from an observer at E, and the *annulus,* of which the breadth is A G, will be visible.

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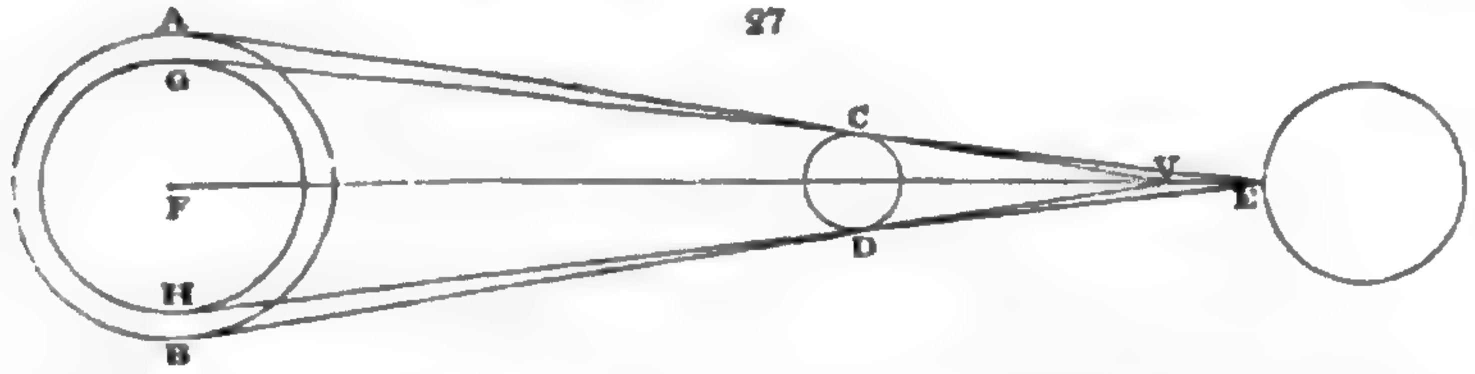

377. *The general circumstances of a solar eclipse may be represented by projection;* and a map may be constructed to show the progress of the shadow over the surface of the earth. The most simple projection is that which supposes the observer to be placed in the sun, and to see the path which any place on the earth's surface describes in consequence of the diurnal motion projected into an ellipse on the plane of the earth's disc, while the path of the moon's shadow is projected into a straight line on the same disc. The geometrical construction thus obtained is sufficiently accurate for the prediction of eclipses.

378. *The circumstances of a solar eclipse may, however, be computed* with considerable accuracy. Thus, find for the given place, from the tables, the time of the conjunction of the sun and moon. The position of the heavenly bodies in reference to the ecliptic is determined by latitude and longitude, in the same manner as the position of a place on the surface of the earth in reference to the equator. Find, then, for the time of the conjunction, the latitude and longitude of the moon, and apply to them the small change produced by the spectator being placed on the surface instead of the centre of the earth; a change which depends on the angle which the earth's semidiameter subtends at the sun and moon at the time: this will give us the apparent latitude and longitude of the moon as seen on the concave surface of the heavens. Compute from these and the longitude of the sun, that is, his distance from the first point of *Aries,* the apparent distance of the centres of the sun and moon at the instant of conjunction; whence we may nearly conclude the time of

the beginning and ending of the eclipse, by taking into account the apparent horary motion of the moon in latitude and longitude at the time of conjunction, computed from the tables. About the conjectured time of the beginning of the eclipse, compute two or three apparent latitudes and longitudes of the moon, and thence, combined with the longitude of the sun, the apparent distances of the centres. From these results the time may be computed by proportion when the apparent distance of the centres is equal to the sum of the apparent semi-diameters, that is, the time of the beginning of the eclipse.

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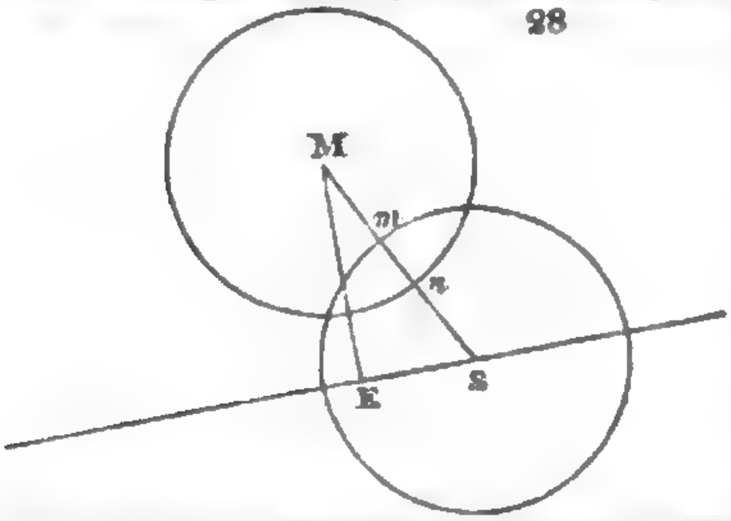

379. *The magnitude also of the eclipse at any time may be thus determined:* let S E be the computed apparent difference of longitude of the centres S, M, of the sun and moon, and M E the computed apparent latitude of the moon. In the right-angled triangle M E S, we have therefore given the two sides to find the hypothenuse M S, which, being known, we obtain *m n* the eclipsed part of the sun: for $mn = Sm + Mn - MS$.

380. *The ecliptic limits of the sun* may be determined in the following manner: let S and M (*fig.* 1) be the sun and moon, seen from E the centre of the earth at the moment of conjunction; that is, when their centres are in the same circle S B perpendicular to the ecliptic. Let the angle *a* E *b*, formed by tangents drawn from E to the adjacent edges of the solar and lunar discs, be equal to the *greatest* difference between the true place B and apparent place *m* of the moon, which can arise from her being viewed from the surface instead of the centre of the earth. It is not difficult to see that this difference will be greatest when the moon is in the horizon, and that its effect will be to depress her altitude. The distance of the sun is so great, that we may at present consider his true and apparent place as coincident. Suppose now an observer on the earth's surface at A, whose horizon is at right angles to S B, to have the moon in his horizon at the moment of conjunction; it is evident that to him the two discs would appear to be in contact: but to an observer on any other point of the earth's surface, the discs would appear asunder. In the moment of conjunction, therefore, the penumbra must have just touched the earth at the point A; and when the centres of the sun and moon approach nearest to each other before or after the conjunction, it will spread over a very small portion of the earth's surface near A, so as to produce *barely* an eclipse. Hence the distance of the sun from the node at the time of conjunction will be the solar ecliptic limit, nearly. In the right-angled spherical triangle S *m* N (*fig.* 2.) let N S be a portion of the ecliptic, and N *m* a portion of the moon's orbit, N being the node, and let the perpendicular S *m* be equal to B *m* in *fig.* 1. The arc N S is the ecliptic limit required: and to find it, we have given the angle at N equal to the inclination of the moon's orbit to the ecliptic, and S *m* equal to the sum of the apparent diameters of the sun and moon together with the angle *b* E *a*, which is equal to B M *m* or A M E, the angle subtended by the semidiameter of the earth's disc as seen from the moon. The angle N and the perpendicular S *m* being known, the base N S is easily determined. The three quantities to the sum of which S *m* is equal, are variable in their values. Taking for S *m* the sum of the semidiameters of the solar and lunar disc, and of the disc of the earth as seen from the moon when they are greatest, we find S N equal to 17° 12′ nearly. But if S *m* be made equal to the sum of the semidiameters when they are least, S N is found to be nearly equal to 15° 19′. Within the former of these limits an eclipse of the sun *may* happen, within the latter it *must* happen.

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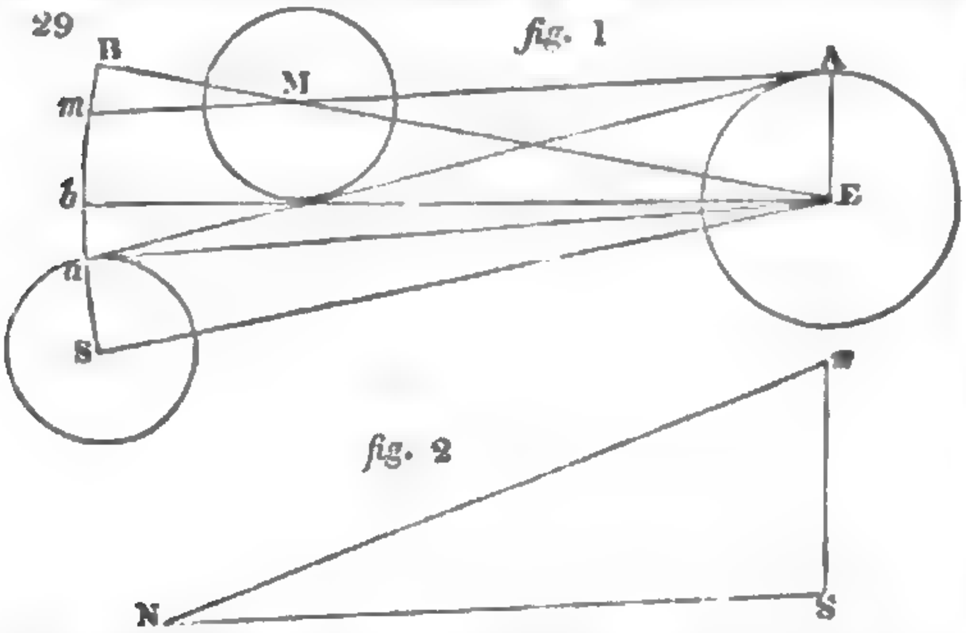


fig. 1

fig. 2

381. *If the moon's apparent diameter* be greater than or equal to that of the sun, the eclipse will be total wherever the lunar shadow falls. But if the sun's apparent diameter be greater than that of the moon, the eclipse will be annular within the lunar shadow.

382. *Number of eclipses.* The ecliptic limits of the sun taken on each side of the node, give an arc of the ecliptic exceeding 30°, so that the sun will be more than a month in passing through these limits. Hence there must be two eclipses of the sun every year. Since the ecliptic limits of the moon, however, taken on each side give an arc only of about 23°, and since through this portion of the ecliptic the sun passes in less than a month, there may be no eclipse of the moon in the course of a year.

383. When a total and central eclipse of the moon happens, there may be an eclipse of the sun at the preceding and following conjunctions, because between new and full moons the sun describes only about 15 degrees of the ecliptic, so that each conjunction may happen within the solar ecliptic limits. The same may take place at the opposite node: there may therefore be six eclipses in the course of a year. The retrogradation of the node at the rate of 20° yearly renders it possible, when the first eclipse of the year happens early in January, that another eclipse of the sun may occur in the end of the year. On the whole, there may be seven eclipses in the course of one year; five of the sun, and two of the moon: and there never can be fewer than two, but though more solar eclipses happen than lunar, there are fewer of the former visible than of the latter; because a lunar eclipse is visible at every place on the earth which is turned towards the moon during its continuance; but in a solar eclipse the sun continues visible at all places over which the penumbra does not pass. The

greatest possible duration of the annular appearance of a solar eclipse is $12^m\ 24^s$, and the greatest possible time during which the sun can be wholly obscured is $7^m\ 58^s$.

384. *As the beginning* and end of a solar eclipse can be observed with considerable accuracy, they are useful for determining the longitude, though the method which they furnish is complex and laborious.

385. *Table showing the Time of all the Solar Eclipses which will be visible in this Country during the present Century. The Hour and the Digits eclipsed are adapted to the middle of England.*

TIME OF SOLAR ECLIPSES.											
Year.	Day and Hour.			Digits Eclipsed.		Year.	Day and Hour.			Digits Eclipsed.	
		D.	H.	°	′			D.	H.	°	′
1832	July -	27	2 A.M.	0	30	1868	February	23	3 P.M.	contact.	
1833	July -	17	5 A.M.	9	36	1870	December	22	11 A.M.	9	36
1836	May -	15	2 P.M.	11	18	1873	May -	26	8 —	3	43
1841	July -	18	3 —	contact.		1874	October	10	9 —	6	18
1842	July -	8	5 A.M.	8	54	1875	September	29	noon.	0	33
1845	May -	6	8 —	6	15	1879	July -	19	7 A.M.	4	0
1846	April -	25	6 P.M.	2	21	1880	December	30	2 P.M.	4	24
1847	October	9	6 A.M.	11	0	1882	May -	17	6 A.M.	2	18
1851	July -	28	2 P.M.	9	43	1887	August	19	3 —	11	58
1858	March	15	11 A.M.	11	30	1890	June -	17	8 —	4	39
1860	July -	18	2 P.M.	9	12	1891	June -	6	5 —	3	0
1861	December	31	2 —	5	0	1895	March -	26	9 A.M.	1	0
1863	May -	17	6 —	3	46	1896	August	9	sunrise.	contact.	
1865	October	19	4 —	7	36	1899	June -	8	5 A.M.	3	13
1866	October	8	5 —	5	3	1900	May -	28	3 P.M.	8	0
1867	March	6	8 A.M.	8	42						

386. *Effects of atmospherical refraction and parallax.* In the preceding explanation of solar eclipses we have had occasion to refer to the effects of ATMOSPHERICAL REFRACTION; also to the difference between the apparent places of the sun and moon, called their PARALLAX, produced from their being viewed from the surface instead of the centre of the earth. Before leaving this subject, we shall state a little more fully the effects arising from these causes.

387. *Atmospherical refraction.* The earth is surrounded on all sides by an aëriform elastic fluid, which is called the ATMOSPHERE. This fluid possesses weight, and is compressible; and hence the parts near the surface of the earth are more dense than those above them, on account of the greater superincumbent pressure which they sustain. The same thing holds true of every *stratum* when compared, in reference to density, with that immediately below it; so that from the surface upwards the density gradually diminishes, at a few miles' elevation becomes very small, and at some point may be considered as altogether evanescent. Now, it is a well known principle, that if a ray of light, after passing through one medium (air, for instance), enters another (say water) of a different density, in a direction *not* perpendicular to its surface, it is bent out of its course *towards* the perpendicular to the surface on which the ray is incident, if the second medium is the denser of the two; but *from* that perpendicular if the second medium is the rarer. In passing through the atmosphere, therefore, a ray of light will be continually deflected from the rectilineal into a curvilineal path; because at every point of its course it is entering a medium of a greater density. The ray is said to be *refracted;* and as the tangent drawn from the eye to the curve which it describes is the direction in which celestial objects appear, it follows, that refraction renders the apparent altitude of all the heavenly bodies greater than the true. Hence they often appear above the horizon when they are actually below it.

388. *The deviation of the refracted ray* from its original course increases with the angle of incidence, and vanishes when the direction of the ray is perpendicular to the surface of the second medium. Hence atmospherical refraction is greatest when the object is in the horizon, where it may be about $34'$: at 45° altitude, it is about $57\frac{1}{2}''$: in the zenith it vanishes.

389. *Whatever alters the density of the atmosphere* must affect also its refractive power. In all accurate observations, therefore, the state of the barometer and thermometer must be taken into account. At the same zenith distances, the quantity of refraction varies nearly as the height of the barometer, supposing the temperature to remain the same. The effect of a variation in the temperature is to diminish the quantity of refraction about $\frac{1}{480}$th part for every increase of one degree in the height of the thermometer.

390. In passing through the atmosphere *light is reflected* as well as refracted. The reflective power of the atmosphere produces the splendour of day by diffusing light in every direction. Combined with its refractive power, it causes that faint light called TWILIGHT,

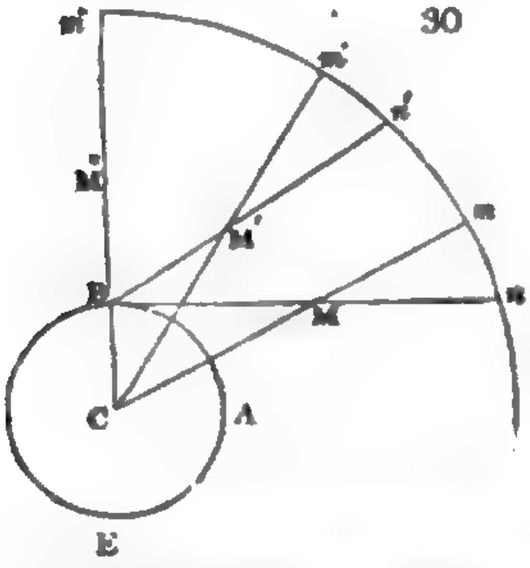
which is perceived before sunrise and after sunset; — beginning in the morning in our latitude, and ending in the evening, when the sun's depression below the horizon is about 18°. Various other phenomena are to be attributed to the same cause: the red and orange colour of the morning and evening clouds; the ruddy appearance of all the heavenly bodies when near the horizon; the blue colour of the sky; and the bright azure of the distant mountain, are all the effects of the refractive and reflective powers of the atmosphere.

391. Refraction is also the cause of *the oval appearance of the sun and moon when near the horizon.* The diameter of the disc that is parallel to the horizon remains unaffected in its apparent length, because both extremities are equally refracted; but the diameter perpendicular to the horizon is shortened by about $\frac{1}{6}$th of its length, because the lower edge of the disc, being nearer the horizon, is refracted nearly five minutes more than the upper.

392. *The great apparent magnitude of the sun and moon when in the horizon* is another remarkable phenomenon which we may here notice. This allusion, which is altogether optical, is usually accounted for on this principle, that we form an erroneous judgment respecting the distances of these bodies when they are in the horizon, compared with their distances when they have attained a considerable elevation. When we see the moon, for example, in the heavens at a considerable altitude, we intuitively suppose her nearer than when she is in the horizon; because, in the latter case, we see a multitude of objects, — many of them at great distances, and the moon beyond them all; but, in the former case, we have no intervening objects by which to form an estimate of her distance. The angle under which she is seen being nearly the same, we infer a greater magnitude when we imagine the distance greatest, that is, when the moon is in the horizon. Such is the error into which we, in this instance, fall, in the rapid judgments of the mind respecting magnitude and distance connected with vision. The more deliberate conclusion on this subject drawn by reason is, that the moon must indeed be at a greater distance from an observer on the earth, when she is in his horizon, than when she is in or near his zenith; but that, however the eye may be deceived, her apparent diameter must, when exactly measured, be found less. This is accordingly the case; for, when accurately measured with the micrometer, the moon's apparent diameter, when she is in the horizon, is actually found to be less than when she has attained a considerable altitude.

393. *Parallax.* We have formerly shown that, in comparison with the distances of the fixed stars, the earth is but as a point in the universe; so that their positions in the heavens appear the same when viewed from the earth's surface, as they would if they were viewed from its centre. This, however, is not the case with regard to the sun, moon, and planets. At each of these bodies the earth presents a disc of an appreciable magnitude: and, on the other hand, their positions among the fixed stars, when viewed from different points of the surface of the earth, vary, and are different from what they would be were they seen from the centre of the earth.

394. *Let* A B E (*fig.* 30.) *be the earth,* C its centre, and M, M″, M′ (a heavenly body, for example) the moon in the sensible horizon, the zenith, and any intermediate position. The true places of the moon in these positions, as seen from the centre C, and referred to the starry heavens, will be *m*, *m*″, *m*′; and their apparent places, as seen from B, will be *n*, *n*″ *n*′. It is evident, that in the zenith the true and apparent places coincide, so that there is no parallax. In the horizon the parallax is greatest: it is measured by the arc *m n*, and is equal to the angle B M C, under which the semidiameter of the earth's disc appears when viewed from the moon. At the intermediate position M′ the parallax is measured by the arc *m′ n′*: it is less than in the horizon, and decreases as the body ascends until it vanishes when the body reaches the zenith. From the horizon to the zenith, parallax diminishes the apparent altitude of a body; but as the altitude increases, this diminution becomes less and less. Its effect, therefore, is contrary to that of refraction, which always increases the apparent altitude of a body.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Chap. XI.

MOTION OF THE PLANETS ROUND THE SUN.

395. *The phenomena of the motions of the other planets differ from those of the moon,* which, as we have shown, are all easily accounted for, on the supposition that the moon revolves round the earth in an elliptic orbit, subject to various changes; which are confined, how-

ever, within certain limits. The attempts which the ancient astronomers made to explain the celestial phenomena, by supposing the earth to be the centre of the universe, introduced a system, the PTOLEMAIC, which was received for about 1500 years, as affording the true explanation of the planetary motions; but which the progress of scientific discovery has proved to be absurd. Ptolemy, an astronomer of Egypt, who flourished about 140 years after the Christian era, supposed the planets to revolve about the earth in the following order; viz. the Moon, Mercury, Venus, the Sun, Mars, Jupiter, Saturn. Beyond the region of the planets he placed the sphere of the fixed stars. While he thus accounted for the proper motions of the planets from west to east, he conceived the whole to be carried round the earth by a diurnal motion, in the opposite direction, in twenty-four hours. The irregularities of the planetary motions, — these being sometimes direct, at other times retrograde; sometimes swift, and at other times slow, — were imagined by him to arise from each planet moving in a small circle, called an EPICYCLE, whose centre was carried round a larger circle, called the DEFERENT, having the earth placed a little to the one side of its centre. The motions in these circles he imagined to be produced by the revolution of transparent globes; each planet being supposed to be attached to a globe, which carried it round in its epicycle; and this globe again supposed to be contained in the shell of another globe of sufficient thickness to receive it within its solid substance, and to allow it to revolve on its own centre, at the same time that it was carried in the deferent round the earth.

396. *Setting aside the obvious objections to this theory,* arising from the extravagance of the suppositions, as well as the awkwardness and complication of the machinery which it employs, an insuperable difficulty remains; viz. that the whole system is entirely hypothetical, and offers no proof of the existence of the agents to which it attributes such mighty effects. It is not surprising, therefore, that instead of being confirmed by subsequent discoveries, it fell to the ground as soon as the true method of investigating the laws of nature was understood and adopted.

397. *Of the planets two, Mercury and Venus,* always accompany the sun, never receding from him beyond certain limits: the rest are seen at all possible angular distances from the sun. Let us, then, fix upon Venus as the most conspicuous of the two which accompany the sun, and upon Mars as one of the most conspicuous among those which recede to all angular distances from him; and by tracing out the apparent motions of these planets, let us endeavour to ascertain the centre about which they revolve.

398. *When the planet Venus* is near the sun, she is invisible; but when she has emerged sufficiently from his rays, she is seen in the twilight of the morning or evening, according as she is to the west or east of the sun. In the former case she is the MORNING STAR; in the latter, the EVENING STAR. When she begins to be seen in the evening, she is found to be receding from the sun towards the east, and thus disengaging herself more and more from his rays. Having reached her greatest angular distance, or elongation, which is from 45° to 48°, she begins again to approach him, and continues to do so till her angular distance is about 28°. During all this time her motion is *direct,* that is, in the order of the signs; but now she becomes *stationary,* and in a short time she is seen moving in a direction contrary to the order of the signs, and has thus acquired a *retrograde* motion; but still she continues to approach the sun, until in a short time she is lost in his light. After being invisible for about six weeks, she is again seen; but now in the morning to the west of the sun, emerging from the solar rays. Her motion is still retrograde; but when she has reached about 28° distance from the sun, she again becomes stationary; and in a short time resumes a direct motion, receding from him night after night, until her angular distance exceeds 45°. She then returns to the sun; is for a time lost in his rays; and at length is seen in the evening to the east of the sun, to repeat the same round of phenomena. While Venus thus appears to have an oscillatory motion to the east and west of the sun, she is found, when viewed through a telescope, to present phases exactly similar to those of the moon, the illuminated portion being always turned towards the sun. We may hence infer that Venus is an opaque body, and shines in consequence of reflecting the solar light. At the same time her apparent diameter also varies, its variations having an evident relation to the position of the planet with regard to the sun. The diameter appears least when the planet is about to be immersed in the rays of the sun in the morning, or immediately after her emerging from them in the evening. On the other hand, it appears greatest when she is about to be lost in the solar rays in the evening, or when she emerges from them in the morning. Such is a general view of the apparent motion of Venus; and by attending to the phenomena which she exhibits, we are led to the conclusion that she revolves round the sun. When in the morning she begins to disengage herself from the solar rays, she is seen to rise before the sun in the form of a crescent; and it is then that her diameter appears greatest. At that time, therefore, she must be nearer to us than the sun is, and not far from being in conjunction with him. Her crescent increases, and her diameter diminishes, as she recedes from the sun: when she has reached her greatest elongation and returns again towards him, she continues to discover to us more and more of her enlightened hemisphere,

her diameter all the time diminishing, until she is lost, in the morning, in the sun's rays. At the instant of her disappearing, Venus is seen as a full disc; and at the same time her diameter is least. Hence we may with certainty infer, that she is then at a greater distance from us than the sun, and again nearly in conjunction with him. After having remained for some time invisible, she re-appears in the evening to the east of the sun; and in receding from and returning towards him exhibits, in an inverted order, the same phenomena, in reference to the changes in her disc and apparent diameter, which she had presented when seen in the morning, on the west of the sun: her enlightened hemisphere turns more and more from us, and her apparent diameter continually increases, until she again disappears, or is seen as a black spot traversing the disc of the sun.

399. *From these phenomena* only one inference can be drawn; viz. that Venus revolves in an orbit, near the centre of which the sun is placed. This conclusion, which rests on the firm basis of observation, leads to a natural and simple explanation of all the peculiarities of her motion.

400. *The planet Mars*, the next to be considered, appears to be carried round the earth by a motion which is subject to great inequalities. When he begins to be seen in the morning emerging from the solar rays, his motion is direct, and at its greatest rapidity; but it gradually diminishes until the planet's angular distance from the sun is about 137°. At that time it changes into a retrograde motion, whose rapidity increases till the moment that the planet comes into opposition with the sun, or is on the meridian at midnight. It is then at its greatest rate, and presently begins to decrease, continuing to do so till the planet becomes stationary when at the angular distance of about 137° from the sun. The motion now returns to its direct state, after having been retrograde for about seventy-three days; and in that period the planet describes an arc of retrogradation of about 16°. Mars continues to approach the sun, until he becomes immersed in his rays in the evening. These phenomena are repeated at every opposition of the planet, with considerable differences, however, in reference to the duration and extent of the retrogradations. At different points of his course round the heavens, the apparent diameter of Mars is very different: it varies from about 13·3″ to 29·1″. It is greatest when the planet is in opposition to the sun.

401. *The phenomena now described can be satisfactorily explained* in no other way but by supposing Mars to revolve round the sun. As he recedes from the sun to all possible angular distances, the earth must be situated within his orbit; but the increase of his apparent diameter as he approaches his opposition, and its decrease when he approaches the sun, show that the earth is not the centre of his motion. Before he reaches the point of opposition, his motion, from being direct, becomes retrograde; after the opposition it resumes its direct state, when the planet is at the same distance from the sun, at which he was situated when the motion became retrograde; and it is at the moment of conjunction that this last motion is most rapid. Now, all these circumstances evidently indicate that the apparent motion of Mars is the result of two combined motions, which alternately conspire with and oppose each other, and of which one depends on the apparent motion of the sun. As we have found that Venus revolves round the sun, and accompanies him in his apparent annual motion round the earth, we are led by analogy to extend the same law to Mars, and to conclude that he also revolves in an orbit round the sun.

402. *The disc of Mars changes its figure*, and becomes sensibly oval, according to his position relatively to the sun: hence we may conclude that Mars is an opaque body, and derives his light from the sun.

403. *The same reasoning being applicable in the case of the other planets*, we may extend to all of them the conclusion which we have now established in reference to Venus and Mars, — namely, that they are opaque bodies, and revolve about the sun in orbits nearly circular; while that luminary of the system either describes or appears to describe an orbit about the earth in the course of a year. This general law, which affords a simple and complete explication of the planetary motions, receives additional confirmation from the phenomena of the satellites of Jupiter and the ring of Saturn; for these phenomena prove directly that Jupiter and Saturn revolve about the sun in nearly circular orbits.

CHAP. XII.

MOTION OF THE EARTH ROUND THE SUN.

404. The conclusion to which we have now been led, — that all the planets describe orbits that have the sun near to their centre, — naturally suggests *the question, whether the earth itself is not subject to the same law*, and therefore to be ranked among the planets which

revolve round the sun. With regard to the celestial motions, every appearance would remain the same to us, whether the earth described an orbit round the sun, or the sun with his accompanying planets revolved round the earth. To which of these hypotheses the preference is due will appear from the following considerations: —

405. *The immense masses of the sun and of several of the planets, combined with their great distances* from the earth, render it much more simple to suppose that the earth describes an orbit round the sun, than that the whole planetary system revolves round the earth. What an inconceivable rapidity of motion is it necessary to assign to Saturn, almost ten times more distant from us than the sun, or to Uranus, at about double the distance of Saturn, in order that these planets may complete a revolution round the earth in a year, at the same time that they revolve about the sun! It is a law which is found to pervade the planetary system, that the less body revolves about the greater body which is in its neighbourhood; and by supposing the earth, in conformity with this law, to revolve about the sun, which in magnitude greatly exceeds all the planets taken together, we avoid all the complication and rapidity of motion which follow from the supposition of the earth being at rest.

406. *The analogy which subsists between the earth and the planets* confirms the hypothesis of the earth being carried round the sun by a motion of translation: Jupiter, for example, is known to have a revolution on his own axis, and to be attended by four satellites. In these particulars the earth resembles that planet, having also a revolution on its own axis, and being attended by one satellite, the moon. An observer placed on Jupiter would be led from appearances to imagine that the planetary system revolved round him, in like manner as an inhabitant of the earth supposes himself placed at the centre of the celestial motions: and the greater magnitude of Jupiter would give to such a conclusion, when drawn by an observer placed on that planet, a greater resemblance to the truth than it would have when drawn by an inhabitant of the earth. With such a close analogy in these respects before our eyes, may we not naturally conclude that it extends still farther; and that as Jupiter revolves in an orbit round the sun, the earth must also have a similar motion?

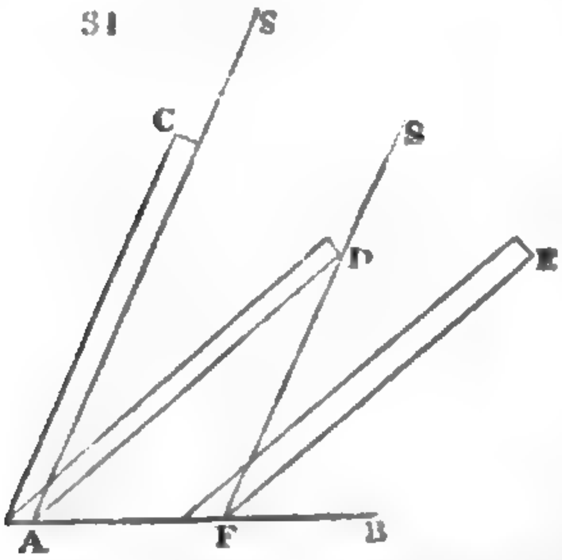
407. *Let us imagine ourselves to be placed on the surface of the sun*, and from that position to observe the earth and the planets. All these bodies would appear to move from west to east; the planets would be found free from all that complication in their motion to which they appear subject when viewed from the earth; and the motion of the earth itself would in every circumstance correspond with that of the planets. The more distant a planet is from the sun, the longer is the time which it requires to perform its revolution round him; but throughout the planetary system this remarkable law prevails, connecting the periodic times with the distances, — the squares of the former are proportional to the cubes of the latter. If we compute, by this principle, what should be the time of revolution of a planet situated at the distance of the earth from the sun, we find the result correspond exactly with the sidereal year; thus, the earth's distance from the sun being assumed as unity, the distance of Mars is known to be 1·523693: his periodic time is 686·9796 days. Hence we have $(1{\cdot}52693)^3 : 1^3 :: (686{\cdot}9796)^2 : (365{\cdot}256)^2$. The periodic time of a planet, at the same distance from the sun as the earth is, should therefore be 365·256 days, which is the length of the sidereal year. This result leaves no doubt that the motion which the earth would be seen to have, if it were viewed from the sun, arises from the same causes, and is regulated by the same laws as the motions of the planets: hence we may conclude that it is no less real.

408. *The motion of the earth in an orbit round the sun*, which the preceding considerations render so highly probable, is directly *proved by* the phenomena of *the aberration of light*. It was long supposed that light was propagated from the sun and other luminous bodies instantaneously; but modern observations have proved that this hypothesis is erroneous, and that light, like all other projectiles, occupies a certain time in passing from one point of space to another. The fact that light has a progressive motion was first discovered by Roemer, a celebrated Danish astronomer, from observations made on the eclipses which the satellites of Jupiter undergo when they fall into his shadow. He found that these eclipses happened sometimes sooner and sometimes later than the time deduced from the tables of their motions; the observation being before or after the computed time, according as the earth was nearer to or farther from Jupiter than the mean distance. Repeated observations have proved, that when the earth is between the sun and Jupiter, his satellites are seen eclipsed about 8¼ minutes sooner than they should be according to the tables; but that when the earth is on the opposite side of the sun from Jupiter, the eclipses of his satellites happen about 8¼ minutes later than the time shown by the tables. The only conclusion that can be drawn from these facts is, that light occupies about 16½ minutes in traversing a space equal to the diameter of the earth's orbit, which is upwards of 190 millions of miles; it must therefore move at the enormous rate of nearly 210,000 miles in a second.

409. *Now, if the earth is really in motion*, it must be moving at the rate of about 20 miles in a second, in order to accomplish its revolution round the sun in the course of a

year. This rate of motion, although small when compared with the velocity of light, bears to it a sensible proportion; so that an evident consequence of the earth's motion will be, that the apparent places of the heavenly bodies will not be the same as they would be if the earth were at rest.

410. *Suppose* A B *to be a portion of the earth's orbit,* S a fixed star, and S A the direction of light proceeding from the star to the earth at A. It is evident that if the earth were at rest at A, a telescope presented in the direction A S would receive the light of the star, which, proceeding along the axis of the telescope, would reach the eye at A, and show the star in its true position. But if the earth be supposed to move from A towards B with a velocity that bears a sensible proportion to the velocity of light, the ray S A, which enters the telescope at C, cannot reach the eye, but must, in consequence of the motion, be lost against the interior of the tube. In order that the light from the star may reach the eye when carried forward by the earth's motion, the telescope must have such an inclination to A B, that S F being supposed a ray parallel to S A, and meeting the axis of the telescope in D, A F may have to F D the same ratio as the earth's velocity in its orbit has to the velocity of light; that is, of 1 to 10,000 nearly. In this position of the telescope, the light entering at D will pass along the axis as it moves from A to F, and will reach the eye at F; but the star will be seen in the direction, not of F S, but of F E: so that its apparent place differs from its true by a quantity measured by the angle S F E or A D F. The angle D F E is the aberration which will evidently be towards that part of the heavens to which the earth is moving. Let the axis F E be supposed to be produced to the starry heavens: it will trace out on the convex surface a circle, if the star S is in the pole of the ecliptic; but an ellipse in every other position of the star. The true place of the star is the centre of the circle or ellipse.



411. *If the star be in the pole of the ecliptic,* the angle D A F may be considered as a right angle; for the line joining the star and the earth will always be perpendicular to the direction of the earth's motion. In this case, therefore, the angle A D F will be the greatest possible; for the ratio of sin. A D F to sin. D A F is constant, being the same with the ratio of A F to F D, or of 1 to 10,000 nearly: so that sin. A D F is greatest, and therefore A D F is greatest when sin. D A F is the greatest possible; that is, when D A F is a right angle. In the case of any other star the greater axis of the ellipse which it appears to describe round its true place as a centre will be equal to the diameter of the circle which a star in the pole of the ecliptic would appear to describe about the pole as a centre: for the ellipse will be the orthographic projection of a circle equal to that described about the pole, the greater axis being the diameter, which is perpendicular to a circle of the sphere passing through the star and the pole of the ecliptic, and at right angles to the ecliptic. When the star is in the ecliptic, it will appear to describe an arch equal to the greater axis of the ellipse described by a star not in the ecliptic, or to the diameter of the circle of aberration that would be described by a star in the pole of the ecliptic.

412. *When angle* D A F *is a right angle*, we have D F : F A :: rad : sin. ∠ A D F; that is, 10,000 : 1 :: 1 : ·0001 = sine of greatest aberration, which will therefore be 20″ nearly. The aberration of a planet will depend on its own motion as well as on that of the earth. If the motion of the planet were equal and parallel to that of the earth, no aberration would take place. The aberration of a planet may be found by first considering the effect of the motion of the earth on the apparent place, and then the aberration arising from the planet's own motion.

413. *Such are the effects which,* if the earth have actually a motion of translation that carries it in an orbit round the sun, must arise from that motion combined with the progressive motion of light. To obtain, therefore, decisive proof of the earth's annual motion, it is only necessary to ascertain by accurate observation the existence of these phenomena.

414. *The true system of the world,* which supposes the sun to be at rest in the centre, and the earth and planets to revolve round him, while the moon revolves about the earth, and the diurnal motion of the heavens arises from the motion of the earth on its axis, was taught by several of the ancient philosophers, and particularly by Pythagoras. It was also held by Archimedes; but after him it was neglected, and even forgotten for many ages, until at length, in the beginning of the sixteenth century, it was revived and improved by Copernicus, from whom it took the name of the Copernican System. Notwithstanding the beauty and simplicity which distinguish this theory, it was at first coldly received or utterly rejected. Tycho Brahe, an illustrious Dane, was among its adversaries. He regarded the doctrine of the earth's motion as untenable, without abandoning the testimony of Scripture: hence he was led to imagine another system, which bears his name; in which the sun, with all the planets and comets revolving round him, is supposed to perform a revolution about the earth in a solar year, while at the same time all the heavenly bodies are supposed to be carried round the earth from east to west in twenty-four hours.

415. *The only apparent difficulty connected with the Copernican system* arises from the fact, that the earth's axis is always pointed to the same star, and that the stars preserve always the same relative positions; though by the annual motion of the earth, a spectator on its surface views them at any two instants of time separated by the period of about six

months, from two points nearly 200,000,000 miles asunder. During the seventeenth century the supporters of the Copernican system laboured to remove this objection, by detecting a change in the position of the fixed stars.

416. *The minute and accurate observations* instituted for this purpose led, in the end, to the important discovery made by the celebrated Dr. Bradley, that the very effects which we have shown, must result from the annual motion of the earth combined with the progressive motion of light. He found that each star describes, round its true place as a centre, a small ellipse of which the greater axis is about 40″; and that this ellipse approaches to a circle or to a straight line, which are its limits, according as the star is situated towards the pole of the ecliptic, or towards the ecliptic itself. No parallax is observable in the fixed stars arising from the earth's annual motion; and hence it must be inferred that their distance is so great, that even the diameter of the earth's orbit is to be regarded as a point in the universe.

417. From an attentive consideration of the celestial motions, *we are therefore led to reject as erroneous the notions which appearances at first suggest respecting the system of the world.* Instead of the globe which we inhabit being at rest in the centre of the universe, it is a planet in motion about its own axis and about the sun. In regarding it under this aspect, we find all the celestial phenomena explained in the most simple manner, the laws of the motions of the heavenly bodies appear uniform, and every analogy subsisting among them is preserved unbroken. Like Jupiter, Saturn, and Uranus, the earth is accompanied by a satellite; it revolves on its own axis as Venus, Mars, Jupiter, Saturn, and perhaps all the planets; like them it receives light from the sun; and to complete the analogy, it revolves about the sun in the same direction, and according to the same laws. By following out the results arising from the earth's motion being combined with the real motions of the planets and of light, we find all the phenomena of the heavens flow, as necessary consequences, from one great principle. Thus the motion of the earth acquires all the certainty of which a physical truth is susceptible.

418. *The vicissitude of season* arises, as we have already explained, from the obliquity of the ecliptic to the equator. The ecliptic, which we have hitherto considered as the path of the sun round the earth, we have now proved to be the orbit of the earth round the sun. The axis of the earth's diurnal motion is inclined to the plane of its orbit at an angle of about 66° 32′, and remains, as the earth revolves round the sun, nearly parallel to itself. Hence the circle which the sun appears to trace in the heavens in the course of a year forms with the equator an angle of about 23° 28′. This produces the differences in the distribution of the solar light and heat which we observe throughout the seasons of the year.

419. *The parallelism of the axis is not absolute;* for the axis is found to have a slow motion of revolution from east to west round a line passing through the centre of the earth, and perpendicular to the ecliptic; its revolution being completed in the period of 25,745 years. In consequence of this motion the poles in the sphere of the starry heavens describe each a circle round the pole of the ecliptic, at the distance of 23° 28′ nearly; and the two points in which the terrestrial equator, when produced to the starry heavens, cuts the ecliptic shift to the westward, at the rate of about 50¼ seconds yearly, which causes the precession of the equinoxes. A small inequality has been observed in the precession of the equinoxes, and in the mean obliquity of the ecliptic, which arises from a slight motion in the earth's axis, whereby its inclination to the ecliptic is not always exactly the same, but varies backwards and forwards some seconds. This is called the nutation of the earth's axis, and was discovered by Dr. Bradley while employed in verifying his theory of aberration. The period of the changes of this inequality is nearly nine years.

Chap. XIII.

ORBITS OF THE PLANETS.

420. *To an observer placed on the sun* all the planets would appear to trace on the concave surface circular paths, cutting each other at various angles, but all comprehended within a certain zone of the heavens of some degrees in breadth. The angle which the plane of the orbit of a planet makes with the ecliptic is called the INCLINATION of that orbit; and the line of their intersection is called the LINE OF THE NODES. If a planet be observed twice in the same node, the node being supposed to have in the mean time remained stationary, the position of the line of the nodes can be determined, and also the distance of the planets from the sun at the times of observation.

421. *Let a superior planet* be observed in its node N from the earth at E, and after the planet has made an entire revolution let the earth be at E′. Then, from the time and the theory of the earth's motion, E E′ is given, and the angles S E E′, S E′ E. But the angles S E N, S E′ N are known by observation; therefore, in the triangle E E′ N, the angles E E′ N, E′ E N, and the base E E′ are given; and hence the sides E E′ and E′ N may be found. Wherefore from either of the triangles S E N, S E′ N the distance S N is determined; also the angle E S N, which ascertains the position of the node as seen from the sun.

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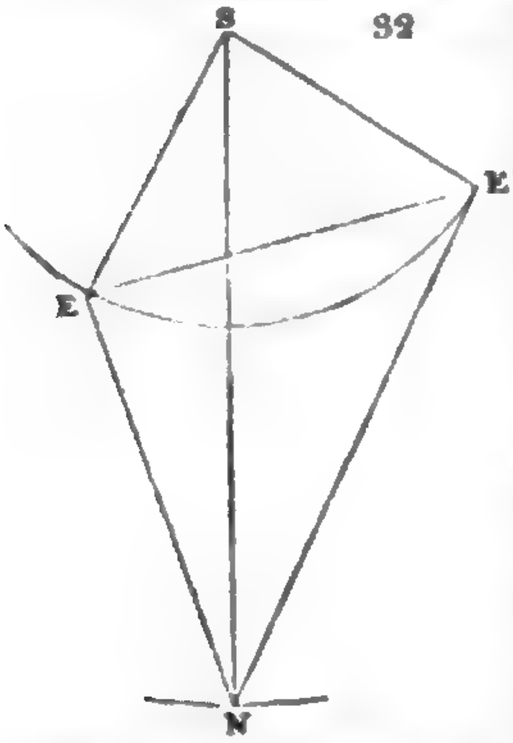

422. *From observations of this kind,* made at times considerably distant from each other, it is found that the nodes of each planet have a slow retrograde motion.

423. *Again,* the distance of a planet from the sun, and its place as seen from the sun, may be determined from observations made at the time of its opposition to the sun.

424. *Let E be the earth*, S the sun, P the planet, O its place reduced to the ecliptic, S N the line of the nodes passing through the sun. Since the planet is in its opposition, the points S, E, O are in the same straight line. The angle E S N is known by last problem, which determines the position of the line of the nodes; therefore the arch O N in the heavens, which measures it, is also given. The angle P N O is equal to the inclination of the planet's orbit to the ecliptic, and is therefore given; also the angle P O N is a right angle. Hence in the spherical triangle P N O, the perpendicular P O and the hypotenuse P N may be found. Now the arc P O is the measure of the angle P S O, and P N is the measure of P S N; therefore these two angles are given. In the rectilineal triangle P S E, the exterior angle P E O can be determined by observation; the angle P S E or P S O is given, and the base E S is known by the theory of the earth's motion; whence P S, the distance of the planet from the sun, may be computed.

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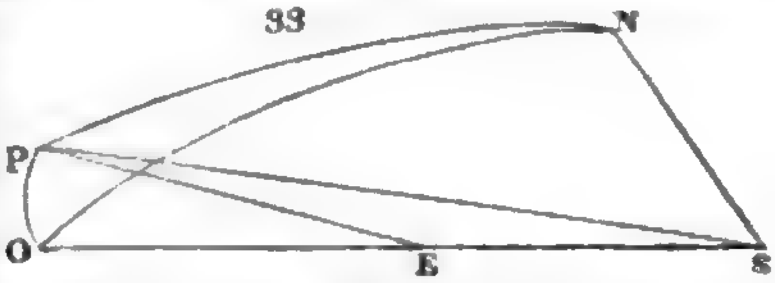

425. *Orbit of a planet.* Since the angle P S N is also known, the line P S is given in position as well as in magnitude. If many oppositions of a planet are thus observed, and if the radii obtained be laid down, the line connecting their extreme points will represent the orbit of the planet. In this manner it is found that the orbits of all the planets are ellipses, having the sun in their common focus; and that the angular motions of a planet round the sun are inversely as the squares of its distance from the sun: so that the sectors described by the radius vector are proportional to the times. This exactly corresponds with what was proved respecting the apparent motion of the sun in the ecliptic, and therefore the motion of the earth is regulated by the same law.

426. *The planets which move immediately round the sun* are called PRIMARY, their satellites are called SECONDARY PLANETS. Thus, the moon is a secondary planet to the earth. In considering the lunar motion, we found that the moon describes round the earth an elliptic orbit, and that the radius vector describes equal areas in equal times. The same holds of the satellites of Jupiter, Saturn, and Uranus; so that the same principle runs through the motions of all the bodies of the planetary system.

427. *When the mean distances of the planets are compared,* and also their periodical times, it is found that the squares of the periodic times are as the cubes of the distances.

428. *The great general facts* which have now been pointed out respecting the orbits of the planets, and their motions in these orbits, were first discovered by Kepler, after he had employed immense labour and ingenuity in the research, and are usually called KEPLER'S LAWS. It may be proper to bring them under one point of view: —

I. The primary planets all revolve in elliptic orbits round the sun, which occupies one of the foci of the ellipse; the plane of the orbit passing through the centre of the sun.

II. The radius vector describes equal areas in equal times.

III. The squares of the times of revolution in the planetary bodies are as the cubes of their distances from the sun.

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CHAP. XIV.

COMETS.

429. *The fixed stars and the planets* are always visible when not obscured by the superior light of the sun; but the class of bodies called COMETS are seen only when they are in that part of their several paths which lies nearest to the sun: at all other times they move through regions of space far beyond the reach of our vision, even when assisted by the most powerful telescopes. The motions of the comets are, like those of the planets, performed in elliptic orbits according to Kepler's laws; but, unlike the planetary orbits, the ellipses which the

comets describe are extremely elongated: so that the small portion of their orbits through which we have an opportunity of tracing them coincides very nearly with a parabola, the curve of which is the limit of the ellipse when its greater axis is indefinitely increased. The inclinations of the orbits of the comets is very various; some move in planes almost coincident with the ecliptic, and others in planes nearly perpendicular to it. They move also in very different directions; the motion of some being *direct*, and of others *retrograde*.

430. *The comets differ widely from the planets in their appearance*, as well as in the figure and position of their orbits. When a comet is first seen, it is usually surrounded by a faintly luminous vapour, which becomes more bright as the comet approaches the sun, and at length shoots out into a long luminous and transparent train, very much resembling a *streamer*, and extending in a direction opposite to the sun. The dense part of the comet, which both to the naked eye, and when viewed through a telescope, resembles much the planetary bodies, is called the *nucleus;* the faintly luminous vapour by which it is surrounded is called the *coma;* and the long luminous train proceeding from the comet in an opposite direction from the sun is called the *tail*. Between the nucleus and the coma lies a part fainter than the former, but brighter than the latter, and in which the nucleus appears involved: this is called the *head* of the comet.

431. *The length of the tail* is very various. Sometimes it extends only a few degrees; in other cases it has been found to reach over more than a fourth part of the heavens. If a comet does not come very near the sun, the coma does not shoot into a tail, but retains the appearance of a nebulosity round the comet during the whole period of its being visible. The tail sometimes consists of two or more diverging streams of light, and is always so transparent that the smallest stars are seen through it without any sensible diminution of their brilliancy.

432. *Nature of comets.* In ages of ignorance comets have always, from their extraordinary appearance, been sources of superstitious terror to mankind. This fear has been dissipated by the light of science, which has shown that the appearances of comets are regulated by the same laws as other celestial phenomena. We are still, however, almost entirely ignorant of the nature of these bodies, though a great many hypotheses have been formed concerning them. They were considered by some of the ancients, and particularly by Aristotle, as accidental fires or meteors generated in the atmosphere of the earth; but this opinion is obviously groundless. If they were connected with the earth or its atmosphere, they would partake of the diurnal motion on the axis, and could not therefore appear to have a diurnal revolution in the heavens along with the other celestial bodies. Besides, their having no diurnal parallax proves that they are at a great distance from the earth; while the fact of their apparent motion being affected by the annual motion of the earth shows that they are situated in the planetary regions. Observation has demonstrated that, like the planets, they are permanent bodies, and, in all probability, derive their light from the sun.

433. *From the small portion of the orbit of any comet* which we have an opportunity of observing, we cannot ascertain with sufficient accuracy the elements necessary for determining the period of its return; but supposing that their orbits are not disturbed by any cause in those distant regions of space through which the greater portion of the paths of comets lie, it is evident that by accurately observing all the comets that come within view, and carefully recording the results, in the course of ages the return of many comets may be detected and their periodic times ascertained. Hence the greater axis of the orbit of each may be determined by Kepler's third law; and the comet's least distance from the sun being found by observation, the less axis will also become known. In this manner the periodic time of some comets has been found, and their return predicted.

434. *The first and most remarkable instance* is that of Dr. Halley, who, by comparing his observations on the comet of 1682, with those of Kepler on the comet of 1607, and those of Apian on the comet of 1531, found reason to conclude, from the agreement of the circumstances of each, that what had been considered three distinct comets were only re-appearances of the same comet after a period of about 76 years. In all the three cases the distance of the comet from the sun when nearest to him was almost the same; the position of the comet in the heavens at the time of its nearest approach to the sun likewise corresponded; as did also the inclination of the orbit, the place of the nodes, and the variableness of the motion, as being direct or retrograde.

435. *These coincidences* rendered the identity of the comet almost absolutely certain. Hence Halley predicted its return in the end of 1758 or the beginning of 1759. The comet appeared about the end of December 1758, and made its nearest approach to the sun on the 13th of March 1759, differing not many days from the time expected. There is, therefore, a degree of probability approaching to certainty, that it will again make its appearance at the completion of its period in the year 1835.

436. *Though there can be no doubt* of the identity of the comet of 1531, 1607, 1682, and 1759, the appearances were considerably different. In 1531 the comet was of a bright gold colour; in 1607, it was dark and livid; it was bright again in 1682; and obscure in 1759.

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437. *The mean distance of this comet from the sun* is about eighteen times that of the earth; but in consequence of the great eccentricity of its orbit, its distance, when at the farther extremity of its greater axis, is nearly double that of Uranus, the most distant of the planets. When nearest to the sun, its distance from him is about $\frac{6}{10}$th parts of the earth's mean distance.

438. *A very remarkable comet* was seen in the end of 1680 and beginning of 1681. Its tail extended 70°, and was very brilliant. This comet, of all those which have been observed, approaches nearest to the sun. Descending with immense velocity in a path almost perpendicular to his surface, it proceeded until its distance from his centre was only about 540,000 miles. Sir Isaac Newton computed that, in consequence of so near an approach to the sun, it must have received a heat 2000 times greater than that of iron almost going into fusion; and that if it was equal in magnitude to our earth, and cooled in the same manner as terrestrial bodies, its heat would not be expended in less than 50,000 years.

439. *Three observations on comets* are recorded in history, agreeing in remarkable circumstances with the comet of 1680:—one in the 44th year before Christ; another in the consulate of Lampadius and Orestes, about the year of Christ 531; and the third in the reign of Henry I. of England, in the year 1106. These dates are nearly at equal distances of time, namely, 575 years; which is also the period between 1106 and 1681. Hence Dr. Halley conjectured that these might be successive appearances of one and the same comet, revolving about the sun in the period of about 575 years. If this conjecture is well founded, this comet may be expected again, after finishing the same period, about the year 2255.

440. *A comet remarkable for its beauty appeared in* 1811. The tail of this comet was composed of two diverging streams of faint light, slightly coloured, which made an angle of from 15° to 20°, and sometimes much more, and were bent outwards. The space between was comparatively obscure. When at its greatest length, the tail subtended an angle of at least 16°; and was then computed to extend about 23,000,000 miles in length.

441. *Besides Dr. Halley's comet there are two others* whose returns have been observed, and the elements of their orbits determined, with such certainty, as to enable astronomers to predict their re-appearance. One of these was recognised for the first time in 1819 as a periodic comet. M. Encke, a German astronomer, has determined the time of its revolution about the sun to be three years and three months nearly. The other was last seen in 1825. Its periodic time was determined by M. Biela, a Bohemian astronomer, to be six years and three quarters. Altogether, then, there are only three comets whose periods are certainly known.

442. *Danger from comets.* As the comets traverse the planetary regions in all directions, it is natural to enquire whether there is not a possibility that some one of them may approach so near to the earth as greatly to disturb its motion, or by an actual contact to produce the most disastrous effects. Upon this subject there is no reasonable ground for fear. If it is not absolutely impossible that a comet may come in contact with the earth, the probabilities against such an event happening are as millions to one. Among bodies so small in comparison with the immense space in which they move; and moving with all velocities, and in orbits that are inclined in all directions, and are of all dimensions, how small must be the probability that any two shall come in contact! Small, however, as this probability is for any one age, if we take into account a long series of ages, the probability may be greatly increased.

443. *If we suppose the earth actually to receive such a shock*, it is easy to imagine the calamitous consequences which must follow. The axis and motion of rotation being changed, the waters of the ocean would leave their ancient position, and would be precipitated towards the new equator. A great part of the human race, and of the lower animals, would be drowned by this universal deluge, or destroyed by the violent shock impressed on the terrestrial globe. Whole species of animals might be annihilated. All the monuments of human industry and invention would be overthrown. In such a catastrophe we find, too, a cause adequate to account for the ocean having overflowed lofty mountains, on which it has left incontestible evidence of its presence; and to explain how the animals and plants of the south may have existed in the climates of the north, where we find the remains and impressions of them. Lastly, such an event accounts for the recentness of the moral world, the monuments of which go back scarcely 3000 years. The human race, reduced to a small number of individuals, and to the most miserable condition, would for a long time be mainly occupied in providing for their preservation, amidst the wreck which surrounded them, and would lose all remembrance of arts and sciences; and when, by the progress of civilisation, they at length became sensible of the want of these, they would find it necessary to recommence, as if man had been newly placed upon the earth.

444. *It seems impossible to contemplate the picture of calamity here drawn,* without being forcibly struck with this singular coincidence;—that if we suppose the period of the comet of 1680 (which in that year made a considerably near approach to the earth's orbit) to be 575½ years; and count back, from the year 1680, seven revolutions, or a period of 4028 years, we reach the year 2349 before Christ,—the year of the deluge, as fixed by chronologers.

445. If we take into consideration the great velocity with which the comets move in approaching to and receding from the sun, it is evident that *the mere approximation of a comet to the terrestrial orbit, would be productive of little or no effect.* Accordingly, though a comet is said to have eclipsed the moon, in which case it must have been very near the earth, no sensible effect was produced.

Chap. XV.

LAW OF UNIVERSAL GRAVITATION.

446. *Having now taken a brief view of the planetary motions,* and pointed out generally their laws, we may next inquire whether from these any *general principle* can be deduced to which the motions regulated by them may be referred as to their cause.

447. *The motions of the heavenly bodies* have been variously accounted for. We have already adverted to the rude mechanism of deferent and epicyclic spheres, by which some of the ancient philosophers attempted to explain the celestial motions. This doctrine originated with Eudoxus and Callipus. But a more sensible attempt was made by Cleanthes, another philosopher of Greece, who, from observing that bodies are easily carried round by whirlpools or vortices of water, imagined that the celestial spaces are filled with an ethereal fluid, which is in continual motion round the earth, and that it carried the sun and planets round with it. Though this hypothesis affords no real explanation of the phenomena, it was revived in modern times, and maintained by two of the most eminent mathematicians and philosophers in Europe, namely, by Des Cartes and Leibnitz, and for a long time met with general acquiescence. But a much nearer approximation to right conceptions on this subject was made by many philosophers, both of ancient and modern times, who supposed that the planets were deflected from uniform rectilineal motions, by forces similar to what we observe in the motions of magnetical and electrical bodies, or in the motion of common heavy bodies; where one body seems to influence the motion of another at a distance from it, without any intervening impulsion. Fermat was the first who suggested that the weight of a body is the sum of the tendencies of each particle of matter in the body to every particle of the earth. Kepler made another approximation to the truth when he said, that if there were two bodies placed out of the reach of all external forces, and at perfect liberty to move, they would approach each other with velocities inversely proportional to their quantities of matter; when he asserted that the earth and the moon mutually attract each other, and are prevented from meeting by their revolution round their common centre of attraction; and when he attributed the tides to the attractive influence of the moon in heaping up the waters immediately under her.

448. *But Dr. Hooke made the most precise surmise to this purpose.* At a meeting of the Royal Society, May 3. 1668, he expressed himself in the following manner: — "I will explain a system of the world very different from any yet received, and it is founded on the three following propositions: —

"1. That all the heavenly bodies have not only a gravitation of their parts to their own proper centres, but that they also mutually attract each other within their spheres of action.

"2. That all bodies having a simple motion will continue to move in a straight line unless continually deflected from it, by some extraneous force causing them to describe a circle, an ellipse, or some other curve.

"3. That this attraction is so much the greater as the bodies are nearer. As to the proportion in which these forces diminish by an increase of distance, I own I have not yet discovered it, although I have made some experiments to that purpose. I leave this to others who have time and knowledge sufficient for the task."

The truly philosophical views stated in these propositions relatively to the celestial motions were illustrated by a very pretty experiment, which Hooke had some time before exhibited to the Society. A ball, suspended by a long thread from the ceiling, was made to swing round another ball laid on a table immediately below the point of suspension. When the impulse given to the pendulum was very nicely adjusted to its deviation from the perpendicular, it described a perfect circle round the ball on the table; but when the impulse was very great or very little, it described an ellipse having the other ball in its centre. The force, under the influence of which this circular or elliptic motion was produced, Hooke showed to be a deflecting force, proportional to the distance from the other ball. But he added, that although this illustrated the planetary motions in some degree, yet it was not suitable to their case; for the planets describe ellipses, having the sun not in their centre but in their focus, so that they are not retained in their orbits by a force proportional to the distance from the sun.

449. *Thus we see that certain points of resemblance* between the motions of the planets and

the motions of magnets and heavy bodies, had attracted the attention of many philosophers; but these observers failed to deduce from the principles which they so dimly perceived any satisfactory conclusion.

450. *At length the powerful genius of Sir Isaac Newton* was directed to the subject, and by his penetrating sagacity the law of universal gravitation was brought fully into view, and successfully applied to explain the celestial phenomena. He had retired from Cambridge to the country on account of the plague, and while walking in his garden he was led to meditate on the planetary motions, and on the nature of that central force which retains the planets in their orbits. The thought happily occurred to him that the same force, or some modification of the same force, which causes a heavy body to descend to the earth, might extend to the moon, and might retain that body in its orbit by deflecting it from the rectilineal path. However plausible this conjecture might appear, the mind of Newton was too deeply imbued with the true spirit of philosophy to adopt it as the groundwork of a theory, unless it could be shown by calculation to be coincident with fact. But before it could be brought to this test, it was necessary that he should form some conditional hypothesis respecting the modification of the force as the distance increased, and also that he should know nearly the magnitude of the earth. The hypothesis which he assumed with regard to the modification of the force according to the increase of the distance was correct; namely, that the force decreases as the square of the distance increases. But he made a false estimation of the bulk of the earth; so that his calculations showed that his conjecture did not agree with the phenomenon: he accordingly abandoned it. A few years afterwards he was induced, however, to renew his calculations, having in the interval obtained more correct *data*, in consequence of the measurement of a degree in France by Picard. The attempt now succeeded; and it is said that, as his calculations drew to a close, he became so agitated that he was obliged to request a friend to finish them. His former conjecture was found to agree with the phenomena with the utmost precision; and in exploring the grand scene which was now laid open before him, he was led to an explanation of the system of the world, consisting simply in an accurate narration of facts, and such an arrangement of them as showed their mutual dependence, and, at the same time, their reference to one great fact of which they were all necessary consequences.

451. *We are now to explain briefly the theory of gravitation;* but our account of it must of course be very limited.

452. *There is no phenomenon in nature more familiar to us than motion;* and although it be greatly diversified, according to the causes by which it is produced, yet all motions are subject to the three following laws: —

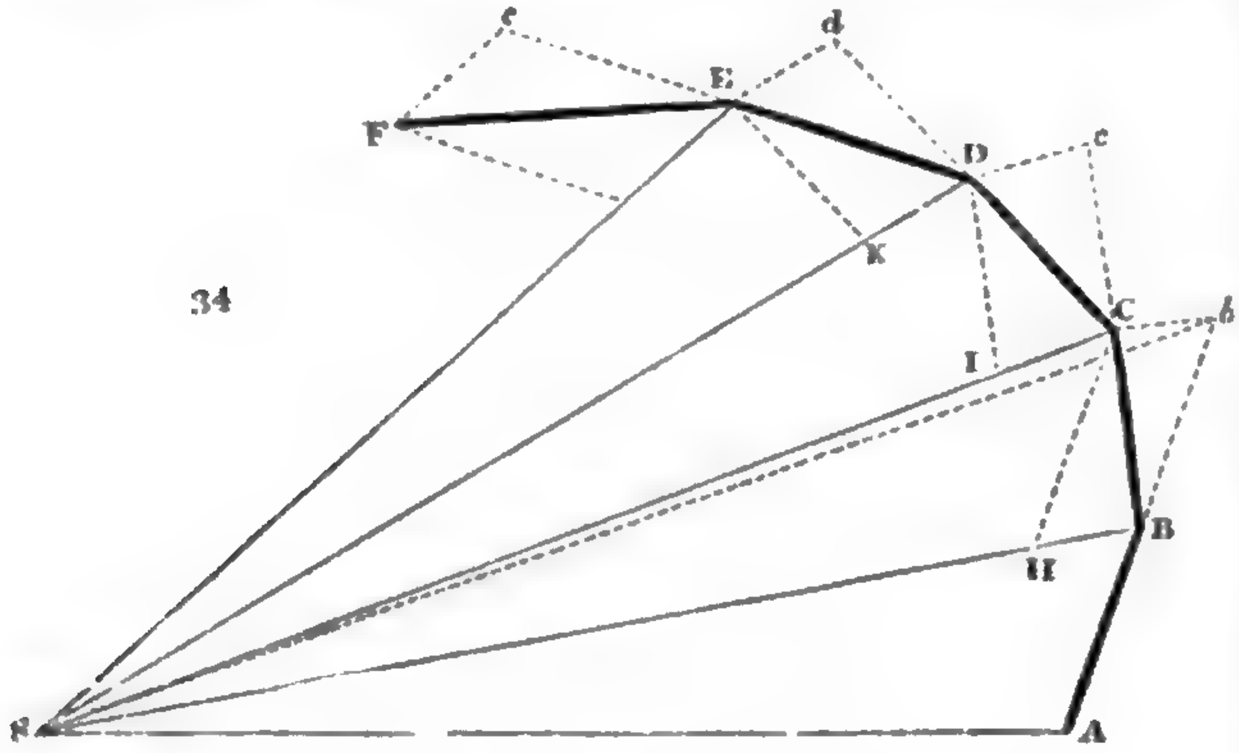
1st LAW. Every body continues in a state of rest, or of uniform rectilinear motion, unless affected by some mechanical force.

2d LAW. Every change of motion is proportional to the force impressed, and is made in the direction of that force.

3d LAW. Every action is accompanied by an equal and contrary re-action.

It is a consequence of the first two laws, that if a body or particle of matter be subjected at the same time to the action of two moving forces, each of which would separately cause it to describe the side of a parallelogram uniformly in a given time, the body will describe the diagonal uniformly in the same time. By these very simple laws, the result of experience, and by the principles of geometry, Newton established the sublime doctrines of the planetary motions.

453. *It will not be expected that we should enter* at any considerable length into the recondite doctrines of physical astronomy. This subject requires for its full discussion ample space, and all the resources of the higher mathematics: the mere elements of geometry, however, are sufficient to indicate generally some of the fundamental principles. Let us suppose that S (*fig.* 34.) is a fixed point, and that a body moves in the direction AH with an uniform velocity, at such a rate, that if not disturbed by any external cause, it would move from B to *b* in a second of time. Let us also suppose that when the body arrives at B, it receives an impulse in the direction BS, and of such intensity, that, if acting alone, it would cause the body to move uniformly from B to H in a second. Complete the parallelogram HB*b*C, and draw the diagonal BC: the impulse at B, combined with the tendency to continue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its motion in the line B b will cause the body to move along the diagonal B C; so that at the end of a second it will actually be at the point C; and if no external cause acted on the body, by the first law, it would continue to move uniformly ever after in the direction B C c; so that in the next second it would describe a line C c, equal to B C. But now suppose that the body, when at C, receives a second impulse in the direction C S, by which it would be carried uniformly from C to I in a second; then, completing the parallelogram D I C c, the actual path of the body will be the diagonal C D, which will be uniformly described in a second; and if undisturbed, the motion would be continued uniformly in the straight line C D d, the distance D d described in the next second being equal to C D. A third impulse at D, in the direction D S, such as would carry the body uniformly from D to K in a second of time, would, when combined with the tendency to move in the direction D d, produce a motion along D E, the diagonal of the parallelogram E K D d, and a fourth impulse in the direction E S, would, when combined with the motion in the direction E e, produce a motion along the diagonal E F, and so on. In this way, by successive instantaneous impulses, a body may be made to describe the path A B C D E F, &c., which will be all in one plane.

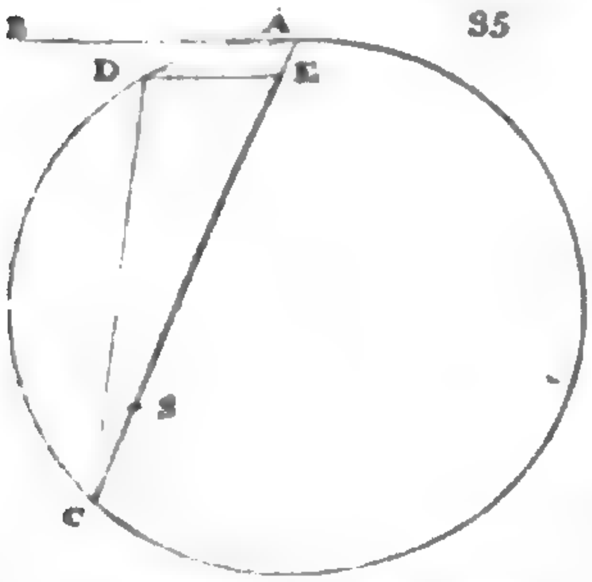
454. *Since the lines* A B, B b *are equal*, the triangles A S B, B S b are equal; but because C b is parallel to S B, the triangle B S b is equal to the triangle B S C; therefore the triangle B S C is equal to A S B. In like manner, it may be proved that C S D is equal to B S C, and D S E to C S D, and so on: thus it appears that the triangles A S B, B S C, C S D, D S E, &c. are all equal. If we suppose a straight line to be drawn from the moving body to the fixed point S, and to be continually carried along with it, it is evident that this line will pass over or generate the equal areas A S B, B S C, C S D, D S E, &c. in equal intervals of time: it is also evident that the shorter the interval between the impulses communicated to the moving body, the greater will be the number of sides of the figure formed by the diagonals of the parallelograms, and the nearer will the line composed of these diagonals approach to a curve. If we suppose, therefore, that the body is urged towards F by a force acting, not at intervals, but incessantly, the body will move in that curve to which, as its limit, the line, composed of the diagonals continually approaches, while the line drawn from the moving body A S, or *radius vector*, will continue to describe areas proportional to the times.

455. *The force which urges the body towards* S, is called a CENTRIPETAL FORCE. If the action of that force were to cease, the body would proceed in a straight line,—a tangent to its curvilinear path. The tendency of the body to proceed in the direction of the tangent, is called its CENTRIFUGAL FORCE.

456. *From the important conclusion to which we have now been led*, we may infer, conversely, that if a body revolve in a curvilinear path about a point, and if the radius vector drawn from that point describe round it areas proportional to the times, the body is deflected from the rectilineal path by a force directed to that point. Now, this is exactly the case of the planets, both primary and secondary. The former describe curvilinear orbits round the sun; and, according to the second of Kepler's laws, the radius vector describes areas proportional to the times. Hence we may infer, that each is retained in its orbit by a centripetal force directed towards the sun; and that this force is counteracted by a centrifugal force generated by the planet's motion in its orbit. In like manner, each secondary planet revolves about its primary, the areas described by the radius vector following the same law; so that the secondary must be acted upon by a centripetal force directed towards the primary planet.

457. *The next thing to be determined is* the law of the centripetal force when a body moves in an elliptic orbit, the force being directed towards one of the foci. First, let us suppose a body to revolve in the circumference of a circle A D C (*fig.* 35.), about any point S, as the centre of its motion, and let us inquire into the law of the centripetal force in that case. Draw the chord A S C, and let A D be so small an arc, that it may be considered coincident with its chord. Draw D E parallel to the tangent A B, and join C D. Then A D will measure the velocity of the body in its orbit at the point A, and A E the space over which the centripetal force directed towards S, if acting alone, would cause the body to move in the time in which it moves from A to D. Put v to denote the velocity, and f the centripetal force. Since the triangles A D C, A E D, are equiangular and similar, we have A C : A D = A D : A E; that is,

$$AC : v = v : f : \text{therefore } f = \frac{v^2}{AC}$$



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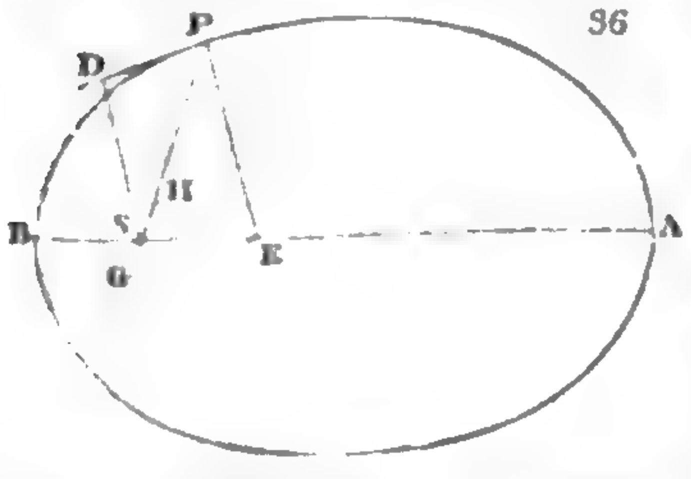
458. *Next, let* A P B (*fig.* 36.) *be the elliptic orbit of a planet*, S the focus in which the sun is placed, A the point at which the planet is at its greatest distance from the sun, and P any other point in its orbit. Join P S; draw the tangent P D, and draw S D perpendicular to P D. Let v and v' denote the velocities of the planet at A and P respectively; and c and c' the chords of the equicurve circles at A and P which pass through the point S, and let f be the deflecting force at A, and f' the deflecting force at P. Then from what we have proved respecting a body moving in the circumference of a circle round any point F as the centre of its motion, we have $f : f' = \frac{v^2}{c} : \frac{v'^2}{c'} = v^2c' : v'^2c$. But since the small arcs which represent the velocities at A and P must be supposed to be described in equal times, the corresponding areas described by the radius vector will also be equal. Hence it is not difficult to see that $v \times AS = v' \times SD$, and $v : v' = SD : SA$. We obtain, therefore, $f : f' = SD^2 \times c' : SA^2 \times c$.
Draw P E perpendicular to the tangent P D, meeting the axis in E, and draw E G perpendicular to P E, and E H perpendicular to P F. From the properties of the ellipse, P H is equal to half the principal parameter, and consequently to half of c, the chord of the circle, of equal curvature at A, which passes through S. Also P G is half of c', the chord of the equicurve circle at P, which passes through S. Therefore,

$$f : f' = 2SD^2 \times PG : 2SA^2 \times PH.$$
$$= SD^2 \times PG : SA^2 \times PH.$$

Now, from the similar triangles G P E, E P H, we have $GP : PE = PE : PH$; hence $GP : PH = GP^2 : PE^2$. But the triangles G P E, P S D being also similar, $GP^2 : PE^2 = PS^2 : SD^2$; therefore, $GP : PH = PS^2 : SD^2$; and $PS^2 \times PH = SD^2 \times GP$: and since it was shown that $f : f' = SD^2 \times PG : SA^2 \times P$, wherefore $f : f' = PG^2 \times PH : SA^2 \times PH$; or leaving the common factor P H out of the two consequents we have $f : f' = PS^2 : SA^2$.



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Thus we have arrived at this important conclusion; that *the force by which the planets revolve round the sun in elliptical orbits, the sun being in one of the foci, and the radius vector describing areas proportional to the times, is always inversely as the squares of the distances.*

459. There remains yet another point to be determined respecting *the forces which retain the different planets in their orbits*; namely, whether there is *any analogy between them.* From Kepler's third law, we know that the squares of the periodical times of any two of the planets are proportional to the cubes of their mean distances from the sun. This law is independent of the eccentricities of the orbits; and the same relation would subsist between the mean distances and the periodic times, though the eccentricities were to become infinitely

small; or, what is the same thing, the orbits were to become circles. Let us then suppose the planets to move with uniform velocities in circular orbits, having the sun in the centre. This supposition differs very little from the truth. Put v, v' to denote the velocities of two of the planets, r, r' the radii of their orbits, t, t' their periodic times, and f, f' the forces by which they are retained in their orbits. From what we have already shown respecting a body moving in a circle round any point as the centre of its motion, we have $f = \frac{v^2}{2r}$ and $f' = \frac{v'^2}{2r'}$, therefore $f : f' = \frac{v^2}{r} : \frac{v'^2}{r'}$. But since the circumferences of circles are to one another as their radii, and the velocity or the space passed over by the planet in the unit of time is equal to the circumference of its orbit, divided by the periodic time expressed in that unit, it is evident that $v : v' = \frac{r}{t} : \frac{r'}{t'}$: hence $\frac{v^2}{r} : \frac{v'^2}{r'} = \frac{r}{t^2} : \frac{r'}{t'^2}$; or, since $t^2 : t'^2 = r^3 : r'^3$, $\frac{v^2}{r} : \frac{v'^2}{r'} = \frac{r}{r^3} : \frac{r'}{r'^3} = \frac{1}{r^2} : \frac{1}{r'^2} = r'^2 : r^2$. Wherefore we obtain $f : f' = r'^2 : r^2$.

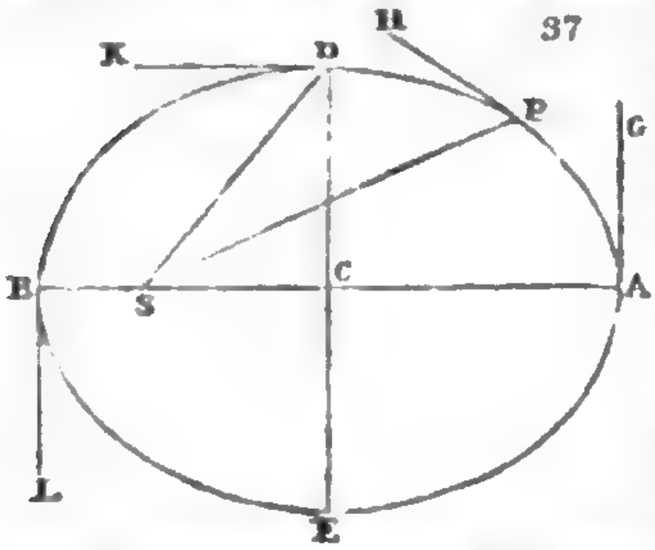
460. *This result shows that the forces which, acting on two planets, would cause them to describe circular orbits, agreeing with Kepler's third law, are inversely as the squares of the distances.* Hence we may infer the sameness of the force which retains the planets in their respective orbits; since it varies from orbit to orbit, according to the very same law which regulates its intensity at different distances in the same orbit. This conclusion is fully established by the fact, that the force which acts upon the comets during their descent to the sun, varies exactly according to the law which we have now assigned as the law of the planetary force. The comet of 1759, which was predicted by Dr. Halley, came from regions far beyond the most distant of the known planets, and approached nearer to the sun than Venus; and when it arrived at the same distance from the sun as any of the planets, its deflection from the rectilineal course by the action of the centripetal force, was the very same as that of the planet. We may, therefore, conclude, that it is one and the same force which deflects all the planets as well as the comets.

461. *From what has now been shown, it is evident* that if all the planets were placed at the same distance from the sun, they would all be deflected equally by the centripetal force independently of the quantity of matter in each. Hence it follows that, at equal distances, the centripetal force must act equally on every particle of matter of which the planets are composed; so that if one planet contain exactly double the quantity of matter that another planet contains, and if both are placed at exactly the same distance from the sun, the former will receive a double impulse. We may infer, therefore, that another law of the force which retains the planets in their orbits is, that, *at equal distances, it is proportional to the mass on which it acts:* and that *if two bodies act on the same particle of matter, the forces which they exert are proportional to their masses.* The force may be supposed to be produced either by a cause residing in the body which is placed in the centre of motion, or by a cause residing in the revolving body. In the former point of view, it is called a force of ATTRACTION; in the latter, a force of GRAVITATION. The truth is, however, that the cause of this force is absolutely unknown. We see only the effects produced, and from these we investigate the laws which connect them with each other, and the general principles on which they depend.

462. *Thus, from the facts discovered* by Kepler respecting the planetary motion, we have shown that each planet has a tendency towards the sun, in consequence of which from a state of rest it would move towards him, acquiring at every instant an increase of velocity according to a fixed and determinate *rule* or law which applies alike to all the planets. This tendency, if not counteracted, would bring the matter of the sun and planets into one mass. This, however, is prevented from taking place, in consequence of an impulse having been originally communicated to each planet, giving it a constant tendency to move in a straight line with an uniform velocity. The effects arising from these two tendencies are so adjusted, as to produce elliptic orbits. But the law which regulates the effects arising from the tendency of the planets towards the sun remaining the same, such a velocity might have been communicated to each planet, by the original impulse which gave it its tendency to move uniformly in a straight line, as would have produced parabolic or hyperbolic orbits. In a circular orbit, if the centre of motion coincide with the centre of the orbit, the velocity of a planet is uniform, and of such rapidity as at every point to produce a tendency to move in a tangent to the orbit, exactly sufficient to counterbalance the tendency to move towards the centre of the orbit. If the orbit be elliptical, and one of the foci the centre of motion, the motion of the planet is variable, and its tendency to move uniformly in a tangent to the orbit sometimes exceeds, and at other times falls short of, that which would be necessary to cause it to revolve in a circle at the same distance from the centre of motion.

463. *Let* A D B E *be the elliptic orbit of a planet revolving* about the sun, which is supposed to be placed in the focus S. Suppose the planet to set out from A in the direction A P, A being the point of its greatest distance from the sun. At A the direction of the planet's motion is at right angles to the radius vector, and if the velocity were such as to produce a tendency to move in the direction of the tangent A G, exactly equivalent to the tendency of the planet to move towards the sun, the planet would revolve in a circle of which S is the centre, and S A the radius. But the velocity being supposed less, the path of the planet will fall within the circle, and the angle S P H contained between the radius vector and the tangent P H, which shows the direction of the planet's motion, changes from a right

angle to an acute angle. The tendency of the planet towards the sun is now exerted partly in accelerating its velocity in its orbit, and partly incurvating its path. While the planet describes the quadrant A P D, its velocity is always less than that which would produce a circular motion; until it is at the point D, and then the velocity is precisely what would be sufficient for a circular motion about S, if its direction were perpendicular to the radius vector: the direction, however, being oblique, the planet is brought still nearer to S. The tendency towards the sun is, in a great measure, still exerted in accelerating the motion, and as soon as the planet passes D, its velocity becomes greater than what might produce a circular motion about S. The angle S D K is, therefore, the least angle which the radius vector makes with the direction of the planet's motion, and from the moment when the planet passes the point D, that angle begins to increase; and the effect of this is to cause the tendency of the planet towards the sun to be principally exerted in incurvating the orbit. Its influence in accelerating the planet's motion, though it still exists, is gradually diminished, until the planet arrives at the point B, where it ceases altogether, in consequence of the radius vector being at right angles to the tangent H L.



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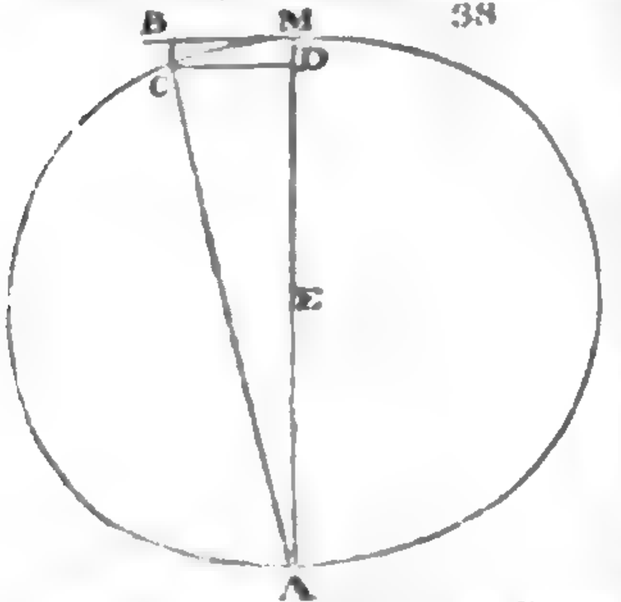
464. *As the velocity of the planet at* B is greater than what is sufficient to produce a motion in a circle of which the radius is S B, the path of the planet falls wholly without that circle; and, consequently, it is now receding from the sun. The angle which the radius vector makes with the direction of its motion becoming obtuse, the tendency of the planet towards the sun is now partly employed in retarding its motion, so that its velocity is diminished. The angle contained between the radius vector and the direction of the planet's motion increases while the planet is moving from B to E, and decreases from E to A, when it becomes a right angle, as it had formerly decreased from A to D, and increased from D to B. The velocity of the planet in its orbit must, therefore, decrease from H to A, as it had formerly increased from A to H; at the point E it will be equal to what it was at D, and from E to A, the influence of the planet's tendency towards the sun to diminish its velocity will become less and less, until when the planet has arrived at A, it will cease altogether. The velocity is then the same as at first, and the motion goes on in this way for ever.

465. *Whatever has now been deduced from* Kepler's Laws respecting the orbits of the primary planets, and the law of the force by which they are described, will apply equally to the orbits of the secondary planets: for in each of these little systems, there is the same analogy between the periodic times and the distances, which takes place in the general system; the figure of the orbits is also elliptic, and the areas described by the radius vector is proportional to the times. We may legitimately conclude, therefore, that *the satellites revolving about any planet, are retained in their orbits by a force inversely proportional to the squares of their distances from their primary planet;* so that all the celestial motions are produced by forces regulated by this general law.

466. *The force which keeps the Moon in her orbit* is, then, the attraction of the earth, or her gravitation towards the earth. But we find that the earth attracts all the bodies near its surface by a force which is proportional to the mass of the body attracted. Whatever be the weight of a body, it falls to the earth from the same height in the same time, and with the same velocity. Thus, if the resistance of the atmosphere be removed, it is found by experiment that the lightest feather falls to the earth, from a given height, in the very same time, and with the very same velocity, as a stone, however great its weight. Let us enquire whether the force which retains the moon in its orbit may not be identified with this attractive force which causes the descent of heavy bodies to the surface of the earth.

467. *We may without great error* suppose the lunar orbit to be circular, and its semidiameter to be equal to sixty semidiameters of the earth. Let it be represented by the circle C M A, the earth being supposed to be placed at the centre E; and let M C be the small portion of the orbit which the moon describes in a second of time. Draw M H a tangent to the orbit at M: draw also C D parallel to M B, and C B parallel to M A, the diameter of the orbit The arch M C may be regarded as coincident with its chord; therefore, joining A C, it is evident that in the right angled triangle A C M we have A M : M C = M C : M D. Hence, since A M and M C are known, M D or B C, the deflection of the moon from the tangent, in a second by the attraction of the earth, may be found.



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468 *The moon describes her orbit round the earth* in about 27^d 7^h 43^m, or 2,360,580 seconds; the circumference of her orbit is about 60 times the circumference of the earth, that is, if we reckon 69½ English miles to a degree, 7,926,336,000 feet; therefore the length of the arc M C, which the moon describes in a second, will be found nearly equal to 3358 feet. Again, A M, the diameter of the moon's orbit, is about 2,523,031,140 feet. Hence we obtain M D equal to ·00447 feet nearly. This small fractional part of a foot is the space which a body, placed at the distance of the moon, and falling from a state of rest by the action of the force which retains the moon in her orbit, would pass over in the first second of time. Observing, now, that this force increases as the squares of the distances decrease, we may determine the space which a body at the surface

of the earth (or at the distance of one semidiameter from the earth's centre), and falling from a state of rest, would pass over in the first second of time, if urged by the same force. For, since the moon's distance from the earth is equal to about sixty times the semidiameter of the earth, we have $1^2 : 60^2 = \cdot 00447$: the space required, which is found to be 16·09 feet. Now, this is exactly the space which a body, falling from rest by its own weight, is found by experiment to pass over in the first second of time. Hence we may infer, that *the moon is retained in its orbit by the very same force which produces pressure in a body supported, or causes a body when unsupported to fall to the ground.*

469. *Though the attraction of the earth on bodies near its surface* is only a particular case of a general principle, which produces all the planetary motions, the effects are, to appearance, considerably modified. At all the heights to which we are able to ascend above the general surface of the earth, or to which we can project a body, the force of gravity acts, as to sense, uniformly: it also acts in the direction of straight lines, perpendicular to the horizon, and therefore parallel to one another, for the greatest range that can be given to a projectile. Hence the phenomena, which depend on the force diminishing in intensity, as the square of the distance increases, and on its emanating in the direction of straight lines drawn to the centre of the attracting sphere, become imperceptible. In consequence of the comparatively small velocity with which human power can project a body, its path always meets the earth, and its motion terminates. But if the whole matter of the earth were collected into a point at the centre, a body projected from a point 4000 miles distant from the centre, and with such a velocity as human power can communicate, would be acted upon by the same forces, with a body similarly projected from the surface of the earth. But on the supposition now made, the body would meet with no obstacle, but would approach within a certain distance of the centre, and would then recede from it until it reached another limit, when it would again approach, and go on in this manner, approaching and receding alternately, for ever. The path of the body would be an ellipse, resembling in figure the orbit of a comet. The extreme portions of the path would, as to sense, be portions of a parabola. Hence it is usually laid down as a law regulating the motion of projectiles, that *if a heavy body be projected in a straight line, not perpendicular to the horizon, it will describe a parabola situated in the vertical plane passing through that straight line, and having its axis perpendicular to the horizon.* This physical truth was first discovered by Galileo.

470. *The force of gravity near the surface of the earth* being uniform in its action, it is found that the motion which it produces corresponds in all its circumstances with that which mathematical reasoning shows should result from the action of a constant force. *The spaces through which the body falls are proportional to the squares of the times, and the velocity is proportional to the time during which the body has been falling.*

471. From the third law of Kepler, it is not difficult to see that *the periodic time of a planet* in its orbit is determined entirely by the mean distance, that is, half the transverse axis; and is not at all affected by the increase or decrease of the conjugate axis. By supposing, then, the conjugate axis to be continually diminished, we are led to this conclusion, that the time in which a body would descend to the sun, if allowed to fall from a state of rest at any distance from him, is equal to half the time of revolution in an ellipse the semitransverse axis of which is half of that distance. Let T be the time of revolution of a planet at any distance, and t the time of revolution at half that distance; then, by the third law of Kepler, $T^3 : t^3 : 2^3 : 1^3$; hence we have $t = \frac{T}{\sqrt{8}}$, and $\frac{1}{2}t = \frac{T}{\sqrt{32}}$. But $\frac{1}{2}t$ is the time in which a body would fall from the distance corresponding to T. Hence *the time in which a planet would fall to the sun by the action of the centripetal force is equal to the periodic time divided by* $\sqrt{32}$; or (what amounts to the same thing) to the periodic time multiplied by 0·176776, the reciprocal of the square root of 32. By this general rule, the times in which the different planets would reach the sun, if the action of their centrifugal should entirely cease at the moment when they are at their mean distances, are as follow:

	Days.	Hrs.		Days.	Hrs.
Mercury in - -	15	13	Juno - - -	354	19
Venus - - -	39	17	Vesta - - - -	205	0
The Earth - -	64	13	Jupiter - - -	765	19
Mars - - -	121	10	Saturn - - -	1901	0
Ceres - - -	297	6	Georgium Sidus - - -	5425	0
Pallas - - -	301	4	The Moon would fall to the Earth in	4	20

472. *The principle in the Newtonian philosophy, that* the effects produced by the attraction of a body depend very much upon the quantity of matter which it contains, furnishes the means of resolving a problem which at first sight may appear of such difficulty as to transcend the powers of the human mind; namely, to determine the quantity of matter in the sun and planets. Let f and f' denote the forces by which two bodies revolve in circular orbits round two central bodies, of which the masses are denoted by m and m'. Let r and r' be the radii of the orbits, and t and t' the periodic times. From what we have already proved with regard to a force that retains a body in a circular orbit, we have

$f : f' = \frac{r}{t^2} : \frac{r'}{t'^2}$. But we have also $f : f' = \frac{m}{r^2} : \frac{m'}{r'^2}$; therefore, $\frac{m}{r^2} : \frac{m'}{r'^2} = \frac{r}{t^2} : \frac{r'}{t'^2}$; and consequently, $m : m' = \frac{r^3}{t^2} : \frac{r'^3}{t'^2}$.

Thus it appears that *the masses of matter in the bodies which compose the solar system are directly as the cubes of the mean distances of any bodies which revolve round them, and inversely as the squares of the times in which the revolutions are performed.* By means of this principle, the masses of the sun and of the planets which have satellites may be compared with one another. With regard to the planets which have no satellites, the quantity of matter contained in them can only be guessed from the effects they produce on the motions of the other planets. The quantity of matter in the moon can, however, be determined

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with greater certainty, by comparing together the influence of the sun and moon in producing the tides and the precession of the equinoxes. Hence we learn, that the matter in the moon is about $\frac{1}{75}$ of the matter in the earth.

The following table exhibits the masses of the planets, that of the sun being considered as unity:

TABLE.

Mercury	$\frac{1}{2025810}$	Jupiter	$\frac{1}{1070 \cdot 5}$
Venus	$\frac{1}{405871}$	Saturn	$\frac{1}{3512}$
The Earth	$\frac{1}{354936}$	Uranus	$\frac{1}{17918}$
Mars	$\frac{1}{2546320}$		

If we add together the numbers given in this table, it will be found that the whole matter in all the planets is not one-six-hundredth part of the matter in the sun.

473. *Knowing the masses of the planets and their diameters*, we can determine the force of gravity at their surfaces; for, supposing them to be spherical bodies, and to have no rotation on their axes, the forces with which a body placed on their surfaces gravitates to them will be *proportional to their masses, divided by the squares of their diameters*.

474. *From the masses of Jupiter and the earth*, La Place calculates that if we suppose them to have no rotation, a body which at the earth's equator weighs one pound would, if carried to the equator of Jupiter, weigh 2·509 pounds, supposing the weights to be measured by the pressures exerted in the two situations. If the centrifugal force produced by the rotation of the planets be taken into account, however, this weight must be diminished by about one-ninth part. The same body would weigh about 27·65 pounds at the surface of the sun. Hence it follows that a heavy body would there descend about 425 feet in the first second of time.

475. *We have hitherto attended chiefly to the action* of the central body upon that which revolves round it; but, in reality, the action is mutual. The planets attract the sun in the same manner as the sun attracts the planets; and the same action and re-action have place among the primary planets and their satellites. Indeed, the gravitation of all the great bodies of the system towards one another, appears only to be a consequence of a similar action between every particle of matter and every other particle of matter. This great fact, to which all the celestial phenomena are ultimately to be referred — *that the particles of matter mutually attract each other by a force varying inversely as the squares of the distances* — is commonly called the principle of UNIVERSAL GRAVITATION.

476. *The mutual attraction of the bodies composing the planetary system* gives rise to a train of consequences which it has required the utmost efforts of human ingenuity to unfold. We have already remarked that the planetary motions are liable to a variety of irregularities with which accurate observation has made us acquainted. Now, here we see the cause to which all these irregularities are to be referred. If the sun were fixed immovable in the centre, and only one planet revolving round him, then the path of that planet would be an ellipse, from which there would not be the least deviation; and that focus which is the centre of motion would coincide with the centre of the sun, supposing that body to be spherical and composed of matter of uniform density. But since the planet attracts the sun as well as the sun attracts the planet, with a force directly proportional to the mass and inversely proportional to the square of the distance, it follows that the sun must also move in an elliptic orbit round that point of which the condition is in no way disturbed by the mutual action of the revolving bodies, namely, their CENTRE OF GRAVITY. It is with this point that the focus of the orbit of the planet, and that of the solar orbit, would coincide, and about which the radius vector of each would describe areas proportional to the times. In reference to this point also, the squares of the periodic times would be proportional to the cubes of the distances.

477. *If we now suppose two or more planets to revolve about the sun*, it is evident that the motions of all would be disturbed by their mutual gravitation. The immense magnitude of the sun compared with that of any of the planets, or of all the planets taken together, might, however, give to his attraction such a preponderance as would preserve all the planetary orbits nearly elliptical; while his own orbit would become a more complicated curve, but such as to furnish a centrifugal force in respect of each planet, just able to counterbalance the gravitation towards it. The centre of gravity of the whole system would be a point to which all their motions are to be referred. Now this is actually the case of the planetary system. Accurate observation proves that the sun is not at rest in the centre, though his motion is very small. His centre is never distant from the centre of gravity of the system so much as his own diameter; and hence the orbit which he describes must be very inconsiderable, when compared with the orbits of the planets. With regard to those planets which are accompanied by satellites, it is not the centre of the primary which traces the elliptic orbit round the sun, but the common centre of gravity of the primary planet and secondary planets which revolve round it.

478. *The perturbations which the mutual attraction of the planets* produce in each other's motions are divided into two classes. The one class affect the figure and position of the elliptic orbits, and increase with extreme slowness: these are called SECULAR INEQUALITIES. The other class depend on the mutual situation of the different planets, and acquire the same amount whenever the same relative positions occur: these are called PERIODIC INEQUALITIES. Both these classes of inequalities have been demonstrated to be periodical; that is, they increase only to a certain extent, and then decrease. Amidst all the changes which arise from the mutual actions of the heavenly bodies, there are two things which remain perpetually the same; namely, the greater axis of the orbit which the planet describes, and its periodic time. Thus the permanency of the planetary system is secured.

479. *To subject to calculation the perturbations of the system* requires the solution of the following problem: three bodies of given magnitudes, as the sun, the earth, and the moon, being projected into space with given velocities, and in given directions, and attracting each other according to a given law, namely, inversely as the squares of their distances from each other, and directly as their masses; it is required to determine the nature of the curve, that one of them, as the moon, describes about one of the other two, as the earth. This is the celebrated PROBLEM OF THE THREE BODIES, stated in all its generality, but under this aspect its solution is beyond the reach of the most refined methods of analysis which the mathematical sciences in their present state furnish. In its application to the purposes of physical astronomy, there are certain conditions which render the problem less difficult; viz. 1. That the sun greatly exceeds in magnitude the other two bodies, and is nearly at rest. 2. Its distance from the earth and moon is so great, that it may be considered the same for both. This condition fails, however, in reference to the action of the primary planets on one another, a circumstance which augments the difficulty of investigating the perturbations arising from their mutual gravitation. 3. The planetary orbits are nearly elliptical, and the aberrations from the ellipse in reference to each, are all that is required. Even with these limitations the problem is sufficiently difficult, and has engaged the attention, and exercised the skill of the most celebrated mathematicians of modern times.

480. *The general view which we have now given* of the planetary disturbances is all that our present object requires. We shall only, therefore, farther advert to the explanation which the theory of gravitation affords of the figure of the earth, and of the tides.

Chap. XVI.

FIGURE AND CONSTITUTION OF THE EARTH DEDUCED FROM THE THEORY OF GRAVITATION.

481. In the beginning (Chap. III.) we proved that the earth must be nearly spherical, in order to account for the general phenomena which we constantly observe. As soon, however, as the general *law of gravitation* was discovered, it was a necessary consequence that the earth could not be a perfect sphere, but must rather be an oblate spheroid flattened at the poles, and swelled out at the equator, and this inference is independent of all actual measurement, but may be confirmed by observation, and in fact has been so, as will be afterwards fully proved. This deviation from the spherical figure is to be attributed to the influence of the centrifugal force, arising from the earth's diurnal rotation, in diminishing the force of gravity from the pole towards the equator, where the centrifugal force, in reference to the surface, is the greatest possible. This tendency which every particle of matter in the earth has to fly off in the direction of a tangent to the circle in which the particle is carried by the earth's motion of rotation would be increased if that motion were to be accelerated: and may be conceived to be increased to such power as not only to overcome the force of gravity, but also the force by which the particles adhere to one another, and so to cause the earth to separate into fragments. Suppose a small satellite to revolve round the earth close to its surface at the equator; its periodic time may be deduced from that of the moon, on the principle that the squares of their periodic times would be to one another as the cubes of their distances. For we have (since the moon's distance is about sixty times the semidiameter of the earth, and the time of her periodic revolution 39343 minutes,)

$$60^3 : 1^3 = 3{,}9343^2 : \text{sq. of the periodic time of the satellite.}$$

Hence we obtain the periodic time nearly equal to 84½ minutes. If the earth revolved about its axis in 84½ minutes while such a satellite described a circular orbit close to its surface, the satellite would therefore appear to be at rest on the surface, but would not in the least degree press upon it, because the force of gravity would be exactly counterbalanced by the centrifugal force produced by the motion of the satellite in its orbit. Now, all the objects on the surface at the equator would be in the very same circumstances with the satellite; for they actually describe circles in consequence of the earth's motion, and if the earth revolved in 84½ minutes, their centrifugal force would become exactly equal to the force of gravity; so that they would no longer have weight. If the earth's motion of rotation became still more rapid, they would fly off from the surface.

482. *At the equator a body describes a circle* of which the circumference is about 132,105,600 feet in $23^h\ 56^m$ nearly: it must therefore describe an arc of about 1528 feet in a second of time. From what we have shown already respecting central forces, it is evident that, by dividing the square of this arc by the diameter of the earth, we shall find the deflection from the tangent in a second, which will be the measure of the centrifugal force. This deflection amounts to about $\frac{67}{100}$ of an inch, or $\frac{1}{288}$ of $16\frac{1}{12}$ feet, the space through which a body would fall in a second by the force of apparent gravity. The centrifugal force at the equator is therefore the $\frac{1}{288}$ part of the sensible weight of a body, or $\frac{1}{289}$ part of its real weight. Suppose, then, a body, when weighed at the equator by a spring steel-yard, to be found capable of drawing out the spring to the division 288: if that body were weighed at the pole, where the centrifugal force vanishes, it would draw out the spring to the division 289.

483. It admits of being demonstrated that, proceeding from the equator where the centrifugal force is *the greatest* toward either pole, where it vanishes, *the diminution of gravity which it produces in different latitudes is directly proportional to the squares of the cosines of the latitude.*

484. Such being the nature of the forces that act upon every particle of matter of which the earth is composed, *the determination of its figure from physical principles* involves the solution of the two following problems:—

1. What is the law according to which a particle will gravitate towards a solid of a given form and constitution, the particle being supposed situated either within or without the solid?

2. What figure will a mass of matter, either wholly or partly fluid, assume in consequence of the joint effect of the attraction of its particles (that attraction varying inversely as the squares of their distances), and a centrifugal force arising from the rotation of the mass about an axis?—Both these problems involve a great degree of difficulty; and the second is even more intricate than the first, in consequence of the reciprocal relations subsisting between the figure of the attracting body and the law of gravitation at its surface, which renders a knowledge of the one necessary to the determination of the other. Assuming that an homogeneous fluid of the same mean density with the earth has the figure of an oblate spheroid, and revolves on its axis in $23^h\ 56^m\ 4^s$ of solar time, it would be *in equilibrio*, if the axis of revolution were to the equatorial diameter in the proportion of 229 to 230. This is the figure which Newton ascribed to the earth; and though the assumption which he made of such a figure was certainly gratuitous, the result of his investigation is almost the same as later writers have obtained by a more rigorous as well as direct mode of reasoning than that which he employed. Again, it has been demonstrated by La Place, that a fluid and homogeneous mass, of the mean density of the earth, cannot remain in equilibrium and possess at the same time an elliptic figure, if the time of its rotation be less than $2^h\ 25^m\ 17^s$. If the time of revolution exceed this, there may always be two elliptic spheroids, and not more, in which the equilibrium may be maintained. In the case of the mass revolving in $23^h\ 56^m\ 4^s$, the one spheroid is that which has already been mentioned; the other is one in which the polar diameter is to the equatorial in the ratio of 1 to 681. The extreme flatness of this spheroid must render the force of gravity at the equator almost nothing; the fluid, therefore, would be so easily dissipated that this equilibrium can scarcely be regarded as stable.

485. *Another conclusion* on this subject, deduced by Clairault, is, that if the fluid mass, supposed to revolve on its axis, instead of being homogeneous, be composed of strata which increase in density towards the centre, in order to remain in equilibrium, it must still possess the figure of an elliptic spheroid, but the oblateness will be diminished.

486. *The oblateness of the earth at its poles* is a phenomenon which the measurements that have been made of arcs of the meridian have placed beyond all doubt; but there is still an uncertainty as to the exact quantity of the compression. The results obtained, however, render it highly probable that it is less than $\frac{1}{230}$ which Newton, proceeding on the supposition of a uniform density, assigned for the compression. Hence we may conclude, that if the earth is a spheroid of equilibrium, it is denser in the interior than at its surface. This inference has been verified by very accurate experiments made by the late Dr. Maskelyne on the sides of the mountain Schehallien, in Perthshire. The object was to determine the derangement of the plummet by the vicinity of this lofty and solid mountain; and the results, obtained from observation made at two stations on the south and north sides of it, showed that the plummet deviated from the direction of gravity towards the mountain more than 7″. The quantity of this change of direction gives the ratio of the attraction of the mountain to that of the whole earth, or to the force of gravity, equal to the ratio of 1 to 17804. But the bulk and figure of the mountain being also obtained by a trigonometrical survey, its mean density was found to be to the mean density of the earth nearly as 5 to 9. Thus it appears that the mean density of the earth is not much less than double the density of the rocks which compose the mountain Schehallien; and these, again, seem considerably more dense than the mean of those which form the exterior crust of the earth.

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487. It may appear *an objection to this mode of reasoning concerning the figure of the earth,* that it is not evident how a centrifugal force should produce the same effect on a solid body, like the earth, that it does upon a fluid mass. But the fact that the earth has made an approximation to the spheroid of *equilibrium*, is an indication that either the entire mass was originally fluid, from whatever cause; or the repeated waste and reconsolidation of the parts near the surface has gradually produced the spheroidal figure. In either of these modes the power of cohesion, which in the solid body resists the effects of the centrifugal force, may have been overcome. However irregular a body, whose surface is composed of land and water, may be in its primitive form; by the process of constant waste, the more prominent parts are gradually worn down, and the matter which composed them is deposited in the lower parts which are occupied by the water: here it acquires a horizontal stratification; and having, by certain mineral operations, under the transforming hand of nature, been consolidated into stone, the water being removed, it may again form a part of the solid crust of the earth. In this manner the primitive irregular form will gradually disappear, and the surface in the course of ages acquire a position at right angles to the direction of gravity; so that, by the action of the centrifugal force, there will be a constant approximation made to the spheroid of equilibrium. The irregular distribution of the heterogeneous materials which compose this terraqueous globe may, perhaps, prevent the coincidence from ever being complete.

488. It admits of being demonstrated, that *if the earth were a perfect sphere*, and composed of matter of uniform density at equal distances from its centre, the action of the solar and lunar attraction upon it would be the same as if the whole terraqueous mass were condensed into a point at the centre. Hence the position of its axis would not, in that case, be in the least degree affected by its gravitation towards the sun and moon, but would remain parallel to itself while the earth performed its annual revolution. In consequence of the spheroidal figure, however, the earth may be considered as composed of a sphere of which the radius is half the polar axis, and of a quantity of redundant matter, which is distributed over it in such a manner as to swell out the equatorial regions. The action of the solar and lunar attraction on this redundant matter produces the precession of the equinoxes and the nutation of the earth's axis. The complete explanation of these phenomena affords one of the happiest illustrations of the Newtonian doctrine of attraction; but requires at the same time the aid of some of the most abstruse theories both in pure mathematics and mechanics.

CHAP. XVII.

THE TIDES.

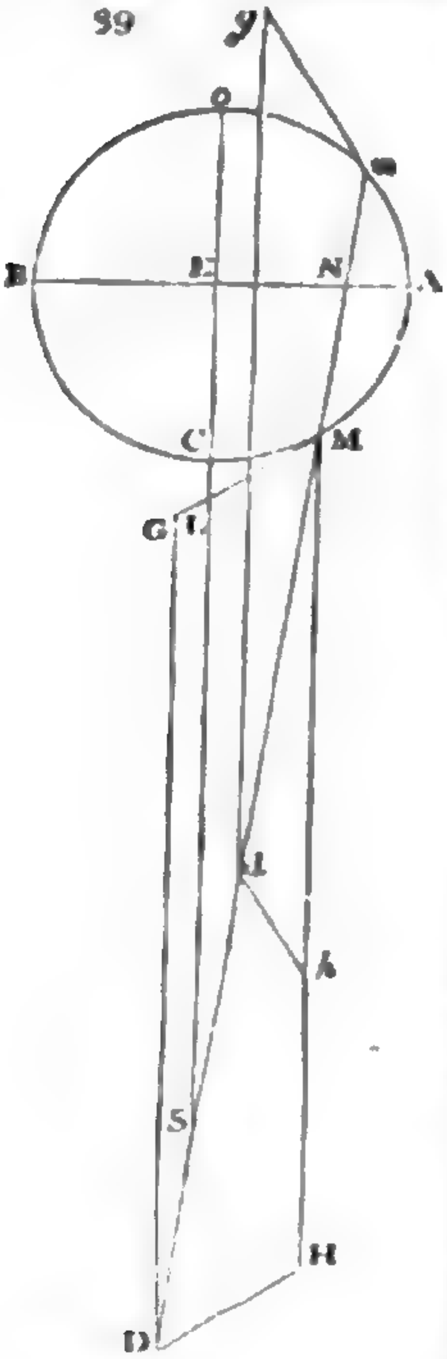
489. *The alternate rise and fall of the surface of the sea, or its flux and reflux,* known by the name of the TIDES, is a phenomenon which has attracted the attention of mankind from the earliest periods. Herodotus and Diodorus Siculus take notice of the daily flux and reflux of the waters of the Red Sea or Arabian Gulf, the latter historian describing it as a great and rapid tide; but neither of these writers form any conjecture respecting its cause. Observation must soon have shown, that this periodical ebbing and flowing of the waters of the ocean had an intimate connection with the position of the sun and moon in the heavens; and, accordingly, we find that Pliny not only describes the phenomena of tides, but expressly attributes them to the action of these luminaries.

490. It was not, however, until *Newton applied the principle of universal gravitation to explain these phenomena that the theory of the tides was fully understood.* The weight of a body on the surface of the earth arises from the tendency which the particles composing it have to the centre (or to a point near the centre), in obedience to the law of gravity. But as every object on the earth's surface gravitates towards the sun and moon, as well as towards the earth, it follows that the solar and lunar attraction must affect the weight of terrestrial objects. Upon solid bodies, between the particles of which adhesive force is powerful, no discernible effects are produced by this attraction. But the case is altogether different with regard to the waters of the ocean, the component particles of which yield to the slightest impulse; so that any alteration in their weight that does not equally affect the whole must be followed immediately by a motion of the parts of the fluid mass, which will continue until, by a new arrangement of the particles, the equilibrium is restored.

491. *To see what must be the general effect*, arising from the action of the sun, if the whole surface of the globe were covered with water; let A C B O be the watery sphere, S the sun, and E the centre of the earth. Let the gravitation of the central particle E to the sun be represented by the lines E S, and the

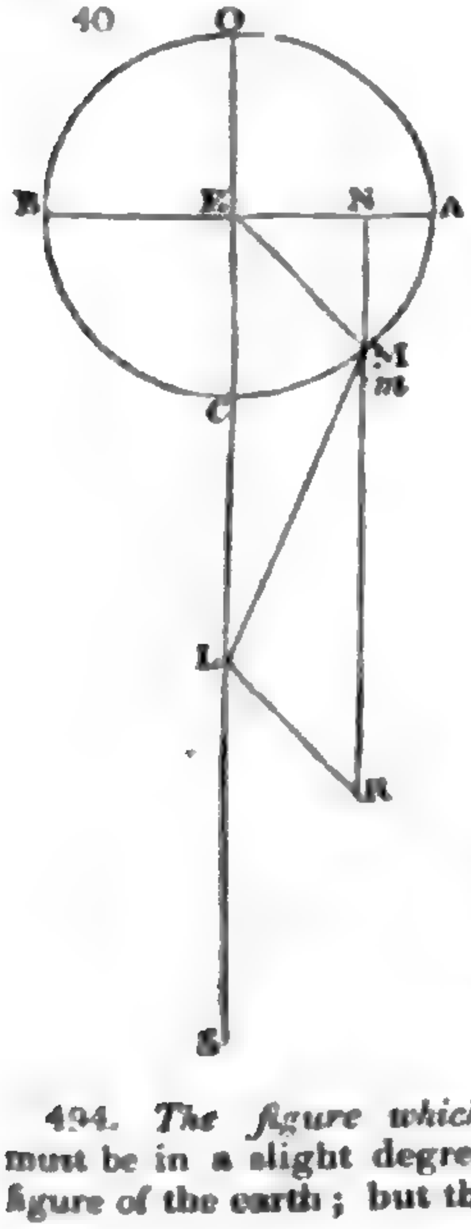
gravitation of any other particle M by the line M S D. Let the force M D be resolved into two forces, M H equal and parallel to E S, and M G. The force M H does not in the least degree affect the gravitation of the particle M towards the centre E; and M G is, therefore, the only disturbing force. If S M be produced to meet the circle A C B O in the point *m*, the action of the sun on a particle situated at *m* is less than its action on the central particle E: so that if *m d* represent the gravitation of the particle *m* towards the sun, the point *d* will fall on the opposite side of S from the point D; and the force *m d* being resolved into two forces, *m h* equal and parallel to E S, and the disturbing force *m g*, it is evident that the tendency of the force *m g* is to diminish the gravity of the particle *m*, in like manner as the force M G diminishes the gravity of the particle M. When the point M coincides with A, the angle E S M is the angle under which the semidiameter of the earth is seen from the sun; therefore E S M can never exceed 8¼″: whence, in determining the direction and quantity of the disturbing force from the geometrical relations of the lines, we may consider the lines D G, S L, and D M as coincident, and M L may be taken for the disturbing force. Again, the difference between S M and S E is greatest when the point M coincides with C or O. But if we consider that C E, the difference between S E and S M when greatest, is only about $\frac{1}{24000}$ part of S E, it is evident that we commit but a very small error in supposing S M, S N and S E in every position equal. Now, since S E and D M represent the gravitation of the particles E and M towards the sun respectively, we have $SE : DM = SM^2 : SE^2$; therefore, since S E and S N may be considered equal, $DM = \frac{SN^3}{SM^2}$. But $SN = SM + MN$, therefore $SN^3 = SM^3 + 3SM^2 \times MN + 3SM \times MN^2 + MN^3$. The quantity M N is so small, compared with S M, that the two last terms of this expression for SN^3 may be neglected: we have, therefore, $SN^3 = SM^3 + 3SM^2 \times MN$, and $\frac{SN^3}{SM^2} = SM + 3MN$: wherefore, also, $DM = SM + 3MN$; and taking S M from each, we find $SD = 3MN$. Now, since G D may be considered equal to $LS + SD$, and E S is by construction equal to G D, it is evident that $ES = LS + SD$, or taking L S from each, $EL = SD$. Hence $EL = 3MN$, and the disturbing force for any point M is determined both in direction and magnitude.

39



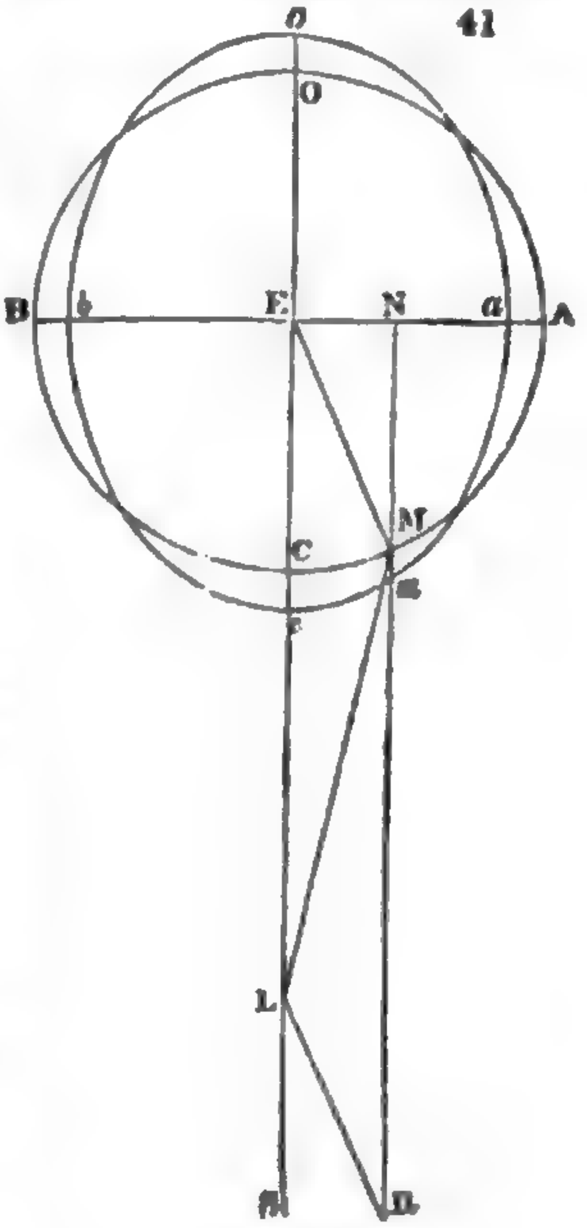
492. *Suppose now that* A C B O (*fig.* 40.) is the terraqueous globe, E S a line directed to the sun, and A E B a section by that circle which separates the enlightened from the dark hemisphere. Let M be any particle on or within the mass. Through the point M draw a straight line M N perpendicular to the plane A E B, and in E S take E L, equal to 3 M N: join L M; then L M represents the direction and intensity of the disturbing force which the sun exerts on the particle M. Let the force L M be resolved into two forces, one, M E, directed towards the centre of the earth, and the other, M R, tending from the plane A E B towards the sun. Suppose the same construction to be made for every point of the sphere, the whole being supposed covered with water, it is evident that the forces represented by M E will balance one another, and therefore need not be considered. But the force represented by M R will diminish the gravity of every particle M, reckoned in the direction of a line perpendicular to the plane of that great circle of the earth which separates the illuminated from the dark hemisphere. The force thus diminishing the gravity will be proportional to three times the distance of the particle from the same plane; for R M is equal to L E or 3 M N. Every particle in any column M N being thus acted on by a force which evidently tends to destroy the equilibrium of the fluid mass, the water in that column cannot remain at rest. Its equilibrium may be restored, however, by the addition of a small portion M *m*, which, by restoring the weight of the column, enables it to resist the pressure of the adjacent columns. A similar addition may be made to each column, perpendicular to the plane A E B: and the result will be that, from being spherical, the figure of the globe will be changed into that of an oblong elliptical spheroid, having its axis directed towards the sun, and its poles in those points of the surface which have the sun in the zenith and nadir.

40



493. *Let the figure* into which the watery sphere would be transformed by the solar action be represented by the ellipse *a c b o* (*fig.* 41.): the points *o* and *c* are the poles of the spheroid; and at these points the waters are highest above the sphere A C B O of equal capacity, while all round the circumference B E A the waters are below their natural level. By calculation it is found that the difference between E *c* and E *a* is about twenty-four and a half inches; so that the deviation from the spherical figure is not great.

41



494. *The figure which the watery spheroid assumes* must be in a slight degree influenced by the spheroidal figure of the earth; but the deviation from the spherical

figure is so small, that its effect in changing the spheroidal figure of the waters on the surface of the earth must be quite inconsiderable. If the earth were at rest, the watery spheroid would acquire that form which would produce an equilibrium among all its particles. This, however, can never happen under the actual circumstances of the case, because some time must elapse before an accelerating force can produce a finite change in the disposition of the waters; but, by the motion of the earth on its axis, the disturbing force is every instant applied to a different part of the surface, so that the position of equilibrium can never actually be attained. Such, then, is the general effect which the solar action would produce if the whole globe were fluid, or a spherical nucleus covered with a fluid of equal density. To explain the phenomena of the tides, however, it is indispensably necessary to take into account the action of the moon.

495. *It is with the moon that the tides are principally connected;* and the sun's influence is known only by its increasing or diminishing the effects of her more powerful action. This greater influence of the moon in producing the tides arises from her vicinity to the earth, when compared with the sun, her distance being only about $\frac{1}{400}$ part of his. It must be carefully kept in view, that it is not the mere action of the sun and moon that produces the tides in the ocean, but the *inequalities* in the action of each: and the gravitation of the waters of the ocean to the moon is much more unequal than their gravitation to the sun. Whatever has been proved with regard to the influence of the sun in producing tides in the ocean is equally applicable to the moon. The waters will be accumulated immediately under her, and on the opposite side of the globe, producing a spheroid of the same kind with that which we have shown must be produced by the unequal action of the sun, but more elongated; and this spheroid, directed toward the moon, will follow her in her apparent daily revolution about the earth. In consequence of this simultaneous gravitation towards both luminaries, the ocean must assume a figure different from both of these spheroids; which will become blended and undistinguishable. The resulting figure resembles each of the spheroids in being elongated, and its most elevated parts are found to follow the more powerful of the disturbing bodies, namely, the moon, in her apparent diurnal revolution about the earth. We may, without sensible error, suppose that the change produced in any part of the ocean by the combined action of the sun and moon, is the sum or the difference of the changes which they would have produced if acting separately.

496. *We have already remarked that the rapid motion of the waters,* in consequence of the diurnal motion, prevents them from ever assuming the figure which would be requisite for the equilibrium of the forces acting on them; so that they oscillate continually, alternately approaching to that figure and receding from it. The motion thus communicated to them is one not of transference, but of undulation, one part rising and another sinking, unless when from want of depth of water the balance between the adjacent columns is destroyed. We may, therefore, regard the two elevations produced in the ocean by the inequalities in the solar and lunar actions as two vast waves which follow the moon in her apparent diurnal motion. The line joining the tops of these two waves is not directed to the moon, as would be the case if the earth and moon were at rest, but is directed to a point about 30° to the eastward of the moon. This arises from the *inertia* of the water, which causes it, when once put in motion, to continue to rise for a time after the impulse communicated has ceased. If we consider the tides relatively to the whole surface of the globe, there is a meridian, therefore, about 30° eastward of the moon where it is always HIGH WATER, both in the hemisphere where the moon is, and the opposite hemisphere. On the west side of this meridian the tide is *flowing*, and on the east side of it the tide is *ebbing*. On the meridian which is at right angles to the former, it is every where LOW WATER. If we suppose, then, the sun and moon to be in the equator, and an observer to be situated on the surface of the water under the equator; when the moon has risen 30° above his horizon, the state of the tide to that observer will be low water. As the moon advances towards his zenith, the tide will flow; and when she has reached a point about 30° to the westward of his zenith, the summit of the wave will reach him, and then the state of the tide will be high water. As the moon approaches the western horizon, the observer will see the water gradually subside as it had formerly risen; and when she has descended 30° below the horizon, it is again low water. As the moon continues her course below the horizon, the waters again gradually rise by the approach of the other wave until its summit arrives at the observer, and again produces high water; when the moon has passed the opposite meridian, and reached a point 30° beyond it, the tide again begins to ebb as the wave rolls on, and the same phenomena are repeated in the same order. Thus, in the space of time in which the moon performs her diurnal revolution, which may be called a lunar day, and consists of nearly $24^{h}\ 50^{m}$, there occur two tides of flood and two of ebb. The time between one high water to the next is about $12^{h}\ 25^{m}$, and the instant of low water is nearly but not exactly the middle of this interval, the tide in general taking about nine or ten minutes more in ebbing than in flowing.

497. *Spring and neap tides.* As the magnitude of the two waves which produce the rise and fall of the tide depends on the action of the sun as well as on that of the moon, it is evident that the height to which the water rises and falls must be affected by the relative position of the

two luminaries. At new moon and full moon the actions of the sun and moon are combined, but at the quadratures they counteract each other. In the former case, the two spheroids produced by the solar and lunar actions have their axes coincident or nearly so; in the latter, their axes are at right angles to each other. Hence, at new and full moon the flood tide will rise higher, and the ebb tide will sink lower, than usual. The reverse of this will happen when the moon is in either of her quadratures: the flood tide will not rise so high as usual, nor will the ebb tide sink so low. This is exactly coincident with experience; and we here perceive the cause of what are called SPRING TIDES and NEAP TIDES. About the time of full moon and change the tides rise higher than when the moon presents any other phasis. The highest tide does not happen, however, the first after the opposition or conjunction, though the disturbing forces are then united, but some time after; and the cause of this is the same which prevents the time of high water of any one tide coinciding with the time of the moon being on that meridian under which the tide happens; namely, the *inertia* of the water, or that tendency which all matter has to retain its state whether of rest or motion. At Brest, where an accurate register was kept of the phenomena of the tides about the beginning of the last century, it was found that the highest tide happened about a day and a half after the new and full moon. If the time of high water coincide with the very time of conjunction or opposition, the third high water after that is the highest of all. This is called the SPRING TIDE. From this period the tides gradually decrease, until the third high water after the moon's quadrature, which is the lowest of all, and is called the NEAP TIDE. But having reached their utmost depression, the tides again increase until the occurrence of the next spring tide; and so on continually. The higher the tide of flood rises, the lower the ebb tide generally sinks on that day. The total magnitude of the tide is estimated by the difference between high and low water. At Brest the medium spring tide is about 19 feet, and the medium neap tide about 9 feet.

498. *Effect in different hemispheres.* Let us next suppose the sun and moon to be situated in one of the tropics; the two waves raised in the ocean by their actions on opposite sides of the globe will now roll along under the tropics. If an observer be placed on the surface of the water, and under the same tropic in which the sun and moon are situated, he will still see two tides of flood and two of ebb; but they will not correspond in all their circumstances, as they did on the former supposition. The depth of the high water produced by the wave situated in the same hemisphere with the moon, will evidently be greater than that of the high water produced by the wave which rolls along under the other tropic in the opposite hemisphere from the moon; for the observer will see the very summit of the one wave, and only the sloping side of the other. To an observer situated under the tropic on the opposite side of the equator from the sun and moon, the case would be reversed; and if he were so far removed from the equator as to be situated under the polar circle, no part of the wave accumulated in the same hemisphere with the moon would reach him; so that he would see only one tide of flood and one tide of ebb daily produced by the motion of the other wave.

499. *This also is consistent* with what we know respecting the tides from observation. All the phenomena are found to be modified by the latitude of the place of observation; and some phenomena are found to occur in high latitudes, which are not at all seen when the place of observation is under the equator. In particular when the moon and the observer are on the same side of the equator, that tide in which the moon is above the horizon is greater than the other tide of the same day which happens when the moon is below the horizon. The contrary takes place when the moon and the observer are on opposite sides of the equator: in this latter case, if the polar distance of the observer be equal to the moon's declination, he will see but one tide in the day, continuing to flow for twelve hours and to ebb for twelve hours. We have supposed for simplicity the sun and moon to be in the equator, or in one of the tropics; but it is evident that this can seldom be the case. The two luminaries are capable of an infinite variety of positions in reference to each other, as well as in reference to any particular point of the earth's surface. The phenomena with regard to particular places must, therefore, be endlessly diversified; but by tracing the general features, the principles become apparent upon which all the phenomena depend.

500. *The influence of the sun and moon in producing tides* in the ocean will evidently be *augmented when these bodies are nearer to the earth,* and diminished when their distances are increased. From this cause it arises, that when the moon is in that part of her orbit where she approaches nearest to the earth, the spring tide which happens at that time is the highest, and the next spring tide is the smallest; because the moon is then nearly at her greatest distance from the earth. This makes a difference of 2¾ feet from the mean height of the spring tide at Brest; and consequently of double that quantity, or 5½ feet, between the greatest spring tide and the least. The neap tide which happens between these two very unequal spring tides is regular, because the moon is then nearly at her mean distance. The reverse of this takes place when the moon is at her mean distance at the time of the change: the spring tide is regular, but the two neap tides differ considerably in height. The increased distance of the sun is the reason why the spring tides in our summer are not so great as in our winter. At the mean intensities of the disturbing forces, the sun tends to raise the waters about 24½

inches, and the moon about 58. Hence the spring tide should be about $58 \times 24\frac{1}{2} = 82\frac{1}{2}$ inches, and the neap tide about $58 - 24\frac{1}{2} = 33\frac{1}{2}$ inches.

501. *Variations caused by continents, islands, &c.* We have hitherto supposed the two waves which produce the phenomena of the tides to meet with no interruption in their progress round the world. This is, however, far from being the case; they are interrupted by continents and islands, and may be propelled or retarded by the action of the wind; their velocity and direction may also be changed by irregularities in the bed of the ocean: so that, to explain all the phenomena at any particular place, the effect of local circumstances, which is often great, must be taken into the account. The great Pacific Ocean is, perhaps, the only part of the terraqueous globe in which all the forces have room to operate. But the wave which they form must, in rolling westward, encounter the coasts of Asia and New Holland, with the interjacent islands; and amidst these obstacles it must force its way to the Indian Ocean. Its figure will thus be changed, and the phenomena of the tides, which it produces, powerfully modified. On its eastern side the Pacific is bounded by a vast stretch of coast, extending without interruption from Cape Horn to Behring's Straits. This barrier prevents all supply from the eastward for making up the watery spheroid, and must be equally effectual in arresting the progress of the waters accumulated to the eastward of the American continent. So far as we have information respecting the tides in the Pacific Ocean, they appear to be very unlike the European tides, until we reach about 40° or 50° west from the coast of America. In the neighbourhood of that coast, scarcely any tide occurs when the moon is below the horizon. Even in the middle of the Pacific Ocean the tides are very small, but at the same time very regular.

502. As a great extent of surface is necessary in order that the sea should be sensibly affected by the inequalities in the actions of the sun and moon, the *tides* which are experienced *in narrow seas, and on shores far removed from the main body of the ocean*, are not produced in those seas, but are waves propagated from the great diurnal undulation, and moving with much less velocity. The tides which visit our own coasts must, in a great measure, be supplied from the accumulation of water in the Indian and Ethiopic Ocean, from the eastward, and by what is brought or kept back from the South Sea. The undulations will be diffused as proceeding from a collection coming round the Cape of Good Hope, and round Cape Horn. Consistently with this supposition, it is found that high water, which occurs at the Cape of Good Hope at new and full moon about three o'clock, is later and later as we proceed northward along the coast of Africa; later and later still as we follow it along the western coasts of Spain and France, until we reach the mouth of the English Channel. The wave now divides itself into three branches; one part passing up St. George's Channel, another proceeding northward along the western coast of Ireland, and the third passing up the English Channel, between the British and French coasts. The two branches that proceed along the east and west sides of Ireland unite and form one ridge or wave, which continues its progress along the western coasts and islands of Scotland, and then diffuses itself eastward towards Norway and Denmark, and circling round the eastern coasts of Britain, comes southward through the German Ocean, until it reaches Dover, where it meets the branch which passes up the English Channel. It is to be remarked, however, that this tide which comes up the channel is not the same with that which meets it from the north, but is a whole tide earlier if not two, as appears from the fact of the spring tide at Rye being a tide earlier than the spring tide at the Nore: it even seems two tides earlier, for it appears the one as often as the other. By tracing the hour of high water from the Lizard up St. George's Channel, and along the west coasts of Scotland, it appears that the two tides which pass along the east and west sides of Ireland, and unite into one wave to the north of it, travel round Britain in about twenty-eight hours, in which time the primitive tide has gone round the whole circumference of the earth, and nearly 45 degrees more. By attending also to the successive hours of high water along the western coasts of Africa and Europe, it appears that the wave, which divides into three branches at the mouth of the English Channel, takes up nearly two days, or between four and five tides, in travelling thither from the Cape of Good Hope. A similar progress of the same high water from the southward is observed along the eastern shores of South America; but beyond Brazil and Surinam the Atlantic Ocean is sufficiently extensive to contribute greatly to the formation of the regular spheroid; so that the effect of this high water from the southward, being blended with the tide raised in the Atlantic itself, becomes insensible. In an ocean of such a breadth from east to west as the Atlantic, the water can rise on the one shore only by descending on the other. In the middle, therefore, it will retain nearly the mean height between its elevations on the two opposite coasts: this appears to be the reason why the tides are small in islands that are very far distant from the shores.

503. *The reflection of the tide from shore to shore* is a great cause of irregularity in the tides. The coasts may be so situated that the time in which the undulation that constitutes the tide would of itself vibrate backward and forward from shore to shore, may be so exactly accommodated to the recurring action of the moon that the succeeding impulses, being always added to the natural undulation, may raise it to a height altogether disproportioned

to what the action of the moon can produce in the open sea, where the undulation diffuses itself to a vast distance.

504. *The inequalities which undoubtedly obtain in the bottom of the ocean affect the tides*, by changing the direction of the waters; also their velocity either absolutely or in respect of particular places. They may also influence the height by causing the tide to rush with increasing velocity toward a particular point, where the waters must at length be suddenly checked, and therefore be accumulated in an extraordinary degree: this appears to be the cause of the astonishingly high tides which occur in the Bay of Fundy. The high water of the Atlantic Ocean at St. Helena does not exceed four or five feet; but, setting in obliquely on the coast of North America, it seems to range along that coast in a channel or bed, gradually narrowing till it is stopped in the Bay of Fundy, where the accumulation of the waters becomes tremendous. The tide approaches with a prodigious noise in one vast wave, that is seen thirty miles off, and the waters rise from a hundred to a hundred and twenty feet in the harbour of Annapolis Royal; the rapidity of the waters is so great as to overtake animals feeding on the shores.

505. *In consequence of the length of time required* for a tide to propagate itself up a great river, one or two succeeding tides may reach the mouth of the river before the first tide has arrived at the highest point to which it ranges up the stream. The second tide will also have propagated itself so far up the river, by the time that the third tide reaches the mouth; and thus there may be three co-existent high waters in the river. The two intervening low waters in the ocean will also produce two corresponding low waters in the river: these changes in the depth of the stream are produced by the high waters which arrive at its mouth checking its velocity, and the low waters accelerating it. To cause high water at any particular point, it is by no means necessary that the water should be raised to that level all the way from that point to the mouth of the river. Before such an accumulation could take place, in many instances, places farther down the stream would be inundated. At many places that are far from the sea, the stream at the moment of high water is down the river, and sometimes it is considerable. At Quebec, the current in the St. Lawrence runs at the rate of not less than three miles per hour: this is a clear proof that the water is not heaped up, for there can be no stream without a declivity. The phenomenon termed the BORE of a river, which occurs chiefly in large rivers that have a wide outlet, and where the greatest tides are experienced, arises from the waters accumulated in the gulf or outlet by one tide not being, in such circumstances, discharged before the approach of the ensuing tide. These accumulated waters encounter, therefore, the waters of the ocean flowing in an opposite direction; so that the re-action of the conflicting waves produces an elevation of the water far above the natural level. The surge formed in this manner rolls up the river with irresistible force, overwhelming every thing which it encounters; until, exhausted by the resistance which it has to overcome, it at length sinks into a feeble undulation. The violence and elevation with which the bore rushes along in some rivers is almost incredible: at the mouth of the Severn the flood comes up in one head about ten feet in height; but in the great rivers of America, and particularly in the Amazon, it becomes a rolling mountain of water, which is said to attain the height of 180 feet.

506. *In confined seas of small extent*, such as the Caspian, the Euxine, the Baltic, and the great lakes of North America, the tides must necessarily be almost insensible; the disturbing forces in such situations have not room to act to any extent: the greatest height to which the waters of the Caspian can rise above their level on the shore, in consequence of a spheroidal shape being given to them by the lunar action, does not exceed seven inches; an accumulation which a slight breeze of wind is sufficient to counteract. Even in cases where a confined sea is connected with the ocean by a narrow channel no sensible tide can happen; for the tide in the ocean cannot diffuse itself through the contracted inlet during the period that elapses between two consecutive tides.

507. *The Mediterranean is a confined sea of considerable extent*; and the tides there might be very sensible if the effects of the solar and lunar actions were not diminished by its distance from the equator. As the moon approaches the meridian of the eastern part of the Mediterranean, there is a considerable elevation of the waters on the Syrian coast, and a considerable depression at Gibraltar. In the middle of the length the water is at the mean height; in the Atlantic Ocean, an open and extensive surface of water, the regular spheroidal form is nearly attained, and the water stands considerably higher on the outside of the straits than on the inside; it is nearly low water within, while it is about one third or one half flood without. Notwithstanding this accumulation, the communication is too narrow to allow the tide of the ocean to diffuse itself in a regular manner into the basin of the Mediterranean. As the moon moves westward, toward Gibraltar, the water will begin to rise, but slowly, within the straits, while without it is flowing very rapidly. The accumulation within increases with the progress of the moon westward, until it reaches high water; but by this time the tide has been ebbing for some hours without the straits. It will now be low water on the coast of Syria; and during all this time the water at the middle between the eastern and western extremities will not have sensibly altered its depth.

508. *The singular currents which prevail in the Straits of Gibraltar* appear in a great measure explained by these peculiarities with regard to the tides in the Mediterranean Sea and Atlantic Ocean. Changes of tide, always different and frequently quite opposite, are observed on the east and west sides of the narrow neck which connects the rock with Spain; and the general tenor of those changes has a very great analogy with what has now been described.

509. *It is a fact which strikes the attention*, upon the most cursory observation of the phenomena of the tides, that they fall later every day. This variation in the interval of the tides is called the PRIMING OR LAGGING of the tides, according as we refer them to lunar or solar time. If we suppose the sun and moon to be in the equator, and the watery spheroid to attain *instantaneously* the form suited to its equilibrium, then the line joining the summits of the two waves produced in the ocean by their combined actions will always be directed to a point situated between their centres; except in the case of the sun and moon being in conjunction or opposition, when it will be directed towards their centres. The following table, calculated on the above supposition, and for the mean distances of the sun and moon from the earth, exhibits the minutes of solar time that the moment of high water precedes or follows the moon's southing, corresponding to every tenth degree of the moon's elongation (eastward) from the sun or from the point opposite to the sun. It shows also the hour and minute of the day, nearly, when it is high water; and the height of the tide, supposing the height of a spring tide to be 1000:—

Moon's Elongation at southing.	Time of High Water.			Height of Tide.	Time of High Water.			Moon's Elongation at southing.
	Before Moon's southing.	Afternoon or Midnight.			Afternoon or Midnight.		After Moon's southing.	
Deg.	Min.	Ho.	Min.		Ho.	Min.	Min.	Deg.
0	0	0	0	1000	12	0	0	180
10	11½	0	28½	987	11	31	11½	170
20	22	0	58	949	11	2	22	160
30	31½	1	28½	887	10	31	31½	150
40	40	2	0	806	10	0	40	140
50	45	2	35	715	9	25	45	130
60	46½	3	13½	610	8	46½	46½	120
70	40½	3	59½	518	8	0½	40½	110
80	25	4	55	453	7	5	25	100
90	0	6	0	429	6	0	0	90

510. *If we note the exact time of the high water* of spring tide for any harbour, and the exact position of the sun and moon at that time, we can easily make a table of the monthly series for that port, by noticing the difference of that time from the table, and making the same difference for every succeeding phasis of the tide.

Chap. XVIII.

GENERAL VIEW OF THE SOLAR SYSTEM.

511. *Ten stars*, among the countless number with which, in a clear night, the heavens appear so resplendent, have been proved, by the observations and reasonings of which we have now given a brief outline, to be *planets* revolving about the sun, and deriving their light from him. The earth which we inhabit has been proved to have a similar motion, and to belong to the same class of bodies. Several of these primary planets are accompanied by satellites; and the whole are preserved in their respective orbits by a centripetal combined with a centrifugal force. Thus there subsist among these bodies relations which are regarded as uniting them in one system, having the sun in the centre; and which is therefore called the SOLAR SYSTEM.

512. *In regard to the other planets*, as we have employed the obvious analogy subsisting between them and our earth, in proving its annual and diurnal motion; so, on the other hand, from the same grounds, it seems reasonable to conclude that, like the earth, they are designed and fitted by Infinite Wisdom for the accommodation of inhabitants, and that in all probability millions of beings are placed upon them. Though our observations in relation to the subserviency of the arrangements of nature to the enjoyment of sentient beings is confined to this narrow scene; yet, seeing this small portion of the universe crowded with examples of utility, why should we imagine that Divine Goodness has not throughout the system in like manner diffused its bounty? As our knowledge of the celestial phenomena is extended, the probability becomes proportionably stronger that the other planets are stored with inhabitants who share in the blessings of rational and sentient existence. Their rotation, their *atmospheres*, of which the telescope has enabled us to detect the existence, and the changes which we see going on in these atmospheres, so much resemble what we experience on the earth, that no man who clearly conceives them can divest his mind of the thought that this is not the only part of the system where the Creator has displayed his bounty by giving existence to sentient beings. There is nothing that forbids us to suppose that in each of the other planets there is the same inexhaustible store of subordinate contrivances that we see here for living creatures in every situation, possessing appropriate forms, desires, and abilities. Before abandoning such an opinion, there may surely be expected, from those who require us to do so, some good reason for its rejection.

513. *In regard to the fixed stars*, as the sun, if viewed from a sufficient distance, would be diminished into a luminous point, while the planets that revolve round him would become invisible; so, on the other hand, it is highly probable that each fixed star is itself a sun, and the centre of a particular system, being surrounded with a certain number of planets and comets, which at different distances, and in different periods, perform their revolutions around it.

514. There appears strong reason to suppose that *the sun, with his accompanying planets, has a motion among the fixed stars*, round a centre. From a comparison of ancient and modern observations, it appears that while the stars in one quarter of the heavens are receding from each other, those in the opposite region are gradually approaching. Dr. Herschel has found that these motions of the stars are nearly in the direction that would result from a motion of the sun towards the constellation of Hercules. It is the opinion of Lalande that there is a kind of equilibrium among all the systems of the universe, and that they have a periodic circulation about their common centre of gravity.

TABULAR VIEW OF THE SOLAR SYSTEM.

I. SECONDARY PLANETS.

1. The Moon.

Revolutions.	D.	H.	M.	S.
Synodical - -	29	12	44	2·9
Anomalistic -	27	13	18	37·4
Sidereal - -	27	7	43	11·5
Tropical - -	27	7	43	4·7
Nodical - -	27	5	5	36·0

Inclination of Orbit to plane of Ecliptic - 5° 8′ 47″·9
Greater semi-axis of Orbit = 1·000000
Eccentricity = ·054844

Semidiameter of Terrestrial Equator = 1.
Moon's mean distance = 59·96435.
in miles = 237000.
Moon's mean diameter = 2160 miles.
Her volume = $\frac{1}{49}$ of volume of the Earth.
Her mass = $\frac{1}{75·85}$ of mass of the Earth.
Her density = $\frac{1}{1·623}$ = ·615 of density of the Earth.
Her light is $\frac{1}{300000}$th of the light of the Sun.

2. Satellites of Jupiter.

Satellites.	Sidereal Revolution. D.	H.	M.	Mean distance in semidiameters of Jupiter's Equator.
1	1	18	28	6·049
2	3	13	14	9·623
3	7	3	43	15·350
4	16	16	32	26·998

3. Satellites of Saturn.

Satellites.	Sidereal Revolution. D.	H.	M.	Mean distance in semidiameters of Saturn's Equator.
1	0	22	38	3·351
2	1	8	53	4·300
3	1	21	18	5·284
4	2	17	45	6·819
5	4	12	25	9·524
6	15	22	41	22·081
7	79	7	55	64·359

4. Satellites of Uranus.

Satellites.	Sidereal Revolution. D.	H.	M.	Mean distance in semidiameters of Uranus's Equator.
1	5	21	25	13·120
2	8	16	58	17·022
3	10	23	4	19·845
4	13	10	56	22·752
5	38	1	48	45·507
6	107	16	40	91·008

II. PRIMARY PLANETS AND SUN.

Planets.	Sidereal Period.	Mean Distance.	Eccentricity.	Mean Longitude. Jan. 1. 1801.			Long. Perihelion. Jan. 1. 1801.			Inclination of Orbit. Jan. 1. 1801.			Long. Nodes. Jan. 1. 1801.			Mean Daily Motion in Orbit.		
	D.			°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
Mercury	87·9692580	0·3870981	·20551494	166	0	48·6	74	21	46·9	7	0	9·1	45	57	30·9	4	5	32·6
Venus	224·7007869	0·7233316	·00686074	11	33	3·0	128	43	53·1	3	23	28·5	74	54	12·9	1	36	7·8
Earth	365·2563612	1·0000000	·01678357	100	39	10·2	99	30	5·0	-	-	-	-	-	-	0	59	8·3
Mars	686·9796458	1·5236923	·09330700	64	22	55·5	332	23	56·6	1	51	6·2	48	0	3·5	0	31	26·7
Vesta	1325·7431	2·3678700	·08913000	1820 278	30	0·4	1820 249	23	44·4	1820 7	8	9·0	1820 103	13	18·2	0	16	17·9
Juno	1592·6608	2·6690090	·25784800	200	16	19·1	53	33	46·0	13	4	9·7	171	7	40·4	0	13	32·9
Ceres	1681·3931	2·7672450	·07849000	123	16	11·9	147	7	31·5	10	37	26·2	80	41	24·0	0	12	50·9
Pallas	1686·5388	2·7728860	·24164800	108	24	57·9	121	7	4·3	34	34	55·0	172	39	26·8	0	12	48·4
Jupiter	4332·5848212	5·2027760	·04816210	112	15	23·0	11	8	34·6	1	18	51·3	98	26	18·9	0	4	59·3
Saturn	10759·2198174	9·5387861	·05615050	135	20	6·5	89	9	29·8	2	29	35·7	111	56	37·4	0	2	0·6
Uranus	30686·8208296	19·1823900	·04667938	177	48	23·0	167	31	16·1	0	46	28·4	72	59	35·3	0	0	42·4

Planets and Sun.	True Diameter.	Volume.	Mass.	Density.	Gravity.	Sidereal Rotation.			Inclination of Axis to Axis of Ecliptic.			Light and Heat.
						h.	m.	s.	°	′	″	
Mercury	0·398	0·398	$\frac{1}{2025810}$	- -	1·03	24	5	28	not known			6·680
Venus	0·975	0·927	$\frac{1}{405871}$	- -	0·98	23	21	7	not exactly known			1·911
Earth	1·000	1·000	$\frac{1}{354936}$	3·9326	1·00	24	0	0	23	27	56·5	1·000
Mars	0·517	0·139	$\frac{1}{2546320}$	- -	·33	24	39	21	30	18	10·8	0·431
Jupiter	10·860	1280·900	$\frac{1}{1070·5}$	·9924	2·72	9	55	50	3	5	30·0	0·037
Saturn	9·932	995·000	$\frac{1}{3512}$	·5500	1·01	10	29	17	31	19	0	0·011
Uranus	4·332	80·490	$\frac{1}{17918}$	1·1000	- -	unknown			not known			0·003
Sun	111·454	1384472·000	1	1·0000	27·90	25	12	0	7	30	0	
Moon	·0275	·020	$\frac{1}{26620400}$	2·4185	0·16	27	7	43	1	30	10·8	1·000

Chap. XIX.

FIGURE AND MAGNITUDE OF THE EARTH.

515. *We have sufficiently established the important proposition that the earth is a round body;* and have inferred from the figure of its shadow, as seen on the moon's disc in lunar eclipses, that it must be a sphere, or at least that it approaches to that figure. The hypothesis of its being exactly spherical is sufficient to explain, in a satisfactory manner, the general appearance of the heavens, as seen from different points of its surface; and before the true doctrine of motion and the law of gravitation, which connects the most remote bodies in the universe, were discovered, a sphere was considered to be an exact representation of its shape, and the ingenuity of mathematicians was exerted to discover its magnitude.

516. *The determination of the magnitude of the earth might appear,* to one altogether ignorant of mathematical science, as a problem of insuperable difficulty, and, indeed, as too sublime to be resolved by a human being. If, however, we suppose the earth an exact sphere, the theory of the solution is by no means difficult; it is within the bounds of elementary geometry, and has been known from the earliest ages: but the case is very different with the practice. In the actual resolution, instruments of the greatest nicety are required; and to produce these, the ingenuity of man has been tasked to the utmost during the last two hundred years; besides, the application of them demands, in addition to the principles of geometry, some of the most refined theories in physics: so that, on the whole, few problems present a more ample field for the exertion of the mind of man, or have more extensively called forth the assistance of arts and sciences.

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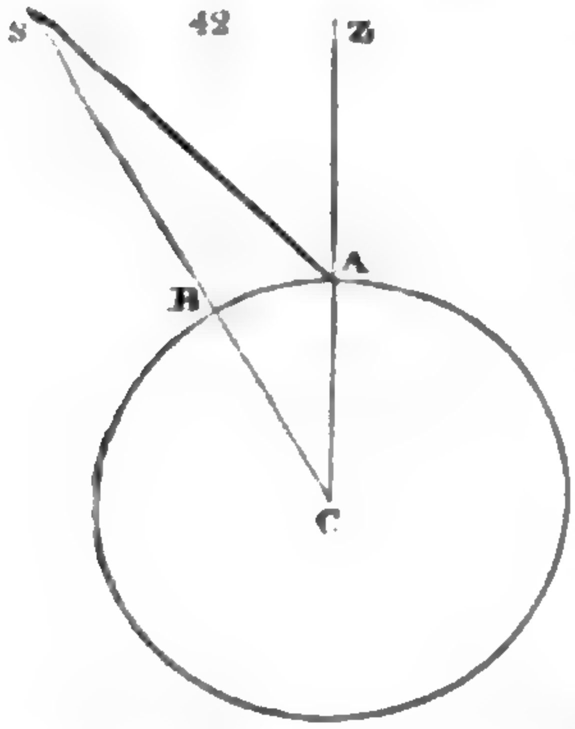

517. *It is now about two thousand years since Eratosthenes attempted to resolve this important problem.* He knew that on the day of the summer solstice the sun illuminated the bottom of a well at Syené. At the same instant he observed at Alexandria that the sun was 7° 12′ from the zenith: and it was supposed that Syené was due south from that place, and therefore that both were under the same meridian. Let C (*fig.* 42.) be the earth's centre, A Alexandria, Z its zenith in the heavens, B Syené, and S the sun at the instant when it illuminated the bottom of the well, and consequently was in the zenith of that place. The angular measure of the celestial arc Z S, or the corresponding terrestrial arc A B, is the angle Z C S at the earth's centre. Eratosthenes observed the angle Z A S, which, by the elements of geometry, is less than the former by the angle A S C. However, this difference is so small, that it may be altogether neglected in the present case; and thus the angle A C B will be nearly 7° 12′, that is, one fiftieth part of 360°; and consequently the arc A B of the terrestrial meridian one fiftieth of the earth's circumference. The distance between Alexandria and Syené had been determined to be 5000 stadia. Hence it immediately followed that the earth's circumference was 250,000 stadia. As it could not be supposed that this result was very accurate, Eratosthenes reckoned the circumference to be 252,000 stadia, which give in round numbers 700 stadia to the length of a degree.

518. *The geometrical principle here employed was quite correct,* and indeed was the same which is used at this time; but the data were very inaccurate and uncertain, for Syené, instead of being exactly south from Alexandria, lies considerably to the east; and it may well be supposed that the assigned distance between Alexandria and Syené was not an accurate measurement, but merely a rude approximation. It is impossible, however, now to determine how near Eratosthenes came to the truth, for want of a knowledge of the exact length of the stadium by which the distance was reckoned.

519. *The principles by which Eratosthenes was directed in his measurement of the earth* appear to have been afterwards employed by Posidonius. This astronomer had remarked, that at Rhodes the star Canopus was just visible in the horizon, but never rose above it; while at Alexandria it attained an altitude of $7\frac{1}{2}^{\circ}$, or $\frac{1}{48}$th part of the circumference of a great circle. The direct distance between these two places, which were supposed to be on the same meridian, was accounted to be 5000 stadia; and therefore, according to this observation, the circumference should have been 240,000: but here the uncertainty of a distance reckoned by a sea-voyage, not to speak of other causes of error, renders the conclusion of no value.

520. *About the year 800 of the Christian era,* the caliph Almaman directed that his astronomers should measure a degree of the meridian in the plains of Mesopotamia. The method which they employed was susceptible of greater accuracy than that of the Greeks.

They divided themselves into two parties: after observing the altitude of the pole, one wen directly north and the other south, measuring as they proceeded, and taking from time t time the altitude of the pole, until each party had changed its latitude by a degree. Thus the measure of two degrees was obtained; but, at the present time, our ignorance of the exact length of the unit of measure renders all their labour useless to us, even if (what is very unlikely) its accuracy might have been relied on. It appears, however, that their estimation of the earth's magnitude was less accurate than that of the astronomer of Alexandria.

521. *The method of Eratosthenes was practised in modern times*, first by Fernel, a Flemish physician. He travelled from Paris towards Amiens, which places are nearly under the same meridian, until he had passed over a degree of latitude; and, by a contrivance attached to the wheel of his carriage, he ascertained the number of revolutions it made in that distance. In this way he found the length of the degree to be 57,070 French toises.

522. *The same degree was afterwards measured by La Caille*, and found to be 57,074 toises. The near agreement of Fernel's result with this last, obtained by a more accurate and scientific process, is very remarkable.

523. *The Dutch astronomer Snellius* was the first who attempted to resolve this most interesting and difficult problem in practical geometry with those scientific aids which its importance required. In the year 1617 he published his *Eratosthenes Batavus*, in which he has detailed the whole process. The extreme points of his meridional arc are terminated in the parallels of Alcmaer, in lat. 52° 40½′, and Bergen-op-Zoom, lat. 51° 29′, the arc between them being 1° 11½′. He formed a series of triangles between these places along the earth's surface, and determined (as well as the imperfect instruments of the time enabled him to determine) their angles; and by several base lines, actually measured, he found their sides. He reduced the positions of his stations to the meridian; and he concluded that a degree of the meridian was 28,500 perches, which were equivalent to 55,100 toises of that period; which, however, were rather longer than the toise as it is now estimated. The error of Snellius appears to have been about 2000 toises on the length of a degree, of which 1900 may have arisen from the error in measuring the celestial arc, and the rest from the imperfection of his geodetical measurements. Snellius measured his original base over again, and corrected his conclusion: he died, however, before he could publish the result. Cassini made certain corrections in his calculations, by which the length of the degree came out 56,675 toises; and Muschenbroek, by an examination of Snellius's papers, found that the degree ought to have been reckoned 57,033 toises.

524. *Our countryman Richard Norwood* made a remarkable approximation to the true length of a degree in 1635, by apparently inadequate means. He measured the distance between London and York, observing the bearings as he proceeded, and reducing all to the direction of the meridian and the horizontal plane. He determined the difference of latitude to be 2° 28′; and from the whole distance he determined the degree to be 367,176 feet English, or 57,800 toises.

525. *As far as pure mathematical theory was concerned*, the method of Snellius was excellent; the chief imperfection was in his instruments: but an immense improvement was made by Picard, in the application of the telescope and the micrometer to the measurement of angles; and, with the assistance of instruments constructed on the new principle, this astronomer, by the direction of the French Academy, began the measurement of an arc of the meridian, taking for its extremities the parallels of Sourdon near Amiens, and Malvoisine. His general manner of conducting the process was the same as that of Snellius. He connected the extreme parallels by a series of triangles, the sides of which were determined from a base of 5663 toises, measured twice with great care at one extremity of the series. There was a base of verification of 3902 toises measured at the other extremity. The horizontal angles were measured by a quadrant of thirty-eight inches' radius; and the celestial arc, which was about 1° 12′, by a sector ten feet in radius. He concluded the length of a degree to be 57,060 toises.

526. *This was the first measurement in which confidence could be placed.* It is true there were several elements wanting in the determination of the celestial arc, owing to the imperfect state of astronomical science at that time; but, by a fortunate compensation, the errors thence arising corrected each other. This measurement of Picard was of service to Newton, in verifying his happy thought of the law of universal gravitation.

527. *The measurement begun by Picard was continued northward to Dunkirk by La Hire*; and in the opposite direction, as far as Perpignan, by the second Cassini, who published the whole in 1718, in a work on the magnitude and figure of the earth.

528. *The labour of the French astronomers* determined the magnitude of the earth with a degree of accuracy sufficient for the general purposes of geography; but science was now proceeding with rapid strides, and a new question was agitated, — Is the earth an exact sphere, as had been hitherto supposed? or, if it be not a sphere, what is its true figure?

529. *Huygens and Newton had established the doctrine of the centrifugal force of bodies*

revolving in circles; and from this it was justly inferred that the earth, in consequence of its rotation on an axis, must necessarily deviate from a spherical figure, and assume that of an oblate spheroid; that is, a solid generated by the revolution of an ellipse on its lesser axis, the extremities of which in this case were the poles.

530. *This opinion received support from some astronomical observations made by Richer*, who was sent by the Academy of Sciences, in 1672, to Cayenne. He there found that his clock, which had been regulated to mean time at Paris, went slower by a sensible quantity. This interesting observation showed that the weight of the pendulum was less at the equator than it had been at Paris; and hence the diminution of the force of gravity in proceeding from the equator towards the pole, as shown theoretically by Newton, was completely established; and consequently also the oblateness of the earth at the poles, and its elevation at the equator, which are the consequence of this diminution.

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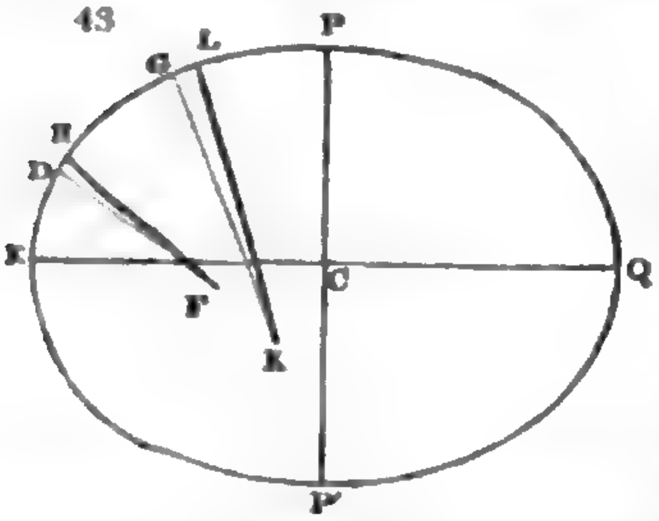

531. *If the earth were a perfect sphere*, then all the degrees of the terrestrial meridian from the equator to the pole would be equal in length. But this will by no means be the case if the earth be a spheroid. For, supposing the earth to be an oblate spheroid (*fig.* 43.), of which the lesser axis is P P′, that diameter of the earth which passes through P P′ the poles. Let E Q be any equatorial diameter, and E P Q P′ a section of the earth, through the axis P P′, which will therefore be a terrestrial meridian. Because the direction of gravity is always in a line perpendicular to the earth's surface; at the poles and equator, the direction of gravity will pass through the centre. It will be otherwise, however, at any point, D, between the equator and poles; for, by the nature of the ellipse, a line, D F, drawn perpendicular to the curve at D will pass on one side of the centre. Now let us suppose that D F, H F, are two straight lines perpendicular to the earth's surface at D and H, which meet in F, and contain an angle, D F H, of one degree; also let G K, L K, be other two lines perpendicular to the earth's surface at points nearer the pole; and suppose these also to contain an angle, G K L, of one degree. The elliptic arc D H, because of its smallness, may be considered as an arc of a circle of which D F or H F is the radius; and similarly, the elliptic arc G L may be considered as an arc of a circle whose radius is G K or L K. The curvature of the ellipse is greatest at E, the extremity of the greater axis, and gradually decreases to P, the extremity of the lesser axis, where it is least. Hence the arc D H will be more incurvated than G L; and since the angle at F and K are equal, each being one degree, the almost equal lines G K, L K, will be greater than the almost equal lines D H, H F; and the arc G L must therefore be greater than the arc D H. Thus, if the earth is an oblate spheroid, a degree of the terrestrial meridian will, by actual measurement, be found to be least at the equator; and the degrees will gradually increase as we proceed towards either pole.

532. *It is manifest that the case would be just the reverse* if the earth were an oblong spheroid, generated by the rotation of an ellipse on its greater axis E Q. Hence the important question, What is the figure of the terrestrial meridian? may be resolved by measuring arcs of the meridian in different latitudes.

533. *None of the measurements before that begun by Picard* were made with such accuracy as to enable mathematicians to resolve the question. But it was then supposed that this had been performed with such care as to afford the necessary data. Such, however, appears not to have been the case. The degrees actually measured were found to be unequal; but, instead of increasing in going from south to north, the reverse was supposed to be the fact; and had this been really true, the polar axis would have been greater than the equatorial, — a conclusion quite in opposition to the conclusion drawn from the doctrine of centrifugal force.

534. *To determine this most important question*, the Academy of Sciences resolved that degrees of the meridian should be measured in various latitudes which might differ as much as possible; and it was determined that one party should be sent to the neighbourhood of the equator, and another to the polar circle. Two scientific expeditions were accordingly undertaken. Maupertuis, Clairaut, Comus, Lemonnier, and Outhier went to Lapland, where the Swedish astronomer Celsius joined them; and there they measured an arc of fifty-seven minutes of a degree, from which they concluded that a degree under the polar circle, viz. in lat. 66° 20′, was 57,419 toises, that is, about 349 toises greater than that of Paris. This degree has been since remeasured with great care by Swanberg and other Swedish mathematicians, who found it to be 57,196 toises. This is 223 toises less than the determination of the French academicians; but it is certainly more correct.

535. *The other party, composed of Godin, Bouguer, and La Condamine*, performed a similar

but more extensive operation in Peru. After ten years' labour, they, with the assistance of two Spanish officers, Don Jorge Juan and Antonio de Ulloa, accomplished the measurement of an arc of about 3° 7′. From this they concluded that the length of a degree was 56,758 toises, which was shorter than the French degree by 302 toises. These measurements set the question completely at rest. There could no longer be any doubt that the polar diameter of the earth was shorter than the equatorial.

536. *The measurement of different degrees* has been since performed many times in different countries; as again in France, and also at the Cape of Good Hope, by La Caille; in Italy, by Maire, Boscovich, and Beccaria; in Pennsylvania, by Mason and Dixon; in Hungary, by Liesganig; in India, by Lambton.

537. *There have been, in addition to these,* two admeasurements of arcs of the meridian which deserve particular notice, on account of their extent, the excellence of the instruments employed, and the skill with which the operations have been conducted. We are indebted to the spirit of reform and improvement which sprung out of the French revolution for one of these, and to the liberal and enlightened views of the English government for the other.

538. *The great diversity in the units of a measure* is an evil which has been long felt and complained of in every commercial country. The French Constitutional Assembly took up this most important subject in the year 1790; and, at the suggestion of Talleyrand, it was decreed, that the king should request his Britannic majesty to engage the parliament of England to concur with the National Assembly in fixing a natural unit of weights and measures; that, under the auspices of the two nations, commissioners of the Academy of Sciences, and an equal number of members of the Royal Society of London, should determine the length of the pendulum in the latitude of 45°, or other preferable latitude, and from this deduce an invariable standard for all weights and measures.

539. *The Academy named a commission,* composed of Borda, Lagrange, Laplace, Monge, and Condorcet, who gave a report, which is printed in the Memoirs of the Academy for 1788. Three different fundamental units were suggested in their report. The first is the pendulum which beats seconds in a given parallel. That of 45° was thought preferable to any other, because there the pendulum is a mean among all those which beat seconds in the different latitudes between the equator and the pole. They observed, however, that the pendulum contains a heterogeneous element, namely, time; and an arbitrary element, viz. the division of the day in 86,400 seconds. They, therefore, considered it to be less proper as a standard unit of lineal measure, than another which they regarded as unexceptionable. This is the length of a quadrant of the meridian, a linear magnitude of the same kind as the thing to be determined, and therefore more natural than the pendulum, which involved the consideration of time. There is yet another linear unit, namely, the circumference of the earth's equator. But this is not better known than the elliptic meridian; nor does it admit of being determined with so much precision. On the whole, therefore, it was recommended that the quadrant of the meridian should be taken as the primary unit, and that its ten millionth part (a lineal space about $39\frac{3}{8}$ English inches) should be the ordinary unit for the measurements which occur in the affairs of life. This was named a *mètre.*

540. *Although in the beginning it had been proposed to invite the English philosophers to assist in establishing a standard unit,* yet, as the object to be attained could be accomplished perfectly by the French mathematicians, without any foreign aid, it was recommended to commence immediately the measurement of the arc of the meridian between Dunkirk and Barcelona, an extent of nearly 9½ degrees. The operations necessary for this labour were, 1. To determine the difference of latitude between Dunkirk and Barcelona; and, in general, to make such astronomical observations on the whole line as might be thought useful. 2. To measure again the bases which had served for the measurement of the degree made at Paris, and the construction of the map of France. 3. To verify by new observations the series of triangles which had formerly been employed for the measurement of the meridian, and to prolong them to Barcelona. 4. To make, at the 45th degree, such observations as might determine the number of vibrations which a pendulum equal in length to one ten-millionth part of the meridian would make in a day, in a *vacuum* at the level of the sea, and at the temperature of melting ice, in order that, this number being once known, the *mètre* might be determined at any time by the length of the pendulum. In this way the advantages of the two methods of forming a standard would be united. 5. To verify by new experiments the specific gravity of pure water in a *vacuum,* and at the temperature of water just beginning to freeze. 6. and lastly, To reduce all the old measures of every kind employed in commerce to the new standards.

541. *To accomplish these objects,* it was recommended that six distinct commissions should be appointed. This was done by a decree of the National Assembly, dated 26th March, 1791; only it was thought to be better to commit the astronomical and geodetical observations to a single commission. Immediately directions were given for the construction of the necessary instruments. Lenoir, a celebrated French artist, was employed to make

repeating circles, long rules of platina for the measurement of the bases, and a shorter rule; also, balls of platina and gold for the pendulum observations.

542. *About the middle of the year* 1792, Cassini and Borda began a series of experiments on the pendulum; and, in the following year, Lavoisier was engaged in experiments on the expansion of metals. And about the same time Mechain began his operations for the determination of the portion of the meridian between Rodez and Barcelona, an extent of 170,000 toises. Delambre had undertaken the portion of the arc between Dunkirk and Rodez, 38,000 toises in extent. This, however, had been twice measured before; and for this reason the labour was expected to be less than was required for the other portion, which was entirely new. Besides the privations and hardships, the ordinary accompaniments of a service which requires those who perform it to live in elevated situations, with little shelter, with few of the comforts to which they have been accustomed, and exposed to the vicissitudes of heat and cold, and the influence of the nocturnal dews, they had to encounter the perils arising from a disorganised state of society. Mechain was stopped in the neighbourhood of Paris; but when he pursued his labours at a distance from the capital, he met with no farther interruption; while Delambre, in the north of France, was often exposed to the most imminent danger. In the heat of the French revolution, the people were jealous of what they did not understand; and the astronomers were at once exposed to the machinations of their enemies at Paris, and to the brutality of the ignorant peasants in the provinces.

543. *In the course of their operations they measured two bases,* on the accurate determination of which the utility of all their labours was to depend. One base, of 6075·9 toises, was measured by Delambre at Melun; and the other, of 6006·2478 toises, at Perpignan. The distance between them was 360,330 toises, about 436 English miles. They were connected by a chain of triangles, the sides and angles of which were all known; so that the length of one base being known, that of the other might be found by computation. It is a remarkable fact, that when the base of Perpignan was inferred by calculation from that of Melun, the result was found to be only about ten or eleven inches less than that obtained by actual measurement. This striking agreement affords a strong presumptive proof of the accuracy with which the operations had been conducted.

544. *The determination of the latitudes of the two extremities of the arc* was also a matter of the utmost importance. The pains which the astronomers took to arrive at true results are almost incredible. Delambre made 800 observations to ascertain the true latitude of the Dunkirk extremity; and a corresponding degree of attention was bestowed on different intermediate points.

545. *This most important undertaking was at last,* after seven years' labour, brought to a conclusion in the year 1799. Although the result was, in its first application, to be directed to the establishment of a standard unit of lineal measure for the French nation, yet the advantages which may be deduced from it extended much farther, and were available to every nation enlightened by science. For this reason, the states living in peace with France had been invited to send eminent mathematicians and astronomers to assist in a rigorous examination of every step of the operation. The astronomical and geodetical observations, in particular, were subjected to the examination of Tralles, the deputy of the Helvetian republic; Van Swinden, the Batavian deputy; and the two French philosophers Laplace and Legendre. They entered into all the details of the measurement of the bases; and they examined the three angles of every triangle, and determined their values. The calculations were then separately performed by four different persons — Tralles, Van Swinden, Legendre, and Delambre; and this last astronomer calculated the length of the meridian by four different and independent methods; and a report was made to the National Institute at Paris, in June 1799, in the name of the Class of Physical and Mathematical Sciences, on the Measure of the Meridian of France, and its Results.

546. *The general fact, that the degrees of the meridian increase* as we recede from the equator towards the pole, was again fully confirmed; so that the oblateness of the earth in the direction of the polar axis is a truth now placed beyond all controversy. Notwithstanding, however, the almost incredible care with which the operations were conducted, the exact quantity of this compression was still left in some uncertainty. The limits between which the true measure of the oblateness is contained are, however, narrower; and it is likely that the problem, What is the exact proportion of the polar to the equatorial axis? does not, from its nature, admit of a nearer approximation to the truth than has been already obtained.

547. *If we could suppose the measurements of lines and angles to be perfectly correct,* it would follow, that although on the whole, taking considerable intervals, the length of arcs of the meridian corresponding to equal celestial arcs go on increasing from south to north, yet the law of the increase is irregular, and not that which ought to result from an exact elliptic meridian. The result of the measurement will be seen in the following table: —

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	Latitudes.	Intervals.	Intervals in Toises.	Length of a Degree.	Mean Latitude.	Arc of one Second.
	° ′ ″	° ′ ″		Toises.	° ′ ″	Toises.
Dunkirk	51 2 9·20					
		2 11 19·83	124944·8	57082·63	49 56 29·30	15·856283
Pantheon	48 50 49·37					
		2 40 6·83	152293·1	57069·31	47 30 45·91	15·852586
Evaux	46 10 42·54					
		2 57 48·24	168846·7	56977·80	44 41 48·37	15·827167
Carcassonne	43 12 54·30					
		1 51 9·34	105499·0	56946·68	42 17 19·60	15·818508
Montjouy	41 21 44·96					

From this table we see that the length of a degree in the four mean latitudes goes on increasing. Also, from the column of mean latitudes, and that of the length of a degree, it appears that a diminution of 2° 25′ 43″·39 in the first mean latitude corresponds to a diminution of 13·13 toises in the terrestrial meridian: this gives 5·5 toises to a degree. Again, that a farther diminution of 2° 48′ 57″·54 produces a diminution of 91·51 toises, which is at the rate of 32·4 toises to a degree. Lastly, that a third diminution of 2° 24′ 28″·77 gives a diminution of 31·17 toises, which is at the rate of about 12·9 toises to a degree. These changes of 5·5, 32·4, and 31·17 toises in the length of a degree in going southward evidently do not follow a regular law, such as should result from a continuous increase of curvature. We may, therefore, reasonably suppose that all the observations have not been equally perfect, or that, in addition to unavoidable errors in the estimation of lines and angles, some disturbing cause must have operated: probably, an inequality of density, in the density of the strata over which the measurement was performed, may have had great influence in producing the irregularity.

548. *The small decrepancies in the results of the observations* must produce corresponding uncertainty in the determination of the great objects to be attained. On the whole, however, it was concluded that the length of the terrestrial meridian between the pole and the equator was 5,130,740 toises; and hence the mètre, or ten millionth part of the meridian, was ·513074 of a toise, which is 443·295986 lines.

549. *Another most important result, deducible from these observations,* was the *ratio* of the *polar axis* of the earth to the *equatorial axis.* This must partake of the uncertainty of the data by which it is to be determined. We may, however, assume, without sensible error, that the equatorial axis is to the polar as 334 to 333. The difference, therefore, of the semi-axes, compared with the equatorial radius, will be one part in 334. The fraction $\frac{1}{334}$, — that is, the difference of the semi-axes divided by the equatorial radius, — is called the *compression* of the earth at the poles.

550. *The astronomer Mechain had contemplated the extension of the measurement of the meridian* beyond the limit at first proposed; but he did not live to carry his views into execution. However, the undertaking was resumed, after a cessation of three years, by Biot and Arago, French astronomers, with whom were associated MM. Chaix and Rodriguez, Spaniards, all eminently distinguished for their talent and devotedness to the object to be accomplished. By their exertions, a train of triangles was carried southward from the point where Mechain and Delambre had stopped, to Formentera, a small island near Ivica, in the Mediterranean. This is the southern limit of a most interesting labour: but, if ever European civilisation extends into Africa, the measurement may be extended to Cape de Gata, and thence across the Mediterranean to the coast of Africa, and continued to the city of Algiers, which is nearly in the meridian of Paris; so that in time the southern extremity may be actually carried to the summit of Mount Atlas.

551. *The other measurement of a considerable portion of the earth,* to which we have alluded, was begun under the auspices and at the expense of the British government as long ago as the year 1784. At that time a memoir, drawn up by Cassini de Thury, was presented to our minister (Mr. Fox) by the French ambassador. It stated the advantages which would accrue to geography and astronomy by determining the difference of longitude between the observatories of Greenwich and Paris, by means of a series of triangles from the former to Dunkirk, to which place the meridian of Paris had previously been extended. The proposal was communicated to the Royal Society; and, having been approved of, the execution was committed to general Roy. The first step was to measure a base, from the length of which the sides of all the triangles might be inferred; and a line rather more than five miles in length was traced out on Hounslow Heath, and measured with the most scrupulous care. It may at first sight appear a very simple matter to measure a straight line on the ground; but if the utmost exactness is required, the operation must be performed with instruments constructed with the greatest ingenuity, and the application of much physical

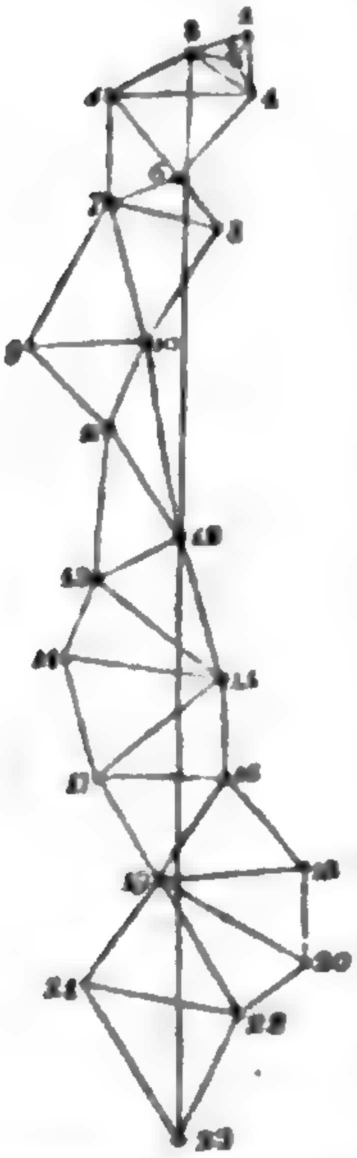
knowledge. Generally all solid bodies expand by heat, and contract by cold; and, moreover, some change their dimensions by moisture and dryness. To counteract or to estimate precisely these changes, so as to allow for them in the final result, is a matter of great difficulty, and only to be accomplished by infinite care and perseverance.

552. *The measurement of the base was first undertaken with deal rods,* twenty feet in length. These, however, were found to be much affected by the changes in the atmosphere from moisture to dryness: they were therefore laid aside; and instead of them glass rods, of the same length in frames, were employed. This substance was chosen, from a belief that it was less affected by changes of temperature than the metals. The measurement, which had been begun about the middle of June, was completed in the end of October; and it was found that the base measured exactly 27404·08 feet, or 5·19 miles.

553. *The work in the field was not carried farther at that time:* it was, however, resumed in 1787. A theodolite of greater dimensions than had ever been employed in geodetical operations was constructed by the celebrated artist Ramsden. The series of observations was begun at the base in the beginning of August, by General Roy, assisted by Isaac Dalby, an excellent mathematician, and most veracious astronomical observer. After continuing to a certain length, it was judged to be expedient to break off, and proceed with the instruments to Dover. A series of observations was there made, in conjunction with the French academicians Cassini, Mechain, and Legendre, by which the triangulation between Paris and Dunkirk might be connected with that between Dover and Greenwich. As a check on the operations, a base of verification was also measured on Romney Marsh; and in this, instead of the glass rods, a steel chain, constructed for the purpose by Ramsden, was employed; it having been found by experience that there was no sensible difference in point of accuracy between this and the glass rods, while the chain manifestly was more convenient. Afterwards, when the two bases were connected by calculating the sides of the triangles, it was found that the measured base differed from its computed value by only twenty-eight inches, although Romney Marsh is more than sixty miles from Hounslow Heath. The junction of the observatories of Greenwich and Paris, by a series of triangles, was completed in 1788, and an account of the operations communicated to the Royal Society; but the death of General Roy again suspended the survey until the year 1791.

554. *At this time, by the exertions of the Duke of Richmond,* Master-general of the Ordnance, the survey was resumed with great vigour. A new theodolite, and various other instruments, in addition to those formerly employed, were liberally supplied, and placed under the direction of Captain (afterwards Colonel) Mudge of the Royal Artillery, and Mr. Dalby. Beginning their labours by a re-measurement of the base on Hounslow Heath with steel chains, they found the difference between this and the former, in which glass rods were employed, to be no more than two inches and three quarters. They also measured another base of verification, 36574·4 feet in length, on Salisbury Plain. When this was connected by a chain of triangles with the base on Hounslow Heath, and its length computed, the result did not differ more than an inch from the actual measurement; a convincing proof of the accuracy with which all the operations had been conducted.

44



555. *Although an accurate survey of the island* was the main object for which all this labour was undertaken, yet, as its complete accomplishment requires a knowledge of the figure and dimensions of the earth, no opportunity of solving this grand problem is to be neglected. The two stations of Beachy Head in Sussex, and Dunnose in the Isle of Wight, are visible from each other, and more than sixty-four miles asunder, nearly in a direction from east to west: their exact distance was found by the geodetical operations to be 339397 feet. The azimuth, or bearing of the line between them with respect to the meridian, also the latitude of Beachy Head, were determined by astronomical observations. From these data the length of a degree perpendicular to the meridian was computed; and this, compared with the length of a meridional degree in the same latitude, gave the proportion of the polar to the equatorial axis.

556. *The result thus obtained, however,* differed considerably from that obtained by meridional degrees. It has been found impossible to explain the want of agreement in a satisfactory way; and, for this reason, it has been thought better to rest the solution of the problem entirely on the measurement of degrees of the meridian in different latitudes, which, on the whole, give results more consistent with one another.

557. *Without noticing in detail all the steps by which the survey has advanced,* we shall next advert to the measurement of an arc of the meridian between Dunnose, in the Isle of Wight, and Clifton, near Doncaster; the

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former in lat. 50° 37′ 5″, and the latter in 53° 27′ 30″. To accomplish this, the ingenuity of the artist Ramsden was again exercised in the construction of an instrument, a zenith sector, for finding the latitude of the different points of the arc: this was almost the last work of a man to whose genius astronomy and geography are highly indebted; and it was superior to any thing of the kind ever before constructed.

558. *To give the reader a distinct notion of this most important operation*, we here present a sketch (*fig.* 44.) of the series of triangles, twenty-two in number, which connect the extreme points, together with the angles contained by the straight lines which join the different stations, and the length of their sides. The numbers marked on the diagram indicate the names of the *stations*, by referring to the following table. The northern extremity of the base, Beacon Hill, or Clifton, is marked No. 3.; and the southern extremity, Dunnose, is 23. The names of the intermediate points may be seen in the table.

No. of Triangles.	Names of Stations.	Angles corrected for Calculation. ° ′ ″	Distance.	Feet.
1.	Butser Hill - - (22)	76 12 21·5	From Dunnose to	
	Dean Hill - - (21)	48 4 31·75	Butser Hill - -	140580·4
	Dunnose - - (23)	55 43 6·75	to Dean Hill - -	183496·2
2.	Dean Hill - - (21)	62 22 47	Dean Hill from	
	Butser Hill - - (22)	48 28 40	Butser Hill - -	156122·1
	Highclere - - (19)	69 8 33	Highclere - -	125064·9
3.	Butser Hill - - (22)	81 31 44·5	Butser Hill from	
	Hind Head - - (20)	66 15 54·25	Hind Head - -	78905·7
	Highclere - - (19)	29 12 21·25	Highclere - -	148031·0
4.	Highclere - - (19)	34 46 15	Highclere from	
	Hind Head - - (20)	83 20 14	Bagshot Heath - -	142952·6
	Bagshot Heath - (18)	61 53 31	Hind Head - -	160972·2
5.	Bagshot Heath - (18)	55 32 25·25	Nuffield from	
	Highclere - - (19)	46 10 17·75	Bagshot Heath - -	105321·2
	Nuffield - - (16)	78 17 17	Highclere - -	120374·
6.	White Horse Hill - (17)	63 7 53·5	White Horse Hill from	
	Highclere - - (19)	63 18 17	Nuffield - -	120557·7
	Nuffield - - (16)	53 33 49·5	Highclere - -	105563·1
7.	White Horse Hill - (17)	38 48 12·5	Brill from	
	Nuffield - - (16)	86 4 15	White Horse Hill - -	146603·2
	Brill - - - (15)	55 7 32·5	Nuffield - -	92805·5
8.	Brill - - - (15)	50 14 45	Stow from	
	White Horse Hill - (17)	64 45 42·5	White Horse Hill	124365·6
	Stow on the Weld - (14)	64 59 32·5	Brill - - -	146386·3
9.	Brill - - (15)	32 34 42·25	Epwell from	
	Stow on the Weld - (14)	60 56 5·5	Stow - - -	78938·2
	Epwell - - (13)	86 29 12·25	Brill - - -	128140
10.	Brill - - - (15)	34 23 57·5	Arbury Hill from	
	Epwell - - (13)	85 [illegible] 17·5	Epwell - - -	83098·4
	Arbury Hill - (12)	60 35 45	Brill - - -	146530
11.	Arbury Hill - - (12)	89 57 5·5	Corley from	
	Epwell - - (13)	54 45 18·25	Arbury Hill - -	117463
	Corley - - (11)	35 17 36·25	Epwell - -	145827·8

559. *The distance of Butser Hill* (22.) *from Dunnose*, 140580·4 feet, had been previously found, by a series of triangles connecting these places with the bases measured on Hounslow Heath and Salisbury Plain; but, for greater security against error, a new base of 26342·7 feet was measured on Misterton Carr, in the northern part of Lincolnshire. From this the sides of the triangles proceeding from the north to the south were computed, as exhibited in the remainder of the table.

No. of Triangles.	Names of Stations.		Angles corrected for Calculation.			Distance.	Feet.
			°	′	″		
12.	Beacon Hill -	(3)	20	47	20	Beacon Hill from	
	North end of Base	(1)	60	17	13	North end of Base - -	64461·7
	South end of Base -	(2)	98	55	27	South end of Base - -	73321·9
13.	Beacon Hill - -	(3)	34	44	42	Gringley from	
	North end of Base -	(1)	74	46	56	North end of Base -	44538·2
	Gringley - -	(4)	70	28	22	Beacon Hill - -	75068·0
14.	Beacon Hill - -	(3)	13	57	23		
	Gringley - -	(4)	51	11	5	Gringley from	
	South end of Base -	(2)	114	51	32	Beacon Hill - -	75068·2
15.	Heathersedge -	(5)	18	40	38	Heathersedge from	
	Beacon Hill - -	(3)	138	9	16	Beacon Hill - -	92227·2
	Gringley - -	(4)	23	10	6	Gringley - - -	156384·8
16.	Sutton Ashfield -	(6)	78	47	1	Sutton Ashfield from	
	Heathersedge -	(5)	54	52	35	Gringley - - -	130399·7
	Gringley - -	(4)	46	20	24	Heathersedge - -	115339·9
17.	Orpit - -	(7)	80	28	57	Orpit from	
	Heathersedge -	(5)	39	8	38	Heathersedge - -	101660·3
	Sutton Ashfield -	(6)	60	22	25	Sutton Ashfield - -	73926·6
18.	Hollan Hill - -	(8)	44	43	31	Hollan Hill from	
	Sutton Ashfield -	(6)	113	49	7	Sutton Ashfield - -	58375·2
	Orpit - - -	(7)	21	27	22	Orpit - - -	95975·3
19.	Bardon Hill - -	(10)	42	58	59	Bardon Hill from	
	Hollan Hill - -	(8)	74	52	37	Hollan Hill - -	124454·7
	Orpit - - -	(7)	62	8	24	Orpit - - -	135695·3
20.	Castle Ring - -	(9)	55	32	43	Castle Ring from	
	Bardon Hill - -	(10)	68	24	3	Orpit - - -	153235·2
	Orpit - - -	(7)	56	3	14	Bardon Hill - -	136717·8
21.	Corley - -	(11)	72	32	46	Corley from	
	Castle Ring - -	(9)	47	54	42	Bardon Hill - -	106357·3
	Bardon Hill - -	(10)	59	32	32	Castle Ring - -	123539·7
22.	Arbury Hill - -	(12)	34	14	33	Arbury Hill from	
	Corley - -	(11)	107	20	14	Bardon Hill - -	180426·0
	Bardon Hill - -	(10)	38	25	13	Corley - - -	117457·1

560. *From this last triangle the distance between Corley and Arbury Hill comes out* 117457·1 *feet.* This result has been found from the base on Misterton Carr: but the same distance, deduced from the bases on Hounslow Heath and Salisbury Plain, either of which is more than 150 miles distant from Misterton Carr, was found (see triangle 11.) to be 117,463 feet, only six feet different. Here we have a remarkable proof of the extreme accuracy with which the operations have been conducted; so that, from whatever cause any uncertainty in the conclusion sought may proceed, it can hardly be found either in the want of perfection in the instruments, or of care in those who used them.

561. *By observations on the pole star,* the exact bearing of Butser Hill from Dunnose (that is, the azimuth or angle which the line joining them makes with the meridian,) was found: and by like observations the bearing of the station at Gringley from Clifton was determined. By these data, and by the known lengths of the sides of the triangles, the portions of the meridian intercepted by perpendiculars on it from the stations was obtained. Their sum gave 1,036,337 feet for the meridional distance on the surface of the earth, between Dunnose and Clifton. Moreover, by the zenith sector, the arc of the celestial meridian between them was found to be 2° 50′ 23″·38, or 2·8398 degrees of difference of latitude. The length of the measured arc of the meridian, viz. 1,036,337 feet, divided by this number, gives 364,933 feet, or 6082 fathoms for the length of a degree in the parallel midway between Dunnose and Clifton, which is 52° 2′ 20″.

562. *In the same way that the length of a degree,* at the middle point between Clifton and Dunnose, was determined, the length of degrees at other intermediate points was found.

The latitude of the station at Arbury Hill was carefully observed with the sector. The latitude of Greenwich was well known; and that of Blenheim, an observatory belonging to the Duke of Marlborough, had been determined from five years' observations. The two observatories were assumed as stations, in addition to those in the meridional chain of triangles, and their position in respect of the others was found.

563. *By comparing the celestial with the terrestrial arcs,* the length of degrees in various parallels was determined, as in the following table: —

	Latitude of Middle Point.	Fathoms.
Arbury Hill and Clifton	52° 50′ 29″·8	60,766
Blenheim and Clifton	52 38 56·1	60,769
Greenwich and Clifton	52 28 5·7	60,794
Dunnose and Clifton	52 2 19·8	60,820
Arbury Hill and Greenwich	51 51 4·1	60,849
Dunnose and Arbury Hill	51 35 18·2	60,864
Blenheim and Dunnose	51 13 18·2	60,890
Dunnose and Greenwich	51 2 54·2	60,884

This table presents a singular deviation from the common rule; for, instead of the degrees increasing as we proceed from north to south, they appear to decrease, as if the earth were an oblong instead of an oblate spheroid. The oblateness of the earth at the poles is, however, a fact so well established by more extensive measurements, that we must suppose either that some error has been committed in the observations, — a thing, however, not probable; or else, what is more probable, that by inequality in the density of the strata, producing a local attraction, the plumb-line of the sector has suffered a deflection at some of the stations.

564. *Notwithstanding the discrepancy of the results of the measurements in this particular arc,* the length of a degree at the middle station (viz. lat. 52° 2′ 20″) agrees very well with the measurements of the meridian in France and other places. Indeed, the measurements of the small arcs of the meridian in other countries have presented similar anomalies, although in general not so remarkable. It is, therefore, only by comparison of the measures of extensive arcs at considerable intervals that we can arrive at certain conclusions. The British survey has now been extended from the southern parts of the island to Unst, the northernmost of the Shetland Islands. At present the engineer officers who carried it on are employed in the survey of Ireland; but we may expect that at no remote period they will resume the British survey, and supply the observations still wanting. When this is done, and the complete triangulation is published, it will then appear how far local attraction may have disturbed the plummet in passing over the variety of rocks throughout the island.

565. *Although the compression of the earth be small,* yet an exact knowledge of its quantity is of great importance, because of the deductions which are to be made from it. It has been explained, that the direction of a plumb-line is always perpendicular to the earth's surface; therefore, and because of the continual change of curvature of the meridian in going from north to south, the direction of gravity can only pass through the earth's centre at the poles and equator. Thus it appears that there is a necessary connection between the form of the earth and terrestrial gravity; so that the small variations in the latter, which are owing to the deviations from the exact spherical figure, being known, that deviation itself may be determined.

566. *If the earth were spherical and homogeneous,* the attraction of its mass upon different points of its surface, or the force which solicits every particle of matter at its surface towards the centre, would be every where the same. But the elliptic form produces a small deviation from this equality, which increases in going from the equator towards the poles, as the square of the sine of the latitude; and this would be true even if the earth were at rest: but, by its revolution about its shorter axis, there is produced a centrifugal force, which acts in a direction perpendicular to that axis, and therefore diminishes the force of gravity most of all at the equator, because there the two forces act in contrary directions. At the pole its direction is perpendicular to the direction of gravity, and produces no effect.

567. *By the united operation of these two causes,* in going from the equator towards the poles, is produced a variation in the degree of quickness of descent of a heavy body, which increases as the square of the sine of the latitude.

568. *The oscillations of a pendulum afford a simple means of verifying this fact.* The increase of weight in a heavy body, — that is, the force of gravity in proceeding from the equator

to the poles, — will be indicated by a diminution of the time in which an invariable pendulum performs a vibration. Accordingly the pendulum has been employed to determine the figure of the earth; and the results obtained have been found to accord perfectly with the geodetical measurements which we have described.

569. *The British and French governments have both instituted observations on the pendulum.* The latter, on the recommendation of the Academy of Sciences, directed that the intensity of the force of gravity should be determined at different points of the arc of the meridian between Dunkirk and Formentera; and committed the labour to MM. Biot, Arago, Mathieu, Bouvard, and Chaix: subsequently, Biot extended his observations to the northern extremity of the British islands. These operations were begun in the year 1807. At a somewhat later period the British government, with the assistance of the Royal Society, employed Captain Kater, an eminent observer and experimenter, in the same labour; and also sent Captain Sabine, a British artillery officer, with invariable pendulums to the equator on the one hand, and the highest accessible latitudes of the northern hemisphere on the other. It was expected that, by thus multiplying the places of observation, the combination of results would destroy the irregular influences of local density, and give the true variations of the force of gravity, which are owing to the earth's ellipticity. From a mean of all the observations made by the British and French experimenters, it was found that the compression or ellipticity of the earth was about $\frac{1}{285\cdot7}$, or $\frac{35}{10000}$. Laplace had previously concluded, from the combined measurements of terrestrial degrees and pendulum experiments, and the lunar inequalities dependent on the figure of the earth, that the same important element was $\frac{1}{306\cdot77}$. There is a difference between the two conclusions; but, on the whole, all the results which have been obtained are comprehended within limits which may be deemed moderate, considering the difficulty of the enquiry.

570. *The following tables exhibit numerical values of the magnitudes of the degrees of latitude and longitude*, and their proportion to each other.

The first is from a valuable collection of astronomical tables and formulæ by F. Baily, Esq., President of the Astronomical Society of London. It shows the length of a degree of latitude and longitude on the earth's surface, assuming the compression to be $\frac{1}{300}$, together with the length of the pendulum beating seconds there, supposing the compression to be $\frac{1}{307}$, the measures at the equator being considered as unity; also the increase in the number of vibrations of an invariable pendulum beating seconds at the equator on proceeding towards the pole. This merely shows the relative values of the quantities therein stated.

The second and third tables are from Mendoza's Tables for Navigation and Nautical Astronomy. And the fourth is from the very valuable Introduction to Practical Astronomy by Dr. Pearson, where it is stated to be computed from a Formula given by Lieut.-Col. Lambton in the Asiatic Researches, vol. xii.

The tables are constructed from different values of the earth's compression at the poles. The uncertainty of this important element, in all questions of geography and astronomy, is an inconvenience which cannot yet be got rid of.

In Tables II. and III., the dimensions of the degrees of latitude and longitude are given in minutes of the equator. To change these into feet or fathoms, we must know the number of them in a degree of the equator.

According to Puissant and Svanberg, the equatorial degree, or 60 geographical miles, is 60,847 fathoms.

Cagnoli has assumed = 60,893 fathoms.

Lieut.-Col. Lambton reckoned it to be 60,857 fathoms.

General Mudge concluded it to be 60,845 fathoms.

Mr. Baily, as an accompaniment to his table (Table I.), assumes the equatorial diameter of the earth to be 7924 miles, and the polar = 7916 miles. A degree of longitude at the equator will, on this supposition, be 69·15 miles, = 60,852 fathoms, = 365,110 feet: so one second of time, or fifteen seconds of a degree of longitude, will be 1521 feet.

Table IV. gives the measure of each degree of latitude and longitude in fathoms.

TABLE I.

Compression = $\frac{1}{300}$			Compression = $\frac{1}{307}$	
Lat.	Degree of Longitude.	Degree of Latitude.	Length of the Pendulum.	Increase of Vibrations.
°				″
0	1·00000	1·000000	1·00000	0·0
5	0·99622	1·000076	1·00004	1·77
10	·98490	1·000301	1·00016	7·08
15	·96614	1·000669	1·00036	15·60
20	·94006	1·001168	1·00063	27·94
25	·90685	1·001783	1·00096	41·59
30	·86675	1·002496	1·00135	58·21
35	·82005	1·003284	1·00177	76·60
40	·76710	1·004125	1·00223	96·21
45	·70828	1·004992	1·00269	116·42
50	·64404	1·005858	1·00316	136·64
55	·57485	1·006699	1·00362	156·85
60	·50126	1·007487	1·00404	174·63
65	·42377	1·008200	1·00443	191·26
70	·34302	1·008815	1·00476	205·61
75	·25960	1·009315	1·00503	217·25
80	·17421	1·009682	1·00523	225·82
85	·08764	1·009907	1·00535	231·08
90	·00000	1·009983	1·00539	232·85

TABLE II.

The Measure of a Degree of Longitude, on each Parallel of Latitude in Minutes of the Equator, on the Sphere and Spheroid. Compression = $\frac{1}{311}$

Par. of Lat.	Degree on the Sphere.	Degree on the Spheroid.	Par. of Lat.	Degree on the Sphere.	Degree on the Spheroid.	Par. of Lat.	Degree on the Sphere.	Degree on the Spheroid
°	′	′	°	′	′	°	′	′
0	60·000	60·000	30	51·962	52·002	60	30·000	30·070
1	59·991	59·991	31	51·430	51·473	61	29·089	29·158
2	59·963	59·964	32	50·883	50·927	62	28·168	28·237
3	59·918	59·918	33	50·320	50·367	63	27·239	27·307
4	59·854	59·855	34	49·742	49·791	64	26·302	26·369
5	59·772	59·773	35	49·149	49·199	65	25·357	25·422
6	59·671	59·673	36	48·541	48·593	66	24·404	24·468
7	59·553	59·556	37	47·918	47·972	67	23·444	23·506
8	59·416	59·420	38	47·281	47·336	68	22·476	22·537
9	59·261	59·266	39	46·629	46·686	69	21·502	21·562
10	59·088	59·094	40	45·963	46·022	70	20·521	20·578
11	58·898	58·904	41	45·283	45·343	71	19·534	19·589
12	58·689	58·697	42	44·589	44·651	72	18·541	18·593
13	58·462	58·471	43	43·881	43·945	73	17·542	17·592
14	58·218	58·228	44	43·160	43·225	74	16·538	16·586
15	57·956	57·963	45	42·426	42·493	75	15·529	15·574
16	57·676	57·689	46	41·680	41·747	76	14·515	14·558
17	57·378	57·394	47	40·930	40·998	77	13·497	13·537
18	57·063	57·080	48	40·148	40·217	78	12·475	12·512
19	56·731	56·750	49	39·364	39·434	79	11·449	11·483
20	56·392	56·402	50	38·567	38·638	80	10·419	10·450
21	56·015	56·037	51	37·759	37·831	81	9·386	9·414
22	55·631	55·665	52	36·940	37·011	82	8·350	8·376
23	55·230	55·257	53	36·109	36·181	83	7·312	7·335
24	54·813	54·841	54	35·267	35·339	84	6·272	6·292
25	54·378	54·409	55	34·415	34·487	85	5·229	5·246
26	53·928	53·960	56	33·552	33·624	86	4·185	4·193
27	53·460	53·495	57	32·678	32·750	87	3·140	3·149
28	52·997	53·013	58	31·795	31·866	88	2·094	2·100
29	52·477	52·502	59	30·902	30·973	89	1·047	1·050
30	51·962	52·002	60	30·000	30·070	90	0·000	0·000

Table III.

The Measures of different Arcs of the Meridian in the Spheroid from the Equator to the Pole; and also the respective Degrees of Latitude in Minutes of the Equator. Compression = $\frac{1}{311}$

°	′		°	′	′	°	′	′
0	0·000		30	1790·302		60	3587·515	
1	59·628	59·628	31	1850·074	59·772	61	3647·566	60·051
2	119·257	59·629	32	1909·855	59·781	62	3707·625	60·059
3	178·887	59·630	33	1969·644	59·789	63	3767·692	60·067
4	238·518	59·631	34	2029·442	59·798	64	3827·767	60·075
5	298·150	59·632	35	2089·249	59·807	65	3887·849	60·082
6	357·784	59·634	36	2149·065	59·816	66	3947·939	60·090
7	417·420	59·636	37	2208·891	59·826	67	4008·036	60·097
8	477·058	59·638	38	2268·726	59·835	68	4068·140	60·104
9	536·699	59·641	39	2328·570	59·844	69	4128·251	60·111
10	596·343	59·646	40	2388·424	59·854	70	4188·368	60·117
11	655·990	59·647	41	2448·287	59·863	71	4248·492	60·124
12	715·641	59·651	42	2508·160	59·873	72	4308·622	60·130
13	775·296	59·655	43	2568·043	59·883	73	4368·757	60·135
14	834·955	59·659	44	2627·936	59·893	74	4428·898	60·141
15	894·618	59·663	45	2687·838	59·902	75	4489·044	60·146
16	954·286	59·668	46	2747·750	59·912	76	4549·195	60·151
17	1013·959	59·673	47	2807·672	59·922	77	4609·350	60·155
18	1073·638	59·679	48	2867·603	59·931	78	4669·510	60·160
19	1133·323	59·685	49	2927·544	59·941	79	4729·674	60·164
20	1193·014	59·691	50	2987·495	59·951	80	4789·841	60·167
21	1252·711	59·697	51	3047·455	59·960	81	4850·012	60·171
22	1312·414	59·703	52	3107·425	59·970	82	4910·186	60·174
23	1372·124	59·710	53	3167·404	59·979	83	4970·362	60·176
24	1431·841	59·717	54	3227·393	59·989	84	5030·541	60·179
25	1491·565	59·724	55	3287·391	59·998	85	5090·722	60·181
26	1551·297	59·732	56	3347·398	60·007	86	5150·904	60·182
27	1611·036	59·739	57	3407·414	60·016	87	5211·088	60·184
28	1670·783	59·747	58	3467·439	60·025	88	5271·273	60·185
29	1730·538	59·755	59	3527·473	60·034	89	5331·458	60·185
30	1790·302	59·764	60	3587·515	60·042	90	5391·644	60·186

Table IV.

The Measure of each Degree of Latitude and of a Degree of Longitude in each Parallel of Latitude from the Equator to either Pole. Compression $\frac{1}{304}$.

Par. of Lat.	Degree of Latitude in Fathoms.	Degree of Longitude in Fathoms.	Par. of Lat.	Degree of Latitude in Fathoms.	Degree of Longitude in Fathoms.	Par. of Lat.	Degree of Latitude in Fathoms.	Degree of Longitude in Fathoms.
°			°			°		
0	60458·6	60857·1	30	60607·4	52746·9	60	60906·7	30503·5
1	60458·8	60847·8	31	60616·5	52210·0	61	60915·7	29578·2
2	60459·3	60820·2	32	60625·8	51657·2	62	60924·5	28643·8
3	60460·3	60774·2	33	60635·2	51088·6	63	60933·1	27700·6
4	60461·5	60709·8	34	60644·8	50504·5	64	60941·4	26748·8
5	60463·2	60627·0	35	60654·5	49904·9	65	60949·6	25788·7
6	60465·1	60525·8	36	60664·4	49290·2	66	60957·5	24820·7
7	60467·5	60406·4	37	60674·3	48660·3	67	60965·3	23845·0
8	60470·1	60268·6	38	60684·4	48015·6	68	60972·7	22861·9
9	60473·2	60112·6	39	60694·6	47355·2	69	60979·8	21871·7
10	60476·5	59938·4	40	60704·8	46682·4	70	60986·7	20874·8
11	60480·3	59746·1	41	60715·1	45994·2	71	60993·4	19871·4
12	60484·3	59535·6	42	60725·4	45292·0	72	60999·7	18861·8
13	60488·7	59307·1	43	60735·8	44576·0	73	61005·7	17846·4
14	60493·4	59060·6	44	60746·3	43846·2	74	61011·5	16825·4
15	60498·4	58796·3	45	60756·7	43103·0	75	61016·8	15799·3
16	60503·8	58514·1	46	60767·2	42346·6	76	61022·0	14768·2
17	60509·4	58214·2	47	60777·6	41577·3	77	61026·7	13732·6
18	60515·4	57896·6	48	60788·0	40795·1	78	61031·2	12692·7
19	60521·6	57561·4	49	60798·4	40000·5	79	61035·3	11618·9
20	60528·2	57208·8	50	60808·7	39193·5	80	61039·1	10601·4
21	60535·0	56838·9	51	60819·0	38374·5	81	61042·5	9550·7
22	60542·0	56451·6	52	60829·2	37543·7	82	61045·6	8497·0
23	60549·4	56047·2	53	60839·3	36701·4	83	61048·3	7440·6
24	60557·0	55625·8	54	60849·3	35847·8	84	61050·7	6382·0
25	60564·8	55187·5	55	60859·3	34983·1	85	61052·7	5321·4
26	60572·9	54732·4	56	60869·0	34107·6	86	61054·3	4259·1
27	60581·2	54261·6	57	60878·7	33221·5	87	61055·6	3195·5
28	60589·7	53772·4	58	60888·2	32325·5	88	61056·5	2130·9
29	60598·4	53267·8	59	60897·5	31419·4	89	61057·1	1065·6
30	60607·4	52746·9	60	60906·6	30503·5	90	61057·2	0000·0

Chap. XX.

DETERMINATION OF LATITUDE AND LONGITUDE.

571. *There are three important problems in geography which require for their solution the doctrines of astronomy.* The first requires to find the direction of the meridian at any point of the earth's surface; the second, to find the latitude of any place; and the third, to find the longitude.

Problem I. *To determine the Meridian, or to draw a Meridian Line.*

572. *This problem, like many others in practical astronomy,* admits of a comparatively easy solution, if no great degree of accuracy is required; but to obtain a very accurate result, much care, and instruments of the most perfect construction, are indispensable.

573. *The general principle of the solution is the fact,* that the celestial bodies which do not sensibly change their declination in the course of a day, have the same apparent altitude at equal intervals of time before and after passing the meridian: also, that their altitude is greatest or least when in the plane of the meridian; that is, when they are due south or due north.

574. *About the time of the summer and winter solstice,* the sun changes his declination very little in the course of a day: and hence it happens that the shadow of an upright rod or *gnomon* is almost exactly of the same length when the sun is at equal distances from the meridian. To determine the position of the meridian, then, let a number of concentric circles be described on a horizontal plane, and let a wire or rod be placed directly over their common centre, and perpendicular to the plane; and, the sun shining on the plane, let the two points in which the extremity of the shadow of the wire crosses each circle be exactly noted. Then, through any point of the plane which is at equal distances, from each pair of intersections draw a straight line through the centre of the circle; and this will be in the plane of the meridian, or will be a *meridian line.* It is easy to see that one circle, and one pair of intersections of the path of the extremity of the shadow and the circle, would be sufficient: but several circles will fulfil the object with greater accuracy and more certainty; because a mean position of the meridian line may be found among all the results; and besides, one of a pair, or both, may be lost by clouds intercepting the light of the sun.

575. *The imperfection of this method of finding the meridian* arises from the indistinctness of the termination of the shadow of the upright wire, and from the change of the sun's declination between the observations. There is, however, another as simple and exact as can be expected, without the assistance of a telescope. It is known that the pole star and the star Alioth, or ε of the Great Bear, pass the meridian within about nine minutes of each other. If, therefore, we suspend two plummets by threads to the ends of a rod which turns horizontally on a pivot, and by moving the rod, keep the two plumb-lines exactly between the eye and Alioth when near the meridian, then, at the moment when the pole star is also seen along the two plumb-lines, the two stars and the plumb-lines will be all nearly in the plane of the meridian. To keep the plumb-lines steady in the vertical plane, the plummets may hang in vessels filled with water.

576. *If we could determine the position of a star when its altitude is greatest or least,* we would then have a point of the heavens in the plane of the meridian: but that position cannot be found with certainty, because the change of altitude is imperceptible to a sensible distance on each side of the meridian.

577. *The exact determination of the meridian requires the aid of the telescope,* a well-regulated clock, and an instrument for determining the altitude of the sun or a star: Hadley's sextant, or a reflecting circle, are the proper instruments for this purpose. By the sextant we can determine two instants of time when the star has the same altitude; the clock will give the interval of time between them: and half this interval will be the time between each observation and the passage of the star over the meridian. If we next day note the time by the clock when the star again attains that altitude, and add to that time the above-mentioned half interval, we shall have the time by the clock when the star will be on the meridian. If at that instant a telescope, moveable in a vertical plane, be directed to the star, so that in passing the meridian the star may be in the axis of the telescope, the position of the plane of the meridian will be obtained: and if the telescope be fixed to a horizontal axis which is perpendicular to that plane, it will have a vertical motion in the plane of the meridian, and will be what is called a *transit instrument.* By this instrument the exact instant when any celestial phenomenon is on the meridian is known. It is, therefore, one of the most essential instruments in an observatory.

578. *In a variable climate like Britain,* it may happen that the observations necessary to determine the meridian may be interrupted by cloudy weather. This, however, is an inconvenience to which all astronomical observations are liable. It must also be observed, that a single set of observations will not give so perfect a result as a considerable number of sets, from which a mean may be deduced.

579. *If the celestial object change its position otherwise than by the diurnal motions of the earth*, as happens when it is the sun, still the problem may be resolved, as has been explained, by making allowance for the change of position, by applying the principles of spherical trigonometry to the laws of the motion.

Problem II. *To determine the Latitude.*

580. *In treating of the doctrine of the sphere*, it has been shown (§ 268.) that the distance of the pole of the world (that is, the point of the heavens about which all the stars turn) from the horizon of any place is equal to its latitude. Now, in the course of twenty-four hours, every star passes the meridian twice, at equal distances from the pole, and on opposite sides of it. When the star passes the meridian below the pole, — that is, between the pole and the horizon, — its altitude is the *least* possible; and when it crosses the meridian above the pole, or between the pole and the south point of the horizon, its distance from the north point of the horizon will be the *greatest* possible. If, therefore, with a suitable instrument, (a quadrant for instance,) we take the star's altitude when it is least, and also when it is greatest, and correct these for refraction, it is manifest that half their sum will be the latitude of the place where the observations were made.

581. *We have supposed the star to pass the meridian between the pole and the zenith*, and then its greatest altitude will be its distance from the north point of the horizon: but it may pass to the south of the zenith, and then its altitude, reckoned from the south, must be subtracted from 180° to get its distance from the north point of the horizon; and half the sum of the two distances, as before, will be the latitude.

582. *Any one star that never sets*, the pole star for instance, will serve to determine the latitude: but it will be proper, if circumstances allow, to observe various stars, and the mean of all the observations may be expected to be more correct than a single pair.

583. *If, instead of the greatest and least altitudes of a star*, its greatest and least distances from the zenith be found, then half their sum will be the *complement* of the latitude; that is, the difference between the latitude and ninety degrees.

584. *For example*, by observations made on the pole star at Dublin Observatory it was found that

Its greatest zenith distance, corrected for refraction, was -	38°	19′	43″·11
Least - - - - - - -	34	53	49·55
The sum - - - - - -	73	13	32·66
Half the sum, or co-latitude of observatory - -	36	36	46·33
The latitude - - - - - -	53	23	13·67

585. *When the latitude of one place is known*, the latitude of another place may be found by observing with a quadrant, or other suitable instrument, the zenith distances of any star at both places. The difference of these zenith distances, when corrected for refraction, will be the difference of latitude of the two places.

586. *Thus, for example*, to determine the difference between the latitudes of Greenwich Observatory and Dunnose in the Isle of Wight, it was found that

At Dunnose the z. d. of β Draconis was - -	1°	50′	5″·24
And at Greenwich - - - - -	0	58	33·13
Difference of latitude - - - - -	0	51	32·11
The latitude of Greenwich was known to be - -	51	28	30·5
The latitude of Dunnose is - - -	50	37	8·39

587. *The navigator has daily occasion to determine his latitude at sea.* For this purpose, he finds the sun's zenith distance, or its altitude at noon, by Hadley's sextant. The Nautical Almanac gives him the sun's declination, or distance from the equator at the time he makes his observation: the sum or difference of these is his latitude, according as the ship and the sun are on the same or opposite sides of the equator.

588. *Ex. On July* 24. 1783, at a place in longitude 54° ($3^h\ 36^m$) west of Greenwich, the altitude of the sun's lower limb, when cleared from refraction and parallax, was observed by a sextant to be 59° 15′ 30″. By the Nautical Almanac, the sun's semidiameter was 15′ 48″, and his declination at the time of noon in that longitude 19° 51′ N. The calculation for the latitude will stand thus: —

Altitude of sun's lower limb	59°	15′	30″
Add sun's semidiameter		15	48
Subtract altitude of sun's centre	59	31	18
From	90	0	0
To sun's zenith distance	30	28	42
Add sun's declination	19	51	0
The latitude of the place is	50	19	42

589. *The navigator cannot always obtain an observation of the sun or a star when on th meridian.* He may, however, be able to observe two altitudes out of the meridian, and th interval of time between them. With these data, and the aid of spherical trigonometry an the Nautical Almanac, he may find his latitude by rules given by writers on navigation an astronomy. It is, in general, by one or other of these methods that the recorded latitudes o all places have been obtained, and arranged in a table for the use of the geographer an navigator.

Problem III. *To determine the Longitude.*

590. *The interval of time between two successive passages of the sun over the meridian of any place is twenty-four hours.* If, therefore, we suppose a number of meridians to be drawn at equal intervals,—that is, to form successively with each other equal angles at the poles,—then, in the course of twenty-four hours, each of these meridians (supposing their planes produced) will pass through the sun. Therefore twenty-four hours of mean solar time will correspond to 360 degrees of longitude; for the whole scale of longitude must be contained between the eastern and western sides of the meridian of the same place. At places situated on the meridian opposite that on which the sun was at 0ʰ, or, in civil reckoning, at 12 at noon, the time would be 12ʰ, or 12 at night; and 12ʰ would correspond to 180 degrees of longitude. At places situated on the meridian at right angles to the former, the time would be 6ʰ or 18ʰ, or, in civil reckoning, six in the morning or six in the evening; and, accordingly, six hours and eighteen hours of mean solar time will correspond to 90° or 270° of longitude; and so on for intermediate meridians.

591. *The selection of a meridian, from which the longitude is to be reckoned,* is entirely arbitrary. The English take the meridian passing through Greenwich Observatory for the *first meridian*, and reckon its longitude to be 0° or 0ʰ. The first meridian of the French is that which passes through the observatory of Paris. An interval of 9ᵐ 21ˢ elapses between the passages of the sun over the meridians of Paris and Greenwich: the longitude of Paris Observatory is, therefore, by English geographers, accounted to be 9ᵐ 21ˢ east, in time; or in degrees, 2° 20′ 15″.

592. *Since it is noon at all places on the meridian of Greenwich from pole to pole at the same instant,* it will be an hour past noon, or 1ʰ, at all places on the meridian 15° to the east of that of Greenwich; and two hours past noon, or 2ʰ, at all places on the meridian 30° east from that of Greenwich; and so on. On the other hand, it will want an hour to noon, or will be 11ʰ, at all places on the meridian 15° west from that of Greenwich; and it will be two hours before noon, or 10ʰ, at places on the meridian 30° west from that of Greenwich; and so on, reckoning an hour, or sixty minutes of time, to correspond to fifteen degrees, and four minutes of time to one degree.

593. *Since it appears that all places on the same meridian have noon,* or any assumed hour, at the same instant, and that the instant of noon is different at places on different meridians,—being earlier or later on meridians having west longitude, according as they are nearer to or farther from the first meridian, and the reverse on meridians having east longitude; and moreover, that the difference between the time of noon on two meridians is proportional to the difference of their longitude, and therefore a *measure* of that difference; it follows that if, knowing the hour of the day at any place, we can at the same instant by any means know the hour at a place on any other meridian, then we can determine the difference of longitude between the meridians: for it will be the difference between the times of the day, as estimated on the two meridians, reckoned in hours, minutes, &c.; and this may be converted into degrees, minutes, and seconds, by reckoning fifteen degrees to an hour, and proportionally for minutes and seconds of time.

594. *The practical methods* of determining the longitude are the following:—

1. *By a Chronometer or Time-keeper.*

Let us suppose that a traveller departs from any place, (St. Paul's, London, for example,) and carries with him a watch regulated to mean solar time, and which indicates 12ʰ at the instant of *mean noon* at London: then, supposing the watch to go with perfect regularity, if he go to Edinburgh, and compare the estimated solar time there with that shown by his watch, he will find that they differ by twelve minutes twenty-one seconds; so that when it is 12^h at Edinburgh Observatory, it will be $12^h\ 12^m\ 21^s$ by his watch. He may therefore conclude, that the difference of longitude between London and Edinburgh is $12^m\ 21^s$ west; and since St. Paul's is twenty-three seconds of time west from Greenwich, the longitude of Edinburgh Observatory is $12^m\ 44^s$ west, which corresponds to 3° 11′. If, leaving London, he had gone to Paris, he would there have found the estimated time to be $9^m\ 44^s$ earlier than that shown by his watch: hence the difference between the meridians of London and Paris is $9^m\ 44^s$, and the longitude of Paris (from Greenwich) $9^m\ 21^s$ east.

595. *In the same way the navigator at sea may determine his longitude by a good chronometer.* He can determine the hour of the day by the sun's altitude, and the principles of spherical trigonometry. Or he may take equal altitudes, noting the times; the middle point of time between them will be the instant of noon, as shown by the watch: he must, however, make a correction for the change of the sun's declination, and the distance run by the ship in the interval. Supposing now the chronometer to have been set to the true time at the port from whence he sailed, and to have gone uniformly with a small known daily acceleration or retardation, called its *rate;* this correction being applied, he will have the time at the port corresponding to his observed time of noon, and their difference will be the longitude of the ship eastward or westward from the meridian whence she sailed.

596. *The longitude of any point on the earth,* either at sea or on land, may be determined by a good chronometer; in the latter case, however, the jolting it must suffer by carriage will disturb its motion, and render the result sought uncertain. At sea, the mode of transport is not so liable to sudden jerks; and, therefore, the chronometer may be expected to go with more regularity. If several be employed, considerable accuracy may be obtained. The Board of Admiralty sent ten or twelve chronometers from Greenwich to Falmouth, and thence in a vessel to Madeira, and in this way determined the longitude of Funchal from a mean of their results.

597. *The facility of this mode of determining the longitude* makes perfection in the construction of chronometers an object of high importance in a maritime nation like Britain. It was, therefore, for many years encouraged by acts of parliament offering high rewards for prescribed degrees of excellence. These, however, are now repealed; but the government has not lost sight of this important subject.

2. *The Longitude by Eclipses of Jupiter's Satellites.*

598. *If a celestial phenomenon can be seen at the same absolute instant of time* in two different places of the earth, this appearance gives the means of determining the difference of their longitudes; for if the phenomenon be seen at both places, and the times, according to their reckoning, be noted, it is manifest that their difference will be the difference of longitude, in time, of the two places.

599. *Now the eclipses of Jupiter's moons are phenomena of this kind.* They may be seen, almost at the same instant, every where in the hemisphere in which Jupiter is visible: and such is the perfection of astronomy, that the times at which they will happen can be predicted with considerable accuracy. These are computed according to Greenwich time, and published, along with various other matters, in the Nautical Almanac several years before they happen, for the benefit of travellers. This method of finding the longitude can, however, only be applied on land; for at sea the rolling of the ship makes it next to impossible to direct a telescope so steadily to Jupiter as to view the eclipse of a satellite.

600. *Example. — Suppose an immersion of the first satellite should be observed at the Cape of Good Hope* April 16. 1805, at $13^h\ 25^m\ 35^s$ mean time; the predicted time given by the Ephemeris being $12^h\ 12^m\ 2^s$ at Greenwich. Here the difference is $1^h\ 13^m\ 33^s$; whence the longitude of the Cape should be 18° 23′ 15″ east of Greenwich.

601. *In this example,* the observed time at the Cape is compared with the computed time of the eclipse at Greenwich. If, instead of this, the observed time at Greenwich had been used, greater accuracy might have been expected.

602. *This method is easy,* and therefore much practised; but it is liable to uncertainty: for two observers in the same room, but using different telescopes, will sometimes differ in noting the time of an eclipse of the first satellite by as much as fifteen or twenty seconds. Delambre thinks that the time of an eclipse of the fourth satellite may be doubtful to the amount of four minutes.

3. *Longitude by an Eclipse of the Moon.*

603. *An eclipse of the moon has exactly the same appearance,* at the same instant, wherever seen; but it is impossible to be quite sure, by observation, of the exact time of their beginning or end, because of the penumbra which bounds the earth's shadow. The results to be obtained from them are therefore uncertain, to perhaps two minutes of time; and therefore only to be regarded as approximations to the truth.

604. *Example. — An eclipse of the moon was observed Aug.* 28. 1729, by the astronomer Cassini at Paris, and by Mr. Stephenson at Barbadoes.

At Paris, Imm. ☽ -	12^{h}	19^{m}	13^{s}	Emer. ☽ -	13^{h}	59^{m}
At Barbadoes, Imm. ☽	8	11	0	Emer. ☽ -	9	51
	4	8	13		4	8

By the mean of the two, the difference of longitude is $4^{h}\ 8^{m}\ 6^{s}\cdot 5$; that is, Barbadoes is 62° 1′ 30″ west of Paris.

4. *Longitude by Lunar Distances, or by Occultations of Stars by the Moon.*

605. *The moon is, of all the celestial bodies,* the most convenient for determining the longitude, because of the greater quickness of her apparent motion among the stars. She makes the complete circuit of the heavens in $27^{d}\ 7^{h}\ 43^{m}\ 4^{s}\cdot 7$ (this is her mean sidereal revolution): therefore she changes her place among the stars more than half a degree, or her own apparent diameter, in an hour; so that in two minutes of time she passes over one minute of a degree. This, or even its half, is quite a measurable quantity by a good sextant.

606. *By the theory of the moon's motion,* her place among the stars is known at any time: that is, knowing the time of the day at Greenwich, the place of the moon is known; and, on the other hand, knowing the place of the moon, the time at Greenwich is known. The Nautical Almanac gives the distances of the moon's centre from the sun, and some of the brighter stars, as it would be seen from the earth's centre, for every third hour of the day, Greenwich time. If, therefore, the Almanac show that the moon, considered as seen from the earth's centre, will be 10° from a certain fixed star at six o'clock in the evening at Greenwich; and we make an observation at a distant place, and find that the moon's distance from the same star, reduced by computation to what it would be if seen at the earth's centre, is 10°, we immediately conclude that at that instant it is six o'clock at Greenwich. Thus the moon, with the brighter fixed stars near her path, serve the purpose of a chronometer.

607. *To determine the longitude in this way,* one observer measures the moon's distance from the sun or a bright star (one of those in the Ephemeris); another observer at the same time finds the altitudes of the moon and star; and a third should observe the exact time by a chronometer or good watch at which the observations were made. These observations, corrected for refraction, give *data* for finding what would be the apparent place of the moon in the heavens, if it could be seen from the centre of the earth at that time. The Nautical Almanac enables the observer to find the hour at Greenwich, when the position of the moon in the heavens was such as he observed it, and the interval between the Greenwich time and his own gives him his longitude.

608. *This method of finding the longitude is commonly practised in the service of the East India Company,* and in the navy. By it the longitude may be generally known to within twenty miles, and very often much nearer. This, although less accurate than the latitude, is yet an invaluable acquisition to the navigator. A striking proof how much it may be depended on has been given by a distinguished navigator (Capt. Basil Hall, R. N.). After a voyage of 8000 miles, occupying eighty-nine days, he arrived off Rio de Janeiro, having passed through the Pacific Ocean, rounded Cape Horn, and crossed the South Atlantic, without making any land. When within a week's sail of Rio, he set about determining, by lunar observations, the ship's course and place at a determinate moment; and having found this, within from five to ten miles, he trusted to the ordinary and more compendious way of finding his position, such as is used in short trips, for the remainder of his voyage. When he arrived within fifteen or twenty miles of the coast (according to his estimation), he hove to at four in the morning, waiting for day-break. He then proceeded, although the weather was hazy; but about eight it became so foggy that he did not like to stand in farther. The fog suddenly cleared off, and then he had the satisfaction to see the Great Sugar-loaf Rock, which stands on one side of the harbour, so nearly right a-head, that he had not to alter his course above a point in order to hit the entrance of Rio.

609. *Occultations of stars by the moon* serve exactly the same purpose as a distance of the moon from a star: these, however, are not so generally observed at sea as on land. They give the distance of the moon from the star with almost perfect accuracy, and therefore are an excellent method of determining the longitude. When an occultation has been observed, we can by the lunar tables or the Nautical Almanac, which is a species of lunar and solar tables, compute the distance between the centre of the moon and star as it would appear at the earth's centre at the moment the occultation was observed, provided we know the longitude of the place where the observation was made: but this longitude is the very thing we want; therefore we cannot proceed by a direct process. However, we may know the longitude nearly by some other means; an eclipse of one of Jupiter's satellites, for

example. With this, as if it were the true longitude, we may calculate the apparent distance between the star and centre of the moon reduced to the earth's centre at the time the occultation was seen. If the longitude had been correctly assumed, this would have been exactly the moon's semidiameter; but it will differ more or less, according to the magnitude of the error we have made in the assumed longitude. There will, however, be such a determinate connection between the error of the longitude and the difference between the moon's semidiameter and computed distance of the star and moon's centre, that the one will be deducible from the other by calculation. In this way, then, the error may be estimated, and a nearer approximation to the longitude obtained; and a repetition of the process will give a still more correct result.

5. *Longitude by the Transit of the Moon over the Meridian.*

610. Let T be the time by the clock when the moon is observed on the meridian of any place, t the time of transit of a known fixed star, $24 + x$ the interval between two successive transits of the same star: then $24 + x : T - t :: 360^\circ$: difference of right ascension of the moon and star at the instant the moon was on the meridian; to which adding the known right ascension of the star, the right ascension (A) of the moon when on the meridian is determined. Now the moon's right ascension when on the meridian of Greenwich is given in the Nautical Almanac for every day of the year, from whence the daily increment of her right ascension may be determined: let, therefore, a be the moon's right ascension when on the meridian of Greenwich, E the increment of right ascension in the time between two successive transits over the same meridian; then, considering the change of right ascension as uniform,

$$E : a - A :: 360^\circ : \text{the required longitude.}$$

6. *Longitude by Signals.*

611. *The most accurate way of determining small differences of longitude* is by signals made on the earth's surface. A rocket fired from an elevated spot on a clear night may be seen distinctly with a telescope at the distance of twenty or thirty miles: therefore, by observing the times at which the same explosion is seen at two places, the difference of longitude of the places may be found.

612. *The same method will apply to places at any distance*, if they be connected by a chain of stations sufficiently near to each other to admit of a rocket to be seen from every two adjoining stations. The difference of longitude between Greenwich and Paris was determined in 1825 in this way. Rockets were exploded at Wrotham, and seen simultaneously at Greenwich and Fairlight Down: also at La Canche on the French coast, which were seen at Fairlight and Ligniers; and at Mont Javoult, which were observed at Ligniers and Paris.

613. *In the same way the difference of longitude* between Geneva and Milan has been determined by signals made by illumination on the tops of intermediate mountains.

614. *The intensely brilliant light which Lieutenant Drummond*, of the Royal Engineers, has proposed for light-houses, and which is produced by placing a ball of lime, about the size of a pea, in a flame supported by oxygen gas, may be employed in determining differences of longitude. We believe that, in favourable weather, this light exhibited on the top of Ben Lomond may be seen at the same time at Edinburgh and in Ireland: indeed, we know that it has actually been seen in the north of Ireland. Here, then, we have the means of determining with great exactness the difference between the longitude of Dublin and Edinburgh.

7. *Longitude by Triangulation.*

615. *The trigonometrical survey of Britain* has determined the longitude of all the principal points on the coast, as well as the mountains and cities in the interior, particularly in England. At present the survey is suspended in Britain, but is going on in Ireland. When this is completed, the British survey will doubtless be resumed, and the geography of the northern part of the island made as perfect in its minute details as the southern, which, from its proximity to the Continent, is more necessary to be known in preparing plans of national defence.

Chap. XXI.

REPRESENTATION OF THE EARTH.

616. *The most natural and correct representation* which can be given of the geographical divisions of the earth's surface is that which is made on a sphere or globe. In this way the different countries may be truly delineated, so as to exhibit perfectly to the eye their relative position, their magnitude, and boundaries; and by such a representation of the earth, all the problems in geography may be resolved with elegance and facility.

617. *But although the surface of a solid* having the exact figure of the earth, or differing but little from it, affords in theory the most complete and the only perfect representation of

any considerable tract of country, yet there is a limit in practice to this precious advantage. A globe of a moderate size serves very well to give a distinct notion of the figure, the magnitude, the position, and general features of the great continents and islands: but the largest globe that can conveniently be constructed is insufficient for minute details; and then we must have recourse to the more simple, although less perfect, representations of MAPS.

618. *It is impossible to represent on a plane* a large extent of the earth's surface, so that the distances of places in the plane map shall have to each other precisely the same proportion as their distances on the globe. To obviate this difficulty, geographers have had recourse to different methods of representing portions of the globe on a plane.

619. *By one method* the countries are represented by the rules of perspective, as they would appear to an eye that should view them on the surface of a sphere from a given point. The different positions which may be assumed for the point from which the sphere is viewed give rise to different *projections*, which all answer very well when the surface to be represented is of small extent, and the point of view, or *projecting point*, is nearly over its centre. However, when the surface is of great extent, a whole hemisphere for instance, those places which lie near the border of the projection are in them all much distorted.

620. *According to another method*, the spherical surface to be represented is supposed to be a cone whose vertex is somewhere in the polar axis produced, and its curved surface either touches the sphere at the middle parallel of the map, or falls within the sphere at the middle parallel, and without it at the extreme parallels. The surface of the cone is then supposed to be extended into a plane. This way of constructing maps is called the method of *development*.

621. *There are other mathematical hypotheses* according to which maps are delineated, and one in particular by which marine charts are constructed. In this, the parallels of latitude and circles of longitude are all represented by straight lines (that is, a line making always the same angle with the meridian), and the course of a ship sailing always on the same rhomb is also a straight line. A representation of the earth in this way is commonly called *Mercator's chart*, although the invention is due to an English mathematician, Edward Wright. Charts of this construction are of great importance in navigation.

I. CONSTRUCTION OF MAPS BY PROJECTION.

622. *There are two projections of the sphere* by which portions of its surface may be truly delineated by the rules of perspective: the ORTHOGRAPHIC and the STEREOGRAPHIC. In each, the plane on which the projection is made is called the *plane of projection*.

1. ORTHOGRAPHIC PROJECTION.

623. *To project any point in space orthographically* on a plane, a perpendicular is to be drawn from the point on the plane and the bottom of the perpendicular; that is, the point in which it meets the plane is the orthographic projection of the point.

624. *The orthographic projection of a line* of any kind on a plane is found by supposing perpendiculars to be drawn from every point in the line, and that line on the plane which passes through the bottom of all the perpendiculars is the orthographic projection of the proposed line.

625. *It is easy to see that the orthographic projection* of a straight line must be a straight line, because the perpendiculars drawn from every point in it to the plane of projection will all lie in a plane, and the common section of two planes is a straight line. It is also apparent that the projection of a rectilineal figure will be a rectilineal figure.

626. *If a circle be parallel to the plane of projection*, its orthographic projection or representation will be a circle: for the perpendiculars supposed to be drawn from every point in the circle to the plane of projection will all be on the curve surface of a cylinder, and they may be considered as constituting that surface. The circle and its projection will be the top and bottom of the cylinder; and since they are parallel, they will be alike and equal.

627. *If the plane in which a circle lies* be perpendicular to the plane of projection, its projection will manifestly be a straight line, which will be equal in length to the diameter; and the projection of any arc reckoned from the extremities of the diameter will be projected into its versed sine: also the complement of the arc, or what it wants of ninety degrees, will be projected into its sine.

628. *But if a circle be in a plane* which is neither parallel nor perpendicular to the plane of projection, then its projection will neither be a circle nor a straight line; it will be an oval figure. The bounding line will be an *ellipse*, a curve formed by cutting a cylinder by a plane oblique to its axis; and it is also one of the *conic sections*.

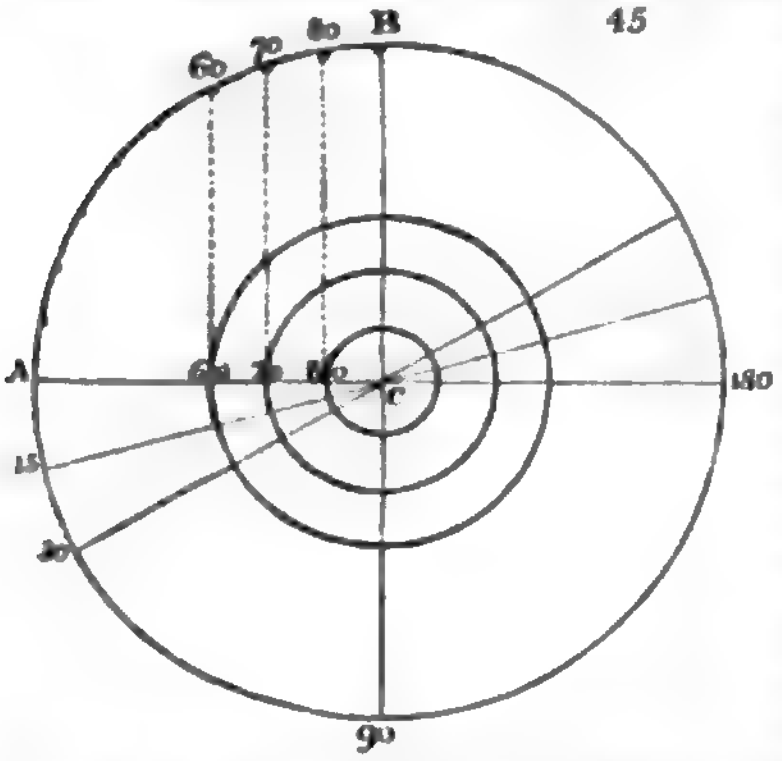
629. *An exact notion may be formed of the orthographic* projection of any line or figure by holding it in the light of the sun, and observing its shadow formed on a plane which is perpendicular to the direction of the solar rays. The rays which pass close to the figure are the perpendiculars to the plane, and the shadow is the projection of the figure.

630. *The plans and sections* by which artificers execute different constructions are no other than orthographic projections of the things to be constructed; with these all workmen are familiar.

631. The orthographic projection of any object, — the *terrestrial globe*, for example, — with all its circles, and the continents and islands on its surface, is *nearly* the representation or picture which an artist would delineate on a plane surface if he meant to represent the globe at a great distance from the eye; and it is *exactly* the appearance which the globe would have, supposing an eye could view it at an infinite distance.

632. *From the nature of this projection*, it appears that the orthographic representation of half the surface of the globe will show nearly the true figure and proportions of countries about the middle; that is, directly opposite to the supposed position of the eye: but, towards the extremities of the map, the graphic representations of places will imperfectly exhibit their true figure and position. For this reason it is seldom employed in geography, although its use is frequent in astronomy.

(A.) *To project the Sphere orthographically on the Plane of the Equator.*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633. *About any point*, C, as a centre (*fig.* 45.), with any radius, C A, describe a circle B A 90 to represent the equator. Draw two diameters, A C 180, B C 90, perpendicular to each other: these will be the projections of meridians distant 90° from each other, and C will be the projection of the pole.

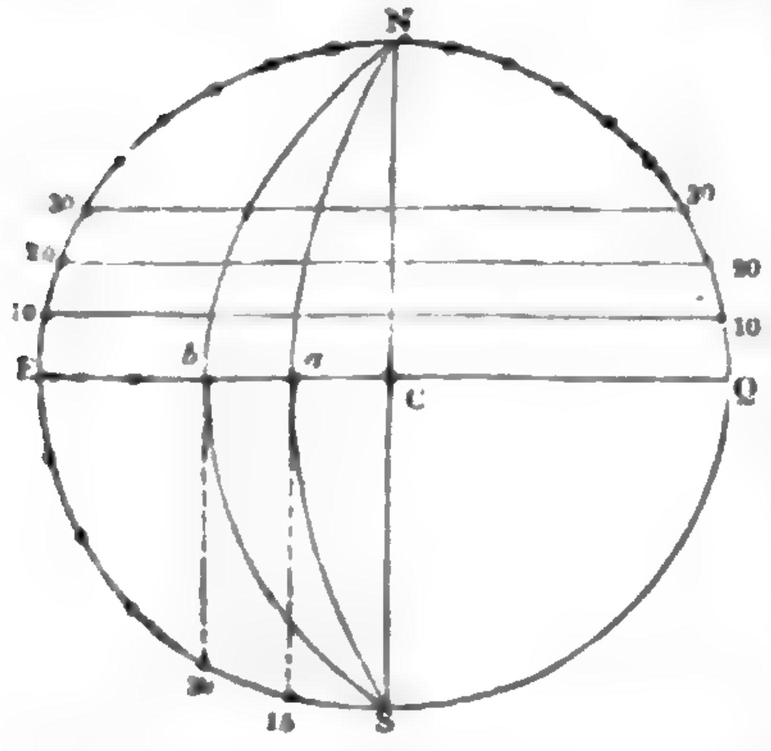
634. *Divide each quadrant into six equal parts*, and let A 15, 15 30 be two of these; draw diameters through 15 and 30, and these will be the projections of meridians 15° and 30° from A C 180; and, in this way, meridians dividing the equator into twenty-four equal parts may be represented. Of these, any one, C A, may be assumed as the first meridian.

635. *To project the parallels of latitude:* divide A B, one of the quadrants, into nine equal parts; let 80, 70, 60 be the three of these points of division adjoining to B: draw perpendiculars from these, and all the other points on the radius A C meeting it in 80, 70, 60, &c. About C as a centre at the distances C 80, C 70, C 60, &c. describe circles, and these will be the projections of parallels of latitude at the distance of ten degrees.

636. *The polar circles and tropics* may be found by laying off an arc of 23½° from A towards B, and from B towards A, and drawing perpendiculars from the points thus determined on C A, circles described about C, through the bottoms of the perpendiculars, will be the projections of the polar circle and tropic. In this way, the projection may be completed.

637. *It is easy to see that the regions within the polar circle* may be represented by this projection so as to give a tolerable notion of their position and magnitude, judging by the eye; but that the appearance of the equatorial regions will be altogether distorted.

(B.) *To project the Sphere orthographically on the Plane of the Meridian.*



638. *Describe any circle*, N E S Q (*fig.* 46.), to represent the meridian, and draw two diameters, E C Q, N C S, perpendicular to each other; the former may be taken as the projection of the equator, and then the latter will represent a meridian 90° from the meridian N E S.

639. *To represent other meridians:* divide a quadrant S E into six equal parts, as at 15, 30, &c.; from these points of division draw perpendiculars 15 *a*, 30 *b*, &c. on E Q. Describe ellipses N *a* S, N *b* S, having a common transverse axis N S, and the lines C *a*, C *b*, &c. for their semiconjugate axes; and these will be the projections of meridians which pass through every fifteenth degree of the equator. Or, by dividing E S into nine equal parts, they may be made to pass through every tenth degree.

640. *For the parallels of latitude:* divide the quadrants E N, N Q each into nine equal parts at 10, 20, 30, &c.; join the corresponding numbers by straight lines, and these will be the projections of parallels of latitude at

distances of 10°, 20°, 30°, &c. from the equator. The tropics and polar circles are to be drawn in the same way; the former at $23\frac{1}{2}°$ on each side of the equator, and the latter $23\frac{1}{2}°$ from the poles.

641. *In this projection, the polar regions,* and all places near the meridian N E S Q, are very much distorted in appearance to the eye: it is only towards the centre that there is any considerable resemblance of a projected portion of the earth's surface to its appearance on a globe.

2. STEREOGRAPHIC PROJECTION.

642. *In the stereographic projection,* the eye is supposed to be situated at a point in the surface of the sphere, and the plane on which the projection is to be made is the plane of that great circle, which is every where 90° distant from the position of the eye: hence it must be evident that the eye can see only the inside or concave surface; however, we may suppose the sphere to be transparent, and its various circles, and the islands, continents, &c. delineated on its surface to be seen through it. If we now conceive a line to be drawn from the eye to any point on the concave surface, the point in which that line cuts the plane of projection will be the *projection* of the point on the spherical surface.

643. *To illustrate what has been said,* let E A C B (*fig.* 47.) be a great circle of the sphere, *p q r s* a plane passing through its centre, and perpendicular to the plane of the great circle; let C E be a diameter of the sphere perpendicular to the plane; then assuming *p q r s* as the plane of projection, E, one end of that diameter, may be taken as the place of the eye or projecting point. If, now, straight lines E A, E B, E C, E D, &c. be drawn to A, B, C, D, any points on the surface of the sphere, the points *a*, *b*, *c*, *d*, &c. in which these lines meet the plane *p r*, will be the projections of the corresponding points on the surface of the sphere. Let A D B be any circle of the sphere: conceive a straight line to be drawn from E, the place of the eye, to D, any point in the circumference. If D, the end of this line, be now carried round the circle, supposing it always to pass through the fixed point E, the line will generate the surface of a cone whose base is the circle, and vertex the place of the eye; and the curve line *a d b*, which is the common section of the plane *p r*, and the surface of the cone will be the *projection* of the *circle*.

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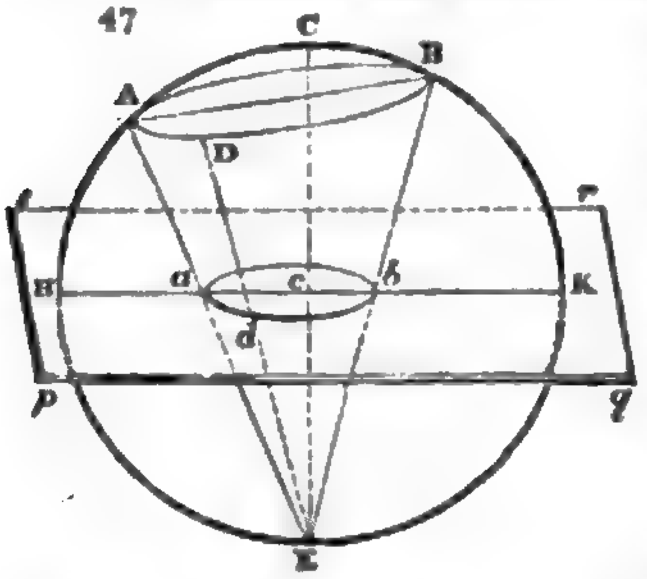

644. It will now be sufficiently obvious,

1. *That every circle which passes through the eye will be projected into or represented by a straight line on the plane of projection.*

2. *That every circle whose plane is parallel to the plane of the circle will be projected into a circle.*

645. *These two properties hold true* wherever the eye be situated. The assumption, however, that it is in the surface of the sphere gives rise to geometrical properties which are peculiar to this projection, and which by their simplicity and elegance give it great value.

646. *One geometrical property is this:* whatever be the position of the circle A D B (or base of the cone) on the surface of the sphere, the portion of the cone between the projecting point E and the plane of projection *p r* is always similar to the whole cone. If the plane of the base be parallel to the plane of projection, the truth of this proposition is obvious; but writers on geometry prove, that when it is oblique, still the cones whose bases are A D B and *a d b*, and common vertex E, are similar; only they have contrary positions. From the similarity of the whole cone to the part cut off, it follows that,

3. *In the stereographical projection of the sphere, the representation of any circle that does not pass through the eye will always be a circle.*

647. *There is another proposition* demonstrated by writers on spherical geometry which is of great importance in this projection; viz. if two straight lines be drawn from any point on the surface of the sphere to touch it in that point, their representation on the plane of projection will contain an angle exactly equal to the angle contained by the lines themselves. Since straight lines touching the surface of a sphere at any point may be regarded as tangents to any circles of the sphere passing through that point, we have this other remarkable property: —

4. *The angle made on the surface of the sphere by two circles which cut each other, and the angle made by circles which are their representations, are in all cases equal.*

648. *This projection is extremely convenient in practice,* because a circle may be easily described when three points in its circumference are given, or when two points and its radius are known; also, the property of lines making angles at their intersection on the surface of the sphere equal to those formed by their projections, is of great value in the

representation of the surface of the sphere on a plane. Moreover, the contraction of the map towards the extremities of an hemisphere is not so great as in the orthographical projection; on all these accounts, the stereographical projection deserves a preference.

649. *Supposing* E *to be the projecting point,* or place of the eye, and *p r* the plane of projection, let C be the point of the sphere opposite to E, and therefore 90° every where from the circle, which is the common section of the sphere and plane of projection; it is evident that any arc, A C, of a great circle passing through C and E will be projected into a straight line *a c*: now, this line is manifestly the tangent of the angle A E C to the radius E *c*, and the measure of this angle is half the arc A C.

5. Hence it follows, that if a great circle pass through the projecting point, *any arc of that circle, reckoned from the opposite point on the sphere, is projected into a straight line passing through the centre, and equal to the tangent of that arc.*

(A.) *To project the Sphere stereographically on the Plane of the Equator.*

650. *Describe a circle,* A B D (*fig.* 48.), to represent the equator, and draw any diameter A C D, and a radius C B perpendicular to A D. Supposing now that the parallels of latitude to every tenth degree are to be represented in the map, divide A B, a quadrant of the circle, into nine equal parts, as at the points 10, 20, 30, &c. and draw straight lines from the points of division to D, the extremity of the diameter A C D, meeting the radius B C in the points 10, 20, 30, &c. Then, about the centre C describe circles to pass through the points 10, 20, 30, &c., and these will represent the parallels of 10, 20, 30, &c. degrees of latitude. In this way, all the parallels of latitude may be found, as also the tropic and polar circle, by laying off arcs of 23½° and 66½° from B towards A.

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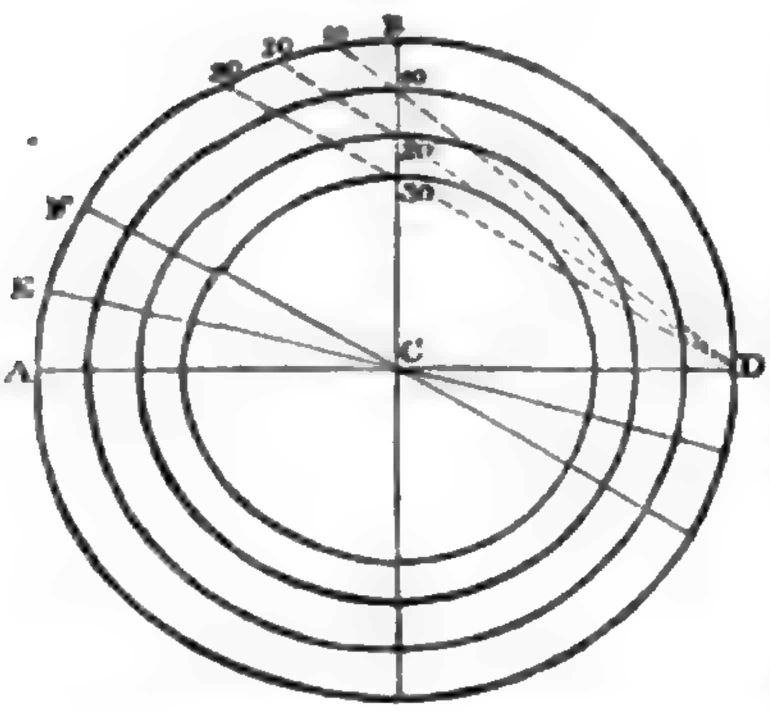

651. *Next divide the circumference of the circle* into 24 equal parts, and draw radii from the centre to the points of division. These will represent the meridians which differ in longitude by one hour.

(B.) *To project the Sphere stereographically on the Plane of a Meridian.*

652. *Describe any circle,* N Q S E (*fig.* 49.), to represent the meridian on which the projection is to be made; which should be so chosen as to include nearly one of the continents, — the eastern, for instance: this will be accomplished if N E S be the meridian 20° west from London. Draw the diameter N C S, which will represent the meridian that passes through the projecting point, and therefore is perpendicular to the plane of projection. Then N will represent the north, and S the south pole: draw another diameter, E C Q, which will represent the equator.

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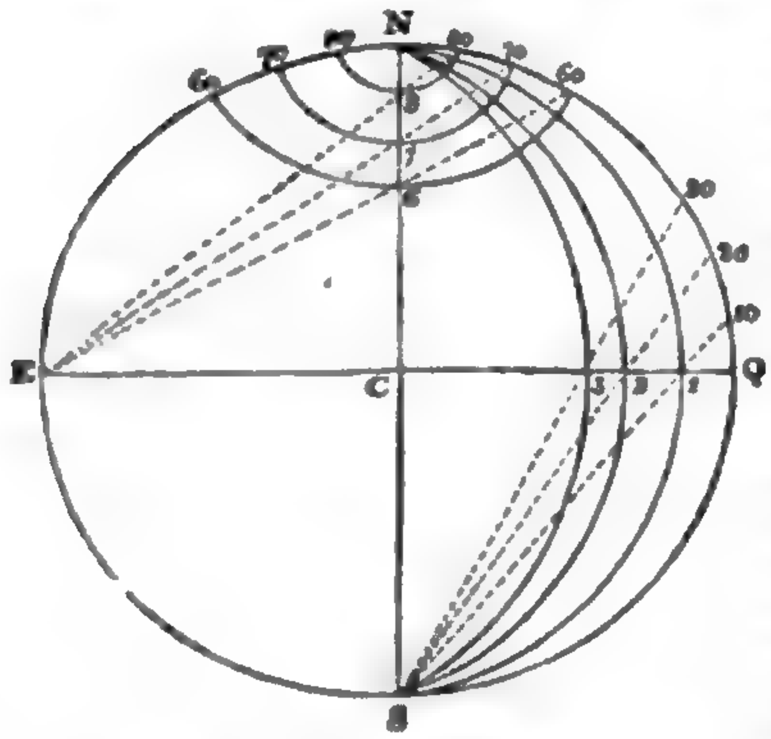

653. *Since, by the nature of the projection,* all the meridians will be represented by circles which pass through the poles N, S, it will be sufficient if we determine the points in which they cut the equator: we shall suppose the meridians to pass through every tenth degree of longitude: the points where they cut the equator will be found by dividing one of the quadrantal arcs, N Q, into nine equal parts, as at 10, 20, 30, &c., and drawing straight lines from S to the points of division, meeting C Q in 1, 2, 3, &c. Then, a circle described through the points N 1 S will represent the meridian which cuts the equator 10° from Q, and a circle through N 2 S will be the meridian that cuts the equator 20° from Q. The remaining meridians N 3 S, &c. will be determined exactly in the same way; and it appears from the construction, that the centres of the circles will be in the diameter E Q and its prolongation, and their distances from the centre will be the tangents of 10°, 20°, &c.; viz. the inclination of the circles to the plane of the primitive; also, that their radii will be the secants of the same inclinations.

654. *To describe the parallels of latitude,* divide the four quadrants each into nine equal parts, as at 80, 70, 60, &c., and draw straight lines from E, one end of the diameter E Q, to the points of division, meeting N S in 8, 7, 6, &c. Then circles described through 80, 8, 80; 70, 7, 70, &c., will represent the parallels of 80°, 70°, &c. The centres of all the circles will be in the line N S, and distant from it by the secants of the distances of the parallels from the pole: also, the radii will be the tangents of the same distances. The polar circles and tropics being described by the same rules at the distances 23½° and 66½° from the poles, the projection will be completed.

(C.) *To project the Sphere stereographically on the Plane of the Horizon for a given Latitude.*

655. *In this projection, the eye* is supposed to be in the nadir of the place for which the projection is made.

On C (*fig.* 50.) and C (*fig.* 51.) as centres with any radius, describe circles W N E S, W′N′E′S′, of which *fig.* 50. is to be the primitive or horizon; the other, *fig.* 51., is to serve for determining the position of the circles to be described on *fig.* 50. Draw the diameters N S, W E, N′S′, W′E′ in both circles perpendicular to one another; then N S in *fig.* 50. will be the projection of the meridian, and W E the projection of the circle passing through the east and west points of the horizon and the zenith, — that is, the prime vertical; N will be the north point of the horizon, S the south, and E and W the east and west points.

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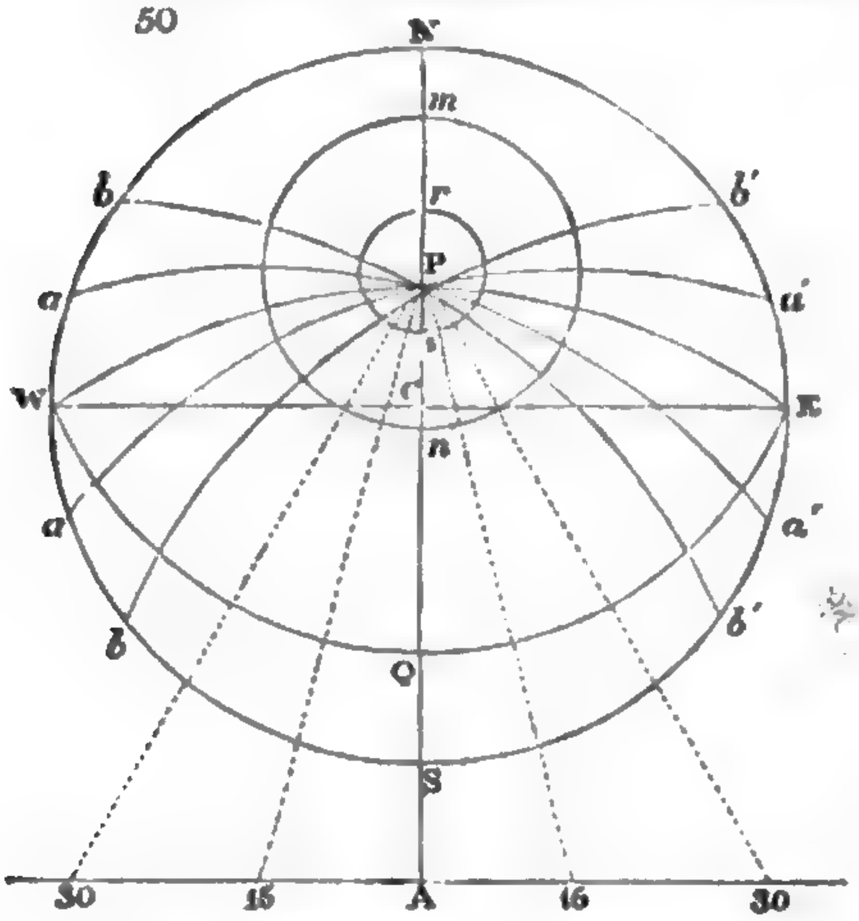

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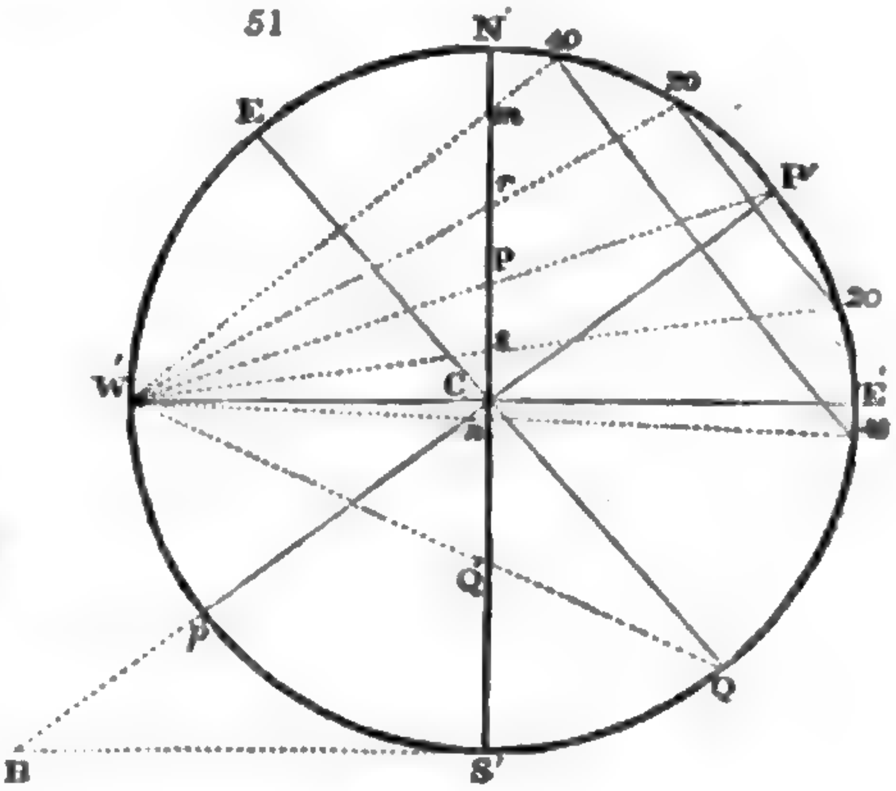

Make the arc N′ P′, or the angle N′ C P′, *fig.* 51., equal to the latitude of the place; join W′ P′ cutting C N′ in P; make C P in *fig.* 50. equal to C P in *fig.* 51., and P, *fig.* 50., will be the projection of the north pole. Draw the diameter E Q, *fig.* 51., perpendicular to P′ C p′; join W′ Q meeting C S′ in Q′. Take C Q, *fig.* 50., equal to C Q′, *fig.* 51.; describe a circle through the points W, Q, E, and the arc W Q E will represent the equator. Next, to project the parallels of latitude, — for example, those which are 40° and 20° from the pole, — from P′, *fig.* 51., take P′ 40 and P′ 40, each arcs of 40° on opposite sides of P′; also, P′ 20, P′ 20, arcs of 20°. Join W′ 40, W′ 40, meeting C N′ in *m* and *n*; also W′ 20, W′ 20, meeting C N′ in *r* and *s*. In N C S, *fig.* 50., take C *m*, C *n*, C *r*, C *s*, equal to C *m*, C *n*, C *r*, C *s*, *fig.* 51.; describe circles on *m n*, *r s* as diameters, and these will be projections of parallels of latitude at the distances of 40° and 20° from the pole. In this way may all the parallels, also the tropics and polar circle, be projected.

656. *To project the meridians:* in *fig.* 51. draw S′ B perpendicular to N S′, meeting P′ *p*′ produced in B; take C A, *fig.* 50., equal to S′ B, *fig.* 51., and through A draw a perpendicular to C A. Let us suppose that the meridians are to make with each other angles of 15°: at P, in the line P A, draw P 15 and P 15 on each side of P A, making angles with it of 15°; and, in like manner, P 30, P 30, making angles of 30°, and so on to angles of 75°. On A, as a centre, describe a circle to pass through P; this will pass through W and E, and will be the projection of the six o'clock hour circle in the heavens, or that meridian on the globe that is perpendicular to the meridian of the place for which the projection is made. On the points 15, 15 describe arcs *a* P *a*′, *a* P *a*′ to pass through P, and meet the projection of the horizon in *a*, *a*′; *a*, *a*′; and in like manner on 30, 30 as centres describe the

arcs *b* P *b*′, *b* P *b*″, &c. all passing through P: these will be the projections of meridians on the terrestrial sphere, or of hour circles on the celestial sphere. In this way, the projection may be completed.

3. GLOBULAR PROJECTION.

657. *In the orthographic projection,* equal portions of the earth's spherical surface are represented by unequal plane surfaces; and the deviation from equality in the surface to be represented, and its plane representation, increases from the centre to the circumference of the projection.

658. *The same is true of the stereographic projection,* but with this difference, that the distortion in the representation of the figure of any portion of the spherical surfaces proceeds in a contrary direction: in the former case, the degrees of longitude and latitude are gradually contracted from the centre to the circumference; but in the latter, they are enlarged.

659. *In the stereographic projection,* the projecting point, or point of view, is the pole of the circle on which the projection is made; and in the orthographic, it may be supposed in the axis, and at a very great, or rather indefinitely great, distance. It is this change of position of the point of view that produces the change in the direction in which the degrees of latitude or longitude are contracted. Hence it may be supposed, that, by taking a point of view at some finite distance greater than the radius of the sphere, a perspective representation will be obtained, in which the degrees in the representation will be nearly equal, and the deviation from equality in the representation of equal portions of the spherical surface in some measure corrected.

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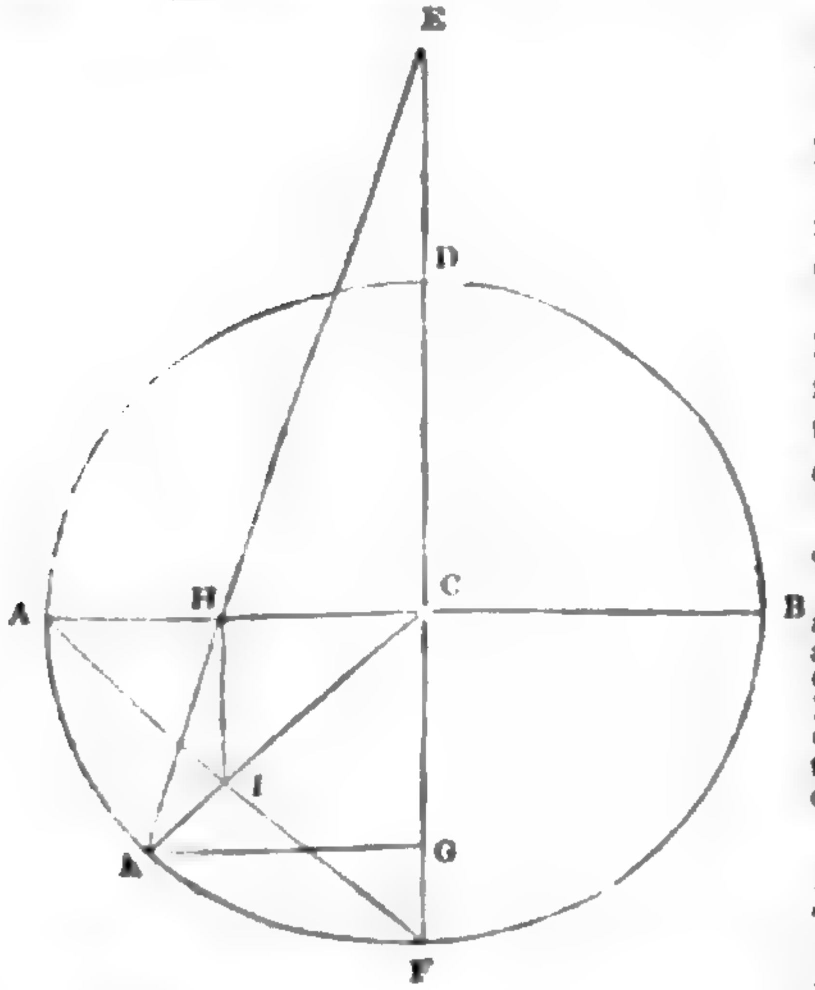

660. *Let* A D B (*fig.* 52.) *be a section of the sphere* by a plane passing through E, the point of view, and C the centre; draw the diameter F D to pass through E, and draw A C B perpendicular to D F. Since the whole quadrant A F is to be projected into the radius A C, if it be possible to make the representations of equal portions of it nearly equal, its halves A K and K F may be assumed as represented by A H and H C, halves of the radius: therefore, a line drawn from K to E must bisect the radius in H. This determines D E, *the distance of the projecting point, to be equal to* K G, *a perpendicular from the middle of the quadrant.*

661. *To prove this geometrical proposition,* draw A F and K C intersecting in I, and join H I. Then A I = I F and A I : I F : : A H : H C; therefore H I is parallel to C F: hence, K I : I C : : K H : H E : : G C : C E. Now, K I = F G and I C = G C; therefore F G : G C : : G C : C E: hence $FG \cdot CE = GC^2 = KG^2 = FG \cdot GD$; therefore C E = G D, and, taking away the line C D common to both, D E is equal to C G or to K G.

662. Hence it appears that the distance D E is the sine of 45°; and therefore nearly 71 of such parts as the radius C A contains 100. This projection was first suggested by M. Delahire, and is now commonly called the Globular Projection. If we suppose the quadrant A F divided into ten equal parts, then the projections of the arcs of 9°, reckoning from F to A, will be as in this table, in which the radius C A is supposed to be 10.

Arc.	Representation.	Arc.	Representation.
0° ... 9°	·991	45° ... 54°	1·017
9 ... 18	·994	54 ... 63	1·020
18 ... 27	·999	63 ... 72	1·015
27 ... 36	1·004	72 ... 81	·997
36 ... 45	1·013	81 ... 90	·950

From this table it appears, that the approximation to equality in the projection of equal arcs of a circle perpendicular to the plane of projection is considerable.

663. *According to the principles of perspective,* in this projection the circles of the sphere

will be represented by ellipses; and they have been so delineated in two hemispheres, projected, drawn, and beautifully engraved by Mr. Joseph Lowry, of London. He has placed London at the centre of the northern hemisphere, and instead of ·707, Delahire's distance of the projecting point, he has made it ·68 of the radius.

664. *In general, however, the projection is made on a meridian,* and the circles of the sphere are represented by circles, and without any regard to the distance of a point of view. Also, the degrees of longitude on the equator, and of latitude on a meridian, are made all equal. With these simplifications, the meridians and parallels on a hemisphere of the earth's surface may be represented by the following construction: —

665. *Let us suppose the parallels of latitude* to be traced through every tenth degree, and that the meridians are to be an hour from each other.

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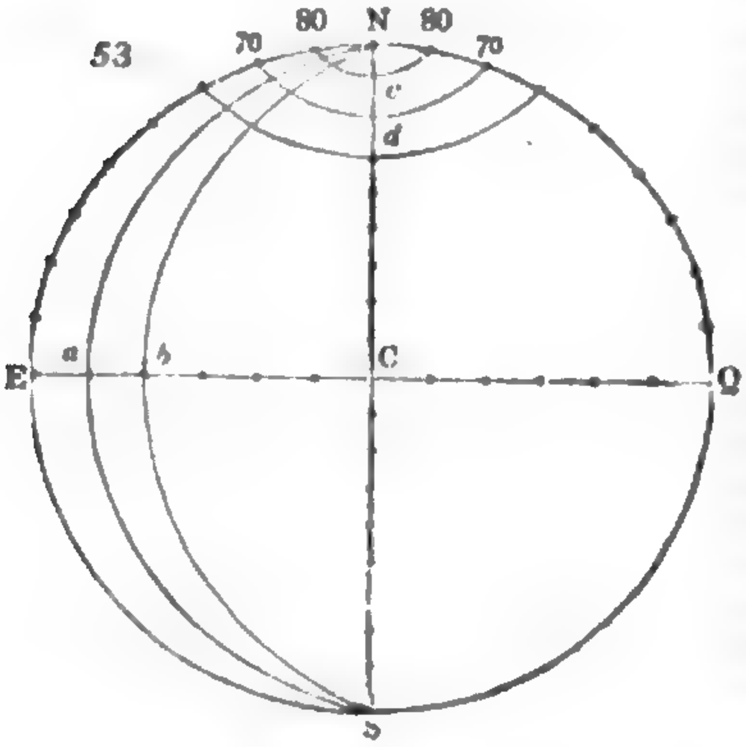


Describe a circle, E N Q S (*fig.* 53.), for the representation of the meridian. Draw the diameters E Q N S perpendicular to each other; one, E Q, to represent the equator, and the other, N S, the meridian, which is 90° from that on which the projection is made; N being the north, and S the south pole.

Divide the quadrants E N, Q N, and the radius C N, each into nine equal parts; let N 80, 80, 70, &c. be the equal divisions of the quadrants, and N *c*, *c d*, &c. the equal divisions of the radius: describe a circle through the three points 80, *c*, 80, and it will be the representation of the parallel of 80° of latitude; in like manner a circle described through the points 70, *d*, 70 will represent the parallel of 70°; the remaining parallels, the tropics and polar circles, on both sides of E Q, the equator, are to be found in the same manner.

666. *Next for the meridians:* divide the radii C E, C Q each into six equal parts at the points *a*, *b*, &c.; describe circles through the points N *a* S, N *b* S, &c. and these will be the representations of the meridians, any one of which, in laying down the positions of places by their latitude and longitude, may be assumed as the first meridian.

II. CONSTRUCTION OF MAPS BY DEVELOPEMENT.

667. *The three methods of projection* which have been explained are usually employed in the representation of a hemisphere, but are seldom used in delineating the geographical features of a single country. For these, the method of *developement* is commonly employed.

668. *A perfect geographical representation of a country* should represent all its parts in just proportion, and should exhibit its true figure. This is exactly done on the sphere; but it can only be nearly accomplished on a plane surface.

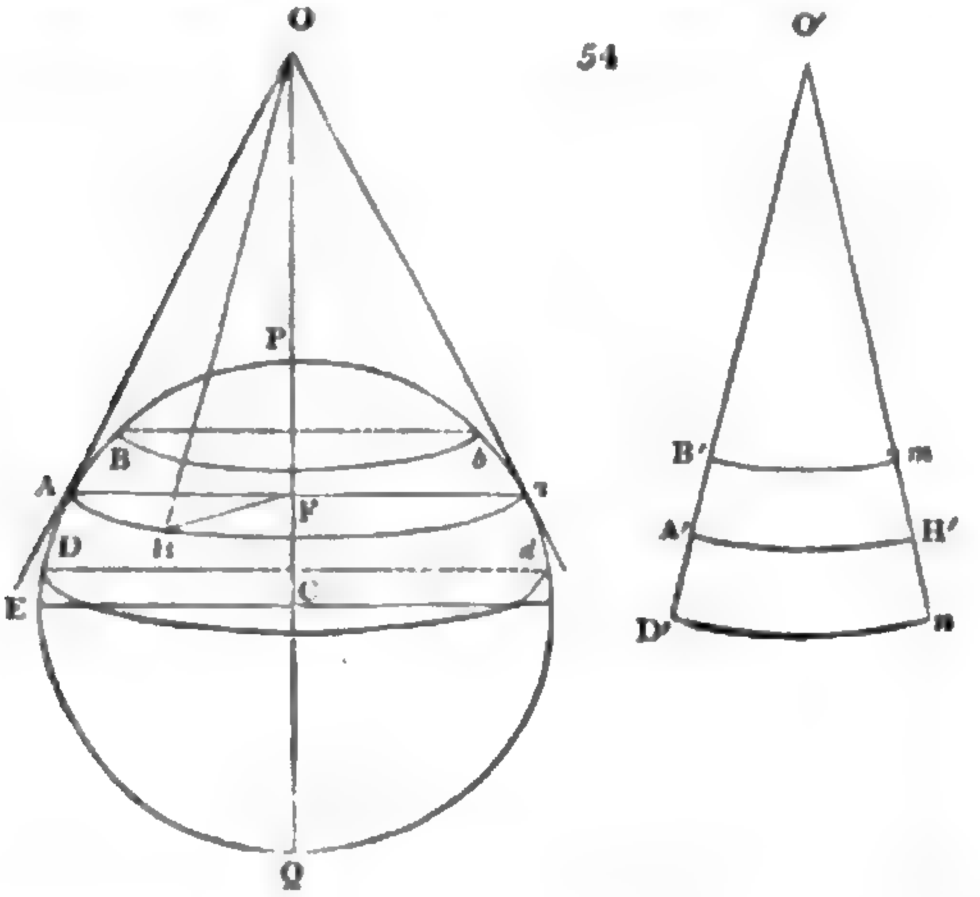
669. *The purposes of civil government* require maps that give the true figure and dimensions of territory. Military affairs require such as give correct distances; and navigation demands the exact bearing of one place from another. Ordinary maps fulfil approximately the two first purposes. The last is completely satisfied by a map of a peculiar construction, called Mercator's chart; but this is not immediately applicable to the other purposes.

670. *It is a known property of a cone* that its curve surface can be expanded into a plane: hence any figure delineated on it can always be exhibited exactly in all its dimensions on a plane surface. Now, a part of the surface of a sphere contained between two parallels of latitude, not very remote, will not differ much from the surface of a frustum of a cone that touches the sphere in the parallel midway between them; and this will also be true if it pass along the chord, or it pass partly within and partly without the sphere, cutting it between the middle and extreme parallels: in each case, the length of the slant side of the frustum must be supposed equal to the length of the meridian between the extreme parallels. On this principle, different constructions have been given for representing the surface of a sphere on a plane.

1. *Conical Developement.*

671. *Let* P A Q (*fig.* 54.) *be a section of the meridian,* P Q the axis, C the centre, E C the radius of the equator, B D any arc of the meridian, and A the middle point between B and D: draw the tangent A O, meeting the axis in O. Suppose now the plane figure O A E to revolve about the axis P Q; the semicircle P A Q will generate a sphere, and the tangent O A will generate the surface of a cone which touches the sphere in A. The points B, A, D will generate the parallels of latitude B *b*, A H *a*, D *d*, of which the middle parallel A H *a* will be a section of the cone perpendicular to its axis.

672. *Take* H *any point in the parallel* A H *a*; draw F H to its centre, and join H O. Conceive now the cone to be expanded into a plane, and that the surface O A H becomes, by developement, O′ A′ H′. The expansion of A H, the arc of the parallel of latitude on the sphere, whose radius is F H, the cosine of the latitude, will now become A′ H′, an arc of a circle whose radius is A′ O′ = A O, the cotangent of the latitude of the parallel.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673. In O′ A′ take A′ B′ and A′ D′, each equal to A B or A D, and with the radii O′ B′, O′ D′ describe arcs B′ *m*, D′ *n*. The plane figure B′ *m n* D′ may now be taken as nearly equal to the spherical surface bounded by meridians passing through A and H, and the portions of the parallels B *b*, A *a* intercepted between them: and any tract of country delineated on the sphere may be nearly shown by a delineation on the plane; the approximation being the more accurate as the breadth of the spherical zone is less.

674. *Let the middle latitude* E A and the angle A F H, or breadth in longitude of the spherical surface, be supposed given, to determine the radius O′ A′ and the angle O′A′H′. Because the middle latitude is known, its cotangent O H is given in parts of the radius by the trigonometrical tables, or it may be expressed in minutes of latitude, by considering that half the circumference (to radius = 1) is 3·1416; therefore, the radius in minutes will be expressed by

$$\frac{60 \times 180}{3\cdot1416} = 3437\cdot7'.$$

Hence O′A′, the radius of the middle parallel in the developement, will be expressed in minutes of latitude by

$$3437\cdot7' \times \text{cot. middle lat.}$$

675. *Next, to find the angle* A′ O′ H′. The arc A H on the sphere and the arc A′ H′ on the plane being equal; by the principles of geometry, the angle A F H will be to the angle A′ O′ H′ as A′ O′ to A F: now, A′O′ = A O is the cotangent of the middle latitude, and A F is its cosine, and the cotangent is to the cosine as radius to the sine; therefore, putting L to denote the degrees of longitude between two meridians on the sphere, the angle A′ O′ H′, contained by the straight lines which represent them in the developement, will be in degrees

$$\text{L} \times \text{Sine middle lat.}$$

The angle O′, and the lines O′ A′, A′ B′, A′ D′, in the developement, are now known; it remains only to divide B′ D′, the representation of the arc of the meridian, and B′ *m*, D′ *n*, the parallels of latitude, into equal parts to form scales of latitude and longitude: then, circles described about O′ as a centre, through the proper divisions of B′ D′, will form the parallels of latitude; and straight lines drawn joining corresponding degrees on the extreme parallels B′ *m*, D′ *n*, will represent the meridians on the map; which is now ready for the delineation of the geographical features of the tract it is to represent. This is the way in which the common maps are constructed.

676. *Example.* Let it be required to construct a map to comprehend the British islands, which extend from 50° to about 61° of north latitude, and from 2° east to 9° west, about 13° of longitude. The middle latitude is 55° 30′, of which the cotangent in the tables is ·68728 and sine = ·82413. From these *data*, O′ A′, the radius of the middle parallel, is $3437\cdot7 \times \cdot68728 = 2362'\cdot7$: the length of the arc B D is $11° = 660'$; therefore, A′ B′ = A′ D′, its half, is 330, and hence

$$\text{O B} = 2362\cdot7 + 330 = 2692'\cdot7$$
$$\text{O A} = 2362\cdot7 - 330 = 2032'\cdot7.$$

677. *The number of degrees of longitude* (L) in this case is 13°; therefore (art. 675.) angle $\text{A}' \text{O}' \text{H}' = 13° \times \cdot82413 = 10° 42'$.

Knowing now the radii O′ B′, O′ D′, and the angle O′, we can find the arcs B′ *m*, D′ *n*; or we can find their chords.

Thus we have,

$$\text{chord of arc } B'm = 2\,O\,B \text{ Sin. } \tfrac{1}{2}O' = 375'\cdot6.$$
$$\text{chord of arc } D'n = 2\,O\,D \text{ Sin. } \tfrac{1}{2}O' = 502'\cdot1.$$

We have now obtained the chords of 13° of longitude on the extreme parallels, and the meridians which form their extremities in minutes of a degree of the meridian; also the radii of the parallels of latitude: with these, the intelligent student of geography will find no difficulty in constructing a map of Britain.

2. *Murdoch's Conical Developement.*

678. *There have been various modifications of the conical developement:* of these, one was given by the Rev. Patrick Murdoch, in the Lond. Phil. Trans. 1758. Let M denote the arc of the meridian which is to be represented in a map: he proposed to make O′ A′, the radius of the middle parallel, equal to

$$\frac{\text{chord of arc M}}{\text{arc M}} \times \text{Cot. mid. lat.}$$

the cotangent being supposed expressed by the radius of the sphere. The remainder of the construction is the same as the ordinary conical projection.

679. *By Murdoch's method,* the surface of the developement is exactly equal to the spherical surface which it represents, and the cone passes through points of the meridian between the middle latitudes and the extremities of the projected arc, its side being parallel to the tangent at the middle latitude.

3. *De Lisle's Conical Developement.*

680. *The astronomer De Lisle* employed the conical projection in constructing a general chart of the Russian empire, which extended from 40° to 70° of north latitude. He, however, supposed the cone to enter the sphere so as to cut it in two parallels midway between the mean and extreme parallels: these, in the developement, had the same dimensions as the corresponding circles of the sphere, and its whole extent differed but little from that of the tract it was meant to represent; because the excess at the two extremities of the chart was compensated, at least in part, by the opposite error in the middle.

4. *Euler's Method.*

681. *Euler was also occupied with this projection:* but he substituted for the determination of parallels which should be common with the sphere, that of the point of concourse of straight lines which represent the meridians, and of the angle which they make when they contain one degree of longitude. His calculations rest on the following conditions:— 1. That the errors are equal at the northern and southern extremities of the map. 2. That they are also equal to the greatest of those towards its middle. Hence he concluded that the point of concourse of the meridians should be situated beyond the pole by a quantity equal to 5° of latitude, and that the angle of two consecutive meridians should be 48° 44′.

5. *Flamsteed's Projection.*

682. *The English astronomer Flamsteed,* in constructing his celestial atlas, developed all the parallels of latitude on the sphere into straight lines, and also one of the meridians; *viz.* that which passes through the middle of the chart: then the parallels, which are all perpendicular to that meridian, are exactly of the same length as on the globe, and consequently the degrees of longitude on the parallels will be shown in their just proportion, that is, as the cosines of the latitude. If, now, the parallels on the map be divided into equal parts, just as the parallels on the globe are, by the meridians, curve lines traced through corresponding points of division will represent the meridians.

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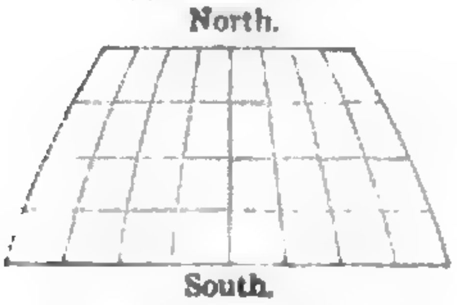

683. *The adjoining figure (fig. 55.)* exhibits a sketch of a map of this construction.

684. *According to Flamsteed's method,* any distance on the map in the direction of the parallels is every where equal to the corresponding distance on the globe; but the configuration of places near the extremities is considerably distorted by the obliquity of the meridians to the parallels, so that the spherical quadrilaterals, the sides of which cross at right angles, are in the map represented by mixtilineal trapeziums, of which the angles are very unequal. Flamsteed employed this projection in representing the positions of the stars; but it is also employed in geography, particularly in delineating countries which extend on both sides of the equator: Africa, for instance.

6. *Modification of Flamsteed's Projection.*

685. *There is a modification of Flamsteed's projection* (*fig.* 56.), which has been extensively employed, and which deserves particular attention, because it corrects, in part, the defect of the obliquity of the meridians. This substitutes arcs of concentric circles for the straight line, which he proposed to represent the parallels of latitude. The common centre of the circles is in a straight line drawn through the middle of the map as an axis, and which represents a meridian; and its position in the axis ought to be such, that the obliquity of the angles made at the intersection of the curves which represent the meridians, and the circles which represent the parallels, should be as little as possible.

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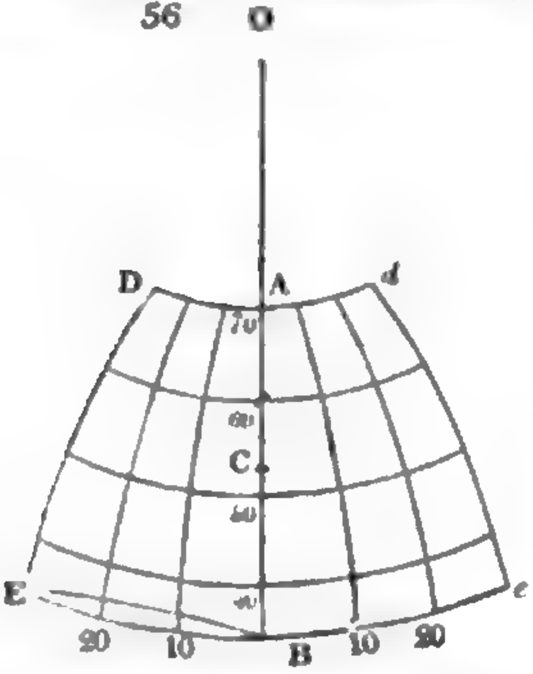


686. *The position of the centre* is so assumed, that the radius of the middle parallel of latitude is equal to its cotangent; and in this the modified projection of Flamsteed agrees with the ordinary conical projection.

687. *To exemplify this construction,* let it be proposed to describe the parallels and meridians for a map of Europe, which shall extend from 53° north latitude to 70°.

688. *Let us, as in* § 674, assume a minute of a degree of latitude for the unit of the scale from which the measures of the lines are to be taken. Therefore, as before, the radius of the sphere, of which a portion of the spherical surface is to be represented, will be 3437·7 minutes.

689. *Let* O A C B (*fig.* 56.) be assumed as the axis or middle meridian of the map; and let A D, B E be the halves of the part of the extreme parallels of latitude to be represented, and C the point in which the middle parallel (52° 30′) cuts the axis; also, let O be the centre of the circles, arcs of which are to represent the parallels.

690. *By the nature of the projection,* O C must be taken equal to the cotangent of 52° 30′; this, to radius = 1, is ·76733, and to a radius expressed by minutes, we have

$$\text{O C} = \cdot 76733 \times 3437 \cdot 7 = 2637' \cdot 8.$$

691. *Having found* O C, *the radius of the middle parallel,* the radius of any other parallel may be found by adding or subtracting its distance in minutes of the meridian from the middle parallel. Thus we find the radii of parallels differing by 5°, as in the following table: —

Parallel.	Radius.	Parallel.	Radius.
35°	3687·8	55°	2487·8
40	3387·8	60	2187·8
45	3087·8	65	1887·8
50	2787·8	70	1587·8

692. *Next, we must find the points* in which some one meridian cuts all the parallels. We shall suppose it to be 30° of longitude from O C, the axis of the map.

693. *From the nature of the developement,* the arc of longitude on any parallel in the map is equal to the arc of the parallel on the sphere which it represents. This has to an arc of the same number of degrees of the meridian the proportion of the cosine of the latitude of the parallel to the radius. Therefore, an arc of 30° = 1800′ on a parallel whose latitude is L will be in minutes,

$$1800 \times \text{cosine L}.$$

694. *By this formula,* the lengths of the arcs may be easily computed by a table of logarithmic sines: but, for a practical construction, it will be more convenient to have the chords of the arcs. Now, in arcs not exceeding 30°, the arc diminished by a fraction whose numerator is the cube of the arc, and denominator 24 times the square of the radius, is very near equal to the chord; that is, a being put for any arc, and r its radius,

$$\text{chord } a = a - \frac{a^3}{24\, r^2} \text{ nearly.}$$

695. *From this formula,* the chords may easily be deduced from the arcs.

696. *As an example,* let the arc of 30° of longitude, and its chord on the parallel 35°, be required. For facility of calculation, we shall use logarithms.

Calculation of Arc.		Calculation of Log. of $24\gamma^{2}$.	
	Logarithms.		Logarithms.
$30° = 1800'$	3·25527	Radius of arc 687·8	3·56677
Cosine 35°	9·91336		2
Arc $a = 1474'·5$	3·16863	Log. of square of radius	7·13354
	3	24	1·38021
From log. of cube of arc	9·50589	Logarithms $24 r^{2}$	8·51375
Subtract Log. $24 r^{2}$	8·51375		
Differ. of arc and chord 9′·8	0·99214		

Thus, by an easy logarithmic calculation, we have found the arc to be 1474′·5, and its excess above the chord to be 9′·8. Therefore, the chord is 1464′·6 of the meridian. By a like process, we have found the arcs of 30° of longitude, and their chords on the parallels to every fifth degree, as in this table.

Par. of Lat.	Arcs.	Chord of Arc.
35	1474·5	1464·7
40	1378·9	1369·4
45	1272·8	1263·8
50	1157·0	1148·7
55	1032·4	1025·0
60	900·0	893·6
65	760·7	755·5
70	615·6	611·8

697. *Having now found the chord* of 30° of longitude on the parallel of 35° to be 1464′·7 of the meridian, we must, with compasses, place that distance taken from a scale of minutes from B to E, and to *e*; and the points E, *e* will be in the representations of meridians 30° of longitude from the axis on each side. In the same way, the intersections of these meridians with the other parallels are found. Curve lines E D, *c d* must now be traced through all the intersections, and these will be the meridians in the map.

698. *The intersections of the intermediate meridians* with the parallels may be found by dividing each parallel into thirty equal parts, from the axis both ways; and as many meridian lines may be exhibited as may be thought necessary. In the figure here given they are traced to every tenth degree.

699. *If the map is to extend* further than 30° on each side of its middle meridian, the divisions of the parallels may be repeated on each, and meridians drawn.

700. *This construction of a map is memorable*, because it was adopted by the general *depôt* of war of France, about the year 1803, as the groundwork of a system of geographical charts which should exhibit the French original territory, as well as the additions which had been made, and were expected to be made, by conquest or negotiation.

Developement of the Curve Surface of a Cylinder.

701. *The mariner, in navigating a ship between remote points on the globe,* directs his course by the *compass;* steering as nearly as possible always in the same direction, supposing there are no obstacles to prevent him. If the place from which he sets out, and that of his destination, be due north and south from each other, the ship's path will evidently be a great circle, *viz.* the meridian passing through them. If, again, they have the same latitude, he must sail on a parallel of latitude; that is, his course must be due east or west. But if the places differ both in latitude and longitude, then it becomes a question, what is the nature of the line on the globe along which a ship must sail, with her head always in the same direction, as indicated by the compass, so as to pass from one to the other?

702. The line in question, which is called a *rhumb line* or *loxodromic line,* has manifestly this property, — *it cuts all the meridians on the globe at the same angle.* By this property, a ship sailing along it will move always in the same direction, as shown by a compass: but it will not be a great circle; for the equator is the only great circle that cuts all the meridians at the same angle; and hence it appears that the line on the globe by which a ship passes from one place to another is never the shortest possible, except when they are on the same meridian, or on the equator.

703. *Supposing a navigator had a perfect delineation of the earth on a sphere,* it is by no means evident how he should find the course he ought to steer to reach a remote port. By due consideration, however, he would see that the path must be a spiral. It would also be represented by a spiral curve on a map, formed by the developement of a cone; but navigators required charts before the theory of such curves was understood; therefore at that period his art must have been imperfect.

704. *The wants of the navigator,* accordingly, gave rise to the construction of a chart, in which the meridians and parallels were straight lines; and in this the developement of the curve surface of a cylinder was employed. Let us conceive that a zone of the earth's surface, of no great extent in latitude, is inscribed in or circumscribed about a right cylinder, whose axis coincides with that of the globe: the planes of the meridians will cut the curve surface of the cylinder in straight lines, parallel to the axis; and the planes of the parallels will cut it in sections perpendicular to the axis, which will be circles equal to the base of the cylinder. But in supposing the surface of the cylinder developed into a plane, these circles will become straight lines, perpendicular to the meridians. This developement has received the name of the *plane chart:* its invention is attributed to Henry, son of John king of Portugal. This kind of chart has nothing but its simplicity to recommend it; for the degrees of longitude have, indeed, their just proportion to the degrees of latitude in the parallel common to the cylinder and sphere, but in no other parallel.

705. *In the developement of a cylinder circumscribing the whole sphere,* the area of any zone in the sphere is exactly equal to that of its representation in the chart; and indeed the same equality may be observed in all cases, by a proper assumption of a parallel of latitude as the base of the cylinder. The developement, however, has this great fault, — the degrees of longitude always err in excess towards the north and in defect towards the south of the mean parallel, which is assumed as the base of the cylinder.

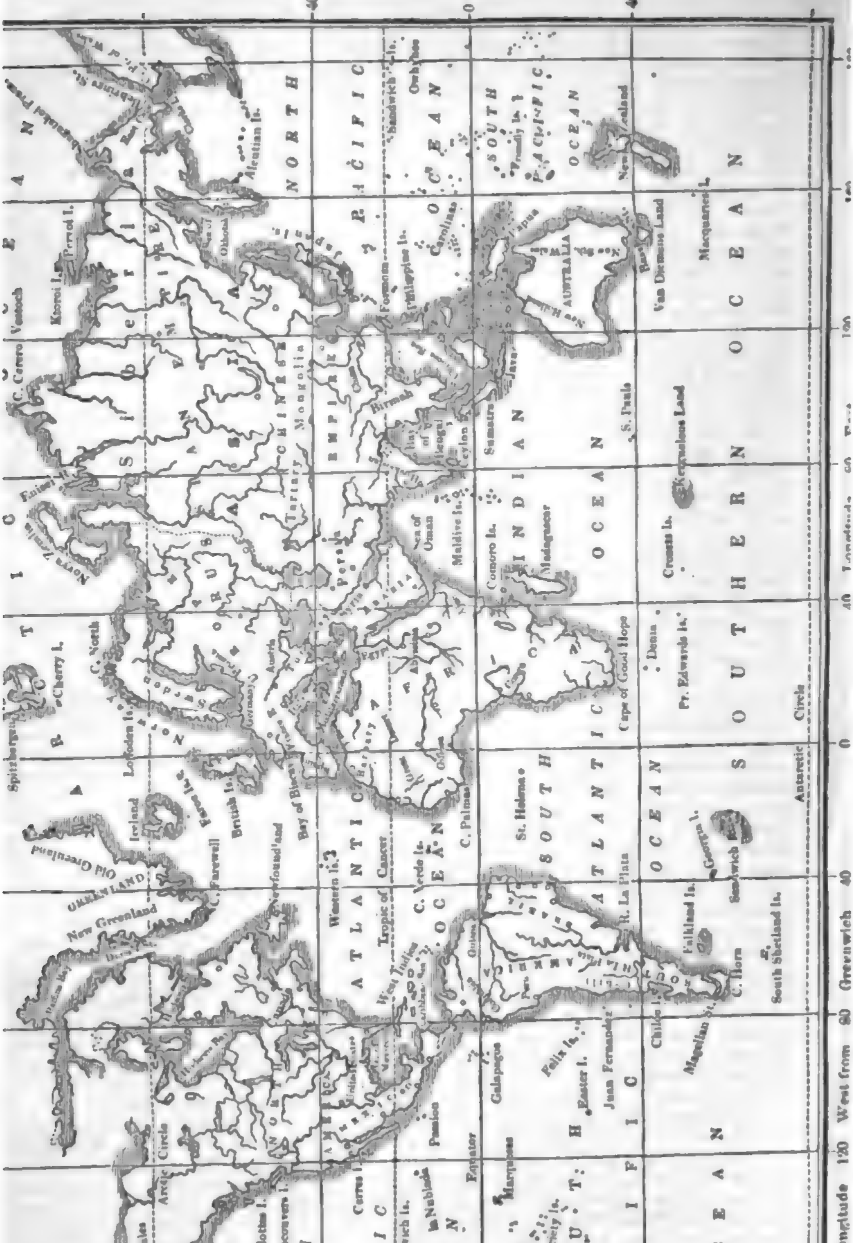
706. *There is a construction,* described in books of navigation under the name of a *plane chart,* the principle of which is somewhat different from that just described. In the seaman's plane chart the meridians are parallel straight lines, and so also are the parallels of latitude; and both are so laid down that a degree of latitude and a degree of longitude are equal in all latitudes. A chart of this kind, extending from 30° to 71° of north latitude, is given in *Robertson's Navigation.* It may easily be conceived how incompetent such a representation must be to the purposes of navigation or geography.

Mercator's Chart.

707. *The utter inadequacy of the old plane charts* to the wants of geography and navigation induced ingenious men to consider whether a chart might not be so constructed as to represent the meridians and parallels by straight lines, and at the same time readily show the true bearings of places from one another. The first that gave a true solution — at least an approximate one — of this important problem was Gerard Mercator, who was born at Ruremond, in Upper Guelderland, in the year 1512, and published a chart in 1556, wherein the rhumbs, which on the globe are spirals, were represented by straight lines, as in the plane chart; and so also were the meridians and parallels. It is not known by what principle Mercator constructed his chart; it has been supposed that he observed on a globe furnished with rhumbs what meridians the rhumbs passed in each degree of latitude: it is certain he did not know the true principles of the construction; for these were first found by Edward Wright, of Caius College, in Cambridge, who communicated his invention to his friend Thomas Blundeville, with a short table, showing the correct distances of the parallels of latitude from the equator, which was published in 1594 by Blundeville, among his *Exercises.* The truth of the divisions of Mercator's chart was then tried by the numbers given by Wright, and they were found to be inaccurate: hence it appears that Mercator did not understand the principles of the map bearing his name, and that this important invention is due to Wright, who explained it himself, in his treatise entitled *The Correction of certain Errors in Navigation,* published 1599, but written many years before.

708. *Although Wright's numbers were sufficiently correct* for all nautical purposes, and might be carried to any degree of accuracy, yet, in the progress of mathematical science, an improvement was made in his theory. Napier's invention of logarithms had proved an inestimable advantage to navigation and geography, by shortening calculations: this, however, was not the only advantage that the navigator derived from the invention; for, about the year 1645, Henry Bond showed that the division of the meridian in Wright's chart was altogether analogous to the logarithmic tangents of half the complements of the latitudes, and might be expressed by them. He seems to have found this by chance: such accidental discoveries are, however, never made but by men of genius. He could not demonstrate his important theorem. At last James Gregory proved its truth in his *Exercitationes Geometricæ,* published in 1668. The construction of the chart was now made perfect.

709. *The invention of Mercator's,* or rather Wright's, chart, one of the most important in the 16th century, affords a notable instance of the slowness with which men adopt improve-


80
40
0
40
180
120
80
40
0
40
80
120
160
Longitude West from Greenwich
Longitude East
N O R T H
P A C I F I C
O C E A N
S O U T H
P A C I F I C
O C E A N
N O R T H
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S O U T H E R N
O C E A N
A R C T I C
O C E A N
Arctic Circle
Tropic of Cancer
Equator
Antarctic Circle
Behrings St.
Aleutian Is.
Q. Charlotte I.
Vancouvers I.
Pr. of Wales
Sandwich Is.
Chatham Is.
Matthews I.
Friendly Is.
Society Is.
Marquesas
Easter I.
Juan Fernandez
Felix Is.
Galapagos
Chiloe I.
Magellan St.
C. Horn
South Shetland Is.
Falkland Is.
Sandwich
Georgia I.
Baffins Bay
New Greenland
GREENLAND
Old Greenland
C. Farewell
Iceland
Faroe Is.
Newfoundland
West Indies
Western Is.
C. Verde Is.
C. Palmas
St. Helena
R. La Plata
British Is.
Bay of Biscay
Spitzbergen
Cherry I.
C. North
Lofoden Is.
Norway
Sweden
Germany
Austria
Barbary
Abyssinia
Cape of Good Hope
Pr. Edwards Is.
Denis
Crozets Is.
Kerguelens Land
Madagascar
Comoro Is.
Maldive Is.
Sea of Oman
Arabia
Syria
Persia
Tartary
Mongolia
CHINESE EMPIRE
Birmah
Ceylon
Sumatra
Java
S. Paula
Nova Zembla
Russia
Siberia
C. Cevero Vostock
Kotoi I.
Ferrol I.
Okhotsk
Aleutian Is.
Formosa
Philippine Is.
Carolinas
Sandwich Is.
Owhyhee
Papua
AUSTRALIA
New Holland
Van Diemens Land
Macquarie I.
New Zealand
Chatham I.
Cornwallis Is.
Lamira
Oro I.

ments in science. Although designed for the use of sailors, it was at first by no means generally used by them. William Burrough, a celebrated navigator, who had entered on his profession at the age of fifteen, and risen by his merit to the rank of controller of Queen Elizabeth's navy, objected to its usefulness. He said — "By Mercator's augmenting his degrees of latitude towards the poles, the same is more fit for such to behold as study in cosmography, by reading authors upon the land, than to be used in navigation at the sea." It is curious to observe that logarithms, the other grand auxiliary of navigation, met with a like reception from the German mathematicians that were somewhat advanced in years.

710. *Mercator's chart may be produced by developement,* as follows: — Conceive that a sphere, with the meridians and parallels and countries delineated on it, is enclosed in a hollow cylinder, and that the axis of the sphere coincides with that of the cylinder. Imagine now that the sphere is expanded in its dimensions, just as a soap bubble is produced by blowing air into it, or as a bladder would swell in all directions by inflation, the parts always stretching uniformly; the meridians will lengthen in the same proportion as the parallels, till every point of the expanding spherical surface comes into contact with the concave surface of the cylinder: the meridians will at last become straight lines, and the parallels, circles on that surface; the former in the direction of its length, and the latter parallel to its base, which is the equator. Suppose now the surface of the cylinder to be cut open along one of the meridians, and spread into a plane; the surface thus produced will be Mercator's chart.

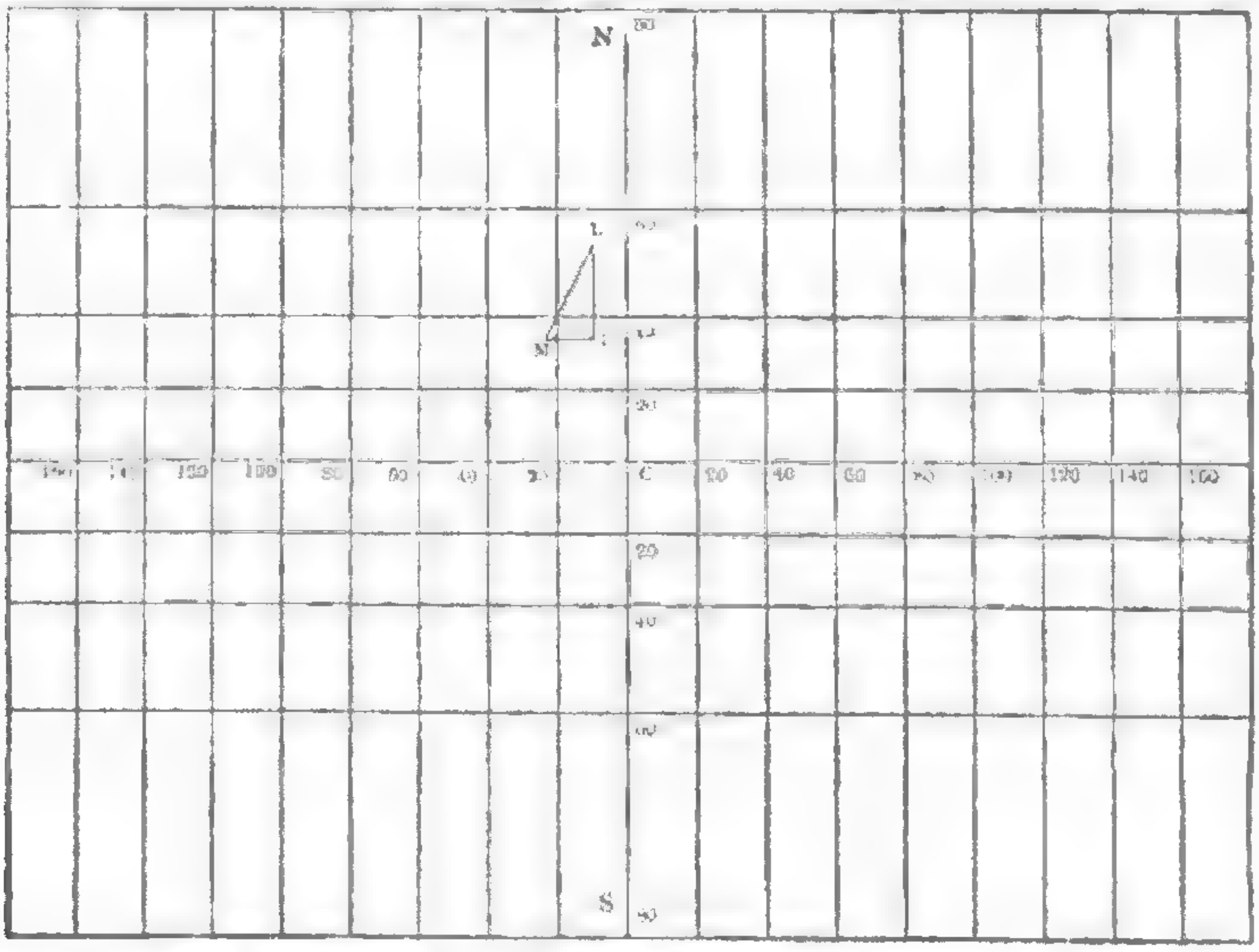
711. *Mercator's chart is constructed, then,* on the following geometrical principles: — 1. The meridians are parallel straight lines at equal distances, for equal differences of longitude; and the parallels of latitude are also straight lines, perpendicular to the meridians. 2. Supposing a meridian on the globe be divided into minutes of a degree; one of these, at any parallel of latitude, will be to a minute of longitude taken on that parallel in the proportion of the radius of the equator to the radius of the parallel, which is the cosine of the latitude; that is, as the secant of the latitude to radius. Now the same holds true in the chart; that is, a minute of the meridian, at any parallel, has to a minute of longitude in that parallel the proportion of the secant of the latitude of the parallel to radius.

712. *By the first of these properties* a minute of longitude in the map is represented by a line of the same length in every parallel; therefore, by the second the minutes of the meridian will be represented by lines which go on increasing from the equator towards the poles. From this it follows that, if a minute on the equator be taken as the unit of a scale, and that unit be considered as the radius of a circle, then the representation of a minute of the meridian, at any latitude, will be expressed by the number in the trigonometrical tables which is the secant of that latitude. Thus it appears that, while the degrees of longitude on the equator form a scale of which the divisions are all equal in the map, the degrees of latitude marked on a meridian form a scale of which the divisions go on increasing from the equator towards both poles, each being the sum of the secants of all the minutes in the degree.

713. *The numbers which result* from the addition of the secants of 1 minute, 2 minutes, and so on to the last minute of any arc of the meridian, reckoned from the equator, are given in books on navigation. They form the table of *meridional parts,* and serve for laying down the position of any place in the chart. The addition of the secants is, however, only an approximation to the true length of the enlarged meridian in the chart; but it is sufficiently near the truth for nautical or geographical purposes. In strictness, also, it must be considered that the earth is not a sphere, but a spheroid, and on that account allowance ought to be made for its compression at the poles. The following short table shows the length of the enlarged meridian, both on the sphere and the spheroid, to every fifth degree of latitude. The compression is assumed to be $\frac{1}{300}$.

Lat.	Meridional Parts.		Lat.	Meridional Parts.	
	Sphere.	Spheroid.		Sphere.	Spheroid.
0°	0·00	0·00	50°	3474·47	3457·39
5	300·38	298·37	55	3967·97	3950·57
10	603·07	599·01	60	4527·37	4509·41
15	910·46	905·28	65	5178·81	5159·93
20	1225·14	1217·69	70	5965·92	5945·51
25	1549·99	1541·17	75	6970·34	6951·07
30	1888·38	1877·99	80	8375·20	8352·24
35	2244·29	2232·09	85	10764·62	10741·75
40	2622·69	2608·35	90	Infinite.	Infinite.
45	3029·94	3014·41			

714. *To construct Mercator's chart (fig. 57.)*, draw two straight lines W E, N S at right angles to each other, intersecting in C; of these W E is to represent the equator, and N S a meridian, in the middle of the chart: from any convenient scale lay off equal parts along the equator, from C both ways, to represent degrees of longitude, and each of which should, if there be room, contain 60 subdivisions for minutes.



715. *Assuming the equator as a scale of minutes*, lay off from C, north and south on the middle meridian, the number of minutes in the enlarged meridian, corresponding to each degree of latitude as shown by a table of meridional parts, of which that just given is an abridgment.

716. *Draw straight lines* through every fifth or every tenth degree of the equator and divided meridian, and perpendicular to them. The perpendiculars to the equator will be *meridians*, and the lines parallel to it *parallels of latitude*.

717. *To put any place in its proper position* on the chart, assume some one meridian for the first, and lay off from its intersection with the equator, and along it in the proper direction, the longitude of the place in minutes; draw a line through the point thus found perpendicular to the equator: this will be the meridian of the place.

718. *On this meridian lay off the latitude*, as shown by the table of meridional parts; and the point thus determined will be the true position of the place in the chart.

719. *To find the bearing* of one point from another, or *course* in which a ship ought to sail in passing from one to the other, draw a straight line joining the two points, and the angle which that line makes with the meridians is the *course* or bearing.

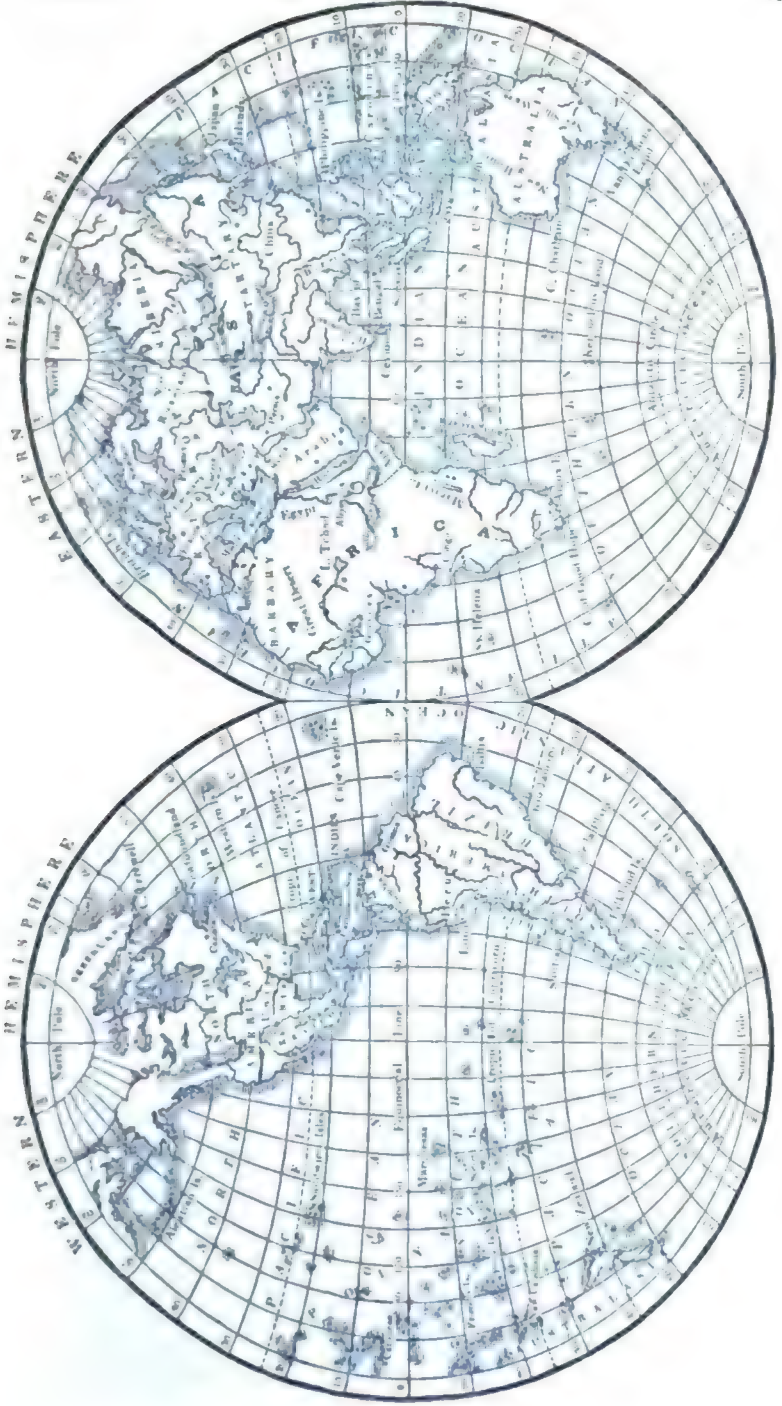
720. *Thus, if* L be the Lizard Point on the chart, and M the east end of the Island of Madeira, draw L I parallel to the meridian N S, and the angle I L M will be the course on which a ship ought to steer from the Lizard to reach Madeira.

721. *The course may be found by a trigonometrical calculation*, by considering that the *meridional difference of latitude* of the two places (as given by the table of meridional parts), and the difference of longitude in minutes, are the sides of a right-angled triangle, of which the line joining the places is the hypotenuse, and the course one of the acute angles, viz. that made by the meridian and line joining the places.

722. *Again*, the distance of the places, measured on the rhumb line passing through them, may also be found by trigonometry. It is the hypotenuse of a right-angled triangle, of which the *proper difference* of latitude (not the meridional difference) is one side, and the course the adjacent angle.

723. *These properties of the chart* apply alike to the bearings and distances of all places on the globe measured on rhumb lines. The bearing and distances of London, Edinburgh, and Dublin, for instance, from each, may be found in this way from a table of meridional parts and their known latitudes and longitudes.

724. *It is evident that Mercator's chart* does not serve well to show the figure of the countries on the globe, nor their relative magnitudes. These are purposes, however, which it is not intended to serve; but it does serve perfectly the purposes for which it was first constructed, and which, before its invention, were a *desideratum* in geography.


EASTERN HEMISPHERE
WESTERN HEMISPHERE
North Pole
South Pole
AFRICA
BARBARY
Great Desert
Egypt
Arabia
Ceylon
China
INDIAN OCEAN
AUSTRALIA
St. Helena
ATLANTIC OCEAN
NORTH AMERICA
SOUTH AMERICA
PACIFIC OCEAN
Equinoctial Line
Marquesas
New Zealand
Antarctic Circle

BOOK II.

GEOLOGICAL PRINCIPLES.

725. *Geology* is that branch of natural history which treats of the atmosphere, the waters of the globe, and of the mountain-rocks of which the earth is composed. No department of natural history abounds more in important facts and interesting conclusions; and therefore we shall lay before our readers a short view, 1st, Of the natural history of the atmosphere, or *meteorology;* 2dly, Of the natural history of the waters of the globe, or *hydrology;* and, 3dly, Of the solid materials of which the earth is composed, or *geognosy.*

Chap. I.

METEOROLOGY.

726. *This beautiful department of science* makes us acquainted with all the properties and relations of the *atmosphere* which surrounds our planet. Although in general but little studied by geologists, a knowledge of it is, nevertheless, most useful in a geological point of view, of which the details we shall now lay before our readers will afford ample proof.

Sect. I. *Pressure, Height, Form, and Temperature of the Atmosphere.*

727. *The air* in which we breathe, with the clouds and vapours floating in it, surround the earth on all sides to an unknown height, and form a moveable envelope denominated the *atmosphere.* The human species, and other land animals, being thus entirely immersed in this fluid, may with some propriety be said to inhabit an ocean as really as the fishes which live in the great deep. But the latter have the advantage in being able to mount up, remain, or descend at pleasure in their element: whereas, without some additional aid, we must content ourselves with the more humble allotment of remaining on the bottom of our ocean. The winged tribes, doubtless, have the power of ascending to great heights; still they can never reach the summit. There is nothing more essential to the existence or health of man himself, or of the various inferior animals and vegetables which live on our globe, than the air or atmosphere; nor has any agent a greater share in the innumerable changes which are daily taking place on the inanimate materials composing our planet. It is not wonderful, then, that the composition and properties of the atmosphere should have so often excited enquiry. To give an account of these, and of their relations to other bodies, particularly to the various substances which are diffused in the atmosphere, and really or apparently deposited from it, constitutes the science of meteorology. Whilst engaging in this task, so far as our limits permit, it will be fully as instructive, and scarcely more tedious, occasionally to introduce a very brief sketch of the mode in which some of the leading facts were first discovered; but there is reason to think that a few of the more obvious properties of air have been known, as it were instinctively, from the remotest antiquity.

728. *That air is a body or substance* possessing the essential properties of matter, appears from the resistance which it offers to the occupation of its place by other bodies. Thus, if an apparently empty glass jar be first inverted, and then immersed in a vessel of water, that liquid will only enter a very little way into the jar, the rest being occupied by the air. This familiar experiment shows that air is a body, by its resisting the entry of the water. At the same time it shows the air to be an elastic or compressible substance, otherwise it should have completely excluded the water. That it is a fluid is evident from the ease with which bodies move in it, from its pressing equally in every direction, and passing with great facility through extremely minute openings.

729. *The ancients* must have been aware of these properties, or at least some of their practical applications, otherwise they could not have constructed their powerful air-guns, nor availed themselves of the principle of the diving-bell: for, in those early ages, the adventurers who dived in search of pearls, &c. were accustomed to hold large pots or kettles inverted on their heads. The air which these open vessels contained both excluded the water, and for a short time supported respiration; thus forming diving-bells in a portable shape. The ancients likewise, in some of their mechanical contrivances, availed themselves of that property of air by which it expands with heat and contracts with cold. It was on this principle that, in more modern times, Sanctorio constructed the air thermometer.

730. *Weight and pressure* are properties of the air as of all other bodies: it presses on the earth's surface, and on every other body with which it comes into contact. This was conjectured even by the ancients. But the effects which are now known to result from the weight and elasticity of the air were for a long time ascribed to a principle called *fuga vacui,* or nature's abhorrence of a vacuum. * So late as the beginning of the seventeenth century,

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* Many principles laid down by our philosophers have been found false or imperfect; but they were truly the general expression of the phenomena then known. Aristotle saw, for example, solid or fluid bodies fall towards the ground when they ceased to be supported, gaseous bodies rise from the bottom towards the surface of the water, and flame direct itself towards the sky; and he concluded that air and fire had a tendency

it was generally believed, that the ascent of water in pumps was owing to this principle, and that by means of suction fluids might be raised to any height whatever. But Galileo, though still inclining to the old opinion, remarked that water did not rise in a common pump unless the sucker or bucket reached within 34 feet of its surface in the well. Hence he was forced to conjecture, that not the power of suction, but the pressure of the atmosphere on the surface of the well, was the cause of the water's ascent; that a column of water 34 feet high was a counterpoise to one of air on an equal base, but reaching to the top of the atmosphere; and that, for this reason, water could not follow the sucker any farther.

731. *Torricelli*, a disciple of Galileo, profited by this hint. It occurred to him that the same force which supported water to the height of 34 feet would sustain a column of any other fluid which weighed as much on an equal base; and therefore mercury, being 13·6 times as heavy as water, should only be suspended to the height of 29 or 30 inches. Accordingly, he took a glass tube from three to four feet long, and closed at one end; this he filled with mercury; then, stopping its mouth with his finger, he inverted the tube, and on re-opening its mouth in a vessel of quicksilver the result verified his expectation. The mercury, obeying the laws of hydrostatics, descended in the tube till the vertical column was about 30 inches above the level of the cistern, leaving the remaining space at the top empty or nearly a vacuum. Hence he inferred that it was only the weight or pressure of the atmosphere on the mercury in the cistern which balanced the column in the tube. This is usually called the Torricellian experiment, and is the foundation of the barometer.

732. *The mean pressure* is every where the same at the level of the sea, and equal to about 14¾ lbs. on the square inch. It becomes less as the place is elevated above the sea, and greater if below its level. The pressure of the atmosphere, as measured by the mercurial column, varies somewhat at every place on the earth's surface. Generally speaking, its variations are greatest in the temperate zones, decreasing towards the equator and poles. The annual range rarely exceeds half an inch in the torrid zone. It is about two inches at London, and the same at St. Petersburg, but rather less at Melville Island. It nowhere exceeds 3½ inches. The annual range is more considerable at the level of the sea than on mountains; and under the same latitude it is less, as the height of the place above the sea is greater. The barometer has a tendency to rise from 4 P.M. to 10 P.M.; to fall from 10 P.M. to 4 A.M.; to rise from 4 A.M. to 10 A.M.; and again to fall from 10 A.M. to 4 P.M. Different authors, however, differ a little both as to the hours and the amount of the diurnal variation, which appears to be greater as the latitude is lower. The barometer is likewise elevated a little at the quarters of the moon, and depressed at the new and full. The range of this instrument is greater in winter than in summer.

733. *The barometer ranges* higher in proportion as the weather is more serene and settled; calm weather, with a tendency to rain, depresses it; high winds have a similar effect, especially from the west and south, during which it sometimes sinks very low without rain. On the other hand, the barometer generally rises with northerly and easterly winds, even though accompanied with rain. In extra-tropical climates, a fall in the barometer, without a change or rise of wind, is usually followed by rain.

734. *The law which regulates the elasticity of the air* formed the next important step, after the discovery of the pressure. It was made by Boyle in England, and Mariotte in France, who discovered, much about the same time, that the temperature being the same, the pressure or elastic force of air is directly as its density, or inversely as the space it occupies. This law, though received as correct at the time of its discovery, came to be frequently called in question during more than a century after. In making experiments on this subject, there are many sources of error to be guarded against; and it would have been nothing remarkable though the first conclusions had been a little inaccurate. Indeed the law continued to be suspected till within these few years. But MM. Dulong and Petit have more recently examined it through a wide range of temperature, Professor Oersted has tried it under a great variety of pressures; and within the limits of their experiments the law was found to hold good. The writers of certain popular works just publishing do not seem aware of this, as they still state the old doubts in all their force.

735. *The variable capacity for heat* forms another property of air of no less importance, but which seems to have been little known or attended to till towards the end of the last century. When air undergoes a change of volume, it at the same time changes its capacity for

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to ascend, earth and water to descend. We now know that these motions, although inverse, are the result of a single power; but we have arrived at this discovery after the insufficiency of the first explanations were rendered manifest by new facts. The same remark applies to the much vituperated principle of the *horror of a vacuum*. Aristotle did not establish it *à priori*, he only announced it as the general expression of the facts then known. If he had seen water stopping in pumps at a height of thirty-two feet, and mercury rising to twenty-eight inches in the Torricellian tube, perhaps on comparing the specific weights, and the height of the two columns, he would have been led to discover the true cause of the phenomenon. We may remark, that so long as experiment had not shown the contrary, it was just as rational to suppose that bodies had a disposition to carry themselves wherever a vacuum tended to form, as to admit that they attract each other, as is now believed. The principle of the *horror of a vacuum* is found false; but it has nothing absurd in itself, and can only seem so to persons who take in the literal sense a figurative expression, (an expression perfectly similar to many others which we employ without scruple,) because language does not furnish us with any that are perfectly rigorous.

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heat: becoming hotter by compression, and colder by rarefaction. The want of acquaintance with this circumstance led Newton, and many others after him, into the mistake of concluding, that the particles of elastic fluids repel each other with forces inversely as their central distances; which cannot be the case if the capacity be affected, no matter in what manner or degree, by a change of density. But very extensive experiments, made by some of the most eminent scientific men in France, and repeated in this country, are favourable to the idea that the particles of air observe the same law as magnetism and electricity, repelling each other with forces inversely as the *squares* of their distances.

736. *There is a gradation of density* in the air. Being, as already stated, a compressible body, it is obvious that the lower parts of the atmosphere, by sustaining the greater weight or pressure of the air above them, must be so much the more condensed; and therefore, as we ascend in the atmosphere, the density will continually diminish. Accordingly, it may be shown from the principles already laid down, that were the temperature and the force of gravity uniform at all heights above the earth's surface, the densities of the strata would decrease in geometrical progression for altitudes taken in arithmetical progression, so as nearly to halve the density for every 3·5 miles of ascent. But, independently of a trifling change in the force of gravity, this is not exactly the law of nature; for it is found that the temperature generally decreases as we go upward, and that not according to any fixed law. Hence the relation between the density and altitude is not of a steady character, and can only be obtained in any particular case from observing the pressure, temperature, and hygrometric state of the air. This is a research to which many eminent men have turned their attention; and their successive labours have led to the formation of convenient rules, by which the heights of mountains can be obtained to a considerable degree of accuracy, and with great facility, by means of the barometer, &c.

737. *The height and form* of the atmosphere are objects of interest. With an uniform temperature, the law of Boyle would involve the notion that its height is infinite; but this is an idea which has scarcely any supporters, and is generally believed to be incompatible with the laws of motion. Dr. Wollaston, whose opinion is entitled to great deference, maintains that the atmosphere must terminate at the height where the repulsive force between its particles equals their tendency to gravitate towards the earth. The law of gravity may be admitted as known, but the same can hardly be affirmed of the law which regulates the repulsive force, so long as the temperature at great heights is unknown; and this circumstance leaves the boundary undetermined. A doubt of a more serious nature, however, attaches to this speculation, on the ground that we are totally ignorant with what materials the air may be mixed at great elevations. The atmosphere is generally supposed to be higher at the equator than at the poles; but we have neither data for computing the heights, nor the proportion in which they differ: so that the oblate spheroidal figure which some give to the atmosphere can be considered as little else than an ingenious conjecture.

738. *The temperature* of the atmosphere has great influence on most meteorological phenomena; but it is exceedingly variable, and can as yet be determined only by actual observation on the spot. Nothing would tend to throw greater light on many of the unresolved questions in meteorology, than a ready mode of computing with certainty the temperature which obtains at any instant in a point of the atmosphere remote from the contact of the earth's surface, and at any point on the surface remote from the observer: but these are likely to continue desiderata. The very little that is known of the temperature of air remote from the earth's surface has been derived from a few aëronautic excursions, particularly the unexampled ascent of M. Gay-Lussac to the height of 7630 yards.

739. *Mr. Dalton*, about the commencement of the present century, proposed a theory of gradation of heat in the atmosphere, on the supposition that the same weight of air, taken anywhere in a vertical column, contains the same quantity of heat; and hence he concluded that the temperature ought to be regulated solely by the capacity of the air for heat at the particular density. This theory seemed very plausible at the time, was embraced by some of the first sages of the age, and appeared to agree sufficiently with what was then supposed to be known of the variable capacity of air for heat. But simpler and more accurate experiments have since shown, that the decrease of temperature due to rarefaction far exceeds that observed in aëronautic ascents; and therefore, if such observations are to be depended on, there must be other causes which interfere with Dalton's law.

740. *The heat of the air* in one shape or other is no doubt greatly derived from the sun, either immediately, by intercepting the solar rays, or indirectly, from its contact with the earth's surface, which is more or less heated according as it is turned more or less towards the sun: but whether heat, in return, be projected from the earth or its atmosphere towards other regions of space, is a disputed question. Professor Leslie maintains that heat, which is not accompanied with or rather in the state of light, cannot pass through a vacuum, and, of course, that it cannot pass the boundary of the atmosphere. If so, it would follow that the atmosphere does not continually draw off heat from the earth, but may oftener be the warmer of the two. Many philosophers, however, are of a different opinion, among whom was the late ingenious Dr. Wells, with most of those who embraced his theory of dew. These allege,

that heat is constantly projected from the earth and atmosphere towards the boundless regions of space. Observation shows, that much heat passes upward from the earth's surface, especially when the air is clear. In this way, the stratum of air in contact with the surface is cooled more than that which is somewhat higher. It is probable that there exists a natural tendency in the atmosphere, as in most other bodies, towards an uniform temperature throughout its whole height; and since currents in its upper regions usually come from a warmer quarter, and the lower currents from a colder, there is upon the whole, independently of aëronautic observations, some ground for supposing that the decrease of temperature on ascending in the atmosphere should be slower than the law of capacity as increased by dilatation requires.

741. *The following list of temperatures,* chiefly observed at stations employed in the barometrical measurements of heights, is taken from M. Ramond's work on that subject. Only a few of these measurements embrace the whole heights of the mountains on which they were made, and the first case is of a different class. We have reduced the temperatures to Fahrenheit's scale: —

Places.	Height.	Temp. at bot.	Temp. at top.	Places.	Height	Temp. at bot.	Temp. at top.
	Yards.	°	°		Yards.	°	°
Gay-Lussac's ascent - -	7630	87.4	14.9	Pic d'Eyré, Tarbes - -	2347	79.3	51.8
Chimborazo - - -	6427	77.5	29.1	Pic du Montaign - .	2244	58.1	37.6
Mont Blanc, Geneva - -	4782	82.9	26.8	Pic du Midi, Barèges - -	1808	80.1	61.5
Ditto - - -	—	81.7	29.1	Ditto - - -	—	71.4	46.4
Pic de Teneriffe - - -	4077	76.8	47.1	Ditto - - - -	—	70.3	46.8
Mont Blanc, Chamouny -	4070	73.4	26.8	Ditto - - -	—	65.3	42.8
Etna - - - -	3540	73.6	39.9	Ditto - - - -	—	50.6	36.5
Mont Perdu, Tarbes - -	3408	78.1	44.4	Ditto - - -	—	64.0	44.6
Col du Géant, Geneva - -	3346	76.8	40.1	Ditto - - - -	—	66.0	42.4
Maladette - - -	3174	69.4	38.1	Ditto - - -	—	65.1	41.4
Pic du Midi, Tarbes - -	2858	81.5	52.9	Puy de Dôme, Clermont -	1163	70.3	57.9
Ditto - - -	—	67.3	47.5	Ditto - - - -	—	64.0	51.4
Ditto - - - -	—	72.5	46.6	Ditto - -	—	65.5	53.1
Ditto - - -	—	74.3	50.7	Ditto - - - -	—	76.6	59.4
Ditto - - - -	—	65.8	46.6	Ditto - - -	—	91.2	74.1
Ditto - - -	—	66.4	39.2	Bédat du Bagnères, Tarbes -	611	51.6	46.4
Ditto - - - -	—	58.6	39.7	Pont du Berges, Clermont -	537	32.5	26.8
Col du Géant, Chamouny -	2606	70.9	40.1	La Barrague, Clermont -	415	74.5	71.2
Mont Perdu, Barèges - -	2354	77.0	44.4				

This table shows, in a very striking manner, with how little certainty the decrease of temperature can be estimated from the increase of height; and how unsteady the rate of decrease is often at the same place. M. Ramond, however, has collected some cases which are still more discordant.

742. *Professor Leslie has given a very simple formula* for determining the difference between the temperatures at two stations, by means of the barometer: it gives nearly the mean of the results in the foregoing table, or about 1° for every 100 yards of ascent, and may therefore be of some use in the present imperfect state of this branch of science. Let B be the height of the barometer at the upper station, and β that at the lower: then the Professor's formula for the difference of temperature, by Fahrenheit's scale, is $45^\circ\left(\frac{B}{\beta}-\frac{\beta}{B}\right)$; and by the centigrade scale, $25^\circ\left(\frac{B}{\beta}-\frac{\beta}{B}\right)$.

743. *Experiments made on the change of temperature* in air, due to a given change of pressure, give a somewhat wider range of temperature than that observed in the atmosphere. Let t be the temperature on Fahrenheit's scale at the lower station: then, if the decrease of temperature were regulated solely by the density, it would be $(448^\circ+t)\left[\left(\frac{B}{\beta}\right)^{\frac{1}{4}}-1.\right]$.

744. *The preceding table* contains the temperatures of the air at different heights for one or a few particular instants; but we shall now add *a table from Baron Humboldt of the mean temperatures of elevated situations,* as deduced from several years' observations. The degrees are those of Fahrenheit's scale.

Height in English feet.	Equatorial zone from lat. 0° to 10°		Temperate zone from lat. 45° to 47°.	
	Mean Temp.	Difference.	Mean Temp.	Difference.
	°	°	°	°
0	81.5	10.3	53.6	12.6
3196	71.2	6.1	41.0	9.4
6393	65.1	7.4	31.6	8.2
9587	57.7	13.1	23.4	
12792	44.6	9.9		
15965	34.7			

745. *From this table it appears, that,* in the mean state of the atmosphere, the temperature does not decrease uniformly for a uniform ascent. At the equator, the thermometer falls 10° in the first 1000 yards of ascent, or about 1° for 310 feet. In the next 1000 yards, it is only 1° for 524 feet; but in the third and fourth stages there is a remarkable acceleration, which, having attained its maximum rate, is diminished again in the fifth stage to somewhat less than it was in the first, or to 1° in 320 feet. The mean rate in the variation of temperature, throughout the whole height of 15965 feet, at the limit of perpetual snow, is 1° for every 341 feet. The smaller rate of decrease in the second and third stages is ascribed by Humboldt to the large dense clouds which are suspended in this region, and which, he alleges, have the triple effect of absorbing the sun's rays, forming rain, and intercepting the radiation of heat from the

earth. In the temperate zone, the decrease is at the rate of 1° for 253 feet, during the first 1000 yards of ascent. But throughout the whole height of 9587 feet, to the limit of perpetual snow, where the mean temperature is 23·4°, the decrease is 1° for 317 feet, or almost 1° for 100 yards. As already remarked, observations made in the free regions of the atmosphere have not yet been so numerous as to warrant any certain conclusion regarding the temperature; but, so far as such observations go, they do not differ very widely from the mean of those observed on the sides and summits of mountains. But generally in the temperate zone, a difference of 1000 yards in height will produce a difference of 12° of temperature; and so on in proportion for smaller heights. In higher regions, the difference between the heats of day and night, summer and winter, seem to be less than at the level of the sea; though from this there are some exceptions. Extensive table-lands are usually warmer than insulated peaks of the same height. Humboldt calculates that, in the temperate zone, an ascent of 110 yards diminishes the temperature as much as an additional degree of latitude.

746. *Temperature of air in mines.* Having thus noticed the lower temperatures which obtain in more elevated situations, we shall now give some account of the increased temperature which generally prevails in air occupying deep caverns and mines. There can be no doubt as to such facts, but the source of the heat is still a subject of controversy. There are some mines intensely cold; and as these were first observed, the explanation offered was, that the colder portions of air had, by their greater weight, descended into the mines: but this solution entirely vanished when it was known that mines are generally hot. The heat of the workmen, their fires and lights, have been stated as sources of heat; as likewise the chemical action of air and water on the minerals. Some again allege that a high temperature obtains in the interior of our globe, and consequently that the heat will always be greater as we penetrate farther. However, it is found that on boring into the solid strata in the bottom of warm mines, and letting down a thermometer, the temperature, so far from increasing, comes short of that in the mine. This sufficiently proves that, whatever be the sources of heat, some of them at least must operate in or be situated about the mine itself. That a high temperature obtains in the interior, is in many instances evident from the streams of hot water and vapour which issue from fissures in the strata: but in many warm mines nothing of this is observable. Professor Leslie, Dr. Forbes, and afterwards Mr. Matthew Miller, have suggested the heat evolved by a current of air, while it undergoes an increase of pressure in descending into the mine. The first two of these philosophers did not deem this an adequate source of heat; and Mr. Miller seems to entertain similar doubts. But from what is now known of the great heat evolved by the compression of air, there can be little room to question that this furnishes a considerable supply, wherever there is a sufficient current of air. Thus, if air at the temperature of 62° F. have its density suddenly increased by the 170th part, the temperature will be raised 1°; supposing no heat to be lost on the sides of the shaft. This would give 1° for a descent of 170 feet, which is still short of the rate at which the temperature is observed to increase in British mines; but when added to the heat caused by the presence of the workmen and horses, their lights, blasting of rocks, fires, &c. together with some increase of temperature belonging to the deeper strata, there does not seem any mystery in the heat of some, although probably not of all, mines. Those mines, again, in which there is almost no circulation of air, and which present a wide mouth to a clear sky, may have their temperature reduced by radiating heat upwards, in the same way that plants are starved with cold by being too much sheltered from the wind while they are exposed to a clear sky.

747. *An immense collection of facts* and observations relating to this subject may be seen in the *Transactions of the Geological Society of Cornwall*, and in the first Number of the *Edin. Phil. Journal.* From the latter we extract the following summary of Mr. Bald's observations, made in the deepest coal-mines in Great Britain: —

Whitehaven Colliery, County of Cumberland.	
Air at the surface	55° F.
A spring at surface	49
Water at depth of 480 feet	60
Air at same depth	63
Air at depth of 600 feet	66
Workington Colliery, Cumberland.	
Air at the surface	56
A spring at surface	48
Water at depth of 180 feet	50
Water 504 feet beneath the surface of the Irish Sea	60
Teem Colliery, County of Durham.	
Water at surface	49
Water at depth of 444 feet	61° F.
Air at same depth	68
Percy Main Colliery, Northumberland.	
Air at the surface	42
Water at surface	49
Air at depth of 900 feet below the level of the sea, and immediately under the bed of the river Tyne	70
Water at same depth	68
Here Leslie's hygrometer indicated dryness	83
Jarrow Colliery, County of Durham.	
Air at the surface	49½
Water at surface	49
Air at depth of 882 feet	70
Water at same depth	68

The engine pit of Jarrow is the deepest perpendicular shaft in Britain, being 900 feet to the foot of the pumps, where the temperature of the air was 64°.

Killingworth Colliery, Northumberland.	
Air at surface	48° F.
Water at surface	49
Air at bottom of shaft 790 feet deep	51
Air at depth of 900 feet, and a mile and half from bottom of down-cast pit	70
Water at most distant forehead and 1200 feet below surface	74° F
Air at same depth	77
At this depth, distilled water boiled at	213
When at surface it boiled at	210·5

748. *The temperature of springs and caverns*, in many places, coincides with the mean annual temperature of the air: but Humboldt alleges that, in latitudes above 45°, the mean heat of springs and caves exceeds that of the atmosphere. As connected with this subject, Mr. Ferguson, of Raith, had four large thermometers sunk in his garden, to the respective depths of 1, 2, 4, and 8 feet, in lat. 56° 10′, and 50 feet above the sea. The stems and scales rose above ground, and indicated the following monthly mean temperatures:

	1816.				1817.			
	1 Foot.	2 Feet.	4 Feet.	8 Feet.	1 Foot.	2 Feet.	4 Feet.	8 Feet.
January - - -	33.0°	36.3°	40.7°	43.0°	35.6°	38.7°	40.5°	45.1°
February - - -	33.7	36.0	39.0	42.0	37.0	40.0	41.6	42.7
March - - -	35.0	36.7	39.6	42.3	39.4	40.2	41.7	42.5
April - - -	39.7	38.4	41.4	43.8	45.0	42.4	42.6	42.6
May - - - -	40.0	43.3	43.4	44.0	46.8	44.7	44.6	44.2
June - - -	51.6	50.0	47.1	45.8	51.1	49.4	47.6	47.8
July - - -	54.0	52.5	50.4	47.7	55.2	55.0	51.4	49.6
August - -	50.0	52.5	50.6	49.4	53.4	53.9	52.0	50.0
September - -	51.6	51.3	51.8	50.0	53.0	52.7	52.0	50.7
October - -	47.0	49.3	49.7	49.6	45.7	49.4	49.4	49.8
November - -	40.8	43.8	46.3	45.6	41.0	44.7	47.0	47.6
December - -	36.7	40.0	43.0	46.0	35.9	40.8	44.9	46.4
Mean of the Year	43.8	44.1	45.1	46.0	44.9	45.9	46.2	46.6

Had the thermometers been sunk considerably deeper, they might have been expected to have indicated 47° 7′, which is the constant temperature of a neighbouring spring issuing from a trap rock.

749. *The local temperature or climate* of a country depends very much upon its distance from the equator, and its height above the level of the sea: but the nature of the surface, the proportion of humidity, the distance of the sea, of lakes, of mountains, of arid or frozen plains, and perhaps, also, the internal heat of the earth, have each their share in the fertility or salubrity of a country. The decrease of heat as we recede from the equator follows different laws in the two hemispheres, being greater in the southern than in the northern, and is also affected by the longitude. On the west of Europe, the cold increases less with the latitude than in any other quarter. Under meridians which are 90° either east or west of London, the increase of cold, as we go northward, is more rapid than in England. According to Humboldt, continents and large islands are warmer on their western sides than on the eastern. The annexed table shows the mean temperatures of western Europe and North America continued to the equator.

Lat.	Old World.	New World.	Diff.
0°	81.5°	81.5°	0°
20	77.9	77.9	[illegible]
30	70.7	67.1	3.6
40	63.5	54.5	9.0
50	50.9	38.3	12.6
60	41.0	25.0	16.0
70	33.0	0.0	33.0

750. *Isothermal lines* have been considered as measuring the heat and cold of the earth. The climate of Eastern Asia comes nearer to that of Eastern America than of Western Europe. Thus the latitudes of Naples, Pekin, and Philadelphia are respectively 41°, 40°, and 40°, whilst their mean temperatures are 63.3°, 54.8°, and 53.4°. Such differences are rendered more sensible when we connect the places having the same mean temperature by lines which Humboldt denominates *isothermal* lines. Thus, the isothermal line of 59° F. traverses the latitude of 43° in Europe, but descends to lat. 36° in America; the isothermal line of 41° F. passes from lat. 60° in Europe to lat. 48° in America: but since the western coast of North America is warmer than the eastern, the isothermal lines, being traced round the northern hemisphere, would have concave summits at the east side of both worlds, and convex at the west.

751. *The difference between the mean temperature of summer and winter* is nothing at the equator, and increases continually with the latitude. But the extreme difference of the seasons is comparatively small in Western Europe, and great where the mean annual temperature is low, as on the east coasts of Asia and America. If we draw a line in a north-east direction from Bourdeaux to Warsaw, and continue it to the Wolga, in lat. 55°, then all places under this line, at the same elevation, will have nearly the same summer temperature of 69° or 70° F. The lines of equal winter temperature decline in an opposite direction. Thus a straight line drawn from Edinburgh to Milan, almost at right angles to the former line, would pass over places which, if equally elevated, would have nearly the same winter temperature of 37° or 38° F.

752. *The extremes of temperature* are experienced chiefly in large inland tracks, and little felt in small islands remote from continents. In the United States intense cold is felt when the wind blows from the frozen regions round Hudson's Bay. From snow-clad mountains, gusts of cold wind, called *snow winds*, rush down and cool the adjacent plains. The heat accumulates to an astonishing degree when the wind passes over extensive deserts of burning

sand, which are said, in some instances in Africa, to be heated to the boiling point. This fine sand, or rather dust, sometimes rises in the air and obscures it like a fog, communicating to it an intolerable heat. In arctic countries the temperature is very much regulated by the freezing of the water and the melting of the ice; by the freezing of the water great quantities of heat are given out which moderate the severity of the winter's cold, and thus save from destruction the arctic land, animals, and plants; while in summer, the intensity of the heat, produced by the long continuance of the sun above the horizon, is moderated by the abstraction of a considerable portion of that heat by the water during the melting of the ice. Had the arctic regions been entirely of land, neither plants nor animals could have existed in them: for during summer, owing to the sun remaining above the horizon for months, an elevation of atmospheric temperature would have been produced fatal to animals and plants; and in winter, the long darkness and intense cold would have proved equally fatal to animated beings. The cold of the icy regions of the north has been alleged to reach, by currents of air, southern latitudes, and thus to lower their temperature.

753. *Baron Humboldt has added more to our knowledge of the distribution of temperature over the globe* than any other who had laboured in the same boundless field of research. The following is his general summary, to which we have added Melville Island. The temperatures have been reduced to Fahrenheit's scale, and the longitudes are reckoned from Greenwich. An asterisk is prefixed to those places whose temperatures have been most accurately determined, and in general by means of 8000 observations.

Isothermal Bands.	Names of Places.	Position.			Mean Temperature of the Year.	Mean Temperature of				Mean Temperature of	
		Lat.	Long.	Hght.		Winter.	Spring.	Summer.	Autumn.	Warmest Month.	Coldest Month.
		° ′	° ′	Feet.	°	°	°	°	°	°	°
Band from 32° to 41°.	Melville Island	74 47	110 48 w.	0	— 2.00	—31.35	— 6.60	35·78	— 3.84	39.08	—35.52
	Nain	57 8	61 20 w.	0	+26.42	— 0.60	23.90	48.38	33.44	51.80	—11.20
	*Enontekies	68 30	20 47 E.	1356	26.96	0.68	24.98	54.86	27.32	59.54	— 0.58
	Hospice de St. Gothard	46 30	8 23 E.	6390	30.38	18.32	26.42	44 96	31.82	46.22	+ 15.08
	North Cape	71 0	25 50 E.	0	32.00	23.72	29.66	43.34	32.08	46.58	22.10
	*Ulea	65 3	25 26 E.	0	33.08	11.84	27.14	57.74	35.96	61.52	7.70
	*Umea	63 50	20 16 E.	0	33.26	12.92	33.80	54.86	33.44	62.60	11.48
	*St. Petersburgh	59 56	30 19 E.	0	38.84	17.06	38 12	62.06	38.66	65.66	8.60
	Drontheim	63 24	10 22 E.	0	39.92	23.72	35.24	61.24	40.10	64.94	19.58
	Moscow	55 45	37 32 E.	970	40.10	10.78	44.06	67.10	38.30	70.52	6.08
	Abo	60 27	22 18 E.	0	40.28	20.84	38 30	61.88	40.64	—	—
Band from 41° to 50°.	*Upsal	59 51	17 38 E.	0	42.08	24.98	39.38	60.26	42.80	62.42	22.46
	*Stockholm	59 20	18 3 E.	0	42.26	25.52	38.30	61.88	43.16	64.04	22.82
	Quebec	46 47	71 10 w.	0	41.74	14.18	38.84	68.00	46.04	73.40	13.81
	Christiania	59 55	10 48 E.	0	42.80	28.78	39.02	62.60	41.18	66.74	28.41
	*Convent of Peyssenburgh	47 47	10 34 E.	3066	42.98	28.58	42.08	58.46	42.98	59.36	30.20
	*Copenhagen	55 41	12 35 E.	0	45.68	30.74	41.18	62.60	48.38	65.66	27.14
	*Kendal	54 17	2 46 w.	0	46.22	36.86	45.14	56.84	46.22	58.10	34.88
	Malouin Islands	51 25	59 59 w.	0	46.94	39.56	46.58	53.06	48.46	55.76	37.40
	*Prague	50 5	14 24 E.	0	49.46	31.46	47.66	68.90	50.18	—	—
	Gottingen	51 32	9 53 E.	456	46.94	30.38	44.24	64.76	48.74	66.38	29.66
	*Zurich	47 22	8 32 E.	1350	47.84	29.66	48.20	64.04	48.92	65.66	26.78
	*Edinburgh	55 57	3 10 w.	150	47.84	38.66	46.40	58.28	48.56	59.36	38.50
	Warsaw	52 14	21 2 E.	0	48.56	28.76	47.48	69.08	49.46	70.34	27.14
	*Coire	46 50	9 30 E.	1876	48.92	32.36	50.00	63.32	50.36	64.58	29.48
	Dublin	53 21	6 19 w.	0	49.10	39.20	47.30	59.54	50.00	61.16	35.42
	Berne	46 5	7 26 E.	1650	49.28	32 00	48.92	66.56	49.82	67.28	30.56
	*Geneva	46 12	6 8 E.	1080	49.28	34.70	47.66	64.94	50.00	66.56	34.16
	*Manheim	49 29	8 28 E.	432	50.18	33.80	49 64	67.10	49.82	68.72	33.44
	Vienna	48 12	16 22 E.	420	50.54	32.72	51.26	69.26	50.54	70.52	26.60
Band from 50° to 59°.	*Clermont	45 46	3 5 E.	1260	50.00	34.52	50.54	64.40	51.26	66.20	28.04
	*Buda	47 29	19 1 E.	491	51.08	33.98	51.08	70.52	52.34	71.60	27.78
	Cambridge, U.S.	42 25	71 3 w.	0	50.36	33.98	47.66	70.70	49.82	72.86	29.84
	*Paris	48 50	2 20 E.	222	51.08	38.66	49.28	64.58	51.44	65.30	36.14
	*London	51 30	0 5 w.	0	50.36	39.56	48.56	63.14	50.18	64.40	37.76
	Dunkirk	51 2	2 22 E.	0	50.54	38.48	48.56	64.04	50.90	64.76	37.76
	Amsterdam	52 22	4 50 E.	0	51.62	36.86	51.62	65.84	51.62	66.92	35.42
	Brussels	50 50	4 22 E.	0	51.80	36.68	53.24	66.20	51.08	67.28	35.60
	*Francker	52 36	6 22 E.	0	51.80	36.68	51.08	67.28	54.32	69.08	32.90
	Philadelphia	39 56	75 16 w.	0	53.42	32.18	51.44	73.94	56.48	77.00	32.72
	New York	40 40	73 58 w.	0	53.78	29.84	51.26	79.16	54.50	80.70	25.34
	*Cincinnati	39 6	82 40 w.	510	53.78	32.90	54.14	72.86	54.86	74.30	30.20
	St. Malo	48 39	2 1 w.	0	54.14	42 26	52.16	66.02	55.76	66.92	41.74
	Nantes	47 13	1 32 w.	0	54.68	40.46	54.50	68.54	55.58	70.52	39.02
	Pekin	39 54	116 27 E.	0	54.86	26.42	56.30	82.58	54.32	84.38	24.62
	*Milan	45 28	9 11 E.	390	55.76	36.32	56.12	73.04	56.84	74.66	36.14
	Bourdeaux	44 50	0 34 w.	0	56.48	42.08	56.48	70.88	56.30	73.04	41.00
Band from 59° to 68°.	Marseilles	43 17	5 22 E.	0	59.00	45.50	57.56	72.50	60.08	74.66	44.42
	Montpellier	43 36	3 52 E.	0	59.36	44.06	56.66	75.74	60.98	78.08	42.08
	*Rome	41 53	12 27 E.	0	60.44	45.86	57.74	75.20	62 78	77.00	42.26
	Toulon	43 7	5 50 E.	0	62.06	48.38	60.80	75.02	64.40	77.00	46.40
	Nangasaki	32 45	129 55 E.	0	60.80	39.38	57.56	82.94	64.22	86.90	37.40
	*Natches	31 28	90 30 w.	180	64.76	48.56	65.48	79.16	66.02	79.70	46.94
68° to 77°.	*Funchal	32 37	16 56 w.	0	68.54	64.40	65·84	72.50	72.32	75.56	64.04
	Algiers	36 48	3 1 E.	0	69.98	61.52	65·66	80.24	72.50	82.76	60.08
Band above 77°.	*Cairo	30 2	30 18 E.	0	72.32	58.46	73.58	85.10	71.42	85.82	56.12
	*Vera Cruz	19 11	96 1 w.	0	77.72	71.96	77.90	81.50	78.62	81.86	71.06
	*Havanna	23 10	82 13 w.	0	78.08	71.24	78.98	83.30	78.98	83.84	69.98
	*Cumana	10 27	65 15 w.	0	81.86	80.24	83·66	82.04	80.24	84.38	79.16

754. *In treating on the mean annual temperature which obtains at different places*, it is customary to give a table which makes the temperature depend entirely on the *latitude*. But observation shows, that the temperature is usually higher at the same latitude in the old world than in the new, and in north latitude than in south; and, as was already mentioned, it differs in the same continent under different meridians. So that more than one table would be required for each quarter of the globe; or else one very extensive table, involving the longitude as well as latitude, which is the case with Humboldt's table, so far as it goes.

755. *As the earth and its atmosphere are continually receiving heat from the sun*, it is plain that their mean annual temperature must be continually on the increase, if no heat be thrown off by them into surrounding space. Professor Leslie accordingly alleges, that the increase of temperature is at the rate of about 1° in 80 years. This would help to explain some of the changes of climate which seem to have been gradually taking place during successive ages in many places, and particularly in the west of Europe. But the late celebrated Marquis de la Place has endeavoured to show, from astronomical observations, that the mean temperature of the earth has undergone no sensible change during the last two thousand years. His arguments, however, are not free from objection.

Sect. II. *Effect of Climate on Plants and Animals.*

756. *The geographical distribution of plants and animals* appears to be chiefly regulated by the temperature of the atmosphere. Each has generally a particular climate in which it thrives best, and beyond certain limits it ceases to exist. Since an increase of height has an effect on climate in some respects similar to an increase of latitude, it has been commonly supposed that there are properly no plants peculiar to high latitudes, because such may be raised on the mountains under the equator, which embrace every variety of climate between their summit and base, at least in so far as temperature is concerned. In point of atmospheric pressure, however, the two situations differ essentially; and some naturalists allege, that pressure is of vital importance to the growth of plants. Professor Dobereiner is of opinion that the diminutive size of plants, in elevated situations, depends more on the diminution of pressure than of temperature. To ascertain this, he put equal quantities of barley and moist earth into two equal receivers: the air in the one had a pressure of 14 inches of mercury, and the other 56; germination commenced in both at the same time, and the leaves had the same green tint. At the end of fifteen days, the shoots in the rarefied air were 6 inches long, and in the other from 9 to 10. The first were expanded and soft and wet on the surface, especially towards their extremities; the others were firm, rolled round the stem, and nearly dry. In some respects, this accords with what Humboldt observed of the trees on the Andes, that water transpires from them even in the driest weather. But such experiments are inconclusive, unless there were some contrivance employed to renew the confined air frequently. Independently of pressure, the barley in the condensed air had the use of four times the quantity of air in the other vessel.

757. *Plants are most numerous, and exhibit the greatest variety of species*, and the most luxuriant growth, within the tropics, beyond which they gradually diminish. In the arctic regions, and in the north of Russia, the vegetable kingdom has dwindled to almost nothing. The lines which limit the growth of certain plants depend on the average summer temperature, for plants which require a long and moderate heat; on the temperature of the warmest month, for those which require a short but great heat; and on the temperature of the coldest month, for those which cannot bear cold. The transparency of the air is also of importance to many plants; but our limits will not admit of enlarging, and therefore we shall confine ourselves to a short account of the climates of cultivated plants. The plantain, which is a primary article of food in tropical America, requires a temperature from 82° to 73° F., which occurs between lat. 0° and 27°: but, in the equinoctial zone (lat. 0° to 10°), its fruit does not ripen at a greater altitude than 3300 feet. The sugar-cane has nearly the same range, but is cultivated, though with less advantage, in the old world to lat. 36° 5′, where the mean temperature is about 67°. The severity of the North American winter prevents the cultivation of the sugar-cane beyond lat. 31°; but it succeeds at an altitude of 5700 feet on the table land of Mexico. The favourite climate of the cotton plant lies between lat. 0° and 34°; but it succeeds with a mean summer heat of 75° or 73° F., if that of winter do not descend below 36° or 38°. In America, it is cultivated at lat. 37°; in Europe, lat. 40°; and in Astracan at lat. 46°. The date palm thrives best between lat. 29° and 35°; but, when sheltered from the north wind, it is cultivated on the shores of Italy to lat. 44°. The citron has nearly the same range, but is cultivated at Nice, at altitudes of 400 feet. This tree, with the sweet orange, grows in Louisiana to lat. 30°, but beyond that it is injured by the cold. The olive ranges in Europe between lat. 36° and 44° 5′; it succeeds wherever, with a mean annual temperature from 66° to 58° F., that of summer is not below 71°, nor that of the coldest month below 42°, which excludes all North America beyond lat. 34°. The favourite climate of the vine in the old world is between lat. 36° and 48°; but it thrives wherever the mean temperature is from 62° to 47·5°, provided that of winter is not below 33°, nor summer under 66° or 68°. Such is the case on the shores of Europe

to lat. 47°, and in the interior to lat. 50°, but only to lat. 40° in North America. The *cerealia* or common grain, as wheat, rye, barley, and oats, thrive where the mean annual temperature descends to 28° F., provided that of summer rise to 52° or 53°. In Lapland, barley ripens wherever the mean temperature of summer rises to 47° or 48°. The rapid growth of barley and oats adapts them to the short summers of the north: they are found as high as lat. 69½° in Lapland, along with the potato. In some parts of eastern Russia, no grain is found beyond lat. 60°. Wheat, which is a precarious crop, and little cultivated beyond lat. 58° in western Europe, yields good returns in this part of the temperate zone, when the mean heat, while the grain is on the ground, is 55°; but if no more than 46°, none of the *cerealia* come to maturity. These species of grain are cultivated at a height of 3500 feet on the Alps, in lat. 46°. Barley and oats succeed at double that height on Caucasus, and at almost a triple height on the Andes, along with wheat and rye. In the west of Europe, maize has the same range as the vine, but reaches farther north on the east. In its native American soil, it forms the chief article of food, from the river Plata to the lakes of Canada. Requiring a short but warm season of four months, it is well suited to the climate of the New World up to the latitude of 45°. The oak ceases at lat. 63° in Norway, at 60° or 61° in Finland, and at 57° in the government of Perm. The pinus silvestris, or Scots fir, grows to a height of 60 feet in Lapland, at lat. 70°, and 850 feet above the level of the sea: there the birch is found at double that elevation. In eastern Russia, the larch, pine, birch, and mountain-ash, disappear about lat. 68°; and, at Hudson's Bay, all trees cease about lat. 60°.

SECT. III. *Composition of the Atmosphere. Aqueous Meteors.*

758. *Regarding the composition of the atmosphere*, abundantly vague and fanciful notions prevailed for many ages. The ancients considered air as one of the four simple elements, of which they supposed all other bodies to be compounded. These were earth, air, fire, and water. How far the opinion was correct, which made fire an element, is a question on which nothing is yet known; but the researches of modern chemistry have shown that the other three are all compound bodies. The chief, and perhaps the only essential, component substances in the atmosphere, are the two gases called oxygen and azote; its other ingredients, occurring only in small and variable quantities, are rather to be considered as foreign bodies. The analysis of air is a difficult problem. Many chemists have found it to consist of 21 parts by volume of oxygen to 79 of azote; and this proportion is sensibly the same whether the air be from the polar or tropical regions, from the level of the sea or a mountain top, from the most healthy or insalubrious countries. But Dr. Prout, guided by the laws of definite proportions, alleges, that if the two gases of which air principally consists be really combined, they ought to be 20 oxygen to 80 azote; and it must be allowed that similar conjectures of the same eminent chemist have been verified regarding the composition of other bodies, which had apparently deviated farther from the atomic system.

759. *The investigation of the component parts of the atmosphere* did not keep pace with that of its mechanical properties. Boyle, however, and his cotemporaries, put it beyond doubt that it contained an elastic fluid and water in the state of vapour. They also conjectured that it contained various other substances, which rose from the earth in the form of vapours, and often altered its properties, rendering it noxious or fatal. Since the discovery of carbonic acid by Dr. Black, it has been ascertained that this elastic fluid always constitutes a part, though a very minute one, of the atmosphere.

760. *With respect to moisture*, or the state in which water exists in air, two opinions have been formed: 1. Water may be dissolved in air, in the same manner as salt is held in solution by water; 2. It may be mixed with air in the state of steam or vapour, after having been converted into vapour. The first of these was hinted at by Dr. Hooke, and afterwards proposed by Dr. Halley. It has been adopted by many others in succession, among whom is Professor Leslie; and it cannot be denied that many of the phenomena agree with that theory. The second opinion seems to have originated with Mr. Deluc; but it is to Mr. Dalton and M. Gay Lussac that we are indebted for subjecting this theory to the test of experiment.

761. *Evaporation* from the waters on the surface of the earth is undoubtedly the source whence the moisture which exists in air is derived. Accordingly we find that water exposed to the air suffers a gradual diminution of bulk, till it entirely disappears. It is then said, in common language, to have dried up, or to have *evaporated*. Under an exhausted receiver, water diminishes even more rapidly than in the open air. Were this owing to solution, the very reverse ought to follow; because, in place of vapour being caused by the presence of air, it goes on more rapidly in its absence. By comparing a set of experiments made at Geneva, with a similar set on the Col-du-Géant, 10,950 feet higher, Saussure found that, supposing the temperature and dryness of the air the same at both places, the evaporation at the upper would be to that at the lower nearly as 7 to 3; so that a diminution of about one third in the density of the air more than doubled the rate of evaporation. It is well known, that cold is always generated during spontaneous evaporation; that is to say, that water, as

it disappears, carries off a quantity of heat. Dr. Black has rendered it probable, that the quantity of heat which disappears during spontaneous evaporation is as great as that which is required to form water into steam. A wet body is always cooled by exposure to dry air, owing to the evaporation from its surface. Hence, in warm countries, liquors are cooled by wrapping wet cloths round the bottles and exposing them to the air. M. Saussure observed, that the evaporation from the surface of melting snow caused it to freeze again, when the temperature of the air was 4° or 5° above the freezing point. The simplest mode of illustrating the cooling influence of evaporation, is to cover the ball of a thermometer with wet cloth and expose it to the air, when it will be found to indicate a greater or less degree of cold. This, it is true, does not take place if the air be very damp, because there is then no evaporation. Wind tends to promote evaporation, both by communicating its heat to the colder evaporating surface, and also by sweeping away the vapour as it is formed. On the contrary, there is scarcely any evaporation in perfectly still air, unless some substance be present which absorbs the vapour as it forms.

762. *On this principle, Professor Leslie contrived an elegant mode of producing ice in any climate.* A cup with water is placed within the receiver of an air pump, along with some substance which absorbs the vapour. The rate of evaporation is then increased in an astonishing degree, by exhausting the air from the receiver; and the portion of the water which is converted into vapour abstracts so much heat from the remainder, that the latter is speedily converted into ice.

763. *Dew* is a remarkable product of atmospheric moisture. The quantity of aqueous vapour which can exist in a given space, as a cubic foot, is pretty generally believed to be the same, whether there be air present in the space, or nothing but the vapour alone. The quantity is always (*cat. par.*) the same at the same temperature, but it is greater as the temperature is higher; and therefore, supposing the space to be saturated with vapour at a particular temperature, a portion of this will return into drops of water whenever the temperature falls. It is on this principle that a cold body, such as a bottle of liquor, being carried into a warm moist apartment, becomes bedewed on the outside, till, perhaps, the water trickles down its sides: the contact of the cold surface chills the air, which in return deposits a portion of its moisture. Now this is similar to the mode in which moisture is insensibly deposited from the atmosphere on bodies at the earth's surface, and which is known by the name of *dew*. All bodies, placed in still air and exposed to the aspect of a clear sky, are found to become colder than they would be if some screen or awning were interposed between them and the sky. In such circumstances, bodies often become much colder than the surrounding air, which, if sufficiently moist, deposits on them a portion of its moisture or dew. When the temperature is low, the dew is frozen, and forms *hoar frost*.

764. *The radiation of heat* also deserves notice. About the commencement of the present century, Professor Leslie discovered that bodies possess very different powers of radiating heat; and that this depends on the nature and condition of their surfaces. Metals possess this quality in a degree inferior to vitreous bodies, and it is diminished in all of them by polishing the surface. Most fibrous and filamentous vegetable substances are good radiators, as are likewise bodies in general which are bad conductors or bad reflectors of heat. Now the degrees of cooling, which different bodies undergo when exposed together to the aspect of the sky, is observed to follow the same order as that of their radiating powers; and, of course, the order in which they begin to acquire dew, as also the quantity acquired, is regulated by a similar law, as will be seen from what follows.

765. *For the investigation of the causes of dew* we are chiefly indebted to the late ingenious Dr. Wells. The ancients maintained, that dew appears only on calm and clear nights. Dr. Wells found that, in opposite circumstances, very little is ever deposited, and that little only when the clouds are very high. Dew never occurs in nights both cloudy and windy; and if in the course of the night, the weather, from being serene, should become dark and stormy, dew which had been deposited will disappear. In calm weather, more dew will appear if the sky be partially covered with clouds, than if it were quite clear. It often happens, that even before sunset, dew begins to adhere to grass in spots which are sheltered from both sun and wind; for, in clear weather, such spots suffer much from the chilling aspect of the sky, and may often continue to acquire dew during the whole night, and for some time after sunrise. The quantity of dew depends on the moistness of the air, being greater after rain than after long-continued dry weather. It is more abundant, in Europe, with southerly and westerly winds, than with those which blow from the opposite points. The reason of this seems to be the direction of the sea rendering the wind moist; for, in Egypt, dew rarely occurs unless the wind come from the sea. But with a southerly wind, which has passed along the floods of the Nile, dew is usually observed in the Delta five or six days before the inundation. After a long period of drought, Dr. Wells exposed to the clear sky, 28 minutes before sunset in a calm evening, known weights of wool and swan-down, upon a smooth, unpainted, dry fir table about 3 feet in height, and which had been placed an hour before in the sunshine in a large grass field. At 12 minutes after sunset the wool was 14° colder than the air, but had gained no weight. The swan-down was 13° colder than the air, but had got no addi-

tional weight; nor was it any heavier at the end of 20 minutes longer, but it had then become 14⅛° colder than the air; whilst the grass was 15° colder than the air four feet above ground. — From these, and many similar experiments, Dr. Wells concluded that bodies become colder than the neighbouring air *before* they are dewed. — He bent a sheet of pasteboard into the form of a penthouse, making the angle of flexure 90°, and leaving both ends open. This was placed one evening, with its ridge uppermost, upon a grass-plat, and, as nearly as could be guessed, in the direction of the wind. On the middle of the spot of grass, sheltered by the roof, was placed 10 grains of wool, and an equal quantity on a spot of the grass fully exposed to the sky. In the morning, the first 10 grains were only 2 grains heavier, whilst the other had gained 16. The wool does not here acquire moisture from the grass by capillary attraction, for the same effect happens if it be placed in a saucer; nor is it by hygrometric attraction, for in a cloudy night, wool placed on an elevated board scarcely gained any weight.

766. *The quantity of dew* varies according to circumstances. When wool is placed upon a bad conductor of heat, as a deal board, a few feet from the ground, it will become colder and acquire more dew than if laid on the grass. At the windward end of the board, it is less bedewed than at the sheltered end; because, in the former case, the wind keeps up the temperature nearer to that of the atmosphere. Rough and porous surfaces, as shavings of wood, straw, &c. take more dew than smooth and solid bodies. Raw silk and fine cotton collect more than even wool. Glass, being a good radiator of heat, is much more quickly coated with dew than bright metals, which, indeed, receive it less readily than many other bodies. This circumstance has given rise to the strange idea that metals absorb dew, though they be the most compact bodies known. If we coat a piece of glass partially with bright tin-foil, or silver leaf, the uncovered portion of the glass quickly becomes cold by radiation, on exposure to a clear nocturnal sky, and acquires moisture; which, beginning on those parts most remote from the metal, gradually approaches it. Thus, also, if we coat a part of the outside of a window pane with tin-foil in a clear night, then moisture will be deposited inside, on every part but that opposite to the metal; but if the metal be inside, then the outside of the coated part of the pane will be sooner and more copiously bedewed. In the first case, the tin-foil prevents the glass under it from dissipating its heat, and therefore it can receive no dew; in the second case, the tin-foil prevents the part of the glass which it coats from receiving the calorific influence of the apartment, and hence it is sooner cooled on the outside than the rest of the pane. When the night, after having been clear, becomes cloudy, though there be no change with respect to calmness, a rise in the temperature of the glass always ensues. In clear nights the temperature always falls, but, unless the air be sufficiently moist, dew does not necessarily follow; from which it is evident, that the cold cannot be the effect of dew. For a more particular account of these interesting phenomena, we must refer the reader to Dr. Wells's elegant *Essay on Dew.*

767. *Clouds. The various forms of clouds* were first successfully attempted to be arranged under a few general modifications by Mr. Luke Howard, and published in the 16th and 17th vols. of the *Phil. Mag.* The system is very simple, and has been extensively adopted both here and on the Continent. In giving a summary of it in "*The Climate of London,*" Mr. Howard thus expresses himself: — "After the experience of eighteen years, I do not find a necessity either to make additions to this little system, or to retrench any of its parts. Some subordinate distinctions may, indeed, at a future period be found useful; but until the classification, as it is, be generally adopted, its simplicity must form its most powerful recommendation, and its conformity to nature. It is in the *form and structure,* carefully considered with due reference to situation, that he will find the basis of a correct judgment; and he will do well to wait, at first, for several successive appearances of each modification, to which he will thus at length find the definition apply in all its parts."

768. *The modifications of clouds* is a term used to express the structure or manner of aggregation, in which the influence of certain constant laws is sufficiently evident amidst the endless subordinate diversities resulting from occasional causes. Hence the principal modifications are as distinguishable from each other, as a tree from a hill, or the latter from a lake; although clouds, in the same modification, compared with each other, have often only the common resemblance which exists among trees, hills, and lakes, taken generally.

769. *There are three simple and distinct modifications,* which are thus named and defined by Mr. Howard: —

(1.) *Cirrus.* A cloud resembling a lock of hair or a feather. Parallel, flexous, or diverging fibres, unlimited in their extent or direction.

(2.) *Cumulus.* A cloud which increases from above in dense convex or conical heaps.

(3.) *Stratus.* An extended continuous level sheet of cloud, increasing from beneath.

770. *There are two modifications* which appear to be of an *intermediate* nature: these are —

(4.) *Cirro-cumulus.* A connected system of small roundish clouds, in close order or contact.

(5.) *Cirro-stratus.* A horizontal or slightly inclined *sheet,* attenuated at its circumference, concave downward, or undulated. Groups or patches have these characters.

771. *There are two modifications* which exhibit a compound structure, viz.: —

(6.) *Cumulo-stratus.* A cloud in which the structure of the *cumulus* is mixed with that of the *cirro-stratus* or *cirro-cumulus*. The *cumulus* flattened at top, and overhanging its base.

(7.) *Nimbus.* A dense cloud spreading out into a crown of *cirrus*, and passing beneath into a shower.

772. *Mr. Howard* began his observations about twenty-five years ago, and *Dr. Thomas Forster* has been for many years employed in making similar observations. From all these, there has resulted at length a theory of the formation and changes of the clouds, which has been deduced entirely from the phenomena they have been observed to exhibit during their formation, changes, and eventual resolution into rain. To avoid, as much as possible, any particular hypothesis as premature, we shall merely give an account of the phenomena observed; contenting ourselves with a description of the distinct modifications of form which aqueous vapour is found to assume during the progress of the formation, changes, and resolution of clouds.

773. *Regarding the mode in which clouds are suspended in the air*, philosophers are not agreed. About the commencement of the last century, it was supposed that the aqueous particles of clouds were in the form of hollow shells, specifically lighter than the air in which they float. But as no evidence or probability could be adduced in favour of this theory, it has given place to other speculations; and, at present, many consider the suspension of clouds as an electrical phenomena. On attentively observing the forms of clouds, it will be found that they have a tendency to assume one or other of the seven distinct modifications above mentioned; the peculiar characters of which may be discovered in all the endless configurations exhibited by clouds under different circumstances. It may be observed farther, that the most indefinite and shapeless masses of clouds, if attentively watched, will sooner or later show a tendency to assume the form of some of these modifications; a circumstance which shows not only their distinct nature, but also proves that there are some general causes, as yet undiscovered, why aqueous vapour, suspended in the air, should assume certain definable and constant modifications.

774. *A more minute description of the formation and changes of the clouds*, and of the prognostics of the weather to be deduced from their peculiar appearances, shall now be attempted.

775. *The cirrus or curl-cloud** may be distinguished from every other by the lightness of its nature, its fibrous structure, and the great and perpetually changing variety of figures which it presents to the eye. It is generally the most elevated of clouds, occupying the higher regions of the atmosphere. As this cloud, under different circumstances, presents considerable varieties of appearances, it will be proper to consider these separately, with reference to the particular kind of weather in which they prevail. After a continuance of clear fine weather, a whitish line of cloud may often be observed at a great height, like a white thread stretched across the sky, the ends seeming lost in each horizon: this is often the first indication of a change to wet weather. To this line of cirrus, others are added laterally, and sometimes, as it were, propagated from the sides of the line in an oblique or transverse direction; the whole having the appearance of net-work. At other times the lines become gradually denser; descend lower in the atmosphere; and, uniting with others below, produce rain without exhibiting the above-mentioned transverse reticulations. The above-described varieties of cloud, though composed of straight lines, are ranged under the general head of *cirrus*, from their resemblance to this cloud when it appears under curved and contorted forms. The *comoid cirrus*, popularly known under the name of the *grey mare's tail*, is the proper cirrus. It somewhat resembles a distended lock of white hair, or a bunch of combed wool, and from this it got the name *comoid*. It usually occurs in variable weather, and is reckoned a precursor of wind and rain. In changeable weather it varies considerably in a few hours; but when the fibres have a constant direction to the same point of the compass for any considerable time, a gale of wind generally springs up from that quarter. During warm changeable weather, when there are light breezes of wind, long and obliquely descending bands of cirrus are often observed in the air, and sometimes seem to connect distant clouds. Frequently, by means of the interposition of these cirri between a cumulus and some other cloud, as, for instance, cirro-stratus, the cumulo-stratus, and ultimately the nimbus or rain-cloud, is formed. The cirrus, when attentively examined, is found to be in constant motion, not merely changing its form, but often exhibiting an internal commotion in the substance of the cloud, especially in the larger end of it. Every particle seems alive and in motion, while the whole mass scarcely changes its place. This motion, on a minute examination, often appears to consist of the fibres which compose the cirrus, gently waving to and from each other; frequently, however, it seems like minute specks all in commotion. This takes place more frequently in those large and lofty *cirri*, with rounded heads and long pointed tails, so common in dry easterly winds during summer and autumn.

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* This, and the other additional terms which follow, have been proposed as English names by Dr. Thomas Forster.

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776. *The formation of the cumulus* is best viewed in fine settled weather, about sunrise or a little after. Small specks of cloud are seen here and there in the atmosphere. These seem to be the result of small gatherings of the stratus or evening mist, which rising in the morning grows into small masses of cloud, while the rest of the sky becomes clearer. About sunrise these clouds increase; two or more of them unite, till a large cloud be formed, which, assuming a cumulated and irregularly hemispherical shape, has received the name of *cumulus* or *stacken-cloud*. This is properly the cloud of day, as it usually subsides in the evening by retracing the steps of its formation in the morning. It separates into small fragments and evaporates, giving place to the stratus or fall-cloud, which is therefore styled the cloud of night.

777. *Some varieties in the forms of the cumulus* deserve particular notice, as they are supposed to be connected with electrical phenomena. The hemispherical form is more perfect in fine than in changeable weather. When such well-formed cumuli prevail during many successive days, the weather is settled, and the electrometer pretty steady in its indications. They are whitish coloured, and when opposed to the sun reflect a silvery light. Cumuli which occur during intervals between showers are more fleecy, and variable in form and colour. Sometimes they are blackish, and may at any time increase till they obscure the sky, or assume the form of the twain-cloud or cumulo-stratus.

778. *The stratus or fall-cloud* comprehends fogs, and all those creeping mists which, towards evening fill the valleys, and disappear in the morning. The cumuli which have prevailed during a hot summer's day decrease towards evening, and by degrees there is formed a white mist near the ground, increasing in density till midnight or even till morning, and generally disappearing after sunrise. In autumn, this cloud sometimes lasts longer in the morning. In winter it becomes still more dense, and sometimes continues a whole day or many successive days. A remarkable instance of this occurred in January, 1814, when a dense fog prevailed for about a fortnight, extending over a great part of the south and west of England. It was particularly felt at London, where the stagnation and subsidence of the smoke more than doubled the dismal visitation. The stratus is often positively electrified, and its component parts do not wet leaves or other substances connected with the earth. On this, however, it may be remarked that dry bodies, which continue warmer than the fog, must remain dry on the ordinary principles of evaporation. The stratus may be distinguished from some varieties of cirro-stratus which resemble it, by the circumstance that the latter wets every object it alights on.

779. *The cirro-cumulus or sonder-cloud* is subject to some variations in the size and figure of the orbicular masses of which it is composed, and in their distances from each other. About the time of thunder storms, the component parts are denser in their structure, rounder in their form, and closer together than usual. This has been frequently noticed by poets as a prognostic of thunder and tempestuous weather. In rainy changeable weather, this cloud has a light fleecy texture, and is very irregular in the form of its component parts; so that it then approaches to the form of the cirro-stratus. Sometimes, indeed, it consists of *nebeculæ*, so small and light coloured as to be scarcely discernible. In fine summer weather, the cirro-cumulus is neither so dense as the stormy variety, nor so light as the one last described; its parts vary in size, and in their proximity. During fine dry weather, with light breezes from the north and east, small detachments of cirro cumulus rapidly form and subside, which do not lie in one plane; but their arrangement is commonly horizontal. The cirro-cumulus sometimes commences in the clear sky. At other times the cirrus, the cirro-stratus, or some other cloud, changes into cirro-cumulus, and *vice versâ*. In summer, this cloud forebodes heat: in winter, the breaking up of frost, and mild wet weather.

780. *The cirro-stratus* is remarkable for its shallowness, compared with its horizontal extent; so that when any other cloud assumes this form, it seldom fails to end in a cirro-stratus. This cloud is constantly changing its form, and gradually subsiding; hence it has been called the *wane-cloud*. There are many varieties in its figure; sometimes it is disposed in waving bars or streaks, varying almost infinitely in size and shape. A flat horizontal cloud, consisting of such streaks, frequently occurs during changeable summer weather; its bars are generally confused in the middle, but more distinct towards the edges. A variety of this sort constitutes what is called the mackerel-back sky. It is often very high in the atmosphere, as is proved from its still appearing high when viewed from the top of a lofty mountain. The cumulus, on the contrary, may be seen on a level with, or even lower than, the observer. The cirro-stratus often appears in the form of a long plain streak, tapering towards the extremities. Sometimes such a figure seems to alight on the cumulo-stratus; and, in these cases, the density of the latter increases in proportion as the former alternately appears and evaporates again on its summits. The usual result is the formation of the nimbus, and a fall of rain. Another principal variety of the cirro-stratus consists of small rows of little clouds, curved in a peculiar manner: it is called the *cymoid* cirro-stratus, and is a sure indication of approaching storms. The last variety of this cloud which we shall now notice, is that large and shallow veil of cloud which covers a large portion of the sky, particularly towards night, and through which the sun and moon are indistinctly seen

Those peculiar refractions of the light of these luminaries, called halos and mock suns, usually appear in this cloud. These are the most certain signs, yet known, of approaching rain or snow.

781. *The cumulo-stratus or twain-cloud* is a stage towards the production of rain, and is frequently formed in the following manner: — The cumulus, which usually passes along in the wind, seems retarded in its progress, grows denser, spreads out laterally till it overhangs the base in dark and irregular protuberances. This change often takes place in all the cumuli which are near to each other; their bases unite, whilst the superstructure remains asunder, rising up like so many mountain summits or masses of rocks. The cumulo-strati, in which hail showers and thunder storms occur, look extremely black and menacing before the rain commences. Sometimes the cumulo-stratus evaporates, or changes again to cumulus, but it oftener ends in the nimbus and rain.

782. *The nimbus* remains to be described; a cloud which always precedes the fall of rain, snow, or hail. Any of the others above described may increase so much as to obscure the sky, without ending in rain, before which the peculiar characteristic of the rain-cloud may always be distinguished. The best way of obtaining a clear idea of the formation of the nimbus or rain-cloud is to observe a distant shower in profile, from its first formation to its fall in rain. The cumulus seems first arrested in its progress; then a cirrus or cirro-stratus may appear to alight on the top of it. The change to cumulo-stratus then goes on rapidly; and this cloud, increasing in density, assumes that black and threatening aspect which is a known indication of rain. This blackness is soon changed for a more grey obscurity; and this is the criterion of the actual formation of rain drops, which now begin to fall, while a *cirriform* crown of fibres extends from the upper parts of the clouds, and small cumuli enter into the under part. After the shower has spent itself, the different modifications appear again in their several stations: the cirrus, the cirro-stratus, or perhaps the cirro-cumulus, appear in the upper regions of the air; while the remaining part of the broken nimbus assumes the form of flocky cumuli, and sails along in the lower current of wind. The reappearance of large cumulo-strati indicates a return of the rain. In showery weather, the alternate formation and destruction of rain-clouds goes on rapidly, and is attended by the other modifications in succession, as above described. From its connection with local showers, the nimbus is distinguished almost exclusively by bearing in its broad field of sable the honours of the rainbow.

783. *Rain.* Theories of rain have been founded on the above observations. Since, as already mentioned, a greater quantity of moisture can exist in a given space as the temperature is higher, it is plain that there is a certain temperature at which air containing some moisture will just be saturated, and which is called the point of deposition, or the *dewing* point; for, if cooled in the least below this, the air will deposit moisture. When the cooling in the body of air below the dew point is very slight, the effect is merely to disturb the transparency, or produce a *fog.* In the case of dew, formerly considered, the transparency is not affected; because it is not the *mass* of air that is cooled below the point of deposition, but only a minute portion of it which comes into contact with surfaces cooled by radiation. When the cooling in a body of air below the dewing point is considerable, the water is deposited more copiously, and, collecting into drops, descends to the earth in the form of *rain;* or if the temperature be sufficiently low, the drops are partially frozen, and form *sleet;* if fully frozen, *snow;* and if such drops be large and compact, they receive the appellation of *hail.*

784. *Dr. James Hutton of Edinburgh* made the first attempt to account for the phenomena of rain, &c. on known principles. Without deciding whether moisture be simply mixed or chemically combined in the air, he conjectured from the phenomena, as is now established by experiment, that the quantity of aqueous vapour which can exist in air varies in a higher ratio than the temperature. Hence he inferred, that whenever two volumes of air saturated with moisture are mixed at different temperatures, a precipitation of moisture must ensue, in consequence of the *mean* temperature not being able to support the *mean* quantity of vapour. But if the air, before mixture, was not fully saturated with moisture, then a smaller quantity, or none at all, may be deposited. This theory has been adopted by various meteorologists, particularly Professor Leslie and Mr. Dalton: but Mr. Luke Howard has justly remarked, that it involves the assumption that the mixture should have the *mean* temperature, — a point which was then, and is even yet, not quite settled; although, so far as experiment goes, it is fully more favourable to the theory than the *mean* would be.

785. *Mr. Howard accordingly rejects Dr. Hutton's theory,* and alleges, that rain is almost in every instance the result of the electrical action of clouds upon each other. This idea, he thinks, is confirmed by observations made in various ways upon the electrical state of the clouds and rain; and he supposes that a thunder storm is only a more sudden and sensible display of those energies which are incessantly operating for more general purposes.

786. *There are two circumstances* deserving of notice *in the formation of the nimbus or rain-cloud,* the spreading of the superior masses of cloud in all directions, until they become, like the stratus, one uniform sheet; and the rapid motion and visible decrease of the

cumulus, when brought under the latter. The cirri, also, which so frequently stretch from the superior sheet upwards, like so many bristles, are supposed by some to be temporary conductors for the electricity evolved by the union of minute particles of vapour into the larger drops which form the rain. In an experiment of Cavallo's with a kite sent up 360 feet, in an interval between two showers, and kept up during rain, it seems that the superior clouds were positively electrified before the rain; but on the arrival of a large cumulus, a strong negative electricity took place, which lasted while the cumulus was passing over the kite. We are not, however, warranted to conclude that the cumulus which brings on rain is always negative; as the same effect might ensue from a positive cumulus uniting with a negative stratus: yet the general negative state of the lower atmosphere during rain, and the positive indications commonly given by the true stratus, render this the more probable opinion. It is not, however, absolutely necessary to determine the several states of the clouds which appear during rain; since there is sufficient evidence in favour of the conclusion, that clouds formed in different parts of the atmosphere operate on each other when brought near enough, so as to occasion their partial or entire destruction, — an effect which can be attributed only to their possessing beforehand, or acquiring at the moment, the opposite electricities. Such is Mr. Howard's view of the subject; but until electricity itself, and in particular the electricity of the atmosphere, be better understood, it is doubtful if the phenomena of rain be brought any nearer home by being ascribed to electricity. In the present state of science, Dr. Hutton's theory has rather the advantage of depending on principles which are better known, though there is some uncertainty regarding their fitness for the purpose.

787. *Rain is very unequally distributed* to the different regions of the globe; but nature has so arranged it, that it is most copious in those latitudes where evaporation is most rapid. There are, however, exceptions to this rule; for on several tracks on the earth's surface it hardly ever rains. These are usually far inland, and are generally extensive plains utterly sterile and uninhabitable. The want of rain is in some places partially supplied by the copious deposition of dew. On the contrary, there are some spots where it always rains, and which are mostly on the sea. As the whole atmosphere, when fully charged with humidity, is calculated to hold no more water than would form a sheet 5 inches in depth, while the mean annual deposit is about 35 or 40 inches, it is plain that the supply must be frequently renewed. Rain is more abundant toward the equator than the poles, at the sea coast than towards the interior, and on elevated situations than on plains.

788. *From the most authentic sources, Mr. Dalton has constructed the following table*, showing the mean monthly and annual quantities of rain which have fallen at several places, being the average for many years: —

	Manchester. 33 Years.	Liverpool. 18 Years.	Chatsworth. 16 Years.	Lancaster. 20 Years.	Kendal. 25 Years.	Dumfries. 16 Years.	Glasgow. 17 Years.	London. 40 Years.	Paris. 15 Years.	Viviers. 40 Years.
	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Fr. Inch.	Fr. Inch.
January -	2·310	2·177	2·196	3·461	5·299	3·095	1·595	1·464	1·228	2·477
February -	2·568	1·847	1·652	2·995	5·126	2·837	1·741	1·250	1·232	1·700
March - -	2·098	1·523	1·322	1·753	3·151	2·164	1·184	1·172	1·190	1·927
April - -	2·010	2·104	2·078	2·180	2·986	2·017	0·979	1·279	1·185	2·686
May - -	2·895	2·573	2·118	2·460	3·480	2·568	1·641	1·636	1·767	2·931
June - -	2·502	2·816	2·286	2·512	2·722	2·974	1·343	1·738	1·697	2·562
July - -	3·697	3·663	3·006	4·140	4·959	3·256	2·303	2·448	1·800	1·882
August -	3·665	3·311	2·435	4·581	5·039	3·199	2·746	1·807	1·900	2·347
September -	3·281	3·654	2·289	3·751	4·874	4·350	1·617	1·842	1·550	4·140
October - -	3·922	3·724	3·079	4·151	5·439	4·143	2·297	2·092	1·780	4·741
November -	3·360	3·441	2·634	3·775	4·785	3·174	1·904	2·222	1·720	4·187
December -	3·832	3·288	2·569	3·955	6·084	3·142	1·981	1·736	1·600	2·397
	36·140	34·118	27·664	39·714	53·944	36·919	21·331	20·686	18·649	33·977

789. *The depth of rain*, according to Humboldt, at the latitudes of 0°, 19°, 45°, and 60°, is, respectively, 96, 80, 29, and 17 inches. In the torrid zone, a small thick rain falls almost every day on that side of the equator where the sun is; but it generally intermits during the night. In many places, there are two wet and two dry seasons in the year; and in some regions, from the effect of mountains and peculiar winds, places under the same parallel have their wet and dry seasons at opposite periods. Though the annual depth of rain be greatest toward the equator, the number of rainy days increases with the latitude.

790. *Aqueous meteors*, so essential to vegetation, have their salutary effects modified by the *chemical qualities* of the moisture in the atmosphere. The salt rain and dew in the vicinity of the Caspian Sea, owing to the vapours which are exhaled from the soil, probably contribute to those saline efflorescences which are said to be gradually overspreading the once fertile soil of Persia. The salt fogs in the west of Jutland are very injurious to the foliage

of trees, without being hurtful to grass. Rain has also been known to be impregnated with sulphur, and with various substances approaching to that of animal and vegetable matters. Some of these communicate to the rain a peculiar colour, as that of blood, &c. On the other hand, fogs occur in which little or no moisture is present: such are called *dry fogs;* and are supposed to be the vapours and ashes ejected by volcanoes, and diffused in the atmosphere by the winds. Their occurring about the time of great eruptions strengthens this conjecture.

791. *Glaciers.* Ice and snow absorb a large portion of heat during liquefaction, which they give out again on freezing; for, in the ordinary process of nature, water does not cool below 32° F. till the whole be frozen; nor does its temperature rise above that point, while in contact with ice or snow,—that is, till the whole be melted. This property has an important effect on the temperature of snowy districts. It retards and often prevents the occurrence of extreme cold, and it opposes a sudden rise of temperature above the freezing point. The cold in the atmosphere, as was formerly stated, continually increases with the elevation; and, at a certain height, depending on the climate or latitude, perpetual frost prevails. Where the earth's surface attains this height, it is, with the exception of some steep or vertical cliffs, continually covered with snow. The snow acquires new additions from time to time; for, though it may melt slowly from the heat of the ground on which it rests, yet it suffers little decay externally, except what the air carries off by evaporation. The warmth of the solar rays may soften it a little, but this only tends to its farther consolidation. Masses of this sort are called *glaciers.* By accumulating in the manner just mentioned, they often become top-heavy, or acquire such an enormous weight as to break their hold, or crush their lower parts, which are besides liable to be undermined by the warmth of the mountain on which they rest. Hence it not unfrequently happens, that huge masses of ice or conglomerated snow slide or roll down the sides of mountains, transporting, perhaps, large stones or fragments of rocks to which they had adhered, or which had been separated from their beds by the agency of the weather. Detached glaciers often descend into districts having a mean temperature considerably above the melting point of snow. But so great is the heat consumed in liquefying such huge masses, that years may elapse before they entirely disappear; and during that interval others descend; and so on continually. So that the limit of perpetual snow may be found in a climate where little snow falls from the clouds. When glaciers descend into the sea, and particularly when detached and floating, they are termed *icebergs.*

792. *The snow-line,* or lower limit in mountains covered with perpetual snow, descends in winter and rises again in summer. Under the equator, this change is scarcely perceptible; but it increases with the latitude, and in high latitudes the snow-line has a great range. The direction of the prevailing winds, with many circumstances too numerous to be detailed, have each its effect. The snow-line is lower on the sides of mountains turned from the sun, than on acclivities which receive his rays more perpendicular to their surfaces. Hence it happens, that one side of a mountain may be covered with perpetual snow, whilst at the same height on the opposite side it is in a state of cultivation. The snow-line, therefore, depends so much on localities, that no general rule can be given for computing its altitude. Though often employed for estimating the heights of mountains, it is a most fallacious criterion.

793. *Humboldt gives the following heights of perpetual snow* in different parts of the world:—Andes of Quito (lat. 1° to 1° 30′), 2460 toises. Volcano of Puracé (lat. 2° 18′), 2420 toises. Tolima (lat. 4° 46′), 2380 toises. Nevados of Mexico (lat. 19°), 2350 toises. Himáláya (lat. 31°), southern side, 1950 toises; northern side, 2605 toises. Summit of Sierra Nevada, Granada (lat. 37° 10′), 1780 toises. Caucasus (lat. 42° to 43°), 1650 toises. Pyrenees (lat. 42° 5′ to 43°), 1400 toises. Swiss Alps (lat. 46°), 1370 toises. Carpathian mountains (49° 10′), 1330 toises. Norway (lat. 61° to 67°), 850 to 600 toises; and (lat. 70° to 71° 30′) 550 to 366 toises.

794. *Colour of the Atmosphere.* That the air has a blue colour, has been conjectured because a distant landscape appears of that cast, which, however, is greatly diminished by a good telescope. Newton ascribed this phenomenon to the greater refrangibility of the blue rays; and some consider it the effect of vapour. The appearance of the sky, when viewed from a high mountain, is of a deep blue, approaching to black. But this must be in some way illusory; because the upper atmosphere is highly transparent, as the heavenly bodies shine with increased splendour.

Sect. IV. *Luminous Meteors.*

795. *The refraction and reflection of light* by air produces a remarkable phenomenon. While the rays of light move in a medium of uniform density and composition, they are straight; but when they pass obliquely into a medium of a different density, they are bent or *refracted* toward the denser medium. The rays of light, therefore, whilst coming through the atmosphere from the heavenly bodies, are always entering into a denser and denser stratum of air, and are consequently bent down towards the earth. The different rays suffer different degrees of refraction, according to their colour. That of the red is the least, then

orange, yellow, green, light blue, indigo, and violet. All solid bodies have the property of reflecting light; and it is probable that all bodies whatever reflect light in a greater or less degree. The clouds and air possess this property. The rays which are the most refrangible, are also the most easily reflected. When the sky shines with a fine azure hue, it is by means of the more reflexible rays, which are first reflected from the earth, and afterwards returned by the atmosphere. The refraction and reflection of light enable it to diffuse itself over the atmosphere, illuminating our hemisphere for a considerable time after the sun has gone down and before he has arisen, producing the morning and evening *twilight*.

796. *The rainbow* is a circular image of the sun, variously coloured, and produced thus: — The solar rays, by entering the drops of falling rain, are refracted to their farther surfaces, and thence, by one or more reflections, transmitted to the eye. But on escaping from the drop, they undergo a second refraction, by which the rays are separated into their different colours; and in this state are exhibited to an eye properly placed to receive them. The rainbow is never seen but when rain is falling, and the sun and bow are always on opposite sides of the observer.

797. *The halo* is a broad circle of a variable diameter, sometimes white, but more commonly exhibiting a faint representation of the colours of the rainbow. It appears in a thin cloud, or in a haze, around the sun or moon's disc.

798. *The corona* is a circular space, full of mild whitish light, around the moon's disc. It sometimes passes into a yellowish or brownish colour towards the edges. This and the *halo* are popularly known by the name of *burrs;* and the latter is accounted a prognostic of rain, especially when its diameter is large.

799. *Parhelia* or *mock-suns* are images which appear sometimes above and sometimes below the disc of the true sun. They are supposed to be seated in the points of intersection of different halos, and to derive their brightness from the union of several reflections. Parhelia are sometimes surrounded by a whitish border, sometimes by the colours of the rainbow. They are rarely quite circular, and some have luminous trains, as has likewise the sun himself, when near the horizon, in the vicinity of Hudson's Bay. It is there, and in similar cold foggy situations, that parhelia are usually seen.

800. *Mock-moons* or *paraselenæ* are of less frequent occurrence than parhelia, but they are generally ascribed to a similar cause.

801. *Luminous shadows* or *glories* are remarkable phenomena, in which a spectator sees his shadow projected on a cloud with a luminous ring, sometimes coloured like the rainbow, encircling his head. The spectator, in such cases, must either be on an elevation, or the cloud must be very low. The shadow is usually of an enormous size.

802. *Looming* is the term used by our sailors to express a curious optical deception, by which objects come into view, though materially altered as to their real situation or position. The French call it *mirage*, and the Italians *fata morgana*. It often happens at sea, that a distant ship appears as if painted in the sky, perhaps in an inverted position, and not supported by the water. Sunken rocks and sands appear as if raised above the surface. The Swedes long searched in vain for an illusory island of this sort, which they saw from a distance, as if placed between the isles of Aland and the coast of Upland. The shipping and buildings on the shore of Naples have, from Messina, sometimes appeared floating inverted in the air. In 1798, the terror of the enemy was not a little increased by the appearance of the French coast distinctly raised above the sea, for an hour, as viewed from the opposite shore of Sussex. To the French, whilst marching in the Egyptian deserts, the sandy plain covered in the distance by a dense vapour presented the illusive image of a vast lake, towards which they hastened, but could never reach it.

803. *The aurora borealis*, or *northern light*, is a remarkable luminous phenomenon which occurs during night, and most commonly in clear or frosty weather. It is unknown in low latitudes, and becomes more frequent as we recede from the equator. But it is doubtful if its maximum either as to frequency or brilliancy be at the pole; for in the late north polar expeditions it was seen to the south of the observer, whereas at greater distances from the pole it appears to the north or a little to the west of north of the spectator. It is usually of a reddish colour, inclining to yellow, and sends out frequent coruscations of pale light, which seem to arise from the horizon in pyramidal undulating forms, and shoots with great velocity towards the zenith. Some maintain that a whizzing noise accompanies this phenomenon, but that is not very well ascertained. The light appears sometimes remarkably red, as was the case in many parts of Europe, Dec. 5. 1737. The aurora borealis frequently appears in the form of a luminous arch, chiefly in the spring, and in the autumn of a dry season. The arch is partly bright and partly dark, but generally transparent. This kind of meteor is almost constant during the long winter nights, in high latitudes. The "merry dancers," as it is called in Shetland, afford the inhabitants great relief amid the gloom of their long dreary nights. They commonly appear at twilight near the horizon, of a dun yellow, and sometimes continue so for several hours, without motion; afterwards they break into streams of a stronger light, passing into columns and innumerable different shapes. During this, the colour varies from all the tints of yellow to the most obscure russet, exhi-

biting the most beautiful appearance. In the northern parts of Sweden and Lapland, the aurora borealis is singularly beautiful, and affords to travellers a very fine light during the whole night. In Hudson's Bay it diffuses a variegated splendour sometimes equal to that of the full moon. Similar lights were observed by Dr. Forster towards the south pole, but they were much feebler than in the northern hemisphere. The cause of such phenomena is unknown. Some ascribe them to electricity and magnetism.

804. *The electricity* of the atmosphere is very imperfectly understood. In storms, the clouds usually exhibit the vitreous or positive electricity. In summer, when the earth is dry, and the day warm and serene, the electricity of the air increases from sunrise to noon; in which state it continues for an hour or two, and again diminishes, till the dew appear. It revives towards midnight, and again decreases till it become insensible.

805. *The phenomena of thunder* are so well known, as to require no description; but no satisfactory explanation has yet been discovered, except that it is intimately connected with electricity, which being itself in a great measure among the *incognita*, leaves us still in the dark. Thunder is more frequent as we approach the equator, and decreases as the latitude increases, being totally unknown in the arctic regions. It is a very rare phenomenon in intensely cold weather, and seldom occurs during night in the temperate zones. It is usually attended by heavy showers of hail or sleet, and less frequently by rain. The distance of thunder may be estimated, by allowing 1100 feet for each second which elapses between seeing the flash of lightning and hearing the report. It is seldom heard at a greater distance than two miles, and only does mischief when very near.

806. *St. Elmo's fire* is a faint light which seems to adhere to the points of bodies carried swiftly through the air. It appears on the tops of ship masts, and at the points of spears and other warlike instruments when in motion. It is generally believed to be an accumulation of electric matter. A single flame of this sort was called by the ancients *Helena*. When seen in pairs, they were called *Castor* and *Pollux*. A friend travelling towards the Lead Hills in Scotland observed his fingers, his switch, and the ears of his horse, ornamented with lights of this description during wet weather.

807. *Fire-balls* are those luminous bodies which appear usually at a great height above the earth, and were on that account long known by the term *meteor*, which is now applied to many other aërial phenomena. They present a very imposing appearance, and are seen of an immense size, sometimes red, but oftener of a vivid dazzling white. They traverse the atmosphere with amazing velocity. This, and their great height, have been inferred from their being seen from various distant places almost at the same instant. Sometimes they burst in pieces, or discharge torrents of flames, with a detonation making both the air and earth to tremble. Some of these balls descend like lightning, break through the roofs of buildings, destroy animals, and shatter vessels at sea; in short, they are often attended with all the disastrous effects of thunder and lightning, with which they are occasionally accompanied. Some consider these balls to be great masses of electric matter, passing from one place to another. Others suppose them to be the same with the aërolites.

808. *Aerolites*, or *meteoric stones*, have frequently descended from the atmosphere from the remotest antiquity. Both the above opinions may be in so far correct; because the fire-balls exhibit very different appearances. Philosophers are very much divided regarding the origin of meteoric stones. Some imagine them to be ejected from volcanos on the earth's surface; others from volcanos on the moon. A third class maintain, that they are generated by the combination and condensation of their component parts, previously diffused in the atmosphere in the gaseous form. Others allege, that they are detached stones moving through the boundless regions of space, and which casually come into contact with our planet. All these are little else than conjecture, although their formation in the atmosphere is the most plausible. A numerous list of the most authentic falls of such bodies is given in *Phil. Mag.* vol. lxvii.

809. *Falling stars* are very ordinary phenomena every where, but still they belong to a class which is not well understood. Near the place of their apparent descent, a fœtid gelatinous substance has frequently been found, of a whitish yellow colour.*

810. *The zodiacal light* is a luminous appearance, seen after sunset, or before sunrise, somewhat similar to the milky way, but of a fainter light, in the figure of an inverted cone or pyramid, with its base towards the sun. Its axis is variously inclined to the horizon, and makes an angle of nearly 7° with the plane of the ecliptic. The earliest distinct account of it was given by Cassini in 1683; but this affords no ground for supposing that it had not existed or been seen prior to that date: it is always observable, when the sky is clear, in the torrid zone; but is more rarely to be found as we recede from the equator. The season most favourable for observing it is about the beginning of March: it is much brighter in some years than others, and was particularly brilliant at Paris, 16th February, 1769. The zodiacal light lies in the plane of the sun's equator, and is therefore supposed by some to be connected with his rotation.

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* Professor Brandes, of Breslau, has published a curious Treatise on Falling Stars, to which we may direct the attention of our readers.

Sect. V. *Winds.*

811. *Winds* are currents of air occasioned by the disturbance of the equilibrium of the atmosphere by the unequal distribution of heat. The general tendency, in such circumstances, is for the heavier columns to displace the lighter; and for the air at the earth's surface to move from the poles toward the equator: in consequence of the rotation of the earth on its axis, another motion is combined with the currents just described. The air, which is constantly moving from points where the earth's motion on its axis is slower to those where it is quicker, cannot have precisely the same motion eastward with the part of the surface over which it is passing, and therefore must, relatively to that surface, acquire a motion somewhat westerly. The two currents, therefore, from the opposite hemispheres, will, on meeting, about the equator, destroy that part of each other's motion which is in the direction of the meridian, leaving nothing but their united motion towards the west. Such is the cause of the *trade-wind*, as proposed and rejected by Dr. Halley: it was shortly after revived by Hadley, and is pretty generally received. The trade-wind (with certain exceptions) blows constantly from the east, between the latitudes of 30° N. and 30° S.; it declines somewhat from due east, towards the parallel to which the sun is vertical at different seasons of the year. The only supply for the air constantly abstracted from the higher latitudes must be made by a counter current, in the upper regions of the atmosphere, carrying back the air from the equator towards the poles. In a zone of variable breadth, within the region of trade-winds, calms and rains prevail, caused probably by the mingling and ascending of the opposite currents. High lands change or interrupt the course of the trade-winds: thus, under the lee of the African shore, calms and variable winds prevail near the Cape Verd islands, while an eddy, or counter current of air from the south-west, is generated under the coast of Guinea. The lofty barrier of the Andes shelters the sea on the Peruvian shores from the trade-winds, which are not felt till a ship has sailed eighty leagues westward; but the intervening space is occupied by a wind from the south. In the Indian ocean, the trade-wind is curiously modified by the surrounding land: the southern trade-wind blows regularly from the east and south-east, from 10° to 23° south latitude; but between 10° south and the equator north-west winds prevail from October to April, and south-west the rest of the year; while north of the equator, the wind is south-west in summer, and north-east in winter: these are called *monsoons*, but are not fully understood.

812. *As to the parts of the globe that lie beyond the region of trade-winds*, calms prevail pretty generally over a narrow space; beyond which, the region of variable winds extends probably to the poles. Mr. Forster observes, that beyond the tropics the west winds are most common. He also supposes that east winds have an ascendancy within the antarctic circle. According to Robins, a westerly wind almost constantly prevails about latitude 60° S. in the Pacific Ocean. In Hudson's Bay, westerly winds prevail during three fourths of the year, as also in Kamschatka. At Melville island, the north and north-west winds prevail: on account of these winds, the Atlantic may be crossed eastward in about half the time of returning westward.

813. *Sea and land breezes* arise from the same general principle which chiefly occasions the trade-winds: during the day, when the sun renders the surface of the land warmer than that of the sea, the warmer rarified air of the land ascends, being buoyed up and displaced by the heavier air rushing from the sea, and thus forming the *sea breeze;* but the reverse often happens during the night, when the surface of the land becomes colder than the sea, and occasions a wind from the land, or a *land breeze.* Winds of this sort are more frequent about islands and small peninsulas than in other situations; but they are not confined to any particular latitude.

814. *A variety of local winds* have also been observed. The *etesian*, which is a northerly or north-easterly wind, prevails very much in summer all over Europe. Pliny describes it as blowing regularly in Italy for forty days after the summer solstice. It is supposed to be a part of the great lower current moving towards the equator. Another northern wind, which often continues about a month in February and March, is called the *ornithian* wind, because some birds of passage then make their appearance in the south of Europe. A *squall*, or sudden gust of wind, is common in many places; and when its impetuosity is sufficient to bear along trees, buildings, &c., it is called a *hurricane:* such winds have frequently a whirling motion, and are accompanied with torrents of rain or hail, and even thunder; these are sometimes called *tornadoes:* they are principally confined to the torrid zone. The *sirocco* is a hot southern wind, known on the shores of the Mediterranean; when it reaches Naples and Sicily, it is very moist and relaxing to the human frame. Some warm climates are occasionally visited by excessively hot pestilential winds, generally from the south, and known under a great variety of names in different quarters. Such are the *kamsin* of Egypt, the *simoom* or *samiel* of Arabia and the Desert. The deleterious effects, which frequently cut off whole hordes or caravans, are sometimes ascribed to the predominance of one of the component gases of the air, or to a mixture of nitrous gas, &c.; but this is not well ascertained. The very arid state of the air, bearing along vast quantities of burning sand and dust, must of themselves be very prejudicial to animal life. The *harmattan* is a warm, dry, east wind, which occurs in Guinea, and is also of an unwholesome description.

815. *The velocity of the wind* varies from nothing up to 100 miles in an hour; but the maximum is variously stated by different authors. According to Smeaton, a gentle breeze moves between 4 and 5 miles per hour, and has a force of about 2 ounces on a foot; a brisk pleasant gale moves from 10 to 15 miles, with a force of 12 ounces; a high wind, 30 to 35 miles, with a force of 5 or 6 pounds; a hurricane, bearing along trees, houses, &c. has a velocity of 100 miles, and a force of 49 pounds on the square foot.

816. *The force of the wind* is nearly as the square of the velocity multiplied by the density of the air. Some interesting experiments are described by Colonel Beaufoy, *Annals Phil.* vol. viii. p. 94.

817. *The atmosphere is the vehicle of sound*, and we shall close this brief sketch by noticing this property. Till lately, the velocity of sound used to be greatly over-rated. From the experiments of Dr. Moll, in the plains of Utrecht, in 1823, it appears, that the mean velocity of sound is nearly 1100 feet per second; but it varies a little with the temperature and humidity of the air. See *Phil. Trans.* for 1824.

Chap. II.

HYDROLOGY.

818. *This branch of natural history makes us acquainted with the various properties and relations of the waters of the globe.* Any definition of water is unnecessary; but mankind must have remarked, at a very early period, that the waters distributed over the globe differ considerably in their fitness for drinking, for preparing food, and for other domestic purposes. These differences are occasioned by the foreign bodies which this liquid holds in a state of solution or suspension; for water is capable of dissolving a greater number of substances than any other fluid. Hence it is scarcely ever found native in a state of absolute purity: in some cases, the quantity of foreign matter is so minute, as to have little influence on the taste or other properties; but in other instances they are so abundant, as to render it unfit for common use, or even noxious; while at other times it is medicinal, &c., according to the nature of the substances with which it is impregnated. Native water, free from colour, is almost never poisonous, especially if it be at the same time tasteless; but if blue from copper, green from iron, or brown from vegetable impregnation, it is unfit for the use of man. Water performs the most important functions in the vegetable and animal kingdoms, and enters largely into their compositions, as a constituent part.

819. *The substance of water presents itself under three different forms of aggregation.* If under sufficient pressure, it is liquid at all temperatures above 32°, so far as is known. It is densest at the temperature of 40°. When cooled down to 32°, it ordinarily assumes the solid form of ice; but if great care be taken to avoid agitation, it may be cooled almost to zero, without freezing. Congelation commences in the form of prismatic crystals, crossing each other at angles of 60° or 120°, and the temperature, however low before, instantly rises to 32°. During this process, the mass expands with a prodigious force, the volume suddenly increasing about a ninth part. Glass bottles filled with water, and properly stopped, are burst during its congelation, and the same has happened to a strong bomb-shell. Water passes into vapour at all temperatures, and under any pressure; when the elasticity of the vapour equals or exceeds the incumbent pressure, the process proceeds with violence, and is called boiling. Under the ordinary pressure of the atmosphere, this takes place at about 212° of Fahrenheit's scale; but the boiling temperature varies with the pressure: hence, water boils at a lower temperature on a mountain top, and at a higher in a deep pit.

820. *The relations of water to heat* are very remarkable. With the exception of hydrogen gas, it absorbs more heat in warming, and parts with more in cooling, than other bodies do. Hence, large bodies of water have a powerful influence in checking or retarding sudden alterations of temperature in the surrounding air. Ice, in melting, absorbs as much heat as would raise its temperature 140°, and gives out the like quantity again in freezing,—a property that enables it to resist or retard sudden alterations of temperature in cold climates, in a more remarkable degree than the other; which, however, exerts its influence in the torrid and temperate as well as in the frigid zone. Lastly, water, in assuming the elastic form, absorbs heat sufficient to raise its temperature 1000°, and parts with as much during re-condensing into water; so that water possesses an almost boundless influence in tempering climate.

821. *Water, as to its composition*, was long ranked among the simple elements; but the researches of modern chemistry have ascertained that it is a compound of 88·9 of oxygen, and 11·1 hydrogen; or its composition by volume and weight may be thus stated: one volume of oxygen combined with two of hydrogen, or eight parts by weight of oxygen, with one of hydrogen. It is composed and decomposed, during many of the operations of nature, and its chemical agency is almost universal. It is an ingredient in most bodies which appear under the crystalline form.

Sect. I. *The Ocean.*

822. *The ocean* is the origin and fountain of all the other waters which occur, in whatever form, on the face of the globe. According to some naturalists, it forms the remains of the menstruum or chaotic fluid, in which all solid bodies were originally held in a state of solution, and from which they have been precipitated or crystallized, in short, brought to their present state, during the countless ages which these processes are supposed to have occupied, anterior to the creation of man: be this as it may, we are certain, that it is from the vapours exhaled by the ocean that the atmosphere is furnished with sufficient moisture to support and refresh the organized beings which inhabit the earth. All nature languishes when the atmosphere withholds its rain and dews; plants fade and droop; animals feel their strength failing; even man himself, breathing nothing but dust, can with difficulty procure shelter from the sultry heat by which his frame is parched and overpowered. The ocean is the grand thoroughfare of commerce, forming a medium of communication between the most distant and otherwise inaccessible portions of the earth. It consists of one continuous fluid, spread round the land, and probably extending from pole to pole. All the gulfs, all the inland seas, form only portions detached, but not entirely separated, from that universal sea, denominated the ocean. Geographers roundly estimate the ocean and its branches to occupy three fourths of the entire surface of the globe. But to ascertain the exact proportion between the land and water will afford them ample employment for ages to come, though every day adds to the stock of information already acquired.

823. *The ocean is variously subdivided* by different authors: it may be conveniently divided into five great basins.

824. *The Pacific*, so named from its comparative tranquillity, and often called also the Great South Sea, separates Asia from America. It is the largest of the basins, and somewhat exceeds the entire surface of dry land. Its greatest extent, from east to west, is about 3700 leagues, and breadth 2700. It is bounded on the east by the western and north-west shores of America, and on the west by the eastern coasts of Asia: on the western side, and between the tropics, its surface is studded with innumerable groups of islands, all remarkably small; and consisting generally of coral reefs, rising up like a wall from unknown depths, and emerging but a very little above the sea. These islands are the works of innumerable minute insects, whose incessant labours are thus gradually forming new lands in the bosom of the ocean. On the western side, it communicates with the inland seas of Japan and Otchosk, the Yellow and Chinese seas; and on the eastern side, it has the inlets of California and Queen Charlotte's Sound. The small isles of the Pacific, scattered over the torrid zone, have their temperature so moderated by the ocean as to enjoy the most delightful climate in the world.

825. *The second basin*, or *Atlantic Ocean*, is usually divided into the North Atlantic, and the South Atlantic, or Ethiopic Ocean. The Atlantic is bounded on the east by Europe and Africa; and on the west, by America: that part of it between Europe and North America is frequently called the Western Ocean. The Atlantic basin extends from 70° N. to 35° and 50° S. latitude; but it is only about half the size of the Pacific Ocean. The length is about 2800 leagues, but the breadth, which is very unequal, varies from 600 to 1800. The South Atlantic contains few islands of any size, and no inlets of consequence; but the North Atlantic abounds in large islands, and in deep and numerous inland seas, which penetrate far on each side into both the old and new worlds, and have fitted it for the most extensive commerce on the globe. On its eastern shores it receives few large rivers; but on the west it receives the Plata, Orinocco, Amazons, and Mississippi, — the largest rivers on the sive commerce on the globe. On its eastern shores it receives few large rivers except the Niger; but on the west it receives the Plata, Orinocco, Amazons, and Mississippi, — the largest rivers on the face of the earth.

826. *The third basin is the Indian Ocean*, which washes the shores of the south-east coasts of Africa and the south of Asia. It is bounded on the east by the Indian islands, New Holland, and New Zealand: its length and breadth are each about 1500 leagues: it contains many islands, the two large bays of Bengal and Oman, with the deep inlets of the Persian Gulf and Red Sea. The half-yearly winds called monsoons prevail in its northern parts.

827. *The fourth basin is the Arctic Ocean*, an immense circular basin, surrounding the North Pole, and communicating with the Pacific and Atlantic by two channels; the one separating America from Europe, the other America from Asia. Few points of the coasts of Europe and Asia, which occupy a full half of the circumscribing circle, extend much beyond the 70th parallel; and it is doubtful if the other boundaries, consisting of the northern coasts of America and Old Greenland, reach nearer the Pole; so that the mean diameter of this basin may be taken at 800 leagues. Its interior or central parts are little known: several islands are scattered over its southern extremities, the largest of which is Old Greenland, whose northern limit is unknown; the others are Spitzbergen, Nova Zembla, the Isles of New Siberia, those lately discovered by Captain Parry, and several towards Baffin's Bay. The White Sea, on the north coast of Europe, is the only deep gulf connected with this basin, which is of any importance to navigation.

828. *The fifth basin is the Antarctic*, which is still less known than the preceding: it joins the Pacific in the latitude of 50° S., and the Indian Ocean in that of 40°. Floating

ice occurs in every part of it; but it is very abundant within the parallel of 60°. It was long supposed, that a large continent of land and fixed ice occupied the greater part within the antarctic circle. In 1819, Captain Smith discovered land lying between the longitudes of 55° and 65° W., and beginning at the latitude of 62°. Mr. Weddell has since examined this quarter nearer the Pole, which he believes to be free from fixed ice.

829. *Of the inland seas,* the Mediterranean i. the largest and the most important: it is deserving of notice on various accounts, and in particular as having been the scene of by far the greater number of the nautical adventures of antiquity. It is the "Great Sea" of the Sacred Writings, though we find it there spoken of under other names. Its greatest length, from east to west, is about 2350 miles; and the breadth, which is sometimes small, is at the greatest 650. It is bounded on the south by Africa, on the east by Asia, and on the north by Europe. It communicates on the west with the Atlantic by the Straits of Gibraltar, and with the Black Sea by the Dardanelles Strait on the east. It has many islands, gulfs, and bays, with a very deep inlet on the north called the Adriatic Sea, or Gulf of Venice. The Black Sea is connected with the Sea of Azof; but these containing only brackish water, and being so far inland, have more of the character of lakes than branches of the ocean. Proceeding still farther eastward, we come to the Caspian Sea, which is abundantly salt, and of great dimensions; but being wholly unconnected with the ocean, will be afterwards spoken of under the character of a lake. Traces of a connection having once existed between it and the Sea of Azof are said to be visible along the intervening low country.

830. *The Baltic* is pretty much allied to the Black Sea, in having only brackish waters, which are sometimes wholly frozen over for several months in winter, and the ice so strong, that armies have been marched across. The Baltic communicates with the German Sea by the strait called the Cattegat: its greatest length is 1200 miles. The North Sea, or German Ocean, is bounded by Britain and the Orkneys on the west, and the continent of Europe on the east; and reaches from the Straits of Dover to the Shetland Islands, where it joins the Northern Ocean. It was probably, formerly, an inland sea or lake. On the west of the Atlantic are the Gulf of St. Lawrence, Hudson's and Baffin's Bays; but we must now proceed to treat of the different properties and relations of the ocean, so far as our limits will permit.

831. *The usual colour* which sea water exhibits is a bluish green, of various shades. Some maintain, that this is its true and proper colour; others, that it is an optical illusion, occasioned by the greater refrangibility of the blue rays of light, — opinions which may both be true to a certain extent. The ocean seems often to assume various other colours; some of them no doubt real, but as often illusory. Among the more general sources of deception, may be reckoned the aspect of the sky: thus, an apparently dark-coloured sea is a common prognostic of an approaching storm; not that the water is really blacker then than usual, but because the dark colour of the clouds indistinctly seen in, or reflected from, the waves, is mistaken for the colour of the sea itself. Whatever other colour the sky happens to wear has a greater or less influence on the appearance of the ocean: thus red clouds seem to tinge it red, &c. On some occasions, the edges of the waves, by refracting the solar beams like a prism, exhibit all the brilliant colours of the rainbow, which is still more nearly imitated by the refraction of the rays in the spray. Not unfrequently, an indistinct image of the neighbouring coast reflected from the ruffled surface is mistaken for the colour of the water.

832. *The variety of colours* in the sea may probably arise from animal and vegetable matters diffused through the waters in a putrescent state, and communicating various tints. The yellow and bright green shades seem to be owing to living marine vegetables, which grow at the bottom, stretch their fibres through the water, or spread over the surface; and it is supposed that the colour of innumerable minute animals is often confounded with that of the sea. Near the shore, and especially towards the mouths of rivers, the diffusion of mud and other earthy matters cannot fail to affect the colour of the sea: where it is shallow or very transparent, the colour of the bottom is frequently mistaken for that of the water.

833. *The colour of the Greenland Sea,* according to Mr. Scoresby, varies from ultramarine blue to olive green, and from the most pure transparency to great opacity. These appearances, he thinks, are not transitory, but permanent; not depending on the state of the weather, but on the quality of the water. Hudson, in 1607, noticed these changes, and observed that the sea was blue where there was ice, and green where it was open. This, however, was only accidental. Phipps does not mention the green water; it forms, perhaps, one fourth of the Greenland Sea, between the latitudes of 74° and 80°; often it constitutes long bands or currents, lying north and south, or N. E. and S. W. In 1817, the sea was blue and transparent about the latitude of 74° or 75°, and between the longitudes of 0° 12′ and 12° E. In 1817, Mr. Scoresby sometimes passed through stripes of pale green, olive green, and transparent blue, in the course of ten minutes. The food of the whale occurs chiefly in the green water, and there the fishers look for them. Whales are more easily taken in the opaque green water than in the transparent blue, because they do not readily see their enemies through the former. On examining the differently-coloured sea waters, Mr. Scoresby found various substances and animalcules, especially in the olive-green water. The number of

medusæ was immense: they were about one fourth of an inch asunder. Hence a cubic foot would contain 110,592. From these, and many similar observations, Mr. Scoresby concludes, that the Arctic Sea owes its colour to animalcules, and that they occasion the opacity of the olive-green water. The blue water contains few animalcules, and is uncommonly transparent. The surface of the Mediterranean sometimes appears of a purple tint. In the Gulf of Guinea, the sea is sometimes white; and around the Maldive islands, black. The Vermilion Sea, near California, is so named from its red appearance.

834. *The transparency of the sea* may in many places be very great, without such property being readily noticed. Thus, where the water is sufficiently deep to be dark at the bottom, it may seem quite opaque, unless some fish or other object happen to come within view. Agitation of the surface will likewise tend to conceal the transparency. In general, the sea is more transparent as we recede from the shore, and in cold climates than hot; owing, perhaps, to the smaller quantity of organic matter diffused in the waters of high latitudes. From this, however, there are exceptions; as in the opacity of the Arctic Sea just noticed, and in the case of the Caribbean Sea, which is often remarkably transparent. Admiral Milne observed the bottom at a depth of 150 feet in the Caribbean Sea. Authors are not agreed to what depth the solar rays penetrate; and indeed we have every reason to suppose that this must depend upon and be as various as the transparency. Some limit the penetration to a depth of 100 yards; while others more than double that quantity. The light should surely penetrate to at least double the depth to which an observer can see from the surface.

835. *The temperature of the sea* has probably a tendency to follow the mean temperature of the climate; but many powerful causes must interfere and modify it. Thus, between the tropics, the mean temperature of the surface of the ocean is about 80°, and generally ranges between 77° and 84°. Beyond the tropics, it begins to decrease, but without observing any strict connection with the latitude; because, on account of the great specific heat of water, powerful currents cannot fail partially to preserve, for some time, the temperature of the place from which they come. Hence, currents from the torrid zone, on passing into higher latitudes, raise the temperature of the sea above what usually belongs to such parallels; the reverse holds of cold icy currents from the arctic regions. The temperature of the ocean is much more steady than that of the superincumbent air, and has likewise a smaller annual range: unless where very shallow, it has scarcely any diurnal range.

836. *The temperature of the sea on descending below the surface* generally decreases, but not according to any uniform or known law. Thus, at a depth of five fathoms, it is sometimes 1° colder, while in other instances it requires 100 fathoms for 1°. Sometimes the cold attains its maximum at a depth of 100 fathoms, and sometimes it requires 400 or 500 fathoms. According to an experiment related by Capt. Sabine, the temperature of the Caribbean Sea was 45·5° at a depth of 1000 fathoms, while its surface was 83°. But the enormous pressure at the bottom probably compressed the ball of the thermometer, and kept the apparent temperature 45.5° above the truth. In the Arctic Sea, however, the temperature increases with the depth. Mr. Scoresby, who first ascertained this, found an increase of 6.6° and 8° at the respective depths of 120 and 730 fathoms; Capt. Parry, 6° at 240 fathoms; Capt. Sabine, 7.5° at 680 fathoms; Lieut. Beechy, 10° at 700 fathoms; and Mr. Fisher, 9.5° at a depth of 188 fathoms. Thus, the rate of increase of temperature in the Arctic Sea has as inconstant a connection with the depth as the decrease in the temperate and torrid zones. Sea water freezes about 28°; after which, the ice has been observed to cool down to — 55°; but we cannot thence infer, that a lower temperature does not occur in the polar regions.

837. *The phosphorescence of the sea* is a common but very remarkable phenomenon, concerning the cause of which authors are not agreed. But most probably, as Newton conjectured, it proceeds from a variety of causes. Since his time, it has engaged the attention of many eminent philosophers. The appearance of these lights is by no means uniform. Sometimes a vessel, in traversing the ocean, seems to mark out a trace of fire; while each stroke of an oar emits a light, sometimes brilliant and dazzling, at other times tranquil and pearly. These lights are grouped in endless variety. Perhaps, at one time, innumerable shining points float on the surface, and then unite into one extensive sheet of light. At another time, the spectator fancies he sees large sparkling figures, like animals in pursuit of each other, incessantly vanishing and re-appearing. Such lights have been ascribed to luminous animals, and to the phosphorescence of semiputrescent matter diffused in the ocean. It is well known, that various fishes and other marine animals emit light, which does not in every instance appear to be voluntary, or to depend on the vital principle, as, in some of them, it continues, and perhaps increases, after death: but motion seems to be either a principal cause, or at least an exciting one; for this light more rarely occurs, and is much fainter, in still water, whilst it becomes more and more brilliant as the motion increases. It is also more abundant immediately before and during storms. In vol. v. p. 303. of the *Edin. Phil. Jour.*, Dr. Francis Buchanan has given a very interesting account of an extraordinary shining of the sea, which he observed, 31st July, 1785, in longitude

61° 25′ E., latitude 6° 32′ N. "About a quarter past seven P. M.," says he, "the sea was observed to be remarkably white. The sky was every where clear, except around the horizon, where, for about 15°, it was covered with a dark haze, as is usual in such latitudes. The whiteness gradually increased till past eight. The sea was then as high-coloured as milk, not unlike the milky way, the luminous appearance very much resembling the brighter stars in that constellation. It continued in this state till past midnight, and only disappeared as daylight advanced. The whiteness prevented us from being able to see either the break or the swell of the sea, although both were considerable, as we knew from the motion of the ship and the noise. There was much light upon deck, as we could discern all the ropes much more distinctly than usual. We drew several buckets of water, in which, even when at rest, there appeared a great number of luminous bodies. The bulk of them did not appear to be more than one quarter of an inch in length, and nearly as much in breadth. Some, however, were one inch and a half long, and of the same breadth as the others. These were seen to move in the same manner as a worm does in water. When taken up on the finger, they retained their shining faculty even when dry. When brought near a candle, their light disappeared; but, by minute attention, an extremely fine white filament could be observed and lifted upon the point of a pin. It was of a uniform shining colour and form, and about the thickness of a spider's thread. In a gallon of water there might be about 400 of these animals emitting light. The water itself, when in the bucket, had a natural appearance. The atmosphere was seemingly free from fog. The stars were bright, and there was no moonlight. The night before, the same appearance was observed at ten P. M.; it lasted only 20 minutes; but as I was below, I did not hear of it till it was over." — "The animalcules which occasion the unusual luminousness of the sea emit light only when strongly agitated, and hence appear close by the sides of the ship, or when any larger fish passes swiftly, or when a bucket of water is drawn and suddenly poured out." — "In the year 1805, on returning from St. Helena to England, a little north from the equinoctial line, and near the coast of Africa, I had an opportunity of seeing a still more splendid appearance of the luminous animalcules. Soon after dark in the evening, it being nearly calm, we saw numerous lights at a distance, like the lamps of a great city. The lights gradually approached the frigate, and on reaching us appeared to arise from a great many large fishes (albicores) sporting in the water, and agitating the animalcules, so as to excite their luminous powers."

838. *The depth of the sea* is a question on which our information is very imperfect, and there is little likelihood that much accurate information will ever be obtained on the subject, so far as regards the wide ocean. According to the speculations of the late celebrated Marquis Laplace, the depth of the ocean is comparatively small, and nearly uniform. If, however, it be recollected that the bottom of the sea is still a part of the earth's surface, and by much the greater part too, one would be apt to ask, why that larger part of the surface should be more level than what appears as dry land? The soundings which have been made in the ocean are quite inadequate to decide the question. They, however, often indicate great inequalities in the depth; but how far hollows may have been filled with *débris*, or asperities worn down, it is not easy to say; though it is more likely that the summits of mountains exposed to the alternate or combined actions of air and moisture suffer a more rapid abrasion than those which are wholly under water. In general, the slope of the adjacent shore is continued downward for a good way under water; that is, the sea is usually shallow where the shore is flat, while its depth increases rapidly by the side of a cliff or steep mountain. It is therefore probable, that some islands, though very small, may be the tops of sub-marine mountains as large, perhaps, as the highest which occur on the earth's surface. In many instances, no bottom has been found; but this might proceed either from the shortness of the line, or from its being borne aside by rapid currents. We have already mentioned a sounding of 6000 feet in the Caribbean sea; but Lord Mulgrave's line of 4680 feet did not reach the bottom of the Northern Ocean. In the entrance of the German or North Sea, at the Straits of Dover, the central depth is 29 fathoms. This extensive basin contains various shallows and sand-banks; yet, generally speaking, the depth increases in going northward, and near to Bergen in Norway it amounts to 190 fathoms. A very interesting account of the bed of the German Sea is given by Mr. Stevenson, *Edin. Phil. Jour.* iii. 42.; and in the third volume of the *Memoirs of the Wernerian Society.*

839. *The level of the open sea is believed, generally speaking, to be every where the same;* or to form a portion of the surface of an oblate spheroid, to which the surface of the land approaches with less accuracy. Some gulfs and inland seas appear to deviate in some measure from the general rule. This is more particularly the case where the communication of such seas with the ocean is narrow; and there are a few other exceptions.* When the general motion of the ocean or of the trade-winds is directed into the mouth of an inland sea, it has a tendency to raise its level above that of the ocean. On this account it is that the Arabian Gulf or Red Sea is higher than the ocean, and still higher than the Mediterranean, which, from the opposite action of the wind and the great evapor-

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* Strabo says the level of the Gulf of Corinth is higher than that of the Gulf of Cenchreæ.

ation, is supposed to be a little below the general level.* Some gulfs and inland seas, as the Baltic and Black Sea, rise in spring, from the copious influx of river water, and are lowered in summer by evaporation and the efflux at their mouths. Of late years, there has been considerable discussion regarding the subsidence of the Baltic below the level it had formerly maintained. Whilst some support this opinion, and venture to explain the cause of the subsidence, others deny the fact altogether. The trade-winds and general westward motion of the ocean force in the water into the Gulf of Florida, so as to maintain a higher level there than on the western coast of the Isthmus of Darien.† The consequence of this accumulation of water is, that it generates a current moving northwards; and which, after various windings through the Atlantic, at length reaches the western shores of Europe, as will be more particularly noticed hereafter. Some naturalists allege, that the *débris*, or alluvial matters daily abraded by the action of the weather on the surface of the land, and swept into the ocean by the rain and rivers, must, at length, raise the level of the ocean till it cover the whole globe, and restore the reign of ancient chaos. Unless there be some compensating process, which either makes up for the exhausted materials, or gradually elevates the entire continents above the water, it is not very easy to guess at an alternative. A compensating power is situated deep in the crust of the earth.

840. *The taste of sea water* is disagreeable and bitter, at least when taken from the surface or near the shore; but when drawn from great depths, its taste is only saline. It would therefore seem that the bitterness is owing to the greater abundance of animal and vegetable matter near the surface. Man, in a civilised state, cannot make use of sea water as drink; yet it is said that the inhabitants of the Isle of Paques, in the Pacific Ocean, make it their usual beverage. Some of the lower animals occasionally travel far to drink sea water; Sheep are very fond of licking the dry salt; and so are many horses and cattle. With them it is a cure for various complaints. Several attempts have been made to render sea water potable, or to free it from salt. Distillation is the most effectual; but the expense of fuel is a serious objection to this method at sea, and, after all, it does not divest it of all its bitterness. Thus, in the midst of water, mariners are frequently in danger of dying of thirst, when they run short of fresh water. Sea ice, when melted, affords nearly fresh water; but being devoid of air, its taste is not very agreeable, though it would be highly prized in time of need. A temporary, and in some degree an imaginary, relief may be obtained, by holding salt water in the mouth.

841. *The saline contents of the waters of the wide ocean* do not, so far as experience has gone, differ much in different latitudes and under different meridians, although we ought to find the sea fresher in the spaces occupied by the internal limits of the trade-wind, and also in those tracts of the ocean where calms and a high temperature prevail, as on the west coast of Africa. The mean is about 3·5 per cent. in the weight of the water; but the saltness is more or less affected by currents and storms. It is diminished at the surface during heavy rains, and by the discharge of rivers; but increased by evaporation, which carries off the water fresh, and leaves the salt behind: hence there is often little consistency in detached observations. From a great variety of experiments, Dr. Marcet concludes: 1. That the Southern Ocean contains more salt than the Northern, in the ratio of 1·0291 to 1·02757. 2. That the mean specific gravity of sea water near the equator is 1.02777, intermediate between those of the northern and southern hemispheres. 3. That there is no notable difference in sea water under different meridians. 4. That there is no satisfactory evidence that the sea at great depths is more salt than at the surface. 5. That the sea, in general, contains more salt where it is deepest and most remote from land; and that its saltness is always diminished in the vicinity of large masses of ice. 6. That small inland seas, though communicating with the ocean, are much less salt than the open ocean. 7. That the Mediterranean contains rather larger proportions of salt than the ocean. This last is explained from the fact, that a pretty strong current from the Atlantic always flows inward at the mouth of the Mediterranean, to supply, as was supposed, the water which escaped by evaporation, and left its salt behind. So great, however, is the influx, that this inland sea ought to have become perfect brine, or perhaps to have deposited beds of salt, if there were *no efflux;* and accordingly it is maintained that there is an outward current at the bottom, very deep, which carries off this excess of salt, and prevents its deposition in the vast hollows in the bottom. The water drawn up from this lower current is salter, in a small degree, than at the surface.

842. *The following are the mean specific gravities of the waters of different seas,* according to Dr. Marcet's experiments: —

Arctic Ocean - - - -	1·02664	Black Sea - - - -	1·01418
Northern Hemisphere - - -	1·02829	White Sea - - - -	1·01901
Southern Hemisphere - - -	1·02882	Baltic - - - -	1·01523
Yellow Sea - - - -	1·02291	Lake Ourmia, in Persia, - -	1·16507
Mediterranean - - - -	1·02930	Dead Sea - - -	1·11100
Sea of Marmora - - -	1·01915		

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* *Vide* Maclaren on the level of the Red Sea, in the Edinburgh Philosophical Journal.

† The mean height of the Pacific above the Atlantic is said to be 3·52 feet.

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843. *The saltness of inland seas* is subject to many varieties. In the entrance to the Black Sea, the water is much salter at the bottom than the surface. To account for this, it is said that an under current enters from the Mediterranean. It is well known that there is an outward current at the surface, which brings with it the less salt water of the Black Sea. The saltness of inland seas is often affected by the direction and strength of the wind, either forcing in, or retarding the entrance of, water from the ocean. Accordingly, from the experiments of Wilcke, it appears that the saltness of the Baltic is increased by a west wind, and still more so by a north-west wind; but it undergoes a diminution when the wind is from the east. Thus, the specific gravities are, for a

Wind at W. - - - -	1·0067	Storm at W. - - - -	1·0118
Ditto at N. W. - - - -	1·0098	Wind at E. - - - -	1·0039

Hence, the proportion of salt in the Baltic depends in no small degree on the different winds; a proof that the salt is not only derived from the neighbouring ocean, but that storms have a much greater effect on it than has been commonly supposed.

844. *The constituent parts of sea water* have been an object of examination to many chemists, and various sets of experiments made to determine them. The late Dr. Murray of Edinburgh was of opinion that there were various sources of fallacy in analysing sea water; and that different modes of operating on the same water gave very different results. Two reasons are assigned for this; viz. that some of the different salts mutually decompose each other in the process, and that a part is lost altogether by evaporation, especially if the temperature be high. According to this eminent chemist, 10,000 parts of water from the Firth of Forth, which is not sensibly different from that of the ocean, contain 220 parts of common salt, 33 of sulphate of soda, 42 of muriate of magnesia, and 8 of muriate of lime. On analysing sea water from N. latitude 25° 30′, W. longitude 32° 30′, Dr. Marcet made the numbers respectively 266, 47, 52, and 12. According to Bladh, the saltness is greater about the tropics than at the equator. Dr. Trail maintains the contrary; and also that the saltness increases with the depth.

845. *Ice is formed on the sea*, though its saltness enables it to resist the process of congelation at the ordinary freezing point of fresh water. This quality does not withstand the rigour of the Arctic regions, where the temperature of the air has been observed so low as 55° F. Sea water freezes about 28°, but the temperature varies a little with the saltness.— It is a curious circumstance, that sea water parts with its salt in freezing.* Hence compact transparent sea ice affords fresh water on being melted. When, however, the ice is of a loose or cellular texture, its pores sometimes contain liquid brine; and therefore, on being melted, it affords brackish water. It is supposed to be the affinity between the water and salt which retards the congelation of sea water; because the greater the saltness, the lower is the freezing temperature. Detached masses of ice are occasionally met with, floating in the ocean at so low a parallel of latitude as 40° in both hemispheres; having been conveyed thither by currents from the polar regions.† At the parallel of 50° they are more abundant; and there it is common, in winter, to see the shallow edges of the sea covered with ice. At 60° N. latitude, the gulfs and inland seas are frequently frozen over their whole surface. As we proceed toward the poles, the ice becomes more and more abundant, and of larger dimensions, till at length we come to *fields* of ice, and *icebergs* or mountains of ice. The process of congelation commences at the surface of the sea, with the formation of slender prismatic crystals resembling wet snow: this the seamen call *sludge*. The surface is at first rough; but, by the union of the crystals and the accumulation of the *sludge*, the surface becomes smooth and forms a continued sheet, which is next broken, by the agitation of the water, into fragments of about three inches diameter; these again coalesce into a continued sheet of a stronger texture, which is in its turn broken as before, but into larger fragments called *pancake ice*. Where the water is free from all agitation, the congelation goes on more regularly, and some allege more rapidly. During 24 hours of keen frost, the ice frequently attains a thickness of from two to three inches, and is soon fit for walking on: it is then called *bay ice*. When the thickness is about a foot, it is called *light ice*; and when three feet thick, *heavy ice*. The term *field* is given to a sheet of ice so extensive that its farther end cannot be seen from a mast-head. Very large loosened pieces, whose boundaries may be seen readily, are called *floes*. Fragments of thick ice floating together are called *brash ice*. Floating ice of any sort, sufficiently loose to allow a vessel to pass through, is called *open* or *drift ice*. Indeed, there is no end to the terms which seamen apply to different sorts of ice. The sudden disruption of extensive fields is sometimes produced by that powerful tendency to undulation of the surface, communicated by the motions of the adjoining liquid surface of the ocean during a continued storm, which is denominated a *ground swell*. The ice, when thin, merely yields; but, if thick and little flexible, it is broken with tremendous noise. A

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* Although some have assumed 28° Fahrenheit, which is the melting point of sea ice, as the mean temperature of the pole, it is evident from the observations of Parry, Scoresby, and others, that it is about zero of Fahrenheit's scale.

† Horsburgh mentions icebergs having been met with in South lat. 35° 54½′, and East long. 17° 50′.— *Phil. Mag.*

very interesting account of such a phenomenon is given by a party of missionaries who passed along the coast of Labrador in sledges drawn by dogs. They narrowly escaped destruction; but were near enough to witness all its grandeur. "The missionaries met a sledge with Esquimaux turning in from the sea, who threw out some hints that it might be as well for them to return. After some time, their own Esquimaux hinted that there was a ground swell under the ice. It was then scarcely perceptible, except on lying down and applying the ear close to the ice, when a hollow disagreeable grating noise was heard ascending from the abyss. As the motion of the sea under the ice had grown more perceptible, they became alarmed, and began to think it prudent to keep close to the shore. The ice also had fissures in many places, some of which formed chasms of one or two feet; but as these are not uncommon even in its best state, and the dogs easily leap over them, they are frightful only to strangers. As the wind rose to a storm, the swell had now increased so much that its effects on the ice were extraordinary, and really alarming. The sledges, instead of gliding smoothly along as on an even surface, sometimes ran with violence after the dogs, and sometimes seemed with difficulty to ascend a rising hill. Noises, too, were now distinctly heard in many directions, like the report of cannon, from the bursting of the ice at a distance. Alarmed by these frightful phenomena, our travellers drove with all haste towards the shore; and as they approached it, the prospect before them was tremendous. The ice, having burst loose from the rocks, was tossed to and fro, and broken in a thousand pieces against the precipices with a dreadful noise; which, added to the raging of the sea, the roaring of the wind, and the driving of the snow, so completely overpowered them as almost to deprive them of the use both of their eyes and ears. To make the land was now the only resource that remained; but it was with the utmost difficulty that the frightened dogs could be driven forward; and as the whole body of the ice frequently sunk below the summits of the rocks, and then rose above them, the only time for landing was the moment it gained the level of the coast, — a circumstance which rendered the attempt extremely nice and hazardous. Both sledges, however, succeeded in gaining the shore, and were drawn up on the beach, though not without great difficulty. Scarcely had they reached it, when that part of the ice from which they had just escaped burst asunder, and the water, rushing up from beneath, instantly precipitated it into the ocean. In a moment, as if by signal, the whole mass of ice for several miles along the coast, and extending as far as the eye could reach, began to break and to be overwhelmed with the waves. The spectacle was awfully grand. The immense fields of ice rising out of the ocean, clashing against one another, and then plunging into the deep with a violence which no language can describe, and a noise like the discharge of a thousand cannon, was a sight which must have struck the most unreflecting mind with solemn awe. The brethren were overwhelmed with amazement at their miraculous escape; and even the pagan Esquimaux expressed gratitude to God for their deliverance."*

846. *The term iceberg* is applied to huge masses of ice resembling mountains, whether resting on the land or floating on the sea. The latter sort appear to be sometimes formed in the sea itself, by the accumulation of ice and snow; at other times to be fragments of land icebergs or glaciers, which have been piling up on shore till quite overgrown, and ultimately broken and launched into the ocean by their own weight. Masses of this sort abound in Baffin's Bay, where they are sometimes two miles long, and half or one third as broad. They are bristled with various spires, rising, perhaps, 100 feet above the surface, and descending half as much below it. When compact ice floats in water, the part under the surface is about nine times as great as that above it; and hence the icebergs may sometimes descend to a great depth, though they should be far from consisting of very compact ice. Icebergs of an even surface, rising 90 feet above the sea, and having an area of five or six square miles, are very common. Those of East Greenland are of inferior size, and they are still smaller around Spitzbergen, where some of enormous dimensions occur on shore. The reason which Mr. Scoresby assigns for this is, that, owing to the shallowness of the water into which the huge fragments are precipitated, they are all shattered against the bottom into a thousand pieces before they are fairly launched into deep water. "On an excursion to one of the Seven Icebergs, in July 1818," says Mr. Scoresby, "I was particularly fortunate in witnessing one of the grandest effects which these polar glaciers ever present. A strong north-westerly swell, having for some hours been beating on the shore, had loosened a number of fragments attached to the iceberg, and various heaps of broken ice denoted recent shoots of the seaward edge. As we rowed towards it, with a view of proceeding close to its base, I observed a few little pieces fall from the top; and while my eye was fixed upon the place, an immense column, probably 50 feet square and 150 feet high, began to leave the parent ice at the top; and leaning majestically forward, with an accelerated velocity fell with an awful crash into the sea. The water into which it plunged was converted into an appearance of vapour or smoke, like that from a furious cannonading. The noise was equal to that of thunder, which it nearly resembled. The column which fell was nearly square, and in magnitude resembled a church. It broke into a thousand pieces. This cir-

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* Brown's History of the Propagation of Christianity, vol. ii. p. 57

cumstance was a happy caution; for we might have inadvertently gone to the very base of the icy cliff, from which masses of considerable magnitude were continually falling." In 1619, a huge mass of this sort fell on a Russian ship. It broke the fore and main masts, sprung the bowsprit, and flung the ship over with such violence that a piece of ordnance was thrown overboard from under the half-deck, and the captain and some of the crew were projected in the same manner. The captain, however, escaped unhurt; but the mate and two others were killed, and many were wounded.

847. *Icebergs variously affect navigation.* They are often highly useful, by protecting navigators from gales, as well as from the concussions of drift ice, which moves more quickly when acted on by the wind than the massy iceberg. To the latter, ships are sometimes moored, but not without danger; for these floating masses are sometimes so nicely balanced as to be easily overturned, should they happen to catch the bottom of the sea. The concussion produced in this way sometimes detaches large fragments; and sometimes the iceberg rolls forward, to the imminent danger of the vessel, though perhaps 100 yards distant, — so great are the waves and whirls caused by such an occurrence. Many dangers and discouragements attend the navigation of the polar seas: but the recent attempts to discover a north-west passage through the Arctic Sea have rendered the ice a subject of considerable interest. These attempts have not yet been crowned with success: but different navigators have brought such different accounts of the state of the ice, that it is probably very changeable, and very difficult to examine. It is not quite agreed that any navigator has been within 6° of the North Pole; although some accounts pretend to a still nearer approach. Captain Parry, in his last voyage, reached to 82° 45′ N. lat. The failure of Captain Cook's attempt to penetrate to the South Pole gave rise to an idea, which has been pretty generally entertained since his time, that the South Pole is surrounded with fixed ice to the distance of 18° or 19°; and a more recent Russian expedition gave still worse hopes, as they could not get beyond the latitude of 70° S. Mr. Weddell, however, has since reached 255 miles nearer the pole, and met with no such obstruction: this enterprising navigator contends strenuously that the South Pole must be free from ice, and might be reached by sea. Some of his arguments are rather plausible; but the question is involved in so many uncertainties, that nothing less than actual trial can decide it.

848. *The expansion and contraction of ice* has important effects. Though water undergoes a great expansion in the act of freezing, yet ice obeys the ordinary law of solids, — that of expanding by heat and contracting by cold. The effect, therefore, of intense cold is to contract ice, which, if of large dimensions, or fixed all around, has no alternative but to rend where it is contracting most. This is often attended with a tremendous report. On the contrary, a rise of temperature may not only bring the parts to meet again, but often makes them lap over, or burst up with great violence.*

849. *The motion of the waters of the ocean* is almost perpetual; and it is believed, that without this provision in the economy of nature, the sea, in place of tempering and purifying the air, would both become putrid and exhale noxious vapours.

850. *Waves.* The motions which first present themselves to our notice are the partial and alternate rising and falling of the surface, known by the name of undulations or *waves.* This sort of motion is caused by the wind, which, by dislodging or depressing a certain portion of the waters, has destroyed the equilibrium or level, which they naturally endeavour to recover. Waves may be compared to the reciprocations of water in a syphon or bent tube. It was in this way that Newton deduced the velocity of waves, and the time required to an undulation. If water ascend and descend alternately in the legs of a bent tube, and a pendulum be constructed whose length between the point of suspension and centre of oscillation is equal to half the length of the water in the tube, then this fluid will ascend and descend during each oscillation of the pendulum. Hence the velocity of waves is as the square roots of their breadths; the breadth being the distance between the tops of the ridges. In the same way, it may be shown that the apparent progressive motions of waves through spaces equal to their breadths are performed in the times in which pendulums oscillate whose lengths are equal to these breadths. Hence waves, whose breadth is 39⅛ inches, will seem to pass over that space in one second. Waves are scarcely ever without progressive motion; but the real progress of the surface of the water is generally small, compared to the apparent motion of the waves; as is easily proved from any floating body which does not rise above the surface so as to be hurried forward by the wind. Waves are distinguished into natural and accidental. The natural are proportional to the strength of the wind producing them: — the accidental are occasioned by repercussion of the wind from hills and bold coasts, and by the dashing of the waves on rocks and shoals. Divers, it is said, find the water perfectly still at the depth of thirty yards, during the greatest tempest. But this can only be known of some sheltered spots; for when do divers descend in an open sea during a tempest? Waves are always seen rolling towards the shore; but an obstacle opposed to them becomes the centre of a new series which spreads in circles. One set of waves, however, may not interfere with

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* The most satisfactory account of the polar ice is that of Scoresby, first published in the Memoirs of the Wernerian Natural History Society.

the motion of another, and they may mutually cross without interruption. Sometimes the ordinary oscillations are combined with a distant swell, called the *bore*, which rises impetuous after certain intervals. Breakers, or waves which break against some obstacle, when formed over a great extent of shore, are distinguished by the name of *surf*. The surf is greatest in those parts of the ocean where the wind blows always nearly in the same direction.

851. *Currents.* There are two permanent and general sorts of currents in the ocean, which are supposed to originate in two great movements, — that of the tropical waters westward round the globe, and that of the polar waters towards the equator. But it is plain that the latter, or polar currents, imply the existence of a *third* set, moving in the opposite direction; otherwise the waters at the poles would soon be exhausted, together with the ice from which they are partly derived. It is well known that the rain, fog, or snow, which fall in the polar regions, could never supply any perceptible current towards the equator. The movement of the tropical waters westward is ascribed to the agency of the trade winds, which, blowing constantly from the east, must impress their motion on the sea to a certain extent. But the resulting current is necessarily modified by the position of the great continents. This grand westerly motion prevails generally between 30° S. and 30° N. latitude. According to Humboldt, its mean velocity is from nine to ten miles a-day. In the Atlantic it separates into two branches, one of which forms the well known Gulf Stream. This branch flows northward, through the middle of the Atlantic, till it reaches the Cape Verd Islands: it then turns west, passes through the Caribbean Sea, and the strait between Cuba and Yucatan, winds round the Mexican Gulf, and rushes out by the Bahama Channel; then spreading out to a greater breadth, it sweeps along the shores of the United States to Newfoundland. At this point it is deflected south-eastward by a southerly current from Baffin's Bay, and passing the Azores and Canary Isles, returns in a great measure into itself, and repeats its circumgyration. The waters of the North Atlantic, between the latitudes of 11° and 43°, thus form a continued whirlpool, completing a circuit of 3800 leagues in about 34 months. Its velocity is greater as the depth and breadth are less. Its breadth is 51 leagues in the Bahama Channel, and velocity from three to five miles an hour. In its retrograde course from longitude 50° to the Azores the breadth is 160 leagues, and velocity from seven to eight miles a-day. An insulated expanse of almost motionless water, 140 leagues in breadth, occupies the interior of the circuit. This grand current sends off one branch near Newfoundland, which proceeds north-eastward, and sometimes deposits tropical fruits on the shores of the British isles and Norway. In 1776, Dr. Franklin traced this current, by means of its high temperature, quite across the Atlantic; and, since his time, it has been more closely traced, especially by Captain Sabine. A second branch, escaping at the Azores, enters the Straits of Gibraltar, and forms the upper and middle current which prevails in that strait. Another branch of the great tropical current sets along the coast of Brazil, and at length passes through the Straits of Magellan. In the Pacific Ocean the waters have a general westward motion from the coast of Peru, which must be partly supplied by the last-mentioned current after doubling Cape Horn. The current from the coast of Peru is less perceptible, till it enters the Indian Ocean; when, strengthened by the northerly currents there, it flows along the eastern coast of Africa, and doubles the Cape of Good Hope, in a rapid stream, 130 miles broad, and from 7° to 8° warmer than the contiguous sea. A current from the South Pole sets along the west side of New Holland into the Bay of Bengal: it is supposed that other portions of the general polar current deflect the great westerly current northward, after it has passed the southern promontories of Africa and America. In the Northern Ocean, in the space comprised between Greenland and the coasts of Britain and Norway, and between Labrador and Spitzbergen, a great body of waters, acted on by three or four lateral currents, is supposed to perform a perpetual circuit. These waters receive their impulse eastward from a branch of the Gulf Stream, which passes from Newfoundland along the north-west coasts of Scotland and Norway. At the North Cape in Lapland, a great westerly current from Nova Zembla turns the waters north-westward along both sides of Spitzbergen. Beyond this island, being met by a current from the pole, they turn south-westward, and pass along the coast of Greenland to Davis's Straits, where they are deflected southward by a fourth current from Baffin's Bay; and having returned to Newfoundland, recommence their revolution. Thus two great whirlpools, connected with one another, touch at the Bank of Newfoundland, which seems to be a bar cast up by their conflicting waters; and revolving in opposite directions, occupy four fifths of the North Atlantic. The small current which sets from the Bay of Biscay across the mouth of the English Channel, and through St. George's Channel, is most probably a branch of the Gulf Stream which had come off at the Azores. Were other parts of the ocean as minutely examined as the North Atlantic, it is to be expected that other great vortices would be discovered.

852. *Local or temporary currents* are produced by winds, the discharge of rivers, the melting of ice, &c. In general, currents which do not descend to a great depth are liable to change with the winds, particularly when they blow for a long time with equal force, as the mon-

soons do. These winds give by turns entirely opposite directions to the currents which prevail from the Maldivia Islands to Arabia and Zanguebar. When the supply of fresh water in an inland sea falls short of what is carried off by evaporation, its level will have a tendency to fall below that of the ocean; and hence the water will flow into it from the ocean. But, as formerly noticed, a continual influx of salt water, to be concentrated by evaporation, must have a tendency to render such inland sea salter than the ocean; and the salter water being the heavier, naturally endeavours to keep under the lighter, which enters from the ocean. In this way, it forms an outward current in the bottom of the entrance. Such is said to be the case with the Mediterranean, as was first hinted by Dr. Hudson in 1724. The reverse of all this takes place where the supply of fresh water in an inland sea exceeds the evaporation, as is the case with the Baltic, the Black Sea, and the Sea of Asoph. In these the outward fresher current is uppermost, while the heavier salter current enters below. Since the mean quantity of salt brought in must equal what is carried out, if no permanent change take place in the saltness of the inland sea, it follows that the salter current is the smaller of the two. However, the weather sometimes produces temporary exceptions to this general rule. The current which flows into the Mediterranean by the Straits of Gibraltar sets along the shores of Africa and Egypt to Syria, where it turns north-westward; and, joined by the current from the Dardanelles, it makes the circuit of the Adriatic, then of the coasts of Tuscany, France, and Spain, and ultimately returns to the Straits. In the Cattegat, a northern current proceeds from the Baltic along the coasts of Sweden; and another, a southern current, enters into the Baltic along the coasts of Jutland. In the German Sea, a north current sets from the Straits of Dover along the continental shore, while a south current comes from the Orkneys along the British coast.

853. *Whirlpools or eddies* are produced by the meeting of currents which come in different directions. These, by encountering in a narrow passage, turn, as it were, about a centre, which is sometimes spiral, till they unite or one of them escapes. The most celebrated whirlpools are the Euripus near the coast of Negropont, the Charybdis in the Straits of Sicily, and the Malstroem on the northern coast of Norway. Such eddies sometimes augment their force by means of two contrary high tides, or by the action of the winds. In certain states of the tide some of them cease altogether; but they do not fail to make up for this afterwards. Their danger to navigation is well known; but is, perhaps, inferior to the dread which they inspire. They draw vessels along, and dash them against the rocks, or engulf them in the eddies. The wrecks, perhaps, do not appear till some time afterwards; or, indeed, they may never be heard of at all. This has given rise to the notion that they have no bottom. The phenomena and dread of whirlpools have afforded excellent matter for marvellous fables both to the ancient poets and more modern writers.

854. *The tides* form a remarkable phenomenon, consisting in the alternate rise and fall of the surface of the sea twice in the course of a lunar day, or at a mean rate every 12 h. 25 m. and 14 s. The instant of low water is nearly, but not exactly, in the middle of the interval between two high waters. The tide generally takes nine or ten minutes longer in ebbing than flowing. At the new and full moon the tides attain the greatest height, and the interval between two high waters is least, viz. 12 h. 19 m. 28 s. At the quarters of the moon the tides are the least, and the interval the greatest, viz. 12 h. 30 m. 7 s. The time of high water is mostly regulated by the moon; and in general, in the open sea, is from two to three hours after that planet passes the meridian, either above or under the horizon. On the shores of large continents, and where there are shallows and obstructions, great irregularities take place in this respect; and when these exceed six hours, it may seem as if the high water preceded the moon's passage over the meridian. Though the tides seem to be regulated chiefly by the moon, they appear also in a certain degree to be under the influence of the sun. Thus, at the syzigies, when the sun and moon come to the meridian together, the tides, every thing else considered, are the highest. At the quarters, when the sun and moon are 90° distant, the tides are least. The former are called the *spring*, the latter the *neap* tides. The highest of the spring tides is not that immediately after the new or full moon; but is in general the third, and in some cases the fourth. The lowest of the neap tides occurs much about the same time after the quarters. The total magnitude of the tide is estimated by the difference between the heights of high and low water. The higher the flood tide rises, the lower the ebb tide generally sinks on the same day. At Brest, the medium spring tide is about 19 feet, and the mean neap tide about 9. On other parts of the coast of France opposite to England, the waters, being confined, rise to a great height, and do so on both sides of the Channel. At St. Malo it is from 45 to 50 feet. Still higher tides are said to occur at Annapolis Royal, in Nova Scotia; though there is something extraordinary in their being alleged to exceed 100 feet. It is the obstruction which the land presents to the motions of the waters which occasions tides of any consequence at all: were the globe entirely covered with water, the tides would be very insignificant. Thus, in the Pacific Ocean, the spring tide amounts only to 5 feet, and the neap from to 2 to 2·5 feet. On the other hand, a free communication with the ocean is indispensable, to produce

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a high tide. Thus, in inland seas, the tides are very trifling, because the luminaries act nearly equally over the whole surface at the same time.

855. *The height of the tide* increases as the sun or moon is nearer the earth, but in a higher ratio. The rise of the tides is likewise greater when the sun or moon is in the equator, and less as they decline from it. When the observer and the moon are on the same side of the equator, the tide which happens when the moon is above the horizon is greater than when she is below it. The reverse occurs when the observer and the moon are on opposite sides of the equator. If the tides be considered relatively to the whole globe and to the open sea, it appears that there is a meridian about 30° eastward of the moon, where it is always high water, both in the hemisphere where the moon is and in the opposite. On the west side of this circle the tide is flowing; on the east it is ebbing; and on the meridian, which is at right angles to the same, it is every where low water. These meridian circles move westward, keeping nearly at the same distance from the moon: only approaching nearer to her when new or full, and withdrawing at the quarters. In high latitudes the tides are very inconsiderable. It is probable that at the poles there are no diurnal tides; but there is some ground for thinking that the water will rise higher at the pole to which the luminaries are at any time nearest, than at the opposite.

856. *The great wave* which follows the moon as above described, and constitutes the tide, is to be considered as an undulation or reciprocation of the waters of the ocean; in which there is, except when it passes over shallows or approaches the shore, very little progressive motion. In all this we are as yet overlooking the operation of local causes, winds, currents, &c., by which these general laws are modified, over-ruled, or even reversed. Most people find little difficulty in conceiving how the waters should rise on the side of the globe which is next the moon; but there can scarcely be a harder task than bringing many to see *why the waters should at the same time rise on the side which is turned from the moon.*[*] We must, however, confine ourselves to a very brief and palpable explanation. The force by which the moon draws any particle of our globe towards her is greater when it is nearer to her and less when more remote. The force, therefore, with which the moon attracts the particles on the side nearest her is greater than the average force which she exerts on the whole globe. These particles, therefore, rise or endeavour to come near the moon. On the other hand, the force by which the moon draws the particles which are farthest from her being less than the average force, these particles endeavour to recede from the moon, and in so doing they also recede from the earth's centre; that is, they rise higher than the general level. The action of the sun is similar to that of the moon; but his being almost four hundred times as distant greatly diminishes his effect. At the new and full moon the luminaries act together, and produce *spring* tides. The highest of all are a little after the autumnal, and before the vernal, equinox; and the least spring tides occur a little after the solstices. At the quarters of the moon her action is opposed by that of the sun, and therefore *neap* tides are the result.

857. *The time of high water* deserves consideration. The preceding is sufficient to show that the phenomena of the tides are effects that might be expected from the principle of attraction or gravitation; but since the waters necessarily occupy some time in moving from one place to another, this is the reason why the high water occurs, not when the moon is on the meridian, but from two to three hours afterwards. For the same reason, when the sun is before or west of the moon, he hastens the rise of the tide; and when behind her, he retards it. Considerable extent of surface is necessary, in order that the sea should be sensibly affected by the action of the sun and moon; for it is only by the inequality of such action on different parts of the mass of waters that their level is disturbed. In narrow seas, and on shores far from the main body of the water, the tides are not caused by the direct action of the sun and moon, but are waves propagated from the great diurnal undulation. Of this the tides on the coast of Britain and in the German Sea are remarkable examples. The high water transmitted from the tide in the Atlantic reaches Ushant between three and four hours after the moon has passed the meridian, and its ridge stretches north-west, so as to fall a little south of the coast of Ireland. This wave soon after divides itself into three branches; one passing up the British Channel, another ranging along the west side of Ireland and Scotland, and the third entering the Irish Channel. The first of these flows at the rate of about 50 miles an hour, so as to pass through the Straits of Dover, and to reach the Nore about midnight at the time of spring tide. The second, being in a more open sea, moves more rapidly, reaching the north of Ireland by six P. M.; about nine it has got to the Orkneys, and forms a wave or ridge stretching due north; at twelve, the summit of the same wave extends from the coast of Buchan eastward to the Naze of Norway; and in twelve hours more it passes southward through the German Sea and reaches the Nore, where it meets the morning tide that left the mouth of the Channel only eight hours before. Thus, these two tides travel round Britain in 28 hours; in which time the primitive tide has gone quite round the globe, and nearly 45 degrees more. Various curious anomalies are observed in the tides of particular places: such as their ceasing altogether for a day or two, at a certain age of the moon; while at other times they become considerable, though perhaps occurring

only once a-day. It is said that on some coasts there is never more than one tide in the course of a lunar day, which is probably owing to some oversight: but it may be shown from theory, that if the observer's distance from the pole be equal to the moon's declination, he will see but one tide in the day. Small tides occur six times a-day on the shore of the Isle of Negropont.*

858. *The agency of the tides is probably very extensive* in many of the operations of nature, and in particular in those which regard geology. The late Professor Robison suggested how experiments might be made to determine the mean density of the globe, from the temporary change which is undoubtedly caused on the direction of gravity by the great body of water brought to Annapolis Royal, and then withdrawn by the stream tides.

Sect. II. *Springs.*†

859. *Springs* are composed of the waters issuing from crevices in the earth. Of such there are great varieties. Some of the principal distinctions, independently of the qualities of their waters, are, — *temporary* springs, which only flow during a certain season of the year; *perennial*, which always run; *intermitting*, which alternately run and cease, either wholly or in part, at short intervals; *periodical*, which flow and ebb regularly at particular periods; *spouting*, which issue with considerable force, forming, perhaps, a jet of water. The magnitude of springs passes through every gradation, from being scarcely perceptible, to considerable rivulets. They have, likewise, a wide range of temperature; but necessarily limited between the freezing and boiling points. It is most usual for springs which are large, and which appear to issue from a considerable depth, to have nearly the mean temperature of the place; and in some instances the temperature is remarkably steady, — not the slightest variation being perceptible in the course of the year. Hence apparently, or relatively to the air, they are colder in summer and hotter in winter. It is, no doubt, this contrast which has given rise to the popular notion, that good springs are really colder in summer and hotter in winter. Nothing is more common than to see a well smoking during intense frost, which shows nothing of the kind during warm weather; but it does not require a really high temperature to exhibit such an appearance, but only a temperature not so low as that of the air. The most that any spring keeps within the range of both seasons, is to remain always at one temperature. The greater number of the smaller springs, however, become a little warmer in summer and colder in winter; particularly those which come along for a considerable way at a small depth under ground. By so doing, they participate in the temperature of the surface, which varies with the season: but all springs preserve a greater warmth than the mean temperature of winter; and, excepting the thermal or hot springs, they do not reach the mean heat of summer.

860. *Hot springs* are those which preserve a heat above the mean temperature of the place. Such as are merely tepid are common in most countries, especially in mines. Those having a considerably higher temperature are less frequently met with, and mostly in volcanic districts; but some of them reach the boiling point, or are actually boiling and spouting forth with great violence, which indicates their having had a still higher temperature before getting vent. The most remarkable are the hot springs of Iceland, some of which are considered among the greatest wonders of the world. They are believed to be more abundant in Iceland than in any other country. But the interest which the number and variety of these hot springs excites in a person who never saw any thing similar, is quickly lost in the feelings which are roused on beholding the magnificent and tremendous explosions of the Geysers, as they are called. Besides the principal fountains, there is a great number of boiling springs, cavities full of hot water, and several from which steam issues. There are also some places full of boiling mud of grey and red colours. The silicious depositions of the waters of the Great Geyser have formed for it a basin 56 feet in diameter in one direction, and 46 in the other; a projection from one side causing it to deviate from the perfect circle. In the centre of this basin is a cylindrical pit or shaft 10 feet in diameter. Through this the hot water rises gradually, filling it and the basin, after which it runs over in small quantities. At intervals of some hours, when the basin is full, explosions are heard from below, like the report of distant cannon, and at the same time a tremulous motion of the ground is felt all around the basin: immediately the water rises in a mass from the pit, and sinking again, causes the water in the basin to be agitated and to overflow: another and a stronger propulsion follows, and clouds of vapour ascend. At length, strong explosions take place, and, large quantities of steam escaping, the water is thrown to a height of from 30 to 90 feet, and even to 200 or 300 feet. The steam, coming into contact with the cold air of that climate, is condensed into thick clouds, which are tossed and rolled with great rapidity; the whole forming a very singular and magnificent exhibition. After continuing for some time, the explosions cease, when the basin and pit are found empty. Bursts of steam sometimes take place, when the water is rising, without any warning by subterraneous

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* *Vide* Stevenson's great work on the Bell Rock Light-house, for observations on Tides in the British seas.

† We are much in want of a natural and chemical history of springs. We shall soon, either ourselves or by means of one of our pupils, lay before the public a treatise on this important subject.

noise. These phenomena seem to be occasioned by steam finding its way from below into cavities, where part of it is condensed into water, which water is at length forced out by the action of the steam under high pressure. The New Geyser is somewhat smaller than the other. There are many hot springs of less note in Iceland; but perhaps the most curious of the whole is the Tunguhver. Among a great number of boiling springs are two cavities, within a yard of each other, from which the water spouts alternately: while from one the water is thrown about ten feet high in a narrow jet, the other cavity is full of water boiling violently. This jet continues about four minutes, and then subsides; when the water from the other immediately rises, in a thicker column, to the height of three or four feet. This continues about three minutes; when it sinks and the other rises, and so on alternately.

861. *The natural jets of water, called sprouting springs,* only differ from the rest in coming down some close canal from a fountain on a higher level. Being thus closely confined, they burst forth in consequence of the pressure, in the same manner as the artificial spouting fountains do.*

862. *Intermitting fountains* have sometimes been viewed by the multitude as of a miraculous nature. One at Como, in Italy, rises and falls every hour: another at Colmars, in Provence, rises eight times as often. At Fronzanches, in Languedoc, one has a period of 24 hours 15 minutes. England affords many examples of such springs; particularly those on the sea coast, whose waters rise and fall with the pressure of the tides. The town of Tideswell, in Derbyshire, is named from a noted fountain of this sort which once flowed there, but has now ceased to observe its tides. The principles on which intermitting springs depend are attempted to be explained in every popular treatise on hydrostatics and hydraulics.†

863. *Various have been the opinions of philosophers concerning the origin of springs.* Some suppose that sea water is conveyed through subterraneous ducts or canals to the places where the springs flow out of the earth: but in this way fresh-water springs could not be produced; because sea water cannot be freed from its salt by filtration. It is, besides, difficult to conceive how the water should filter *upwards*. In order to overcome these objections, recourse has been had to subterranean heat, by which the water is conceived to rise upwards in vapour through certain fissures and cavities of the mountains where it is collected, and issues forth, as we see, in springs. Others vary the hypothesis a little, by saying that the sea water is raised through the mountains by capillary action: but here we ought still to have salt springs; and it has been further objected that a current cannot be produced by capillary action.

864. *The most probable theory is that proposed by Dr. Halley,* who maintained that springs are nothing more than a part of the water which falls on higher ground filtrating through, and afterwards issuing forth at a lower level. This, it is true, does not at first sight appear to account for the permanent flow of springs during dry weather. To complete the theory, it is supposed that the water at first collects in large subterranean cavities, from which it afterwards filtrates slowly, and passes towards the springs. The disposition of the rocks in strata contributes much to the collecting of the waters under the surface, and conveying them without waste, as if in close pipes, till they are united in fountains, lakes, rivers, &c. Dr. Halley showed that the evaporation from the sea alone is a sufficient supply for all the waters that the rivers carry into it. His calculation was founded on a very complex view of the subject, and liable to several objections. Buffon took a more simple view of the matter, by selecting one of those lakes that send out no stream to the ocean, and showing that the probable evaporation from the surface of the lake is equal to all the water carried into it.

865. *The theory of hot springs* is deserving of consideration. It has been ascertained that the greater number of warm and hot springs occur in volcanic countries — where volcanoes formerly burnt or are still in a state of activity; and of those that do not occur in volcanic districts, some are associated with trap and granite rocks to which most geologists assign an igneous origin. Hence it is inferred that they owe their temperature to the same cause or causes as gave rise to volcanic and ignigenous rocks. That the heat of such springs is often connected with volcanic action cannot admit of doubt; for, from the Geyser of Iceland, the transition is almost uninterrupted to the hot springs in the dormant volcano of the island of Ischia, and from thence to those connected with the processes which formerly took place in the now extinct volcanoes of Hungary and Auvergne. The hot and warm springs of Bath and Bristol, however, occur in a limestone country where no igneous rocks are visible; but these may be under the limestone. This opinion is further countenanced by the fact that many of the hot springs met with in primitive, and also in secondary, formations, occur in spots where the strata appear to have been disturbed by igneous agency. Of this there is a striking example at the hot springs of Carlsbad in Bohemia; the hot springs of

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* Vide Ed. New Phil. Journal, vol. ix. for observations on spouting springs and Artesian wells.

† Vide Ed. New Phil. Journal, vol. viii. for an account of intermitting springs.

Clifton issue from a limestone which appears, at an early period, to have been disturbed by igneous action: the hot springs of Pfeffers, in the Grisons, gush from a ravine from 400 to 654 feet in depth, and so perpendicular that the provisions required for the inmates of the bath are lowered from ropes attached to the summit of the cliff, and so narrow that the rocks in some places touch overhead, and nowhere, perhaps, are more than 30 feet apart. The most obvious explanation of such a phenomenon is to be found in some convulsion of nature, such as that caused by an earthquake, or the sudden elevation of a large tract of country. The other hot springs in Switzerland appear in circumstances for the most part similar. Those of Weissenburg, in the canton of Berne, rise out of a gorge of the same kind as that of Pfeffers: those of Louechi appear at the fort of the mural precipice of the Gemmi; whilst the spring of Baden, in the canton of Argovie, from which the only remaining one, that of Schinzath, is not far removed, lies near the point where, in consequence of the two mountains of Staffelegg and Lagern having been severed asunder by some great convulsion, the waters of the Rhine and of the other rivers, — which appear to have once constituted a single lake extending from Coire in the Grisons to this mountain ridge, including the lakes of Zurich and of Wallenstadt, with the intermediate country, — in one continuous sheet of water, flowed off by the channel now taken by one of the rivers, the Limmat alone. Thus the Rhine, says Dr. Daubeny, may be supposed to owe its original direction to the event which produced the hot spring, and its present course to that which occasioned anotner.

866. *Some springs apparently emit inflammable matter;* for when a light is applied, it seems to take fire like ardent spirits. But it is not so much the water that is inflammable, as some gas which it exhales, or bituminous matter floating on its surface.

867. *Springs in the sea.* Powerful springs are occasionally met with boiling up in the bottom of the sea, so as, in some instances, to rise above the surface. From some of them navigators can draw up fresh water fit for taking on board as store. The natives, in certain places, know where to dive under the surface of the sea for fresh water; which, perhaps, may be the only source whence they could obtain it.

868. *Mineral waters, and the quantity of matter they deposit.* Springs in their course through strata convey along with them portions of the strata, not only from higher to lower situations, but also from below upwards. They contain salts, earths, acids, metals, and inflammable matters, of very varied nature: the variety depending sometimes on the nature of the strata through which they pass; at other times, as in those that rise upwards in volcanic districts, on igneous agency. Hoffmann remarks, that when warm and hot springs, and those richly impregnated with mineral matters, occur in countries at a distance from active and extinct volcanoes, we observe the strata from which they issue to be much deranged, thus intimating that formerly earthquakes and other igneous agencies were at work in the districts where these springs now flow. The quantity of mineral matter brought from the interior of the earth by springs is very great; whether that matter is abstracted from the strata traversed by the springs, or is brought by them from a great depth, as in volcanic countries. Even some calcareous springs in Britain deposit annually vast quantities of calcareous tuffa and calcareous sinter. In the neighbourhood of Edinburgh there are great calcareous deposits from calcareous springs that flow through limestone rocks; and appearances of the same description abound around all the calcareous springs in England. Near to Clermont, in France, some calcareous springs, rising through rocks of *granite and gneiss,* have formed a mound or hill 240 feet high. Many of the great edifices in Rome are built of calcareous deposits from calcareous springs. The hot springs of Carlsbad annually deposit much calcareous tuffa and sinter. Other springs, as the hot springs in Iceland and in the Azores, deposit annually great quantities of silica. Salt springs also bring from the interior of the earth, and spread over their vicinity, much salt, which salt may be derived from the saline clays and salt beds through which they pass; in other instances the salt may come from a great depth as an igneous production.

869. *Chemical nature of spring waters.* The water of springs, when very pure, is named *soft;* if impregnated with calcareous salts, *hard;* and if impregnated with various mineral matters, *mineral.* It was long believed that hard water was unfit for brewing and distillation; and hence soft water was often procured for these operations, at great expense; but it is now found that water which owes its hardness to lime is the most proper of all for the fermentation of worts. A time will, however, be necessary to remove the popular prejudice in favour of soft water. We have, in the following Table, given a view of the composition of the most celebrated mineral springs.

870. *According to some chemists* the salts found by chemical analysis in springs are considered as existing in the waters; the late Dr. Murray considers the compound existing before concentration of the water as, in all cases, the most soluble salts that can be formed out of the ingredients present. But, in reality, so far from our having determined in any given case the nature of the existing combinations between the ingredients, we are ignorant even of any method by which such knowledge is attainable. If, says Berzelius, the physician enquires of the chemist, what the proportion these salts bear to each other in any given case may be, the latter must reply, that this is a question as to which we are at present entirely

TABLE OF THE COMPOSITION OF THE MOST CELEBRATED MINERAL SPRINGS, &c.

Names of the Springs, &c.		Chemists.	Grains of Water.	Cubic Inches of Gases.				Carbonates of				Sulphates of				Muriates of				Silica.	Alumina.	Resins.	Temp.
				Oxygen.	Carbonic Acid.	Sulph. Hydrogen.	Azote.	Soda.	Lime.	Magnesia.	Iron.	Soda.	Lime.	Magnesia.	Iron.	Soda.	Lime.	Magnesia.	Potash				
								Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	
Acidulous.	Seltzer	Bergmann	8949	45·5	13·1	-	-	5·2	78·3	6·3	-	-	-	-	-	15·7	-	-	-	-	-	-	Cold.
	Pyrmont	Ditto	8950	-	19·6	-	-	-	4·3	9·8	0·7	-	8·4	5·4	-	1·7	-	-	-	-	-	-	Cold.
	Spa	Ditto	8932	-	9·8	-	-	1·9	1·9	4·4	0·7	-	-	-	-	0·2	-	-	-	-	-	-	Cold.
	Carlsbad	Klaproth	25920	-	50·0	-	-	38·5	12·5	-	0·1	66·8	-	-	-	32·5	-	-	-	2·3	-	-	165°
	Kilburn	Schmeisser	138240	-	84·0	36·0	-	-	8·4	1·3	0·3	18·2	15·0	91·0	-	6·0	0·6	2·8	-	-	-	6·0	Cold.
Sulphureous.	Harrogate	Garnet	103643	-	8·0	19·0	7·0	-	18·5	5·5	-	-	-	0·5	-	615·5	5·0	9·1	-	-	-	-	Cold.
	Moffat	Ditto	103643	-	1·0	16·0	4·0	-	-	-	-	-	-	-	-	36	-	-	-	-	-	-	Cold.
	Aix-la-Chapelle	Babington	8940	-	-	13·1	-	-	15·3	6·9	-	-	-	-	-	6·2	-	-	-	-	-	-	143°
	Enghien	Fourcroy	92160	-	18·5	7·0	-	-	21·4	1·5	-	-	33·3	5·8	-	2·4	-	8·0	-	-	-	-	Cold.
Saline.	Sedlitz	- - -	58240	-	8·0	-	-	-	6·7	31·0	-	-	41·1	1444	-	-	-	36·5	-	-	-	-	Cold.
	Cheltenham	Fothergill	103643	-	30·5	3·0	12·0	-	-	12·5	5·0	48·0	40·0	-	-	5·0	-	12·5	-	-	-	-	Cold.
	Plombières	Vauquelin	14600	-	-	-	-	26·0	0·4	-	-	1·0	-	-	-	2·0	-	-	-	-	-	-	Cold.
	Dunblane	Murray	7291	-	-	-	-	-	0·5	-	0·2	2·7	-	-	-	21·0	20·8	-	-	-	-	-	Cold.
	Pitcaithley	Ditto	7291	-	1·0	-	-	-	0·5	-	-	0·9	-	-	-	12·7	20·2	-	-	-	-	-	Cold.
Chalybeate.	Tunbridge	Babington	103643	1·4	10·6	-	4·0	-	-	-	1·0	-	1·3	-	-	0·5	-	2·3	-	-	-	-	Cold.
	Brighton	Marcet	58309	-	18·0	-	-	-	-	-	-	-	32·7	-	11·2	12·2	-	6·0	-	1·1	-	-	Cold.
	Toplitz	John	22540	-	-	-	-	13·5	16·5	-	32·5	-	-	-	-	61·5	28·5	-	-	-	15·1	-	Cold.
Calcareous, nearly pure.	Bath	Phillips	15360	-	2·4	-	-	-	1·6	-	·004	3·0	18·0	-	-	6·6	-	-	-	0·4	-	-	114°
	Buxton	Pearson	58309	-	-	-	2·0	-	10·5	-	-	-	2·5	-	-	1·5	-	-	-	-	-	-	82
	Bristol	Carrick	58309	-	30·3	-	-	-	15·5	-	-	11·2	11·7	-	-	4·0	-	7·3	-	-	-	-	74
	Matlock	- - -	58309	-	-	-	-	-	-	-	-	-	trace	-	-	-	-	-	-	-	-	-	66
	Malvern	Philip	58309	-	-	-	-	5·3	1·6	0·9	0·6	2·9	-	-	-	1·6	-	-	-	-	-	-	Cold.
Dead Sea, sp. gr. 1·211		Marcet	100	-	-	-	-	-	-	-	-	-	·054	-	-	10·7	3·8	10·1	-				
Ditto 1·245		Klaproth	100	-	-	-	-	-	-	-	-	-	-	-	-	7·8	10·6	24·2	-				
Ditto 1·288		Gay-Lussac	100	-	-	-	-	-	-	-	-	-	-	-	-	7·0	4·0	15·3	-				
Frith of Forth		Murray	7291	-	-	-	-	-	-	-	-	25·6	-	-	-	159·3	5·7	35·5	trace				

in the dark; as the proportion depends not only on the quantity of the acids and bases present, which admits being ascertained, but also of the relative force of affinity subsisting between the one and the other, for determining which we have as yet no data whatever.

Sect. III. *Lakes.*

871. *A lake is a body of water which does not communicate with the ocean.* Independently of the qualities of their waters, lakes are distinguished into several sorts: — 1. Those which receive streams of water, and have an outlet, are the class of lakes best known. It is rare for a lake to give rise to more than one river, which often bears the name of the principal stream which flows into it, though these two rivers may differ materially in every respect. 2. Those which receive streams of water, and often great rivers, without having any visible outlet. This class is less numerous than the former, and is confined to warm climates; but the largest of all lakes, the Caspian Sea, belongs to it. 3. Those which receive no running water, but have an outlet, — circumstances which imply that such lakes are fed with springs from beneath, or with small imperceptible streams from the adjacent land. 4. Those which receive no running water, and have no visible outlet. Lakes of this class, exclusive of marshes, are for the most part small, and merit little attention. Without regarding the foregoing distinctions, some writers subdivide lakes into two kinds, according to the general character of the surface in which their basins are situated: viz. those which are formed in deep hollows between the ridges or at the foot of mountains, and fed by springs or torrents; and those which are formed in low and level countries for want of a general declivity, or dammed up by a mere accumulation of alluvial matter.

872. *Subterranean lakes form a class of lakes differing remarkably from all the preceding,* and are bodies of water contained in cavities quite covered over by earthy strata. It is only when such cavities are laid open by earthquakes, by the falling asunder of mountains, by the action of the weather or of rivers, by the operations of mining, or when the roof falls in, that their situation becomes known. But they are probably very numerous, though perhaps often of small size. It is not easy to account for the permanent and uniform flow of many springs on any other supposition. Some of them appear to give rise to rivers, while others are known to receive very considerable streams which lose themselves in the interior. Such are the numerous cavities of the Julian Alps. It is to similar reservoirs that we must attribute the periodical disappearance of certain lakes situated above ground. There are some caverns in Norway which afford a passage to rapid currents of water, as appears from the sound heard through their roofs. It is natural to suppose that many streams, finding no readier outlet, flow into subterranean cavities, are absorbed by the earth, or discharge themselves under ground into the sea. In this way may be explained the origin of those springs of fresh water that are to be seen spouting up even in the midst of the waves of the ocean. The waters thrown up by volcanoes, the sudden and terrible inundation of mines, the number of rivers which disappear, the mountains which are suddenly engulfed in the bosom of new lakes, — all these facts leave no doubt of the existence of extensive subterranean cavities containing large bodies of water. The digging of wells has supplied a fact still more interesting to physical geography. It appears that there are lakes, or rather sheets of water, which extend under ground to considerable distances. In digging wells near Aire, in the province of Artois, they always come to a clayey bed; which being pierced, the water gushes forth in large bubbles, and forms permanent springs. In the country of Modeux, we find every where, at the depth of twenty yards, a bed of clay five feet thick; which being pierced, the water spouts up with considerable force — indicating that it is connected with a reservoir which stands at a higher level. There is a district in the interior of Algiers, where the inhabitants, after digging to a depth of about 200 fathoms, invariably come to water, which flows up in such abundance that they call it the subterranean sea.

873. *Lakes which receive much water, but have no outlet, were long believed necessarily to communicate with the ocean* by some subterraneous channel. The great distance of some of them from the ocean seemed to stand in the way of such an explanation; but doubts might still have remained, were it not for the discovery of the remarkable fact, that some of the principal lakes of this description have their surfaces far depressed below the level of the ocean. Thus the surface of the Caspian Sea, which is the largest known lake, and without an outlet, was found by Engelhardt and Parrot to be 334 feet beneath the level of the Black Sea. A similar depression has been ascertained of the level of the famous Dead Sea, in Judea, which is also a lake without an outlet. Its surface is below that of the Mediterranean in its neighbourhood, and consequently still farther below the higher level of the Red Sea. The true explanation as to the consumption of the waters of such lakes seems to be, that it is carried off by evaporation. The climates in which the two last-mentioned are situated accord well with this supposition. The level of these lakes, however, varies with the weather, and with the abundance or scarcity of the waters discharged into them by rivers at particular seasons of the year. The variation in the height of the Caspian Sea is from four to eight feet; but the level, at a particular point of its shore, must be affected by the direction of the wind, and probably by a very trifling tide. When the banks of lakes are

very porous, they cannot fail, during very dry weather, to absorb a large portion of the water, and to throw it off by evaporation.

874. *The depth of great lakes has been seldom ascertained with much exactness.* The general depth of the Caspian Sea is from 60 to 70 fathoms; but this increases towards the south end to such a degree, that no bottom can be found with a line of 380 fathoms. In lakes, as in the ocean, the slope of the bank is continued downward for a considerable way below the water; that is, deep lakes are to be found in mountainous districts, and shallow marshy ones in flatter countries. The depth of Loch Ness, in the Highlands of Scotland, is in some places 130 fathoms, which is four times the mean depth of the German Sea; and its bottom is actually 30 fathoms below the deepest part of that sea, between the latitudes of Dover and Inverness.* The Lake of Geneva attains the still greater depth of 161 fathoms. Many other lakes are known to be exceedingly deep, without the amount being ascertained. Several have passed for ages as bottomless; but this opinion now obtains little credit. It is more probable, that most lakes are daily getting more shallow, from being filled up with mud or debris.

875. *The temperature of the surface of lakes depends on the climate and season;* but at the bottom of deep lakes it undergoes little or no change throughout the year, and approaches to that which corresponds to the maximum density of water, which different writers estimate variously, from 39° F. to 42·5°; but 40° is most commonly received. In Loch Catrine and Loch Lomond, the temperature, at all depths below 40 fathoms, is 41°; but the mean for the climate is 47°. The deep lakes of Thun and Zug, in Switzerland, had a temperature of 42° at the depth of 15 brasses. Thun was 41·5° at the depth of 105 brasses, while the surface was 60°; and Zug, 41° at 38 brasses, with surface 58°. The bottom of the Lake of Geneva has a temperature of 42°: that of the Lago Sabatino at Rome is 44·5°, at a depth of 80 fathoms. Tepid springs may, in some cases, keep up the temperature, when they occur at the bottom of lakes. From what we mentioned of the Caribbean Sea, it does not appear that the climate has much influence; and yet most powerful springs of fresh water are known to boil up in its shallower parts. Such springs probably approach to the mean temperature of the climate; or, perhaps, those who contend for an increase of heat with the depth of the solid strata would claim for them a higher temperature. Deep lakes almost never freeze, except in a very cold climate; because the whole body of water must cool below 40° before congelation could commence. Accordingly, neither Loch Ness nor its effluent river of the same name are ever frozen over.

876. *The qualities of the waters of lakes are various,* according to the nature of the substances with which they may be mixed or contaminated. The principal distinctions, in this respect, are *fresh, saline,* and *alkaline.* Lakes which receive much fresh water, and have a copious efflux, are almost always fresh; but those which lose much of their water by evaporation may be slightly saline, especially if the neighbouring soil abound in salt. When lakes have no outlet, they are invariably saline. To account for this, two reasons have been given, which are quite compatible with each other. The one is, that salt lakes having no outlet are concentrated portions of the waters of the deluge, retained by the hollows of the earth's surface; and that all other lakes were originally such, and saline; but those have had their salt washed out and carried to the ocean, which are traversed by rivers or other fresh water. The other opinion is, that the salt in lakes has come from springs, or been washed from the soil of the adjacent country by means of the rain and rivers: for such lakes are most abundant where the soil contains saline matter; and where lakes only lose water by evaporation, the vapour goes off fresh and leaves the salt behind. The Dead Sea is the saltest of all known lakes, and appears to have been so for upwards of 4000 years; for in the book of Genesis it is called, by way of distinction, the "Salt Sea," even at a time when the adjacent plain was as noted for fertility as it is now for barrenness. The waters of this lake are in a state of saturation, containing about eight times as much salt as those of the ocean. The salt must be accumulating in beds at its bottom; for the river Jordan, which is brackish, necessarily carries in more. Masses of bitumen frequently float on the surface, and seem to rise from the bottom of the lake. The same thing occurs in other Asiatic lakes, some of which are impregnated with borax. In the island of Trinidad, there is a lake which produces an enormous quantity of bitumen fit for naval purposes.

877. *Some lakes are both saline and alkaline,* as is the case with a series of lakes in Lower Egypt. These are called the Natron Lakes, from their abounding in soda, which is there called *trona* and *natron,* the *nitre* of the Sacred Writings.

878. *Lakes appear to have been much more numerous at a former period than at present,* and to have occupied a large proportion of the surface of the land. Traces of their existence occur every where. Many of them have been filled up with debris, and become level plains traversed by a river; some have been drained by the gradual deepening of their outlets; or both causes have often operated together. Others have got vent through cracks caused by earthquakes, or by the subsiding of a part of the basin. The kingdom of Hungary is sup-

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* Vide Stevenson, Wernerian Memoirs, and Edinburgh Phil. Journal.

posed to have been originally the basin of a lake; and some go so far as to allege the same of the Mediterranean Sea. Geological phenomena also show that new lakes arise, and old ones disappear, during those great risings and sinkings of the land which have taken place during former periods, and even now are not without example.

879. *There are several modes in which new lakes may be formed.* In hot tropical climates, many large lakes are formed during the rainy season, and entirely disappear on a change of weather; but such hardly deserve the name, being rather land-floods, though they would be permanent lakes in a colder country. We already mentioned the formation of a visible or open lake from the falling in of the roof of a subterranean one. When a mountain falls asunder, it often happens that it stops up a neighbouring river and valley, and forms a lake. But the water of a river obstructed in this manner will always overflow, and can scarcely fail to regain its former level, either by wearing away a cut for itself above, or by undermining the ruins beneath. Shallow marshy lakes are frequently formed by the surplus waters of rivers detained on flat ground by an accumulation of mud. Ice and snow sometimes accumulate in narrow passes between mountains, so as to obstruct and make the water stagnant, and form a temporary lake, increasing perhaps for years, till at length the pressure of the water is augmented to such a degree as to burst the icy barrier. The consequences are sometimes dreadful. So great a discharge of water and ice, precipitated from the mountains, tears up not only alluvial substances, but frequently portions of rocks, which are scattered over the plain below. Thus villages and fertile fields are almost instantly converted into deep hollows and heaps of rubbish. These cavities perhaps continue filled with water, forming small lakes.

880. *There are certain lakes which disappear and re-appear periodically,* without regard to the rainy season. Such are supposed to be filled and emptied in a manner similar to the cavities of intermitting springs, or to communicate with some subterranean lake which undergoes such periodical changes. That any lakes, remote from the sea, should communicate with it under ground, so as to rise and fall with the tide, is very improbable. In Portugal there is a small lake near Beja, which emits a loud noise on the approach of a storm. Other lakes appear agitated by the disengagement of gases. Near Boleslaw, in Bohemia, a lake of unfathomable depth sometimes emits blasts of wind which raise up pieces of ice. Some of the Scottish lakes, and the Wetter in Sweden, experience violent agitations even during serene weather. A coincidence of dates has given ground for believing that these agitations are connected with earthquakes in distant countries.

Sect. IV. *Rivers.*

881. *The origin and progress of rivers* has been compared by Pliny to the life of man. "Its beginnings are insignificant, and its infancy is frivolous; it plays among the flowers of a meadow, it waters a garden, or turns a little mill. Gathering strength, in its youth it becomes wild and impetuous. Impatient of the restraints which it still meets with in the hollows among the mountains, it is restless and fretful; quick in its turning, and unsteady in its course. Now it is a roaring cataract, tearing up and overturning whatever opposes its progress, and it shoots headlong down from a rock; then it becomes a sullen and gloomy pool, buried in the bottom of a glen. Recovering breath by repose, it again dashes along, till, tired of uproar and mischief, it quits all that it has swept along, and leaves the opening of the valley strewed with the rejected waste. Now quitting its retirement, it comes abroad into the world, journeying with more prudence and discretion, through cultivated fields, yielding to circumstances, and winding round what would trouble it to overwhelm or remove. It passes through the populous cities, and all the busy haunts of man, tendering its services on every side, and becomes the support and ornament of the country. Increased by numerous alliances, and advanced in its course, it becomes grave and stately in its motions, loves peace and quiet, and in majestic silence rolls on its mighty waters till it is laid to rest in the vast abyss." The sun and the host of heaven have, in all ages and nations, been objects of sincere worship. Next to them, the rivers seem to have attracted the grateful acknowledgments of the inhabitants of the neighbouring countries. They have every where been considered as a sort of tutelar deities, and each little district, every retired valley, had its river god, who was preferred to the others. The expostulation of Naaman the Syrian, who was offended with the prophet for enjoining him to wash in the river Jordan, was the natural effusion of this attachment. "What (said he), are not Abana and Pharpar, rivers of Damascus, more excellent than all the waters of Judea? Might I not wash in them and be clean? so he went away wroth." In those countries particularly where the labours of the husbandman and shepherd depended on what took place in a far distant country by the falling of periodical rains, or the melting of the collected snows, the Nile, the Ganges, the Indus, were the sensible agents of nature in procuring to the inhabitants of their fertile banks all their abundance, and they became objects of grateful adoration. Their sources were sought for even by conquering princes, and when found were worshipped with the most affectionate devotion. These rivers preserve to this day the fond adoration of the inhabitants of the countries through which they pass, and their waters are still held sacred.

882. *The term river* is applied to any large current of water which is not in the ocean or its branches, and which may discharge itself into the ocean, into lakes, marshes, or into other rivers; for the waters of some rivers never reach the ocean; as is the case with the Wolga, the Jordan, and others, which discharge themselves into salt lakes, having usually the name of *seas*. When the atmosphere supplies a country with more water than it has an opportunity of carrying off again by evaporation, the surplus either penetrates through the surface or collects into small streams, which, afterwards uniting and receiving the water of springs, gradually form larger and larger currents, which, if allowed to proceed increasing, at length become rivers. Some rivers proceed from lakes or marshes, but none come immediately from the sea. They invariably occupy the lowest parts of the districts from which their waters are derived, and these districts are called their *basins*. The basins are usually bounded by high lands, and sometimes by mountains. They form natural divisions in physical geography. Those of the Rhone, Garonne, Loire, Seine, and part of the basin of the Rhine, comprehend the greatest part of France. In some cases, the boundaries of basins are not well defined; as where the surface becomes flat or marshy. This is the case between the basins of the Amazons and Orinoco, which are connected by a natural and navigable communication. In Europe, the sources of the Dwina, of the Niemen, and of the Borysthenes, are nearly united in a marshy plain. It is evident that the deep ravines through which rivers flow could not in many instances be the work of the rivers themselves; because the margins of such ravines are often higher than other places of the district, through which the rivers ought to have flowed before such valleys were cut, as some fancy, out of solid rock. A more rational explanation is, that a crack or rent, — the effect of some earthquake or subsidence, — had taken place; and that the water, getting through such rent, had gradually widened it by the attrition of its sand and gravel: the still more corroding action of the weather would materially assist in widening the upper part of the ravine. Many rivers appear to have been at first a series of lakes and cataracts alternately, through which the water was conveyed from higher to lower ground. The bottoms of these lakes are gradually filled up with debris, the outlets are by degrees deepened, or the basins rent through as above described. The lakes at length become dry plains, traversed by the river; the cataracts, clefts or deep ravines: and the river acquires, upon the whole, a pretty uniform descent. There are traces of these changes every where: the parallel roads of Lochaber, as they are called, seem to be nothing else than the horizontal shelves with which lakes are usually surrounded. From these it appears that the valleys of Glen Gluoy, Glen Roy, and Glen Spean, have formerly been the basins of lakes, which are now cut through and emptied. Three distinct basins are observed in the course of the Rhine: first, that of the Lake of Constance; the second reaches from Basle to Bingen; and the third from this to the sea. They are separated from each other by rocky straits. In many cases, the subsidence of the water, at successive stages, can be traced from one level to another, by means of the different horizontal shelves still visible on the sides of the valleys. Sir Thomas Lauder remarked this, in the above named glens in the Highlands of Scotland. In the valley of the Rhine, Professor Playfair distinguished four or five such terraces, at the successive heights of twenty, thirty, or forty feet above one another. The same thing occurs on the banks in the great chain of North American lakes which are not yet empty.

883. *The larger rivers are, their fall or declivity is generally so much the smaller.* The reason of this is, that large rivers necessarily occupy the lowest parts of the country; and also, that there are no materials of which beds of rivers are ordinarily formed, that could have resisted the action of a great river, having a rapid fall, during the lapse of ages. In the last 200 leagues of the Amazons, the fall is only 10·5 feet; and in the 3000 miles above that, the mean fall is only five inches per mile. The Seine, between Valvins and Sevres, has a fall of about 9·5 inches per mile. The Loire, between Briaire and Orleans, has only one foot on 13,596. Between the Himalaya chain and the sea, the Ganges has only four inches per mile. The entire fall of the Wolga is 957 French feet, or five inches per mile. Notwithstanding the rapidity of the Rhine, it has only a fall of four feet per mile between Schaffhausen and Strasburg; and of two feet between that and Schenckenschantz. Sometimes a river falling into another with great rapidity, and at an acute angle, will at the time of a flood force the latter to flow back for a short way. Such is sometimes the effect of the Arve on the Rhone, which is forced back into the Lake of Geneva.

884. *The bore* is a phenomenon which occurs on some great rivers, which enter the sea with considerable velocity, and experience a sudden check or obstruction from the flow of the tide: the consequence is, that an enormous wave, known by the term *bore*, and various other names, is generated and sent backward or up the river with great velocity, to the no small danger of the navigation. The principle on which this phenomenon depends is nearly allied to that of the hydraulic ram: at the spring tides, it appears of a correspondingly greater magnitude. In the Amazons, the height of this wave is estimated at 180 feet.

885. *Rivers are subject to inundation.* In the Sacred Writings, some allusions are made to the overflowings of the Nile; but those of the Jordan are distinctly mentioned, as covering all the banks during harvest, and expelling the lions which lurked in the thickets, so as to

drive them infuriated through the country. Modern travellers, however, assert that this river does not now overflow; and they allege as a reason, that its channel is become deep enough to hold the floods. It is as likely that the banks have been raised by the deposition of mud and the growth of vegetables: perhaps the fall of snow and rain upon Mount Lebanon, from which the floods came, is not so abundant since its forests of cedars were cut down; for some travellers are of opinion that this river must, from the accounts of the ancients, have been formerly of much greater magnitude, at all seasons of the year, than it now appears to be.

886. *The excessive rains* which fall in tropical regions, during a certain season of the year, occasion the inundation or overflowing of the rivers which originate in the torrid zone. The following is nearly the general rule for the rainy season; viz., that periodical rains every where prevail from the equator to the parallel of latitude over which the sun is vertical. Humboldt mentions as another pretty correct and still more general rule, applying likewise to the frigid zone, that the season of floods falls within four months of midsummer. The floods of rivers originating in high latitudes proceed principally from the melting of the ice and snow on the mountains, by means of the summer's heat. Such floods are violent, but of short duration, and occur in the four months preceding the summer solstice. Some of these rivers have two, or perhaps three, successive floods, corresponding to the seasons of thaw in the low ground, on the sides of mountains, and on their summits.

887. *The ancients* were quite aware that some rivers derived their floods from the sources we have just mentioned; but the overflowings of the Nile, in a country remote from both rain and snow, excited their surprise. The mystery was, however, dispelled, when once it was known that the Nile principally draws its waters from the tropical regions, where the excessive periodical rains cause other rivers to overflow. The Nile begins to swell in June, and continues to do so till the middle of August, when it has reached its maximum height of from 24 to 28 feet. With the exception of a few elevated spots, and some of the higher accumulations of alluvial matter, on the margin of the river, the whole of the Delta and the long valley of Egypt is then covered with water. The rising of the Ganges, which is partly owing to the melting of snow and partly to the rainy season, commences in April, and, like the Nile, attains its maximum of about 31 or 32 feet in the middle of August. Tropical rivers which move parallel to the equator spread their waters pretty uniformly over the low ground: such is the case with the Orinoco and the Senegal. In rivers which descend from great elevations, or move at right angles to the equator, the action of the tropical rains is extremely unequal; for the surplus water only overflows the low and flat districts. This is exactly what happens with the Nile: but it is sufficient here to mention the general principles; as the inundations of particular rivers will be described along with their respective countries.

888. *Waterfalls, or cascades and cataracts*, are often formed by rivers in descending from primitive mountains into secondary countries. Compact durable rocks are requisite for producing a permanent effect of this kind: such are the cataracts of the Nile, of the Ganges, and various other rivers. Some cataracts, like those of Zunguska, in Siberia, have gradually lost their elevation by the wearing away of the rocks, and have now only a rapid descent. According to Humboldt, the height of the great cataract of the Rio de Bogota, in South America, long estimated at 1500 feet, is about 800 feet; that of Staubbach is about 900 feet. The small river Ache, in Bavaria, which rises in the cavern of the glacier of Mount Tauren, runs through the valley of Achenthal, and, after reaching the Gulf of Tauren, throws itself over an elevation of 2000 feet. It has five great falls; the last of which forms a most magnificent arch of waters, which is resolved into spray before it reaches the ground. The noise of the waters is so terrible, that it is heard at the distance of more than a league; and the current of air produced by the descent of the water is so violent, that it drives back those who attempt to advance towards the gulf: it is necessary, therefore, to approach it by walking backwards. The fall of Garispa in India is 1000 feet. One of the most considerable known falls takes place on the river Niagara, which connects Lakes Erie and Ontario. The river here, just before the fall, is divided by Goat Island into two parts: the one, 600 feet broad, falls to the depth of 150 feet; while the other, 35 yards broad, falls 164 feet in perpendicular height. In Scotland the most considerable falls are those on the river Clyde, near Lanark, where the river is precipitated down three successive precipices of red sandstone. In the upper fall, that of *Bonniton*, the whole river throws itself over a precipice 30 feet high: lower down, at *Corra Linn*, it is precipitated from a height of 84 feet. The lowest fall, that of *Stonebyres*, consists of three stages, being broken by two projecting rocks; its fall is 80 feet. In the course of the river Foyers, on the side of Loch Ness, there are two falls; the upper fall is 40 feet high, the lower 90 feet. In the mineralogical report of Lapland, presented to the Swedish government, the discovery of a great waterfall in the river Lulea is particularly mentioned. It is said to be one eighth of a mile broad, and to fall 400 feet; if the mile be German, as is most likely (equal to four and a half English miles), the breadth exceeds half an English mile.

CHAP. III.

GEOGNOSY.

889. *This branch of natural history makes us acquainted with the structure, materials, relative position, and mode of formation, of the great mineral masses of which the crust of the earth is composed.*

890. *In conveying to our readers a short view of this important subject,* we shall adopt the following arrangement: —

I. Describe the physiognomy of the earth's surface.

II. Give an account of the action of water and air on that surface.

III. Give an account of the action of volcanoes and earthquakes on the earth's surface.

IV. Describe the different structures observable in the solid mass of the globe.

V. Define and describe the different classes and species of rocks of which the crust of the earth is composed.

SECT. I. *Physiognomy of the Earth's Surface.*

891. *Dry land.* The dry land, or the land above the level of the sea, is arranged into masses of various magnitudes and forms. It is not equally distributed; for a much larger portion of it occurs to the north than to the south of the equator; and the difference in this respect is so great, that the southern half of the globe is principally water, while the northern is chiefly land. About the middle of the last century, it was asserted that a great continent must exist towards the south pole, in order to counterbalance the mass of land in the northern hemisphere; but by the voyages of Cook and Bellinghausen, and particularly the late enterprise of Weddel, it has been shown that in high southern latitudes, in place of a continent, there are but a few groups of islands. The absence of a continent near the south pole does not itself prove that there is less land there than in the north, since it is possible that the land in general may be only rather more depressed in the south, and consequently the ocean is spread more extensively over the surface of the earth in that quarter. The dry land is arranged into two grand divisions named *worlds*, viz. the *Old World* and the *New World.* The Old World, in the eastern hemisphere, extends from S.W. to N.E., and comprehends the three continents of Europe, Asia, and Africa. The *New World,* in the western hemisphere, extends from N. to S., and is composed of two continents, viz. North and South America.

892. *The general direction of the land in the two worlds is different.* In America, it is from N. to S.: in the Old World, it is S.W. to N.E.; and, if we omit Africa, it is almost parallel with the equator. The longest straight line that can be drawn on the Old World commences on the western coast of Africa, from about Cape Verd, and extends to Behring's Strait, on the north-east coast of Asia: it is about 11,000 miles in length. A similar line traced along the New World from the Strait of Terra del Fuego to the northern shore of North America measures nearly 9000 miles.

893. *The Old and New Worlds have the following features in common:* northern and southern halves, connecting isthmuses, a peninsula on the one side, and a group of islands on the other. This arrangement will appear evident from the following details.

894. *The old world may be considered as composed of two great halves:* the one, the western, includes Europe and Africa; the other, the eastern, Asia and New Holland. In the western half, the two continents, viz. Europe and Africa, are connected together by the isthmus of Suez, and have on the one hand the islands of the Mediterranean, and on the other the peninsula of Arabia. In the eastern half, the two continents of Asia and New Holland are, to a certain extent, connected together by the islands of Java, Sumatra, &c.; and in front of this *broken isthmus* is Papua and other islands, and on the other side the peninsula of India. *The New World* is composed of two halves, a northern and a southern: these are connected together by the isthmus of Darien; and on the front are situated the West India islands, and behind the peninsula of California.

895. *Another general feature in the general distribution of the dry land,* is the tapering of all the great peninsulas to the south. This, for example, is the case with the continent of Africa, with Arabia, India, South America, Scandinavia, Spain, Italy, Greece, Corea, Alashka, Kamschatka, California, Florida, and Greenland.

896. *Besides the Old and New Worlds,* as above described, there occur, dispersed through the ocean, numerous smaller masses of land, forming islands of various magnitudes and forms. Those islands situated near to the continents are considered as belonging to them. Thus the British isles belong to Europe, those of Japan to Asia, the West India islands to America, and Madagascar to Africa. But besides these there are other islands and groups of islands, situated at a distance from continents, and which cannot be referred to any of the preceding divisions, but to the oceans in which they occur; as, for example, the Sandwich Islands, in the North Pacific Ocean.

Subsect. 1. *Inequalities of the Surface of the Dry Land.*

897. *The surface of the land exhibits great variety in aspect*, forming mountains, hills, valleys, and plains. The most general of these features are what geographers term *high land* and *low land*. *High lands* are lofty, uneven, and widely extended masses of land; thus, the mountainous tract of country extending from the Naze of Norway to the North Cape is a high land. *Low lands* are widely extended low and flat countries: thus, the northern part of France, the Netherlands, Holland, part of Germany, and Silesia; Poland, and European Russia form what may be called the great European low land. We shall first explain the structure of high land, and next that of low land.

898. (1.) *Structure of high land.* In a high land, the central parts are generally the most rugged and lofty, while the exterior districts, those which border on the low land, are lower, and less rugged. The central part is named *alpine*, the lower and the exterior part *hilly*. The alpine part of a high land is composed of a central and lofty chain of mountains, named the *central*, or *high mountain chain*, towards which there tend a greater or lesser number of *lateral* or principal; and from these again *subordinate* chains. The high mountain chain forms the *water-shed* (*divortia aquarum*) of the district; and the hollows that traverse the upper part of this chain are named *passes* (*cols*). On passing from one side to another of the alpine land, we do not always travel through a pass or *col*, but sometimes across a comparatively flat tract, many leagues in extent; such are named *table lands*. In crossing from Norway to Sweden, we pass in some parts across a table land; also in travelling from Vera Cruz by Mexico to Acapulco. The inclined planes on which the lateral, or principal and subordinate, chains are distributed are named the *acclivities* of the high land. The hollows that separate these chains from each other are named *valleys*: those valleys bounded by principal chains are named *principal valleys*, and sometimes *transverse valleys*; while the valleys between subordinate chains are named *subordinate valleys*. The hilly or lower part of the high land is composed of comparatively low and less rugged chains, called *chains of hills*, which are irregularly grouped, being entirely without a central or high mountain chain. The valleys in this hilly land are shorter, less steep, and not so rugged as in the more central or alpine part of the high land.

899. (2.) *Structure of low land.* Low land is formed principally of extensive plains, little elevated above the level of the sea, in which we occasionally observe gentle risings and undulations of the surface, that often extend to a considerable distance, and sometimes form the limits between neighbouring rivers. Now and then conical and table-shaped hills rise up singly and suddenly in low country, as is the case with volcanic and igneous hills. The plains of the low land are characterised by the presence of particular hollows or concavities, which are named *river-courses* or *river-valleys*; because in these rivers flow. In such hollows we distinguish the *bed* of the river, and the *holm* or *haugh land*; further we observe the *high* and *low* banks of the river, and the *ravines* or small valleys, that traverse the high bank and terminate in the low bank. There is still another kind of hollow met with in the low land; it is that in which lakes, generally shallow, are contained.

900. *Coasts.* The margin of the dry land, where it meets the waters of the ocean, has received the general name of *coast*. It varies in its aspect. Sometimes it is low and shelving, and then the neighbouring sea is shallow to a considerable distance; at other times it is steep, lofty, and rugged, and then the sea is deep. In many parts of this country, and on the continent, as in Holland, the coast is low and sandy, and the sand is occasionally blown into hills.

901. *Caves.* These are cavities of greater or less extent, which are either *open* to day, as in the case of the magnificent caves in the Isle of Isla, those in Arran, those near Wemyss on the coast of Fifeshire, &c., when they are named *external* or *open caves*; or they are more or less concealed in the interior of the rocks in which they are contained, as Maclean's Cave in the Isle of Egg, and many caves in the limestone of Derbyshire: such are named *internal caves*.

Subsect. 2. *Inequalities of the Surface of the Submarine Land.*

902. *The bottom of the sea*, like the surface of the dry land, varies in form. In some seas there occur flats and plains ranging to a considerable extent, and near to the surface of the water, forming what are called *shoals*; in other cases, plains, of great extent, occur deeply seated, or much below the surface of the sea, which are denominated *deep submarine plains*. These submarine plains, like the plains on the dry land, sometimes contain hollows of considerable extent, and of great depth; the deep hollows under the sea off the east coast of Scotland, known under the name of *Montrose pits*, are of this description. The sea bottom is sometimes *hilly*; these hills vary in form and magnitude, and are either deeply seated, or rise above the surface of the water, forming rocks or islands. In tropical seas, the bottom, when not very deep, becomes encrusted with coral; which coral sometimes rises to the surface, and then forms *coral shoals*, *coral reefs*, or *coral isles*. If the bottom is very deep, but sends up from below hills whose summits are not far below the level of the ocean, these in tropical seas also become covered with coral.

Sect. II. *Effects of Water and the Atmosphere on the Surface of the Land.*

903. *Water* is a very active agent in altering and variously modifying the surface of the earth, and its energy is increased when it carries along with it mechanical matter, as sand, gravel, &c., and particularly when aided by the gnawing influence of the atmosphere. Through these agents the whole surface of the dry land is kept more or less in a state of motion, by their breaking up the strata, and removing with greater or less rapidity, the broken rocky matters from point to point, and often into lakes and the sea.

904. *Water acts mechanically and chemically:* it acts *mechanically* when it removes part of the soil or broken rocky matter over which it passes, or corrodes the channel in which it flows, or the reservoirs in which it is contained; it also acts mechanically, when, on being imbibed by rocks, it increases their weight, and thus favours their rending, slipping, and overturning; and, lastly, it acts mechanically, when, by its freezing in fissures, it breaks up mountain masses and rocks. It acts *chemically*, when it dissolves particular mineral substances, as rock-salt, out of the rocks through which it percolates.

Subsect. 1. *Mechanical destroying Effects of Water.*

905. (1.) *Rivulets and rivers.* Running waters, in their course from the higher to the lower parts of a country, carry along with them the debris already prepared by the action of the weather on exposed rocks, and also more or less considerable portions of the strata of the basin in which they flow. The quantity of abraded matter depends in a great degree on the quantity of sand or gravel the river carries along with it; it being a fact, that running water, when pure, acts but feebly on compact strata, and displays its scooping or excavating power only when carrying along with it sand, gravel, and such other matters, which communicate to it a mechanical destroying action. As the velocity of the river diminishes its carrying power diminishes; and frequently, long before it has reached the marsh, lake, or the sea into which it disembogues itself, it carries only slime and sleech, leaving the gravels and larger solid masses in higher parts of its course. The transporting power of water is much greater than many are aware of: it is strikingly shown by the enormous quantities of rubbish, and great blocks of stone, which are swept along by rivulets when in the state of flood or swollen. This transporting power is materially assisted by the diminished specific gravity of the rocks when immersed in the water, by which their weight is often diminished one third, and even one half. The transporting of heavy stones by water in situations where ice occurs is assisted by the ice which adheres to them, and which diminishes the specific gravity of the mass. Some curious details in regard to this subject are given in one of the volumes of the *Memoirs of the Wernerian Natural History Society.* The late Professor Robison, the most profound and learned teacher of natural philosophy Scotland ever produced, in his admirable article on Rivers, in the *Encyclopædia Britannica*, has discussed with great ability many circumstances connected with the progress of rivers, but which our limited space prevents us from noticing.

906. (2.) *Lakes.* Around the margins of many lakes we observe a beach, formed of the fragments of the neighbouring strata, broken off in part by the waters of the lake. The bursting of lakes also occasions great changes in the neighbouring country, which changes are of a mechanical destroying nature.

907. (3.) *Ocean.* The waters of the ocean exercise a powerful destroying effect on coasts. If the coasts are bold and rugged, they are violently assaulted by the waves of the ocean; the crags and cliffs split and tumble down, in frightful and irregular succession. The perforated rock, the Doreholm, on the west coast of Shetland; the perforated rocks described by Captain Cook near New Zealand; the stalks, holms, and skerries on the coasts of Shetland, Scotland, and Norway, are effects of the destroying power of the waves of the ocean, conjoined with the gnawing action of the weather. The various inroads of the sea on the east and west coasts of Scotland are well detailed in Mr. Stevenson's memoir, read before the Wernerian Society; those on the east and west coasts of England are also considered by Stevenson, and by Young and Phillips, in their Geologies of Yorkshire; by Taylor, in his Geology of East Norfolk. On those rocky coasts where the strata are of unequal hardness, the softer portions, and also part of the surrounding harder mass, are removed by the action of the waves; and thus *sea-caves* are formed.

908. *The waters of the ocean often also cause dreadful ravages in low countries exposed to their fury.* Holland furnishes many striking examples of its devastating power. In the year 1225 the waters of the ocean, agitated by a violent tempest, inundated the country; the Rhine, swollen at the time by extraordinary floods, and retained at a great height, partly by the waters of the ocean, and partly by the wind blowing in a contrary direction to its course, spread over the neighbouring country: but, the tempest having suddenly subsided, the highly elevated waters retired, with such velocity and force as to carry with them a considerable portion of the soil, and left in its place the sea now named the *Zuyder Sea.* In

the year 1421, a great inundation submerged the southern part of the province of Holland, drowned 60,000 persons, and on retiring formed the *Bies-Boos*.

909. *The action of the sea on the submarine land* is also worthy of notice. Stevenson speaks of agitations of the sea reaching to a depth of upwards of 200 ft.; stating that, at a considerable depth the power of the ocean is so considerable as to break rocks in pieces, and throw them upon the coasts in masses, of various sizes and forms. Thus he says, "numerous proofs of the sea being disturbed to a considerable depth have also occurred since the erection of the Bell Rock Light-house, situated upon a sunken rock in the sea, twelve miles off Arbroath, in Forfarshire. Some *drift-stones* of large dimensions, measuring upwards of thirty cubic feet, or more than two tons weight, have, during storms, been often thrown upon the rock from the deep water. These large boulder-stones are so familiar to the light-house keepers at this station, as to be by them termed travellers."* On the coast of the *main land* of Shetland, particularly on the west coast, we have observed many striking displays of the power of the waves in moving enormous masses of rocks.

910. *The currents* that traverse the ocean, like rivers on the dry land, probably scoop out beds for themselves, and carry away, and often to distant places, great quantities of abraded matter. The gulf stream, and other branches of the great equinoctial current, may act powerfully in this way; and the same may be the case with the currents in our own seas, and those that enter mediterranean seas and wind round them, as the Baltic and Mediterranean.

911. (4.) *Action of water by its own weight.* Water by its own weight contributes very much to the degradation of the surface of the globe. Sometimes great masses of rock, particularly those of a soft and porous nature, imbibe much water, by which their weight is increased, and thus occasions breaking and rending, and slipping of masses often of enormous magnitude. Clay beds sometimes become soft from the percolation of rain or snow water from the superincumbent strata. When this takes place the superincumbent beds lose their support, and if the clay and superimposed rocks are inclined at a considerable angle, the rocks in vast masses separate, and slide down into the lower part of the country. The fall of the Rossberg, in Switzerland, in September 1802, may be mentioned as an example of this phenomenon. This mountain (Rossberg) is 5193 feet high, and lies opposite to the Rigiberg, which rises 6182 feet above the level of the sea. The Rossberg is composed of molasse, with beds of clay, and all inclined at an angle of 45° to 50°. It is said that the clay in some of the beds was much softened by the percolating water, and the thick superincumbent beds of molasse, in this way losing their support, were separated from the inclined and soft surface underneath, and slid into the valley below. This avalanche of debris and mud overwhelmed several villages, and destroyed from 800 to 900 persons. In the year 1714, the west side of the Diablerets, in the Vallais, separated, and in its course downwards covered the neighbouring country with its ruins for two miles in length and breadth; the immense blocks of stones and heaps of rubbish interrupted the course of the rivers, and lakes were thus formed. In the year 1618, the once considerable town of Pleurs, in the Grisons, with the neighbouring village of Schelano, were overwhelmed by a vast mass of rock, which had imbibed much water, and separated from the south side of the mountain of Corto.

912. (5.) *Effects of the freezing of water.* In those regions of the earth where the freezing and thawing of water takes place, the expansive and destroying action of ice is often displayed on a grand scale. In the history of northern countries we meet with many accounts of the noises and rendings of rocks, occasioned by the expansion of water during its freezing in the fissures of rocks. Terrible disasters take place in alpine countries by the bursting and fall of great masses of rock, split by the freezing of the water in rents.

913. (6.) *Destroying effects of ice and snow.* Water in the form of ice causes considerable changes on the surface of the earth. Thus, when floated along in great masses by rivers, it breaks up their banks, and thus affords them an opportunity of devastating the lower country; and the masses are often so great, that enormous heaps of the strata are thereby torn off and carried to a distance. When sea ice is drifted against the cliffs and precipices on the coast, the breaking and destruction it occasions sometimes almost pass belief. For the breaking up and moving of large masses of rock, one of the most powerful engines employed by nature are the glaciers. These masses of congealed water and snow, in their course downward, push before them enormous quantities of broken rocky matter, which form great mounds, named, as formerly mentioned, moraine.

Subsect. 2. *Chemical destroying Effects of Water.*

914. *Atmospheric water* enters into the fissures of rocks in a pure state, but issues forth again more or less impregnated with mineral matters of various kinds abraded from the strata through which they pass. The most abundant substance brought out in this way from the interior of the crust of the earth is lime, which is deposited from these calcareous waters in the form of tuffa. Many of the excavations in limestone are partly owing

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* Vide Wernerian Soc. Memoirs, vol. iii.

to this destroying effect of water. Spring waters, in passing through beds of gypsum and rock salt, dissolve a portion of them, and in this way sometimes occasion considerable changes in the interior and even the surface of the earth, by the superincumbent strata yielding over the hollows formed by the removal of the salt and gypsum.

Subsect. 3. *Mechanical forming Effects of Water.*

915. (1.) *Forming effects of springs.* Springs bring from the interior of the earth muddy matter of various descriptions; and in the course of time, if the springs are spouting-springs, hillocks and hills of considerable magnitude are thus formed.

916. (2.) *Lakes.* When lakes are filled up, or are emptied, we find the space formerly occupied by them covered, to a greater or less depth, with the alluvial matter brought into them by the rivers that flow into them. When lakes burst their barriers, at different times, they leave on their sides a series of natural terraces or platforms, of which we have a splendid example in Glen Roy. In Glen Roy these terraces are known under the name *Parallel Roads of Glen Roy;* because some have fancied they were not natural arrangements, but works of art, — roads formed by the ancient inhabitants.

917. (3.) *Rivers.* When rivers are in a state of flood they often overflow their banks, and cover the neighbouring country with their waters. Thus the Ganges, near its mouth, in the rainy season overflows the country to the breadth of one hundred miles, and to a depth of nearly twelve feet; and the Indus, during its period of inundation, extends thirty or forty miles from its banks. This flood water carries with it muddy and other matters, and deposits them upon the land. Gerard says that the annual floods of the Nile had raised the surface of Upper Egypt about six feet four inches, English measure, since the commencement of the Christian era, or four inches in a century. In other countries extensive deposits, extending along the sides of rivers, are formed by the overflowing of their waters. Where rivers enter lakes and the sea, they form triangular pieces of land named *deltas,* from their resemblance in form to the triangular-shaped Greek letter Δ. These deltas are more strongly marked in lakes than in nearly enclosed seas, as the Mediterranean; and in these seas than in the ocean, where the depositions are much interrupted by currents. The most famous in history of these deltas is that of the Nile. This delta has been considerably enlarged since the time of Herodotus, but not to the extent stated by many writers. At no great distance from the shore of the delta the depth of the Mediterranean is about seventy-two feet, and further out the sea suddenly deepens to 2000 feet, — a depth very probably beyond reach of the delta, and which may be conjectured to be the original depth of this part of the Mediterranean sea. The deltas of the other rivers that flow into the Mediterranean, as the Rhone and the Po, exhibit phenomena similar to those observed in the delta of Egypt; and by their considerable extent, and annual growth, furnish ample proofs of the forming power of rivers, and of the resemblance of alluvial matters to strata of an older date. The great sea-deltas, or those formed where rivers flow into the ocean, are sometimes on a great scale, as is the case with the Ganges, of which a most interesting account has been given by Rennel and some other writers. A full description of this magnificent delta, as also of the vast deposites at the mouths of the Mississippi, Orinoco, and other great rivers, will be given in the body of this work. At present, however, we may remark, that the quantity of matter carried into the sea by all the rivers of the globe is very great, and fully as considerable as that stated by some authors, who have been held as exaggerating the amount of this earthy matter carried from the dry land to the shores of the ocean. The alluvial matter brought down by rivers not only forms great tracts of land at their mouths, but also, through the agency of currents, assisted by the waves of the ocean, gives rise to extensive tracts of low and flat land, which extend along the coasts.

918. *Downs.* When the sea-coast is low, and the bottom consists of sand, the waves push this sand towards the shore, where, at every reflux of the tide, it becomes partially dried, and the winds, which often blow from the sea, drift up some portions of it upon the beach. By this forming action of the ocean, sandy flats and *downs,* or ranges of sand-hills, are formed along the coast. When this sand is moved about by the wind, it forms what is called the *sand-flood.* Westward from the mouth of the river Findhorn, in Morayshire, a district consisting of upwards of ten square miles of land, which, owing to its fertility, was once named the Granary of Moray, has been depopulated, and rendered utterly unproductive by the sand-flood. This barren waste may be characterised as hilly; the accumulations of sand composing these hills frequently varying in their height, and likewise in their situations. The sand hills of Barry, at the mouth of the Tay, composed of blown sand, are from 200 to 300 feet high. Belhelvie links, in Aberdeenshire, and the extensive sandy tracts in the Shetland and Western Islands, are of the same description. These blowing sands sometimes block up the mouths of rivers and rivulets: thus, many years ago, the mouth of the river Findhorn in Moray having become blocked up with blowing sand, it cut out for itself its present channel, which conducts it by a more direct course to the sea. In consequence of this the old town of Findhorn had changed its situation, from the east to the west side of the river, and its site has since been covered by the sea. The lake at Strathbeg, which covers

a square mile of country, on the coast of Aberdeenshire, about ten miles north from Peterhead, was formed about 170 years ago, by the choking up by blowing sand of a small stream that fell into the sea. These barriers sometimes give way, when the tract is again, for a time, covered by the sea; a new barrier again rises, and the sea is excluded a second time. These operations, on a great scale, would afford alternation of productions of the land and of the sea. The sands of the African deserts may be sea sands, or land sands, or both together. Dr. Oudney, Major Denham, and Captain Clapperton have added to our knowledge of the blowing sands of the African deserts. The coloured engraving of the sand-hills of the African desert in Denham, Oudney, and Clapperton's Narrative, is a striking and interesting representation of the form of the moving sand-hills of Africa.

919. *Sand banks.* The bed of the German Ocean supports many accumulations of sand, called sand-banks. One of these extends from the Firth of Forth, in a north-easterly direction, to a distance of 110 miles, while another, the Dogger Bank, extends, north and south, for upwards of 350 miles. The average height of these submarine sand-banks is estimated at about seventy-eight feet: the whole surface of the various shoals in this sea laid down in charts, according to Stevenson, is equal to about one fifth of the whole area of the German Ocean, or about one third of the whole extent of England and Scotland. These banks are composed of quartz sand, varying in the size of the grain, from coarse to fine, which is abundantly mixed with broken shells and fragments of corals. These banks are conjectured to owe their origin to the action of currents and the tides.

Subsect. 4. *Chemical forming Effects of Water.*

920. (1.) *Springs.* Many spring waters, after dissolving, by means of the superabundant carbonic acid with which they are impregnated, calcareous matter abraded from limestone rocks, or rocks containing lime, allow the carbonate of lime to crystallise, in consequence of the escape of the acid, and in this way form depositions of calc-sinter, or calcareous alabaster, on the roofs, sides, and floors of caves; or fill up fissures in rocks, and form veins; or when flowing over the surface of rocks, form, if the surface is horizontal, horizontal beds — if inclined, inclined beds — of calcareous sinter and calcareous tuffa. These beds sometimes extend very far, and with a thickness of 200 or 300 feet. The water of such springs, when collected into hollows so as to form lakes, often deposits vast quantities of calcareous sinters and tuffas; and hence such lakes, when emptied, present extensive calcareous deposits. The travertine employed at Rome for building is a lake or spring calcareous deposit of sinter and tuffa; and the town of Guancavelica in South America is built of a compact calcareous tuffa from the calcareous springs in the neighbourhood. In the mountain limestone districts in England, also in the lias districts both in England and Scotland, the roofs, walls, and floors of caves are often elegantly ornamented by numerous varieties of calcareous sinter. In Persia, as mentioned by Sir John Malcolm, there are great deposits of a very fine calc sinter, which is extensively employed for ornamental purposes; and in the marshes of the great plain of the vast circular valley of Hungary, according to Bendant, there is a constant deposition of horizontal strata of calcareous tuffa and sinter, which are so hard as to be used for building, all the houses of Czelea being constructed of these minerals. The pea-stone, a beautiful calcareous carbonate, is formed in very considerable abundance from the waters of calcareous hot springs, as those at Carlsbad in Bohemia. As these calcareous springs often flow into rivers, and these rivers terminate in the sea, it is evident that in this way a vast quantity of carbonate of lime must reach the ocean, where it will be deposited in the various forms of sinter, tuffa, and limestone. The Geysers, or hot springs of Iceland, and those of St. Michael's in the Azores, deposit on the dry land vast quantities of siliceous sinter. This siliceous mineral, which is sometimes like opal, although generally pure, is not always so, being occasionally intermixed with other earths, and thus giving rise to particular mineral substances. Such springs also pour their waters into the ocean, and even rise from the bottom of the sea sometimes a considerable way upwards, or even jet above the surface level of the sea, all the time throwing out much water impregnated with silica, which is deposited on the submarine land in various forms and states, depending on a variety of circumstances which our limits prevent our noticing.

921. (2.) *Lakes.* Having already noticed the calcareous depositions from the waters of some lakes, we may now mention some other deposits that appear to owe their origin to lakes. The bog iron-ore, or hydro-phosphate of iron, is often found in such situations as to show that it has been deposited from the waters of lakes; and in some countries it is collected from the sides and bottoms of lakes once in a certain number of years; thus showing that it is still forming in such situations. In salt lakes considerable depositions of salt take place; and when such collections of water dry up, or are drained off, the sides and bottoms of the hollows are found incrusted with salt, which is sometimes disposed in beds alternately with beds of clay.

922. (3.) *Marine incrustations.* Collections of perfect and broken sea-shells and of corals are sometimes found agglutinated by calcareous, clayey, or ferruginous matters, forming banks or beds of considerable extent. Beds of this kind, particularly those formed of shells, are

met with in many parts of the coasts of this island. In other countries, as in the West Indies, a solid conglomerate of shells and corals lines a considerable extent of coast on several of the islands. The human skeleton from the island of Guadaloupe, in the British Museum, is imbedded in a rock of this description.

Subsect. 5. *Effects of the Atmosphere, &c.*

923. *Effects of the atmosphere.* The air and moisture of the atmosphere effect great changes on the rocks at the surface of the earth. They either simply disintegrate the rock, or not only break it down, but also occasion a change in its chemical constitution. Sandstone, and other rocks of the same general description, often yield very readily to the weather; their basis or ground is washed away, and the quartz, mica, and other particles remain in the form of sand and gravel. When trap veins intersect strata, it frequently happens that the softer parts of the rock are destroyed, while the harder trap appears rising several feet or yards above the neighbouring surface, and crossing the country like walls; hence, in Scotland, they are named *dykes.* The variously shaped *summits* of mountains and hills owe much of their form to the destroying influence of the weather. Some caves, as certain open caves in sandstones and limestones, are also formed by the destroying powers of the atmosphere. The various changes in the form of rocks, by which they assume columnar, globular, tabular, and indeterminate angular forms, and fall into *scales, crusts, layers, gravels,* and *sands,* are, to a certain extent, effects of the destroying powers of the atmosphere. Valleys owe much of their form and extent to the destroying influence of the atmosphere. Their sides and summits, every where exposed to its action, become covered with debris; and in this way valleys experience greater changes than are produced on their bottom by the passage of the river, and on its sides by the rushing of the torrent. The chemical destroying effects are to be traced to the carbonic acid of the atmosphere, and to the vast quantities of the same matter which rise from the interior of the earth: this acid dissolves lime, abstracts alkaline matters from granite and other similar rocks, and by combining with iron, converts that universally distributed substance into a soluble carbonate. The oxygen of the atmosphere also, by its action on the iron and other constituents of rocks, assists in breaking them down.

924. *Effects of electricity on rocks.* Electricity, as a chemical agent, may be considered not only as directly producing an infinity of changes, but also as influencing almost all that take place. There are not two substances on the surface of the globe that are not in different electrical relations to each other; and chemical attraction itself seems to be a peculiar form of the exhibition of electric attraction: and whenever the atmosphere, or water, or any part of the surface of the earth, gains accumulated electricity of a different kind from the contiguous surfaces, the tendency of this electricity is to produce new arrangements of the parts of those surfaces. Thus, a positively electrified cloud, acting even at a great distance on a moistened stone, tends to attract its oxygenous, or acidiform, or acid ingredients; and a negatively electrified cloud has the same effect upon its earthy, alkaline, or metallic matter; and the silent and slow operation of electricity is much more important in the economy of nature than its grand and impressive operation in lightning and thunder.

Sect. III. *On Volcanoes, and the Changes they produce on the Land and the Bottom of the Sea.*

925. *The agents which the globe conceals in its interior,* and whose existence is manifested at its surface, are made known to us by the phenomena of *volcanoes* and *earthquakes.* We shall first describe these phenomena, and afterwards add some observations on their causes.

Subsect. 1. *Distribution of Volcanoes.*

926. *Volcanoes, as is well known, are openings in the crust of the earth,* whence there issue from time to time jets of burning substances and currents of melted matters which bear the name of *lavas.* These openings are generally on the summit of isolated mountains; they have the form of a funnel, and take the name of *craters.*

927. *Position of volcanoes.* Volcanoes occur in all quarters of the globe, and are often distributed in a linear direction.

928. *Distribution.* — Europe contains but few burning volcanoes. On the coast of Sicily, we see Ætna rising like a colossus to a height of 10,870 English feet. On the opposite coast of Italy we have Vesuvius, which does not attain more than the third of this elevation, viz. 3932 feet. Between them, in the Lipari islands, we find the small volcano of Stromboli, and the volcanoes of Vulcano and Vulcanello, which still smoke. The islands of the Archipelago, at Milo and Santorino, contain mountains which, during an early historic period, produced terrible igneous phenomena. Iceland in the north, in the midst of snow and ice, presents to our view many volcanoes, of which the most prominent, Hecla, rises to a height of 5000 feet. Farther to the north, in the desolate and dreary

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Jan Mayen's Island, extending between north latitude 70° 49′ and 71° 8′, is the volcano of Esk Mount, which rises to a height of 1500 feet above the sea-beach in Jameson's Bay. The continent of *Asia*, as far as is known at present, exhibits but few volcanoes. We can scarcely reckon three or four on its eastern shores, or on the edges of the Caspian: there are none in its northern part: some but vaguely known exist in Central Asia: in the east, the peninsula of Kamtschatka contains five or six; but in the islands which surround this continent their number is great. The islands on the coast of *Africa*, such as Bourbon, Madagascar, the Cape de Verd Islands, the Canaries, and the Azores, also contain several volcanoes. In *America*, if we except those of the West India islands, we observe the greater part of them on the ridge of that great Cordillera, which, like an immense wall or lofty terrace, borders the western part of that continent. They are remarkable not only on account of their position, but also for their colossal form, the nature of the masses of which they are composed, and the materials they throw out. Torrents of fire rarely issue from them, but streams of water and mud are of frequent occurrence: the total number of American volcanoes is about eighty-six; they are placed as it were in groups. The kingdom of Guatimala presents about twenty; in Mexico there are six, in the number of which is the Jorullo, so well known from the account of Humboldt. But it is in Peru that the greatest occur: there are seven in that country, of which we shall mention Pichincha, nearly 15,931 feet high; Cotopaxi, which rises to the height of 18,867 feet; and Antisana, which attains a height of 19,136 feet. On a rough estimate, we state the number of burning volcanoes including solfataras at 303; of these 194 are in islands, and the other 109 are on the continents: the most distant from the sea are those of America and Asia; in Peru there are volcanoes thirty leagues from the sea; and that of Popocatopec near Mexico, which, however, is now only a smoking volcano, is fifty-six leagues; and they occur in the very centre of Asia. The circumstance of the most active volcanoes being situated in the vicinity of the sea, is a fact worthy of being recollected; it becomes still more so when we observe, that there are submarine volcanoes burning in the midst of the waters. The islands, and the phenomena which they have been observed to produce, at Santorino, on the coast of Iceland, in the Azores, &c., leave no doubt respecting their existence.

929. *Independently of volcanoes in a state of activity*, the interior of our continents contains a great number of *extinct volcanoes*, but which still present their original form, or incontestable remains of that form: perhaps no country contains more numerous and splendid displays of them than France; there are more than a hundred in Auvergne, Vivarais, and Cevennes. They are conical mountains, composed of lavas, scoriæ, and volcanic ashes heaped upon each other; many of them present a crater, which has retained its form in a greater or less degree; and sometimes there are seen as it were issuing from their bases lavas which extend to a distance of several thousand yards, and which have perfectly preserved the form of *currents:* the matter of which they are composed resembles that of lava trap. We may further remark, that volcanoes are never or scarcely ever isolated; they are collected into groups. This is the case with the American volcanoes; those of Asia, and the different Archipelagoes are similarly situated: in Europe, the Greek islands and southern Italy present distinct groups. Sometimes volcanoes are arranged one after the other in the same line, as is the case in South America, and in the extinct volcanoes in the neighbourhood of the Puy de Dôme.

Subsect. 2. *Phenomena and Theory of Volcanoes.*

930. *Volcanoes do not incessantly emit flames,* nor do lavas constantly flow from them; they remain for ages in a state of inactivity. Vesuvius was extinct from time immemorial, when, awakening from its slumber, it suddenly re-kindled, in the reign of Titus, and buried the cities of Pompeii, Herculaneum, and Stabiæ under its ashes. It became quiet again at the end of the fifteenth century; and in 1630, when it resumed its action, its summit was inhabited, and covered with wood. The inhabitants of Catania regarded as fables the accounts of history respecting eruptions of Ætna, till the period when their city was ravaged, and in part destroyed, by the fires of that volcano.

931. *Subterranean noises,* and the appearance or increase of smoke, which issues from the crater, are generally the first symptoms of volcanic action. Presently the noise becomes louder, the earth trembles, it experiences shocks, and every thing proclaims that it is in labour. The smoke increases, thickens, and becomes charged with ashes. When the air is tranquil, the smoke is seen rising, under the form of an immense column, to a very great height. There, finding itself in a rarer atmosphere, it ceases to rise; its upper part dilating, forms as it were an expanded summit, placed upon a lengthened shaft. The cloud, with the supporting column, in favourable circumstances, has the figure of an immense umbrella, or of the Italian pine, to which Pliny the Elder compared that of the eruption of Vesuvius in A. D. 79, and which was accurately represented in October, 1822. At other times the smoke disperses in the air: it there forms thick and vast clouds which obscure the day, and cover the surrounding country with darkness. These columns and clouds are often traversed by

enormous jets of red-hot sand, resembling flames, and rising to extraordinary heights. Sometimes they are traversed by flashes of lightning, and on all sides loud explosions are heard. Then there are projected red-hot stones and masses in fusion. They issue from the volcano with a noise which is frequently very loud. They rise into the air, spreading out in their progress, and fall around the mouth of the volcano under the form of showers of ashes, scoriæ, or stones. The shocks and quakings of the ground continue and increase in violence. In the midst of these convulsions, and on these accessions, the melted matter which filled the subterranean furnaces, already carried into the mountain, is raised up by elastic fluids; it ascends to the crater, fills it up, and passing over the least elevated part of this enormous cavity, spreads out upon the flanks of the volcano. It then descends, sometimes very quickly; sometimes, and more frequently, as a majestic river, quietly rolling along its peaceful waters. Very frequently, when the lava rises, the walls which contain it being unable to resist its immense pressure or its heat, give way and burst asunder. It rushes forth like an impetuous torrent through this new aperture: rivers and torrents of fire make their way to the foot of the mountain; they spread out upon the neighbouring ground, carrying along or burning all that they find in their way, breaking down or overthrowing every obstacle that opposes their passage. In the midst of torrents of fire, enormous currents of water and mud sometimes issue from volcanoes, and deluges falling from the atmosphere increase the ravages, lay waste fields which lavas had spared, and carry desolation into places which had already thought themselves happy in having escaped the scourges of the eruption. Mephitic gases and noxious exhalations sometimes arise, particularly in low situations; they destroy animals and blast vegetation, and thus complete the scene of misery and desolation.

932. *After the emission of the lavas the earth seems freed of the evil which agitated it*, the earthquakes cease, the explosions and ejections diminish for some time, and the volcano enjoys a moment of rest: but presently a new accession takes place, reproducing in a still more terrible manner the same phenomena; and this state of things continues during a variable period of time. At length the crisis ceases, and the volcano finally resumes its original tranquillity.

933. *Having premised this general account of volcanic action*, we shall next treat of the substances ejected or projected into the atmosphere by volcanoes, and of the lavas which they pour out.

a. *Ejected Matters.*

934. These are, 1. Smoke. 2. Ashes. 3. Sands. 4. Scoriæ. 5. Volcanic bombs. 6. *Unaltered Masses?*

(1.) *Smoke.* The enormous columns of smoke which are seen issuing from the crater, sometimes with extraordinary rapidity, are chiefly composed of aqueous vapour. This vapour is generally charged with gaseous substances, and particularly with hydrogen gas, sometimes also with carbonic acid. Sulphurous acid and muriatic acid are also given out. The smoke is grey or white; sometimes also brownish black, or fuliginous, and then the smell is not unlike that of asphaltum, or mineral pitch. It often contains a great quantity of volcanic ashes.

(2.) *Ashes.* These ashes, which appear to be nothing else than the substance of the lava reduced to a state of minute mechanical division, are formed of flocculent and extremely minute particles of a grey colour, and forming a paste with water. They are always mixed with a greater or less quantity of sand, which gives them the blackish colour which they sometimes exhibit. The torrents of gas and vapour which issue from the craters carry these ashes along with them, bearing them into the atmosphere, where they form vast clouds, sometimes so dense as to cover the surrounding country with darkness. During the eruption of Hecla in 1766, clouds of this kind produced such a degree of darkness that at Glaumba, which is more than fifty leagues distant from the mountain, people could only find their way by groping. During the eruption of Vesuvius in 1794, at Caserta, four leagues distant, people could only walk by the light of torches. On the 1st of May, 1812, a cloud of volcanic ashes and sand, coming from a volcano in the island of St. Vincent, covered the whole of Barbadoes, spreading over it so intense a darkness, that at mid-day, in the open air, one could not perceive the trees or other objects near him, nor even a white handkerchief placed at the distance of six inches from the eye. The distance to which these volcanic ashes are carried by the winds is truly astonishing. Barbadoes is more than twenty leagues from St. Vincent's, and Hecla is fifty leagues from Glaumba. Procopius relates, that in 472 the ashes of Vesuvius were carried as far as Constantinople; that is to say, to a distance of 250 leagues. These showers of ashes produce, in the countries where they fall, earthy beds, often of great thickness, which, on being heaped up and penetrated by water, form some kind of volcanic tuffa. See in *Blackwood's Magazine*, vol. i. p. 134—136, an excellent account, by one of our pupils, of the fall of volcanic ashes in Barbadoes.

(3.) *Volcanic sands.* These are small particles of lavas which have been ejected into the air in the form of drops, and there harden. They are nothing but very small sized scoriæ, or fragments of ordinary scoriæ. They are, moreover, mingled with numerous small crystals of augite and felspar, or with fragments of these crystals. The quantity of these sands which volcanoes eject is immense. They form the greater part of the ejections, and of the mass of many volcanic mountains, of Ætna for example, according to M. Dolomieu. The finest mingle with the ashes, and form part of the clouds already mentioned. Others, accumulating in too great quantity to be sustained upon the acclivities of the mountain, slide down and spread out at its base. In the eruption in Vesuvius of 1822, a current of sand of this description, still red-hot, was taken at a distance for a torrent of lava.

(4.) *Scoriæ.* The gases which come from the depths of the volcano, passing through the mass of melted lava with great force and velocity, carry off some parts of that viscid matter, and bear them along with them into the atmosphere. They are there further divided, in consequence of the resistance which the air opposes to them; and, in cooling, they assume the intumesced and slaggy appearance which the scoriæ of forges so frequently have.

(5.) *Volcanic bombs.* When the matter of lavas is projected in a soft state, as is most commonly the case, it sometimes on cooling in the air assumes the form of drops, tears, or elongated spheroids, to which the name of *volcanic bombs* is given. They abound in the extinct volcanoes of Auvergne.

(6.) *Unaltered ejected masses.* Volcanoes sometimes eject stones, many of which bear no marks of common fusion. These, by some, are considered as fragments of rocks, which form the walls of internal cavities, and which may have been torn off and projected by some current of elastic fluids; others, again, maintain that they are fragments of rocks, which have been formed by igneous solution and crystallisation. Fragments of these dubious masses are found in great numbers on the Monte Somma. There they are of granular limestone, containing mica, and many other minerals besides.

935. *Projectile power of volcanoes.* Did our space allow of it, it would be interesting to enquire what is the intensity of that force which throws such quantities of matter to so great a height. We can only remark, that the greatest velocity in the cases of Ætna and Vesuvius was found to be equal to that of a cannon-ball at the moment when it issues from a cannon, the velocity being from four to five hundred yards per second. The gigantic Cotopaxi projected a piece of rock about an hundred cubic yards in magnitude to the distance of three leagues.

b. *Lavas.*

936. *Eruptions of lavas.* When we have an opportunity of seeing the liquid lava in the crater, it resembles the melted matter in our furnaces, and appears as it were boiling with greater or less violence. Jets of the melted matter are thrown up from the liquid surface, through the agency of elastic fluids. It is by these elastic fluids that the lava is raised upwards in the crater. When the mountain is high, as Teneriffe or Ætna, these fluids are not sufficiently powerful to raise the lava to the summit, or rather the sides of the mountain are not sufficiently strong to resist the weight and force of the long and heavy column of lava; it therefore presses or melts the walls which surround it, and thus forms an opening, through which it issues with great rapidity. When, on the contrary, the mountains are comparatively low, as Vesuvius for example, the lava reaches the mouth of the crater and flows over its lips, and from thence downwards along the acclivities of the mountain. On reaching the bottom they divide into several branches, according to the nature and slope of the ground over which they flow. The currents or streams of lava vary much in regard to the velocity with which they move. This velocity depends upon the slope of the ground upon which it flows, as well as upon the quantity and viscidity of the lava. At Vesuvius, M. de la Torre saw currents passing over a space of about 800 yards in an hour. Sir William Hamilton observed one which traversed 1800 yards in the same time. The eruption of 1776 presented another, which moved more than 2000 yards in 14 minutes. Buchk observed, during the eruption of 1805, a torrent flow from the summit to the sea-shore, a distance, in a straight line, of about 7000 yards. Those we have mentioned, however, are extraordinary velocities; for in general lavas move slowly. Those of Ætna, flowing upon an inclined plane, are considered quick when they traverse a space of 400 yards in an hour. In flat grounds they sometimes occupy whole days in advancing a few yards.

937. The *slowness* with which lavas cool is not less remarkable than that with which they move. If their surface is quickly cooled and consolidated, the case is different with the interior; the heat concentrates there, and is retained for whole years. Currents are mentioned which were flowing ten years after emerging from the crater, and lavas were seen smoking in Ætna twenty years after an eruption.

938. The *heat of liquid lava* is nearly that of liquid trap, as greenstone or basalt. The particular temperatures are given by Dr. Kennedy, Sir James Hall, and Professor Jameson.

939. The *magnitude* of lava currents varies much. The largest current which has ever issued from Vesuvius was about 14,000 yards long; that of the eruption of 1805 was 8000; that of 1794 was in length 4200 yards, in breadth from 100 to 400 yards, and in depth from eight to ten yards; that which issued from Ætna in 1787 was four times

larger; and Dolomieu relates that that volcano furnished one more than ten leagues in length. But the largest current known is that which in Iceland, in 1783, covered an extent of twenty leagues in length by four in breadth.

940. These *currents*, by being superinduced on each other, and having interposed between them other products of eruptions, as sand, ashes, and scoriæ, form a series of inclined beds that give rise to the cone of the mountain. In short, the cone is composed of a series of concentric layers or coats of lava, scoriæ, &c.; the outgoings of which are sometimes well seen in natural sections in the mountain.

c. *Different Kinds of Eruption.*

941. *Watery and muddy eruptions.* In the accounts of volcanic eruptions, mention is often made of torrents of water and mud vomited forth by volcanoes. Many of these watery and muddy eruptions are external actions, as is the case with those mentioned as having taken place in Vesuvius, Ætna, and Hecla; others are internal, as those of Quito.

942. (1.) *External aqueous and muddy eruptions.* These are owing to great rains, which frequently take place by the condensation of the great volumes of aqueous vapour that rise from the craters during volcanic action. This rain, on mixing with the ashes and sands, forms currents, more or less charged with earthy matters, which descend on the sides of the mountain, spread themselves at its base, and sometimes to a distance in the low country. The melting of bodies of snow by the lavas also occasions great floods of water and mud. Of this a striking instance is related as having taken place on Mount Ætna in 1755, where, by the sudden melting of a great body of snow by a stream of liquid lava, a terrible inundation was produced, which devastated the sides of the mountain for eight miles in length, and afterwards covered the lower parts of Ætna, together with the plains near the sea, with great deposites of sand, ashes, scoriæ, and fragments of lava. Similar floods of ashes and sand are mentioned by authors as taking place in Iceland and in America, where the summits reach above the snow line.

943. (2.) *Internal aqueous and muddy eruptions.* The waters also frequently make their way into the mountain by infiltration. They there collect in particular reservoirs; and at the period of explosion, or when the mountain happens to split in consequence of some shock, they issue forth, and cover the neighbouring countries. During the earthquake which overturned Lima in 1746, four volcanoes opened at Lucanos and in the mountains of Conception, and occasioned a frightful inundation. The mountains of Quito sometimes present the same phenomena; but it is there accompanied with extraordinary circumstances. The enormous cones of Cotopaxi, Pichincha, Tungouragoua, &c. are but in some measure the summits of the volcanoes to which they belong, and whose acclivities are probably encased in the great mass of the Andes. No true lavas, within the memory of man, have been vomited forth by these volcanoes; yet Humboldt saw consolidated lava currents on Sanguay, and even on Antisana. It might be said, says Humboldt, that the volcanic agents, which seldom have force sufficient to raise the column of lava to the summit of Ætna and of the Peak of Teneriffe, would still less be able to raise it in volcanoes of nearly double the height. In Ætna and Teneriffe, the lava may force an opening at the lower part of the mountains, and thus burst out; but this could not happen in volcanoes whose sides are strengthened, to a height of nearly 3000 yards, by the whole breadth of the Cordilleras. These volcanoes confine themselves to the emission of ashes, scoriæ, and pumice. They also vomit immense quantities of water and mud, but much more frequently by openings which take place on the sides of the cone than by the craters. These muddy waters form, as it were, great lakes in the different cavities which these enormous mountains contain. They issue from these cavities, as we have said, when a communication is opened with the exterior. Thus, in 1698 the volcano of Carguaraso, which is in the neighbourhood of Chimborazo, and perhaps forms a part of it, broke down, and covered with mud eighteen square leagues of country. Similar muddy waters are still contained in parts of the same country, which are of volcanic origin, but which no longer present any indication of fire; and they are equally vomited forth during great commotions of the ground. In Peru and Quito it is not by fire and currents of burning matters that the volcanoes commit their ravages, but by the water and enormous streams of mud. This substance is mud which is at first of a soft consistence, soon hardens, and bears the name of *moya.* It presents two curious phenomena. Sometimes, as in the moya which inundated the country of Pilielo, and which destroyed the village of that name during the earthquake of 1797, it contains a combustible matter, which renders it blackish and soiling, and which exists in so large a quantity in it that the inhabitants make use of this moya as a kind of fuel. Frequently the same muddy waters, issuing from subterranean caverns, carry with them a great quantity of small fishes. These fishes are a species of *pimelodes* (P. cyclopum). Most of them are not more than four inches long. Their number is sometimes so great that diseases are occasioned in the country by their putrefaction. They are the same as those which live in the brooks of the country. What, then, has introduced them into these subterranean

lakes? It would appear that there are some communications between the upper and lower level of these lakes and the surface of the ground; but what could have raised them from the level of this surface to the summit of the volcanoes, for they sometimes issue from the crater? It is very difficult to give any explanation of this. From all that has been said above, it does not appear that the mud which issues from these volcanoes comes from the subterranean caverns where the volcanic fires have their focus, and prepare the matter of lava.

944. *Air and mud volcanoes.* In some countries we observe issuing from the ground jets impelled by gases and charged with earth, which, on being deposited in the form of mud, in the neighbourhood of and chiefly around the apertures which have vomited them, form cones, which represent on a very small scale volcanic cones, and which are therefore named *air volcanoes.* One of the most remarkable of these is that of Macalouba in Sicily. It consists of a hill of dried mud about 160 feet high. Its upper part, which is 2600 feet in circumference, presents a multitude of small cones of which the largest are not above a yard in diameter. They have a small crater full of soft clay, which is every instant traversed by large bubbles of gas, which burst with an exploding noise, and scatter the clay around. Some of these explosions have been seen throwing jets of mud to the height of 160 feet. In the neighbourhood of Modena there are many of these small mud volcanoes, where they are called *salses* on account of the saltness of the water they scatter about. The gas which occasions the phenomena is hydrogen gas charged with petroleum and carbonic acid. Similar mud volcanoes occur in the Crimea, Java, Trinidad, and America.

d. *Periods of Activity of Volcanoes, and the Theory of their Formation.*

945. *Periods of activity of volcanoes.* The periods of activity of volcanoes are but transitory and of short duration. They are followed by years, or even ages, of rest. Humboldt is of opinion that the frequency of eruptions seems to be in the inverse ratio of the size of the volcano. The smallest of them, Stromboli, is continually throwing up volcanic matter; the eruptions of Vesuvius are less frequent, there having been but eighteen recorded since 1701; those of Ætna are much rarer; those of the Peak of Teneriffe still more so; and the colossal summits of Cotopaxi and Tungouragoua scarcely exhibit one in the course of a hundred years. To periods of activity there sometimes succeed periods of repose. The crater is filled up and becomes covered with forests. These burning furnaces, whence torrents of fire have issued, become the reservoirs of subterranean lakes, whose waters are peopled with fishes, and in elevated situations the sides and summits of the mountains become covered with snow and ice. But most commonly the state of rest is not complete; the crater remains open, and there is exhaled from it a greater or less quantity of vapours, which attack the masses that lie in their way. Sometimes they produce different saline and metallic incrustations. Volcanic districts in which, however, no eruption has taken place since the commencement of our history, and in which the volcanic cones are nearly effaced, still betray by their vapours and exhalations the fire which formerly ravaged them, and which is not yet extinct. Such are the *Phlegrean Fields,* on the coast of Puzzoli, in the kingdom of Naples.

946. *Cause of volcanoes.* This is an obscure subject. A conjecture, hazarded many years ago, may be stated. There being no decided proof of a central heat, in the commonly received sense, it may be assumed that the matter of lavas is seated deep in the crust of the earth, in spaces of greater or less extent, from whence it is sent up from time to time among the previously existing strata, by the agency of elastic fluids.

Sect. IV. *Earthquakes.*

947. *On earthquakes, and the changes they produce on the earth's surface.* Werner distinguishes two kinds of earthquakes. Some, he says, appear to be connected with a particular volcano, and to have their focus in the same region as it. They are only felt to the distance of a few leagues around, and their paroxysms are almost always connected with those of the volcano. Others, which appear to have their focus at a much greater depth, and whose effects are much greater, are propagated to immense distances with incredible celerity, and are felt almost at the same time at points thousands of miles distant from each other. Some of the latter however approach the former, and are still connected with volcanic phenomena. Thus, during the earthquake which overturned Lima in 1746, and which was one of the most terrible that has been recorded, four volcanoes opened in one night, and the agitation of the earth ceased.

948. *Universality of earthquakes.* If in the more violent we include the slighter agitations of the earth's surface in particular places, earthquakes may be said to be universal or general, and we may affirm that no considerable country is entirely exempted from them. Sandy deserts and fertile regions, primitive, secondary, and tertiary hills, extensive plains, and even marshy districts but little elevated above the level of the sea, afford no protection against these destructive phenomena, which are equally prevalent in cold, in temperate, and in tropical climates. They are, however, generally considered more frequent near to coasts; thus,

Syria, the coasts and islands of Asia, America, the European coasts of the Mediterranean, and Iceland, are most subject to them; while the plains of Africa, Asia, and the North of Europe are least exposed. Viewing the whole earth, and including every slighter agitation, earthquakes appear to be exceedingly numerous, and it may be maintained that not a week passes in which the earth's surface in some place or other is not more or less agitated. The great number of concussions observed in civilised countries, and the fact that some districts are constantly agitated by them, entitles us to draw the conclusion. Their return in the places most subject to them, and in the places where they are less frequent, is not regulated by any precise period of time. Their appearance is not connected with any particular season of the year or state of the atmosphere, and they take place by day as well as by night.

949. *Phenomena of Earthquakes.* The phenomena peculiar to earthquakes are in themselves sufficiently simple. They consist in tremblings and oscillations of the earth's surface, called shocks; extending over greater or smaller tracts of country, and frequently following a particular direction. The shocks appear at first chiefly as perpendicular heavings; then as horizontal undulations or oscillations; lastly, in some instances, there is a violent agitation: the motion is more or less rotatory. If to these we add the rending, slipping, rising and sinking of the ground, the violent agitations of the sea, lakes, rivers, and springs; consisting, in springs, in their drying up or bursting forth with great violence; in lakes, rivers, and the ocean, in their falling and rising, and rushing backwards and forwards, owing to the sinking and rising of the land, we obtain an enumeration of the principal phenomena. As the subject is very interesting, we shall view it somewhat in detail, and under the following heads: — 1. *Shocks.* 2. *Extent of earthquakes.* 3. *Duration of shocks.* 4. *Magnitude of rents formed, and the phenomena connected with them.* 5. *Elevation and subsidence of the land.* 6. *Agitations in the sea.* 7. *Notice of particular earthquakes.*

950. (1.) *Shocks.* The slighter shocks of an earthquake, consisting of perpendicular heavings and horizontal undulations, commonly produce rents in houses, moving light objects in them, as articles of furniture. Persons unacquainted with the phenomenon, or who do not perceive it from the subterraneous noise resembling thunder which accompanies it, feel unsteady while in their beds, but particularly when sitting, and believe themselves seized with a sudden giddiness. The shocks proceed gradually to be more violent, and then they are very easily perceived even by the inexperienced. Then the most substantial buildings are shattered to pieces, and the inhabitants buried beneath their ruins; while buildings of a lighter construction are only rent, and very slender reed huts are least of all exposed to destruction. In some cases the fracturing, or as it were trituration, surpasses description. Hence, for the plainest reasons, it is most dangerous to remain in houses or inhabited places; but even the fields and mountains themselves afford no perfect security, inasmuch as the fields frequently in some places open into fissures, and are rent asunder; while mountains are not only rent, but slide down into the valleys, dam up rivers, form lakes, and cause inundations. Although the desolation produced by these convulsions exceeds all description, this is much more the case with the rotatory motions; a species of motion, however, the existence of which has been denied by some geologists. In proof of it, however, it may be mentioned, that during the earthquake of Catania, whose general direction was from S. E. to N. W., many statues were turned round, and a large mass of rock was turned 25° from South to East. But the rotatory motion was more strikingly exemplified in the earthquake at Valparaiso, on the 19th November, 1822, by which many houses were turned round, and three palm trees were found twisted round one another like willows. These rotatory motions of masses of rock are particularly interesting when viewed in connection with phenomena connected with faults or shifts among strata in non-volcanic districts. It is only the slighter earthquakes that pass by with a single shock; in most of them more shocks follow at short intervals, and for the most part the number is proportioned to the violence of the concussion. The first shock is sometimes the most powerful, but the second is as often, if not oftener, equally violent. Further, the concussions are also repeated after longer intervals, as the earthquakes in Syria, that sometimes continue for a number of months with longer or shorter intermissions; but the first catastrophe is generally the most violent and destructive.

951. (2.) *Extent of earthquakes.* It is the agitation of the sea that points out the great extent of the tracts of land convulsed by earthquakes. In this respect, the earthquake at Lisbon, in 1755, was the most remarkable and most violent that ever visited Europe. In consequence of it, by the concussion on the bottom, or momentary rising or upheaving of the sub-marine land, the sea overflowed the coasts of Sweden, England, and Spain, and of the islands of Antigua, Barbadoes, and Martinique in America. In Barbadoes the tide, which rises only 28 inches, rose 20 feet in the bay of Carlisle, and the water appeared as black as ink, owing probably to bituminous matter thrown up from the bed of the ocean. On the 1st of November, when the concussion was most violent, the water at Guadaloupe retreated twice, and on its return rose in the channel of the island to a height of from 10 to 12 feet. Similar appearances were witnessed at Martinique. A wave of the sea, 60 feet high, overflowed a part of the city of Cadiz; and the lakes of Switzerland, such as Geneva, were observed to be in commotion six hours after the first shock. It is also remarkable that agitations were

noticed in lake Ontario, in October, 1755. During the earthquake at Lima, 1586, a wave of the sea rose 84 feet high in the harbour of Callao. During the earthquakes in Calabria in 1783, the sea not only overflowed the coast and drowned many people, but was in general so much agitated that the guns on ship-board sprang from the deck to a height of several inches.

952. (3.) *Slipping of Mountains.* Besides the common operations of earthquakes already mentioned, others occur that do not immediately succeed the concussions, and therefore happen less frequently. To these belong the sliding down of parts of mountains, as at Dobratch in 1345, and the falling together of two mountains in Jamaica in 1692, by which the bed of a river was dammed up. In the latter place, a part of a mountain slid down and covered many plantations; the city of Port Royal sunk to the depth of eight fathoms; and a plain of 1000 acres fell in, with all the buildings upon it.

953. (4.) *Duration of shocks.* Single shocks frequently succeed one another very rapidly, and often after greater or smaller intervals of time; they are occasionally single, frequently very numerous; and in volcanic districts, shocks sometimes happen after a lapse of months or years, are then followed by longer or shorter intervals, and even periods of 10 or a 100 years. In regard to this, it is remarkable that since the earthquake which in 1204 shook Antioch, Damascus, and Tripoli, Syria was spared till the latter half of the seventeenth century, although no region of the earth suffers more from these destructive phenomena than that country. It is, in short, difficult to define the duration of a single shock. It is undoubtedly brief in general; and in slighter shocks, witnessed by tranquil spectators and consequently observed with greater attention, it is not longer than a few seconds. In the greater convulsions, for instance at Lima, Caraccas, Calabria, Catania, Zante, Antioch, &c. the time is reckoned from fifty seconds to one minute and five seconds, or indefinitely from a few minutes to a few seconds. When we consider how exceedingly distracted the attention is when the shock is first perceived, the duration cannot be measured by means of a watch, but by supposition, and by such a mode of computation we are in the habit of reckoning time much longer than it really is, so we may with great probability conclude that the duration of a single shock does not go beyond a few seconds, and we may affirm that, at the most, it rarely exceeds half a minute.

954. (5.) *Magnitude of rents formed by earthquakes.* These vary from a few feet to many fathoms in extent. They have either a direction which is nearly straight or more or less winding, or they run in all directions from a centre. During the terrible Calabrian earthquakes of 1783, rents were formed of great dimensions; in the territory of San Fili there was formed a rent half a mile long, two feet and a half broad, and twenty-five feet deep; in the district of Plaisano, a rent, of nearly a mile in length, one hundred and five feet broad, and thirty feet deep opened; and in the same district two gulfs arose, one at Cerzulli, three quarters of a mile long, one hundred and fifty feet broad, and about one hundred feet deep; and another, nearly a quarter of a mile long, about thirty feet broad, and two hundred and twenty-five feet deep. Ulloa relates that in the earthquake of 1746, in Peru, a rent took place, which was two miles and a half long, and four or five feet wide. These rents sometimes close again; thus, in the year 1692, in the island of Jamaica, during an earthquake, the ground heaved like a boiling sea, and was traversed by numerous rents, two or three hundred of which were often seen at a time opening and closing rapidly again.

955. (6.) *Elevation and subsidence of land during earthquakes.* It is evident that if the land is fractured and then traversed with vast rents, by earthquakes, that portion of the land will in some places sink and in others rise, and this not once but several times in the same place. In the year 1772, during an eruption of one of the loftiest mountains in Java, the ground began to sink, and a great part of the volcano, and part of the neighbouring country, estimated to be fifteen miles long and six miles broad, was swallowed up. During the earthquake at Lisbon in 1755, a new quay entirely disappeared; thousands of the inhabitants had taken shelter on it, to be out of the reach of the tottering and falling buildings, when suddenly the quay sunk down with its thousands of human beings, and not one of their dead bodies ever floated to the surface. In the year 1692, during an earthquake in Jamaica, a tract of land about a thousand acres in extent sank down in than less a minute, and the sea immediately took its place. On the north side of the island several large tracts with their whole population were swallowed up, and a lake appeared in their place covering above a thousand acres. Numerous examples of the upraising of the land by earthquakes might be given; we shall enumerate a few of them. On the 19th of November, 1822, a most dreadful earthquake visited the coast of Chili; the shock was felt at the same time throughout a space of one thousand two hundred miles from north to south. When the country around Valparaiso was examined on the morning after the shock, it was found that the entire line of coast, for the distance of more than a hundred miles, was raised above its former level. The area over which this upraising took place was estimated at one hundred thousand square miles: the rise upon the coast was from two to four feet; at the distance of a mile inland, it was estimated from five to seven feet. On the 18th of March in the year 1790, at St. Maria di Niscomi, some miles from Terranuovo, near the south coast of Sicily, a loud subterranean

noise was heard under the town just mentioned, and the day after earthquakes were felt; then the ground gradually sunk down for a circumference of three Italian miles, during seven shocks, and in one place to a depth of thirty feet; as the subsidence was unequal, rents were formed, some of which were so wide that they could not be leaped over: this gradual sinking continued to the end of the month. About the middle of this period an opening took place in the subsiding land, about three feet in diameter; through these continued to flow, for three hours, a stream of mud, which covered a space sixty feet long and thirty feet broad; the mud was saltish and composed of chalky marl and a viscid clay, with fragments of crystalline limestone; it smelt of sulphur and petroleum. On the 16th June, 1819, at Cutch in Bombay, a violent earthquake took place, during which, independent of other changes, the eastern and almost abandoned channel of the Indus was much altered: this estuary was, before the earthquake, fordable at Luckput, being only a foot deep when the tide was at ebb, and at flood tide never more than six feet; but it was deepened at the fort of Luckput, after the earthquake, to more than eighteen feet at low water, showing that a considerable depression had taken place. The channel of the river Runn was so much sunk that, instead of being dry as before, during that period of the year, it was no longer fordable except at one place; and it is remarked by Captain Macmurdoch, — and the observation is of high geological import, as connected with the formation of valleys, of river districts, &c. — "should the water continue throughout the year, we may perhaps see an inland navigation along the northern shore of Cutch; which, from stone anchors, &c. still to be seen, and the tradition of the country, I believe to have existed at some former period." Sindree, a small mud fort and village belonging to the Cutch government, situated where the Runn joins the Indus, was overflowed at the time of the shock. The people escaped with difficulty, and the tops of the houses and walls are now alone seen above water. In the year 1790, in the Caraccas, during an earthquake, a portion of granite soil sunk, and left a lake 800 yards in diameter, and from eighty to an hundred feet deep: it was a part of the forest of Aripao which sunk, and the trees remained green for several months under water.

956. (7.) *Agitations of the sea.* We have already noticed, in a general way, the agitations observed in the sea during earthquakes; we shall now add some particulars illustrative of these motions. During the Lisbon earthquake of 1755, the sea rose along the coast of Spain; and at Cadiz it advanced in the form of vast waves sixty feet high. At Lisbon about sixty thousand persons perished. The sea first retired, and laid the bar dry; it then rushed in, rising upwards of fifty feet above its ordinary level. At Kinsale, in Ireland, the sea rushed into the harbour, and invaded the land. At Tangier, in Africa, it rose and fell eighteen times on the coast. At Funchal, in Madeira, it rose fifteen feet above high-water mark; although the tide, which ebbs and flows there seven feet, was then half-ebb. Even ships at sea, a considerable distance from land, felt, in the midst of these convulsive motions, as if hurried across a ridge of rocks. This took place, to a distance of 160 or 270 nautical miles from the coast, during the earthquake at Lisbon in 1816. During the Lisbon earthquake of 1765, the shock was felt at sea, on the deck of a ship to the west of Lisbon, and produced nearly the same feeling as on land. At San Lucar, the captain of the Nancy frigate felt his ship so violently agitated that he thought he had struck on the ground; but, on heaving the lead, found he was in deep water. Captain Clark, from Derina, in N. lat. 36° 24′, between nine and ten in the morning, had his ship shaken as if she had struck upon a rock, so that the seams of the deck opened. Dr. Shaw relates, that in 1724, being on board the Gazello, an Algerine ship of 50 guns, they felt such violent shocks, one after another, as if the weight of twenty or thirty tons had been let fall from a good height on the ballast. Schouten, speaking of an earthquake which happened in the Moluccas, says, that the mountains were shaken, and ships that were at anchor in thirty or forty fathoms' water were jerked as if they had run ashore, or come foul of rocks. Le Genil says, "that ships at sea and at anchor suffer, during earthquakes, such violent agitations that they seem to be falling asunder; their guns break loose, and their masts spring."

957. (8.) *Notices of particular Earthquakes. A full account* of all the principal earthquakes that are known would much exceed our limits; we shall, therefore, select only a few of the more interesting.

958. *No part of Europe is more visited by earthquakes than Italy and the neighbouring islands.* The first earthquake particularly worthy of notice was that which, in the year 63, destroyed Herculaneum and Pompeii. Since that period they have frequently visited Italy and Sicily, but much seldomer from A. D. 63 to the twelfth century, than from that period till modern times, that is, till the eighteenth and nineteenth centuries. Of these we shall describe one of the most recent in Calabria, and another of still later date in Sicily.

959. *Earthquake of* 1783. The earthquake that so much affected Calabria, and destroyed the city of Messina, raged at unequal periods from the 5th of February till the 28th of March, 1783. According to Sorcia, its principal seat was the small town of Oppido in the neighbourhood of Atramonte, a snow-covered peak of the Apennines.

From this point, says Sir William Hamilton, around to a distance of twenty-five miles, comprehends the surface of country which suffered most, and where all the towns and villages were destroyed. If we describe the circle with a radius of seventy-two miles, it will include the whole country which was in any way affected by the earthquake. The first shock, on the 5th February, in two minutes threw down the greatest part of the houses in all the cities, towns, and villages from the Western acclivities of the Apennines, in Calabria Ultra, to Messina in Sicily, and convulsed the whole surface of the country. Another shock, which took place on the 25th of March, was nearly equally violent. The granite chain which extends through Calabria from north to south was but slightly agitated, the principal shocks being propagated with a wave-like motion through the tertiary sands, sandstones, and clays, from west to east. It was remarked that the violence of the shock was greatest at the line of junction of the granite and tertiary rocks, occasioned probably by the interruption of the undulatory movement of the softer strata by the harder granite. The granite range also prevented the passage of the shocks to the countries on the opposite side of the mountain-range. About 200 towns and villages were destroyed, more than one hundred hills slid down, fell together, dammed up rivers, and formed lakes: numerous rents, often of vast magnitude, were formed; many subsidences and also upraisings of the ground took place; and the general features of the country were so much changed that they could scarcely be recognised. Thus, in a very short space of time the whole country was as much changed as if it had been exposed to common influences for many thousand years. The total number of human beings that perished was estimated at 100,000, and it was difficult to find even distant relations to succeed to the property of some families.

960. *Earthquake of Lisbon in 1755.* In no part of southern Europe has so tremendous an earthquake occurred as that which began on the 1st of November, 1755. On the morning of that day, at thirty-five minutes after nine, without the least warning, except a noise like thunder heard under ground, a most dreadful earthquake shook, by short but quick vibrations, the foundations of Lisbon, so that many of the principal edifices fell to the ground in an instant: then, with a scarcely perceptible pause, the nature of the motion changed, now resembling that of a waggon driven violently over rough stones, which laid in ruins almost every house, church, convent, and public building, with an incredible destruction of the people. It continued in all about six minutes. At the moment of its beginning, some persons on the Tagus, near a mile from the city, heard their boat make a noise as if it had run aground, though then in deep water, and saw at the same time houses falling on both sides of the river. Four or five minutes after, the boat made the like noise, caused by another shock, which brought down more houses. The bed of the Tagus was in many places *raised to its surface.* Ships were driven from their anchors, and jostled together with great violence; and the masters did not know if they were afloat or aground. The large quay called *Cays de Prada*, was overturned, crowded with people, and sunk to an unfathomable depth in the water, not so much as one body afterwards appearing. *The bar was seen dry from shore to shore;* then suddenly the sea, like a mountain, came rolling in, and about Belem castle the water rose fifty feet almost in an instant; and had it not been for the great bay opposite the city, which received and spread the great flux, the lower part must have been under water. As it was, it came up to the houses, and drove the inhabitants to the hills. About noon, there was another shock, *when the walls of several houses which were yet standing were seen to open from top to bottom more than a quarter of a yard, but closed again so exactly as to leave scarce any mark of injury.* It is remarked, that on the 1st of November, 1756, being the anniversary of the fatal tragedy of this unhappy city, another shock gave the inhabitants so terrible an alarm that they were preparing for their flight into the country, but were prevented by several regiments of horse placed all around by the king's orders. Many of the largest mountains in Portugal during the great earthquake were shaken as it were to their foundation, and many of them opened at their summits, split, and rent, and huge masses of them were cast down into the subjacent valleys. The same dreadful visitation was experienced at Oporto. We are told that at about forty minutes past nine in the morning, the sky being serene, was heard a dreadful hollow noise like thunder or the rattling of coaches over rugged stones at a distance; and almost at the same instant was felt a severe shock of an earthquake, which lasted six or seven minutes, during which every thing shook and rattled. It rent several churches. *In the streets the earth was seen to heave under the people's feet, as if in labour.* The river was also amazingly affected; for in the space of a minute or two, it rose and fell five or six feet, and continued to do so for four hours. The river Douro was observed to burst open in some parts, and discharge vast quantities of air; and the agitation was so great in the sea, beyond the bar, that it was imagined the air got vent there also.

961. *On the fatal day of the great earthquake of Lisbon, at Ayamonte,* near where the Guadiana falls into the bay of Cadiz, a little before ten o'clock, immediately on a rushing noise being heard, a terrible earthquake was felt, which during fourteen or fifteen minutes damaged almost all the buildings. In little more than half an hour after, the sea and

river, with all their canals, overflowed their bounds with great violence, laying under water all the coasts of the islands adjacent to the city and its neighbourhood, flowing into the streets. The water rose three times, after it had as many times subsided. One of the swells was at the time of ebb. The water came on in vast black mountains, white with foam at the top, and demolished more than half of the town at the bar called De Canala. The earth was observed to open in several places, and from the apertures flowed vast quantities of water.

962. *At Cadiz*, in the same morning, some minutes after nine, the whole town was shaken with a violent earthquake, which lasted about five minutes. The water in the cisterns under ground rolled backwards and forwards. At ten minutes after eleven, a wave was seen coming from sea, eight miles off, at least sixty feet higher than usual. It dashed against the west part of the city; at last it came upon the walls, beat in the breast-work, and carried pieces of eight or ten tons weight forty or fifty yards from the wall. When the wave was gone, some parts that are deep at low water were left quite dry, for the water returned there with the same violence as it came. On the same eventful morning Gibraltar was agitated by an earthquake. It lasted about two minutes. *The guns on the battery were seen to rise, others to sink, the earth having an undulating motion.* Most people were seized with giddiness and sickness, and some fell down, others were stupefied, though many that were walking or riding felt no motion, but were sick. The sea rose six feet every fifteen minutes, and fell so low that boats and all the small craft near the shore were left aground, as were numbers of fish. Ships in the bay thought they had struck on rocks. The flux and reflux lasted till six next morning, having decreased gradually from two in the afternoon.

963. *This earthquake excited much attention*, from the incredibly great extent at which slighter contemporary shocks were experienced. They extended from Greenland and Iceland to Norway, Sweden, Germany, Britain, Switzerland, France, Spain, Morocco, Salee, Fez, Teutan, and even to the West Indies and the lake Ontario in North America.

964. *However dreadful many of the earthquakes of Europe were*, they bear no comparison with those which have desolated many parts of Asia. Passing over those which were observed in the islands, on the eastern continent, and in the environs of the Caspian Sea, our attention is particularly drawn towards Syria, on account of the ravages it has frequently experienced.

965. *Gibbon*, in the forty-third chapter of his Decline and Fall of the Roman Empire, gives the following account of the earthquake that took place at Antioch in A. D. 526, May 30. "The near approach of a comet may injure or destroy the globe which we inhabit; but the changes on its surface have been hitherto produced by the action of volcanoes and earthquakes. The nature of the soil may indicate the countries most exposed to these formidable concussions, since they are caused by subterraneous fires, and such fires are kindled by the union and fermentation of iron and sulphur. But their times and effects appear to lie beyond the reach of human curiosity, and the philosopher will discreetly abstain from the prediction of earthquakes, till he has counted the drops of water that silently filtrate on the inflammable mineral, and measured the caverns which increase by resistance the explosion of the imprisoned air. Without assigning the cause, history will distinguish the periods in which these calamitous events have been rare or frequent, and will observe, that this fever of the earth raged with uncommon violence during the reign of Justinian. Each year is marked by the repetition of earthquakes, of such duration, that Constantinople has been shaken above forty days; of such extent, that the shock has been communicated to the whole surface of the globe, or at least of the Roman empire. An impulsive or vibratory motion was felt: enormous chasms were opened, huge and heavy bodies were discharged into the air, the sea alternately advanced and retreated beyond its ordinary bounds, and a mountain was torn from Libanus, and cast into the waves, where it protected, as a mole, the new harbour of Botrys, in Phœnicia. The stroke that agitates an ant-hill, may crush the insect myriads in the dust; yet truth must extort a confession, that man has industriously laboured for his own destruction. The institution of great cities, which include a nation within the limits of a wall, almost realises the wish of Caligula, that the Roman people had but one neck. *Two hundred and fifty thousand persons* are said to have perished in the earthquake of Antioch, whose domestic multitudes were swelled by the conflux of strangers to the festival of the Ascension. The loss of Berytus was of smaller account, but of much greater value. That city, on the coast of Phœnicia, was illustrated by the study of the civil law, which opened the surest road to wealth and dignity: the schools of Berytus were filled with the rising spirits of the age, and many a youth was lost in the earthquake who might have lived to be the scourge or the guardian of his country. In these disasters, the architect becomes the enemy of mankind. The hut of a savage, or the tent of an Arab, may be thrown down without injury to the inhabitants; and the Peruvians had reason to deride the folly of their Spanish conquerors, who with so much cost and labour erected their own sepulchres. The rich marbles of a patrician are dashed on his own head; a whole people is buried under the ruins of public and private edifices, and the conflagration is kindled and propagated by the innu-

merable fires which are necessary for the subsistence and manufactures of a great city. Instead of the mutual sympathy which might comfort and assist the distressed, they dreadfully experience the vices and passions which are released from the fear of punishment: the tottering houses are pillaged by intrepid avarice; revenge embraces the moment, and selects the victim; and the earth often swallows the assassin or the ravisher in the consummation of their crimes. Superstition involves the present danger with invisible terrors; and if the image of death may sometimes be subservient to the virtue or repentance of individuals, an affrighted people is more forcibly moved to expect the end of the world, or to deprecate with servile homage the wrath of an avenging Deity." In 1169 single shocks continued for four months; and in 1202 another earthquake destroyed many cities, filled up the valleys of Lebanon, and shattered the basaltic districts of Hauran, so that, according to the expression then current, *it was no longer possible to say, Here stood this or that city.* A dreadful earthquake took place in 1759; the shocks continued for six months. At the first shock the cities of Antioch, Balbec, Acre, Tripoli, &c. were laid in ruins, and 30,000 persons killed. The most recent earthquake, of 1822, lasted still longer, and committed dreadful ravages. On the 13th of August, in one horrible night, Aleppo, Antioch, Biha, Gesser, indeed every single village and cottage within the pashalic of Aleppo, was, within ten or twelve seconds, completely destroyed, and converted into a heap of rubbish: no less than 20,000 people lost their lives, and many more were mutilated; a very great number, considering the low population of these places.

966. *Africa* is very little known, and we are therefore ignorant of any earthquakes in its interior, where they may occur as frequently as in other places. The southern extremity of this continent is rarely visited by slight shocks, but they are more numerous in the north, where, in March, 1825, they did considerable damage to Algiers and Blida. On the contrary, *America*, particularly in the southern parts, is inferior to no part of the world for the magnitude, number, and duration of its earthquakes. We shall now mention a few of the greatest recorded by naturalists. To these belong the earthquake of 1746, which, within five minutes, destroyed the greater part of Lima; Callao was inundated; and of 4000 persons, 200 only escaped. The destruction of New Andalusia, on the 21st of October, 1766, was equally terrible. The shocks extended over Cumana, Caraccas, Maracaibo, the shores of the Casanar, the Meta, the Orinoco, and Ventures; and the granite districts in the mission of Encaranada were also shaken by their violence. An earthquake, in 1797, destroyed a great part of Peru. It proceeded from the volcano Tungouragoue, continued with slight shocks during the whole of February and March, and returned on the 15th of April, with increased violence. Many places were filled up by the summits of mountains tumbling down; muddy water flowed from the volcano; and, spreading over the country, became afterwards an indurated crust of clay. The entire number of persons who perished on this occasion was 16,000. No earthquake could well be more destructive to any place than that which destroyed the Caraccas in 1812, and of which Humboldt has given an excellent description. The Caraccas was thought secure on account of its primitive mountains, although in 1641, 1703, and 1778, violent earthquakes were experienced, and a slighter shock in 1802. Humboldt, from actual inspection, had no doubt but this country, from being in a volcanic region, must be liable to such disasters. In December, 1811, various shocks were felt; on the 12th of March, 1812, the city of Caraccas was destroyed. The sky was clear, and in Venezuela there had not been a drop of rain for five months, there was no forewarning prognostic, for the first shock at seven minutes past four in the afternoon came on unexpectedly, and set the bells a-ringing. This was immediately succeeded by a second shock, which caused a waving and rolling motion in the earth, then a subterraneous rumbling noise was heard, and there was a third shock, in which the motion was perpendicular and sometimes rolling horizontally, with a violence which nothing could withstand. The people, in place of flying directly to the open fields, flocked in crowds to the churches, where arrangements had been made for a procession; and the multitudes assembled there were buried beneath the ruins. Two churches 150 feet high, and supported by columns of from twelve to fifteen feet in diameter, fell in a mass of rubbish, and were for the most part ground into dust. The Caserne el Quartel vanished almost entirely, and a regiment of soldiers stationed there, and about to join the procession, disappeared at the same time along with it; a few individuals only escaped; nine tenths of the city were completely destroyed, and most of the houses that remained were rendered uninhabitable; the number of people killed was reckoned at nearly 10,000, without including those who perished afterwards from bruises and want of sustenance. The clouds of dust having fallen, were succeeded by a serene night, which formed a frightful contrast with the destruction on the earth, and with the dead bodies lying scattered among the ruins. The duration of each particular shock was reckoned by some 50 seconds, by others 1 minute 12 seconds. These shocks extended over the provinces of Venezuela, Varinas, Maracaibo, and into the mountains in the interior. La Guyara, Mayquatin, La Vega, St. Felipe and Merida, were almost entirely destroyed. In Guyara and St. Felipe the number of persons killed was about 5000. On the 5th of April another violent earthquake took place, during which enormous fragments were detached from the

mountains. It was said that the mountain Silla lost from 350 to 360 feet of its height by sinking.

967. *Cause of earthquakes.* — The original hypothesis, which attributed volcanic eruptions and earthquakes to the operation of central fire, was at first attacked chiefly by Stukely, who, from the phenomena of two earthquakes observed at London on the 8th February and 8th of March, 1749, endeavoured to prove that they were caused by a highly overcharged state of the electric fluid. Andrew Bena affirms, that they are sudden explosions, caused by gas in the interior of the earth, which he believes would be found there enclosed in reservoirs of sulphur and bitumen. Beccaria, as is known, endeavoured to attribute to electricity every thing that had any probable affinity for it; hence he believed that an accumulation of it in the crust of the earth produced concussions with the clouds, and then exhibited the appearance of earthquakes. Humboldt found it to be a prevailing opinion in America that earthquakes are electrical phenomena; but observes, that this must be excused by reason of the partiality entertained for Franklin. The invention of the Voltaic pile, and the observation of its singular operations, induced many philosophers, at least those naturalists who were perfectly intimate with the nature of this remarkable apparatus, to consider the whole earth as a column or pile of this description, or that it contains an apparatus of this description in its interior. These fancies, however, lead to nothing satisfactory. Where then can we seek for the cause or causes of earthquakes? The subject is entirely hypothetical, as we have no means of reaching the seat of these remarkable phenomena. The theory of the earthquake is the same as that of the volcano. The agitations may be produced by the motions of the liquid and gaseous matter at a *great depth in the crust of the earth endeavouring to escape.*

Sect. V. *Account of the different Structures observable in the Crust of the Earth.*

968. *Before the time of Werner,* little had been accomplished in regard to the determination of the structures that occur in the crust of the earth. Some maintained that every where irregularity prevailed, and that it was in vain to look for order or regularity in the coarse rocky masses of which mountains, hills, and plains are composed. Werner, however, on general grounds, assumed, that if determinate structures and arrangements occurred in the vegetable and animal kingdoms, the same must be the case in the mineral kingdom, not only in simple minerals, but also in the great and more generally distributed masses of which the crust of the earth is principally composed. His investigations fully confirmed the truth of this opinion, for minerals he found as well characterised as plants and animals; and the following details will show that there exists among *mountain rocks,* or those great masses of which the crust of the earth is composed, a beautiful series of structure, from that of *hand specimens* to the general arrangements of the great rock formations. We shall consider these structures in the following order, beginning with the smallest and terminating with the greatest.

Subsect. 1. *Different Structures.*

1. Structure of mountain rocks in hand-specimens.
2. Structure of strata and beds.
3. Structure of formations.
4. Arrangements of formations in regard to each other.
5. Structure of veins.

969. (1.) *Structure of mountain rocks.* The kinds of structure occurring in mountain rocks are the following: — 1. Compact. 2. Slaty. 3. Granular. 4. Porphyritic. 5. Amygdaloidal. 6. Conglomerated. In the *compact structure,* the mass is uniform, without slaty or any other arrangement, and when broken exhibits various fractures, as earthy, splintery, conchoidal, even, &c. Common compact quartz is an example of this kind of structure. In the *slaty structure* the rocks split readily into thin layers or slates, as in common roofing-slate. Rocks having the *granular structure* are composed of granular concretions or imperfect crystals, as in primitive limestone or statuary marble. In the *porphyritic structure* there is a basis or ground with imbedded crystals, generally of felspar or quartz, or both, as in porphyry: in the *amygdaloidal structure* there is also a basis or ground; but here the base does not contain imbedded crystals, but amygdaloidal cavities, which are either nearly empty, half filled, or completely filled with minerals. The rock named amygdaloid exhibits this kind of structure. Lastly, the *conglomerated structure* is that which we observe in the rock named conglomerate, which is composed of fragments imbedded in a basis or ground.

970. (2.) *Structure of strata and beds.* When a mountain or hill is composed of tabular masses of the same kind of rock, as of sandstone, that extend throughout the hill, it is said to be stratified, and the individual tabular masses are named *strata,* as in *fig.* 58. If among these strata there occur tabular masses of a different rock, the masses are named *beds: a, fig.* 58.

represents a bed of limestone in the cliff of stratified sandstone. These strata and beds vary in *position*; sometimes they are flat or *horizontal*, or they are more or less inclined until they become *vertical*, or are set on their edges. They also vary in the point of the compass towards which they are *inclined* or *dip*; but it is worthy of remark, that the dip is always at right angles to the range or direction of the strata; and that if the dip is given, we know the direction: but a knowledge of the direction will not give us the dip. Their *direction* also varies. In this country the primitive and transition rocks often range or have their direction from N.E. to S.W. The position of strata is determined by a well known instrument, the clinometer, which is a compass with an attached quadrant. When we examine the structure of individual strata and beds, several varieties may be discovered: thus, in some beds, the rock is arranged in *columns*, as in basalt; in others, the arrangement is in *tables*, as in porphyry; or in *balls*, as in granite and greenstone.

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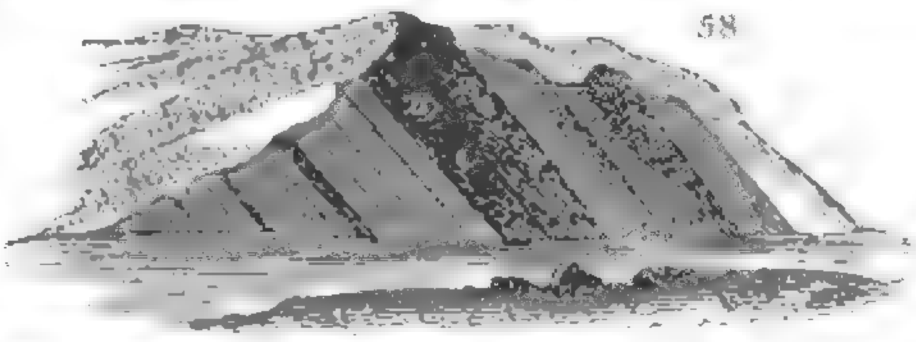

971. (3.) *Structure of formations.* The idea of formations was first clearly brought out by Werner. To his views on this most important subject we can trace the new character of geology, and the great progress made in geognosy within these last thirty years. But this is not the place for discussing the subject. All those rocks which appear to have been formed at the same time, and in the same or similar circumstances, and which agree in position, structure, mass, petrifactions, imbedded minerals, &c. are said to belong to the same formation. These formations are divided into *simple* and *compound*. *Simple formations* are those principally composed of one rock; *compound formations*, of more than one species of rock: granite is an example of a simple formation; the first secondary sandstone, or the great coal formation, of a compound formation, because it contains several rocks; viz. sandstone, slate, limestone, coal, and ironstone.

972. (4.) *Arrangement of formations in regard to each other.* When two formations occur together, and the one rests upon the other, the subjacent formation is named the *fundamental rock*, and that which covers or lies upon the other, the *superincumbent*. The line where the two rocks or formations meet is called *the line of separation or line of junction*. In *fig.* 59. *a* is the fundamental rock, and *b* the superimposed rock, and *c c* the line of junction. When the strata of the superimposed formation is parallel with the strata of the fundamental or subjacent rock, the stratification is said to be *conformable*, as *fig.* 60., where a formation *a*, we shall say of limestone, rests on *b*, of sandstone. If the strata of the superimposed formation are disposed as at *c*, *fig.* 61., they are said to be *unconformable*. Lastly, if the

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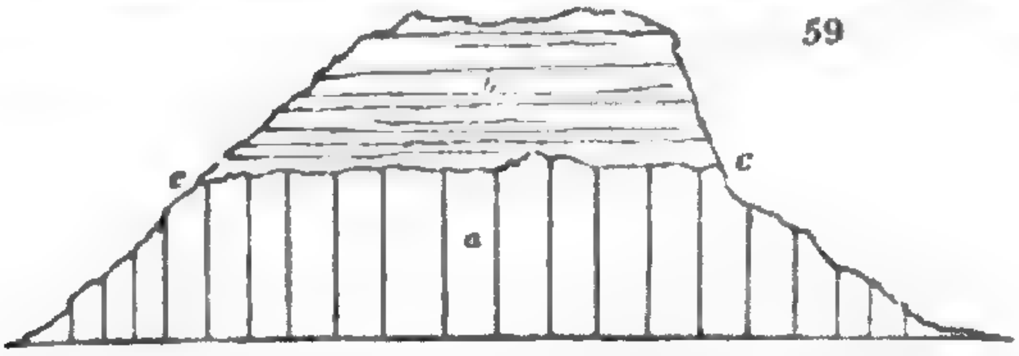

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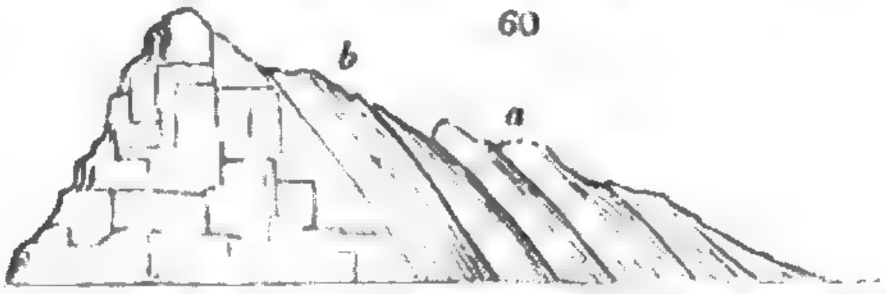

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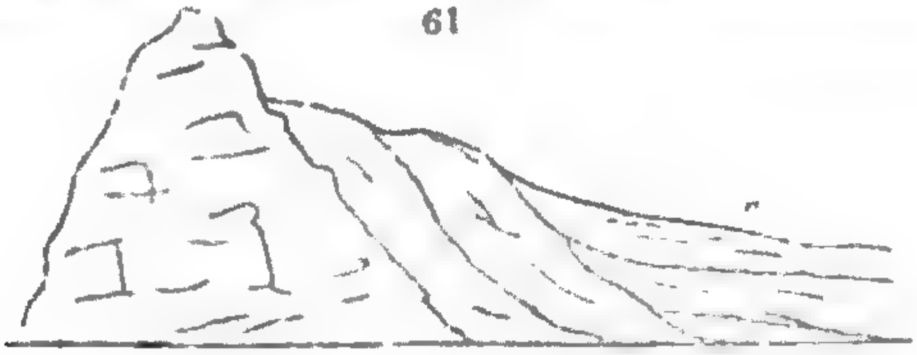

strata lie over the ends of the strata of the fundamental rock, as at *b*, in *fig.* 59., they are said to be *unconformable* and *overlying*. If the strata rest on the fundamental rock, as represented in *fig.* 62., they are said to be *saddle-shaped;* if as represented in *fig.* 63., they are said to be *mantle-shaped;* if disposed in a bason-shaped hollow, as in *fig.* 64., they are said to be *bason-shaped;* if in a lengthened or trough-like hollow, as in *fig.* 65., they are said to be *trough-shaped.* In a mountain, or natural section of Neptunian or aquatic rocks, as limestone, sandstone, slate, &c., the undermost or lowest-lying strata are considered to be the oldest: therefore, on ascending a mountain, as that in *fig* 66., from *a* to *b*, we pass from the newer to the older rocks; but if from *c* to *b*, from the older to the newer. Formations were formerly more continuous than at present, portions only remaining of extensive deposits. The remaining portions occupying different situations have received particular names, according to the situations in which they occur. When in patches on the summits of hills, as represented at *a a a* in *fig.* 67., they are called *mountain-caps*. When in hollows, as at *b b*, they are named *upfillings*.

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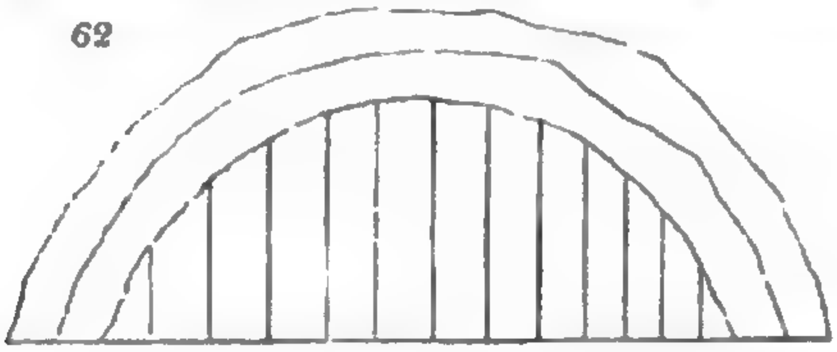

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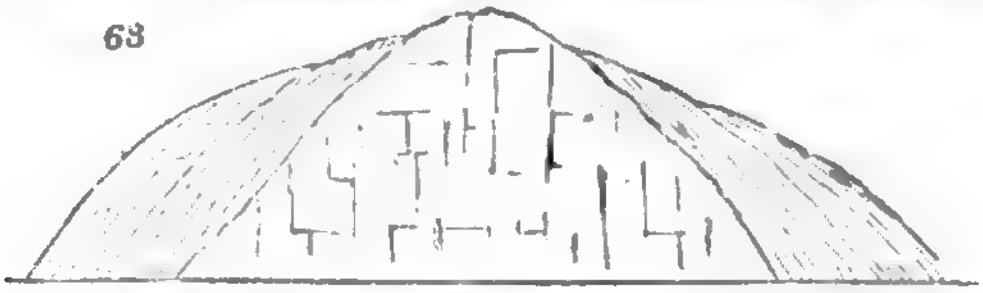

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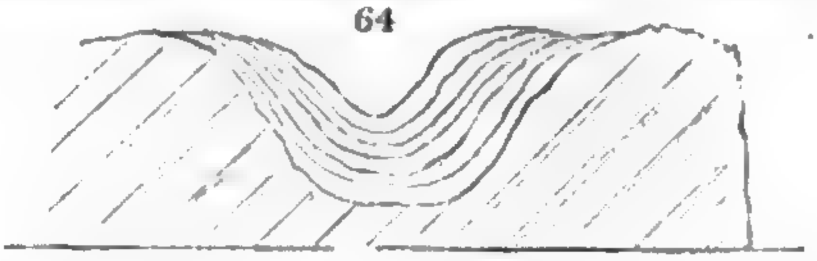

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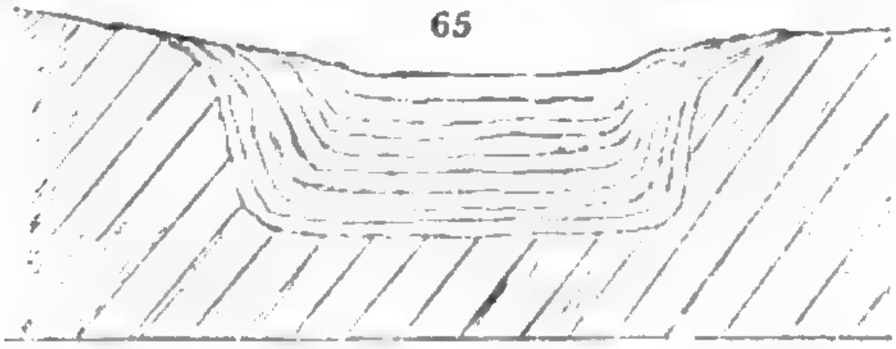

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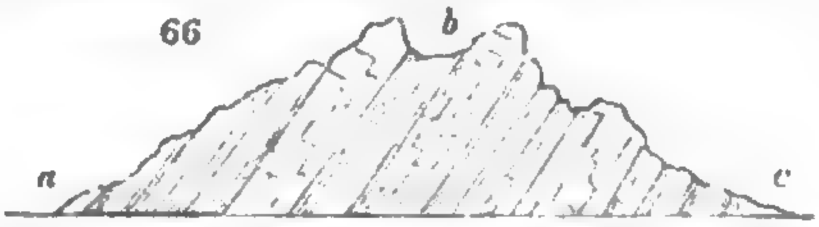

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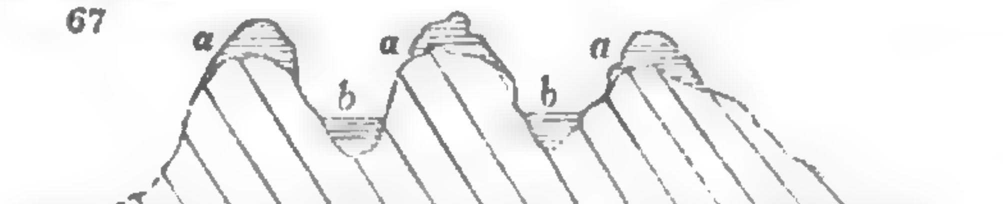
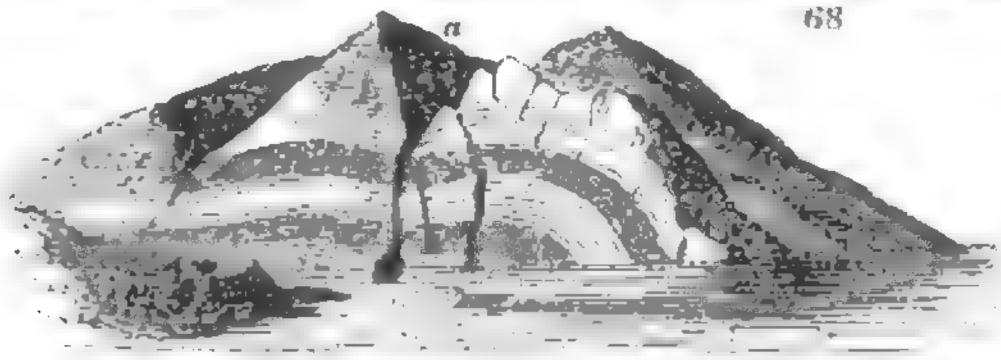


973. (5.) *Structure of veins.* These are tabular masses that intersect the strata and beds of the mountain or tract in which they occur. The tabular masses of trap or whinstone veins that cut across the strata of this country are popularly known under the name *whin dykes.* Veins, like strata, vary in position, being sometimes vertical, at other times not much inclined to the horizon; their direction, inclination, and dip are determined in the same manner as in strata. These intersecting masses vary in *breadth* from an inch or less to many fathoms; in *length*, from a few inches to several miles; and in *depth*, from a few inches to an unknown

and vast depth. Veins appear to have been originally open rents or fissures traversing the strata, which have been filled by an after-process with the mineral matters they now contain.



This being the case, we naturally expect to find the strata on the walls of veins exhibiting the same phenomena as occur in the walls of rents. When rents cut across strata, they sometimes, as in *fig.* 68., at *a*, *b*, produce no derangement; while, in other cases, the strata on the opposite sides of the rent do not correspond, owing to the strata on one side sinking down, as represented in *fig.* 69.: this derangement is called a *shift*, *slip*, or *fault*.

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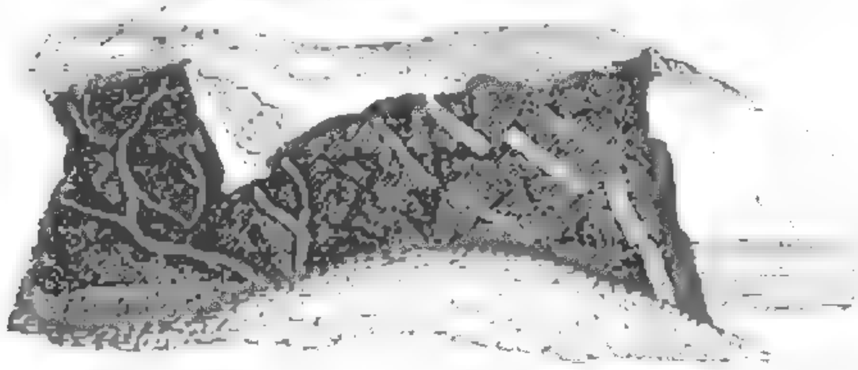

Such, then, are the different structures observable in the great masses of which the crust of the earth is composed. We next proceed to give —

Sect. VI. *An Account of the different Classes and Species of Rocks of which the Crust of the Earth is composed.*

974. *It was at one time a general opinion* that the formations of which the crust of the earth is composed were destitute of all regularity in distribution and in individual characters. Lehman, a German miner, was early convinced of a certain degree of order in their arrangement; and in his well known work, first stated their division into *Primitive* and *Secondary*: under the first including those destitute of fossil organic remains, while under the other he arranged all those containing petrifactions or fossil organic remains. The first, he said, were generally in highly inclined strata, the other in horizontal strata. Werner first distinctly characterised these two classes of rocks, and added to them other two classes, viz. the *Transition* and *Local*, or what are now called *Tertiary*. The whole rocks, from the oldest to the newest, were arranged by Werner under the following names and in the following order: — 1. Primitive. 2. Transition. 3. Secondary. 4. Local, the Tertiary of the present geology. 5. Alluvial. 6. Volcanic. This arrangement, more or less modified, still remains, being adopted by the principal geologists in Europe and America.

975. *Primitive rocks.* The rocks of this class lie under those of the succeeding classes. Countries in which they predominate are in general more rugged and lofty than those composed of rocks of the other classes; further, their cliffs are more extensive, their valleys narrower and deeper, and more uneven, than those in secondary countries. The strata of primitive mountains are very frequently highly inclined; a circumstance which contributes in an especial manner to the increase of the ruggedness and inequalities of the surface of primitive regions. The primitive strata in many countries maintain a wonderful uniformity of direction. Thus, in Scotland the general direction of the strata of primitive mountains is from N. E. to S. W.; and the same is nearly the case in the vast alpine regions of Norway, and in many of the lofty and widely extended primitive lands of other parts in Europe. The rocks of which primitive mountains and plains are composed are throughout of a crystalline nature, and present such characters as intimate their formation from a state of solution. These characters are the intermixture of the concretions of which these are composed at their line of junction, their mutual penetration of each other, their considerable lustre, pure colours, and translucency. Thus, in granite the concretions of felspar, quartz, and mica are joined together without any basis or ground; and at their line of juncture are either closely attached together, or are intermixed; and frequently branches of the one concretion shoot into the other, thus occasioning a mutual interlacement, as is observed in bodies that have been formed simultaneously and from a state of solution. These characters show that the concretions of granite (and the same applies to the concretions of limestone, gneiss, mica slate, and other rocks of the primitive class,) are of a crystalline nature, and have been formed at the same time. The strata are so arranged as to show that they are

crystalline formations. Primitive rocks contain no organic remains, hence are inferred to have been formed before animals and vegetables were called into existence. Primitive rocks abound very much in metalliferous minerals, and hitherto no metal has been met with which does not occur, either exclusively or occasionally, in this class of rocks. Tin, wolfram, and molybdena occur more frequently in these rocks than in other situations. Gold, silver, lead, copper, iron, cobalt, zinc, manganese, arsenic, and mercury, occur either disseminated, in beds, veins, or imbedded on various rocks of this class, and many primitive districts are characterised by the metalliferous deposits they contain.

976. *The most beautiful of all the productions of the mineral kingdom*, the gems, occur in great variety in primitive rocks. Nothing can be more beautiful than the *drussy cavities* met with in primitive mountains, whose walls are lined with pure and variously tinted and crystallised topaz, beryl, rock crystal, fluor spar, and calcareous spar; the gneiss, granite, and mica slate, with their *imbedded* crystals and grains of sapphire, chrysolite, and garnet; and the *veins* in granite, clay slate, and other primitive rocks, with their emeralds, axinites, and spinel rubies, afford to the mineralogist highly interesting combinations.

977. *Species of primitive rocks.* — The following are the species of rocks that form the primitive parts of the crust of the earth: — 1. Granite. 2. Syenite. 3. Protogine. 4. Trap. 5. Serpentine. 6. Porphyry. 7. Gneiss. 8. Mica slate. 9. Clay slate. 10. Quartz rock. 11. Limestone.

978. *Of these rocks one set*, consisting of certain granites, with trap, gneiss, mica slate, clay slate, quartz rock, and limestone, are said to be of *Neptunian* origin, that is, have been deposited from a liquid, probably water; the other set, including certain granites, with syenite, porphyry, protogine, serpentine and diallage rock, are named *Plutonic* or *igneous*, it being probable that they have been formed from a state of igneous solution. We shall describe first the Neptunian, and next the Plutonian primitive rocks.

SUBSECT. 1. *Neptunian Primitive Rocks.*

979. (1.) *Granite* is a granular compound of felspar, quartz, and mica. It occurs in beds and in imbedded masses, and also in included veins in gneiss, mica slate, and clay slate. From its intimate connection with these rocks, it is inferred to be a Neptunian deposite.

980. (2.) *Trap.* Under this name we include all those granular primitive rocks in which hornblende is the sole or predominant constituent part. These rocks sometimes appear arranged like the steps of a stair; hence the name trap, from the Swedish word *trappa*, a stair.

981. (3.) *Gneiss* is a granular slaty compound of felspar, mica, and quartz.

982. (4.) *Mica slate* is a slaty compound of mica and quartz. *Talc slate* and *micaceous talc rocks* may be arranged under this head.

983. (5.) *Clay slate* is a slaty rock, frequently entirely composed of minute scales of mica.

984. (6.) *Quartz rock.* This rock is almost entirely composed of quartz, either in granular concretions or in the compact form; and grains of felspar and scales of mica not unfrequently occur in it. When the felspar increases in quantity, the compound at length passes into granite. When the scales of mica increase and the felspar disappears, mica slate is formed.

985. (7.) *Limestone.* This rock has generally a white or grey colour, is composed of shining granular concretions, and is more or less translucent. It frequently contains scales of mica and grains of quartz, seldom or never grains and crystals of felspar.

SUBSECT. 2. *Plutonian or Ignigenous Primitive Rocks.*

986. (1.) *Granite.* The structure and composition of this granite is in general the same as that of the Neptunian kind already noticed. It differs from it in occurring in vast and often widely extended masses, which form the central parts of mountain groups, and appear to have come from below after the deposition of the Neptunian rocks that rest upon them. The highly inclined position of the primitive strata is considered to have been occasioned by this granite, with its syenites and porphyries.

987. (2.) *Syenite* is a compound of felspar, hornblende, and quartz; in short, it is a granite in which the mica is replaced by hornblende. Some of the primitive traps belong to this head.

988. (3.) *Porphyry* is a rock with a felspar basis, including grains and crystals of felspar and quartz, and sometimes scales of mica. This porphyry is a mere modification of granite.

989. (4.) *Protogine* is a granular compound of felspar, quartz, and chlorite. It differs from granite in the mica being replaced by chlorite.

990. (5.) *Serpentine* is a simple green-coloured rock, with a compact fracture, feeble translucency on the edges, which yields readily to the knife, and feels greasy.

991. (6.) *Diallage rock* is a compound of felspar and diallage. It belongs probably to the primitive trap series.

SECT. VII. *Transition Rocks.*

992. *The rocks of this class*, in the regular succession, rest immediately upon those of the

primitive class. They generally in this country (Scotland) occupy a higher level than the secondary, but a lower one than the primitive formations. Most of the rocks are distinctly stratified, and the strata are frequently vertical, and, like those of the primitive class, exhibit the same general direction throughout great tracts of country. Some of the deposits are of a chemical, others of a mechanical, nature; limestone is an example of a chemical, greywacke of a mechanical, deposite. They are negatively distinguished from primitive rocks by the absence of fossil organic remains, and the positive characters are drawn from the occurrence of certain fossil crustaceous animals, shells, and corals. The extensive deposits of limestone, particularly of the variegated kinds so highly prized for ornamental purposes, which they contain; the fine granites and porphyries which they afford; and the ores of lead and copper distributed among them, are proofs of their importance in the arts. In this class there are also Neptunian and Plutonian rocks. The *Neptunian* are the following, viz. 1. Greywacke. 2. Transition clay slate. 3. Gneiss and mica slate. 4. Quartz rock. 5. Red sandstone. 6. Limestone. 7. Glance coal. The *Plutonian* are, 1. Granite. 2. Syenite. 3. Porphyry. 4. Trap. 5. Serpentine.

Subsect. 1. *Neptunian Transition Rocks.*

993. (1). *Greywacke* is a conglomerated rock, having a basis of clay slate, in which fragments of various primitive rocks, as clay slate, quartz rock, &c. occur imbedded. When the imbedded fragments become very small, and the quantity of the basis increases, the rock acquires a slaty fracture, and is named *greywacke slate*.

994. (2.) *Transition clay slate.* This is the rock known under the name *roofing slate.* It sometimes contains trilobites.

995. (3.) *Gneiss and mica slate.* These have the same general aspect as the varieties met with in primitive regions.

996. (4.) *Quartz rock.* This rock very much resembles the kinds met with in primitive mountains.

997. (5.) *Limestone.* It frequently occurs with less lustre and translucency than primitive limestones, and often exhibits in the same bed various tints and shades of beautiful colours. It is frequently traversed by veins of calcareous spar. Some varieties are conglomerated, forming the *brecciated marble* of artists; and others contain fossil shells and corals, and also the characteristic *trilobite.*

998. (6.) *Glance coal, or Anthracite.* Beds of this coal, known by its metallic lustre, and burning without flame or smoke, are met with in transition districts.

Subsect. 2. *Plutonian Transition Rocks.*

999. (1.) *Granite.* This rock does not differ materially from that of the primitive period. It is principally distinguished by its being intermingled with greywacke and other transition rocks.

1000. (2.) *Syenite.* This rock, which has the same mineralogical characters with the primitive varieties, very generally contains crystals of sphene.

1001. (3.) *Porphyry.* This porphyry has sometimes a basis of felspar, sometimes of clay stone, and as usual contains imbedded grains and crystals of felspar. It occurs either alone, or associated with syenite and trap, forming mountains, and even ranges of mountains.

1002. (4.) *Trap.* In this as in the primitive trap, the sole and always the predominating mineral is hornblende. It passes into syenite.

1003. (5.) *Serpentine.* This rock does not differ materially from the primitive rock of the same name: geognostically it is distinguished from it by its alternating with, and sometimes traversing in the form of veins, greywacke and other characteristic transition rocks.

Sect. VIII. *Secondary Rocks.*

1004. This very interesting class of rocks rests, in the regular succession, immediately upon those of the transition class. In this country they generally occupy a lower level than the transition formations, and the districts where they prevail have also a different external aspect or physiognomy. Much of the mineral matter of which they are composed appears to have been deposited from a state of mechanical suspension, a circumstance which may be considered as distinguishing them, in some measure, from the transition class, where chemical deposits prevail over those of a mechanical nature. They abound in fossil organic remains, and it is here that for the first time we meet with remains of vertebrated animals, as *lacertæ* and other species of the same general description. *Coal,* which occurs but in small quantity in transition deposites, is profusely distributed among secondary formations. Of ores, by far the most abundant, and at the same time the most important in an economical view, are those of *iron* and *lead*: of these the iron (it is the common clay ironstone, the aluminous carbonate of iron,) is the most abundant and most widely distributed. In this, as in the preceding class, there are Neptunian and Plutonian rocks. The Neptunian rocks are the following: — 1. Sandstone. 2. Slate. 3. Limestone. 4. Gypsum. 5. Coal. The Plutonian are, 1. Granite. 2. Porphyry. 3. Trap.

Subsect. 1. *Neptunian Secondary Rocks.*

1005. *In the primitive and transition classes* geologists have not hitherto observed any very determinate arrangement among the Neptunian deposits; whereas in the present class a determinate order has been discovered throughout the whole series. In our sketch we shall follow the order of succession, beginning with the oldest, and finishing our account with a description of the newest formation. The whole Neptunian series is divided into formations of sandstone and formations of limestone; the other members of the series, as the slate, gypsum, coal, and ironstone, occurring subordinate to these.

1006. *First secondary formation;* or the *old red sandstone.* This formation is a sandstone of a red colour, and, being the oldest of the sandstones, is named the *old red sandstone.* It is composed of particles of quartz, with occasional scales of mica and fragments of felspar, held together by an iron shot basis or ground. Sometimes it is associated with a *conglomerate* made up of fragments of transition and primitive rocks.

1007. *Second secondary formation,* or *mountain limestone,* or *metalliferous limestone,* or *carboniferous limestone* of geologists. This deposit rests, generally conformably, sometimes also unconformably, on the old red sandstone. It is distinctly stratified, and the strata are frequently more or less inclined. Its colours are generally grey; the fracture is compact. Sometimes it has a granular foliated structure, particularly where it occurs in contact with trap rocks. Some varieties, viz. those named *lucullite,* have a black colour. It contains fossil organic remains of animals of various descriptions. Of these the most characteristic are genera of the *trilobite* tribe. It is much to be wished that those naturalists who have the opportunity would institute a rigid comparison of the mountain limestone, or the limestone immediately below the great coal formation, and the transition limestone which alternates with greywacke.

1008. *Third secondary formation;* or the *second secondary sandstone,* or the *great coal formation.* This very important deposit is a compound formation, therefore consists of different rocks. Of these rocks the predominating one is sandstone. The rocks of the formation are the following: — 1. Sandstone. 2. Slate. 3. Clay. 4. Limestone. 5. Coal. 6. Ironstone. 1. *Sandstone.* The general colours are white and grey; sometimes also it is reddish, and then it much resembles the old red sandstone. Some varieties are entirely composed of particles of quartz, held together by a very inconsiderable basis or ground; others contain besides quartz also felspar and mica; these are by some geologists named *arkose.* It frequently contains coaly matter, and casts and impressions of plants. — 2. *Slate.* Of the slate there are two kinds, named slate clay and bituminous shale, both of which are mere modifications of clay with the slaty structure. These also contain fossil organic remains. — 3. *Clay.* This is compact clay without the slaty structure, and from its use in the arts is named fire clay. — 4. *Limestone.* This limestone very much resembles the mountain limestone which lies below the coal; but hitherto no trilobites have been found in it. It alternates in beds with the other rocks of this formation. Some geologists refer it to the mountain limestone, and consequently that limestone to the coal formation; an opinion which may be correct. — 5. *Coal.* The coal in this formation occurs in beds that alternate with the slates, sandstone, and limestones. The coal is bituminous or black coal. — 6. *Ironstone.* This ironstone is the common grey clay ironstone of mineralogists. It is an aluminous carbonate of iron, and is the species of ironstone which affords most of the iron manufactured in this island. It occurs in beds or imbedded, and most frequently in the slate of this formation.

1009. *Fourth secondary formation;* the *second secondary limestone;* the *magnesian and alpine limestone* of authors. This formation, in the regular succession, rests immediately upon the coal formation. It contains several varieties of limestone. One of these, which frequently occupies the lowest part of the deposit, has a brownish black colour, a thick slaty fracture, and emits an animal bituminous smell, and is named *bituminous marl slate.* Another variety has a yellowish grey, or even at times an ochre yellow colour, with a compact or small granular foliated structure, with a low degree of lustre, and is named *magnesian limestone.* Another variety has a brownish or yellowish colour, is sometimes compact, sometimes granular or cavernous, impregnated with sparry iron, forms the upper part of the deposit, and is called *calcaire ferrifère.* When this variety becomes charged with bitumen and cavernous, it is named by German miners *rauchwacke.* It abounds in the fossil shell named *Productus aculeatus.* This formation does not abound in fossil organic remains. No true ferns, but fossil *fuci* and *zosteræ,* occur in it. Remains of the *monitor,* and it is said also of the *crocodile,* have been met with in it. Fishes of the genus chætodon and of other tribes, and numerous remains of shells and corals, occur more or less frequently in different varieties of the limestone. The *trilobite* tribe, so abundant in the transition period, and also in the first secondary limestone, occur here along with *orthoceratites.* It is the species named *trilobites bituminosus.* *Entrochi* and *pentacrini* of great size also occur in it. The shells are not distributed throughout the whole mass of the beds, but rather occur in particular parts. The following are the shells: —

Orthoceratites, very rare.
Ammonites gibbosus.
Terebratula paradoxa.
Terebratula elongata.
Spirifer alatus.
Encrinus racemosus.
Productus rugosus.
Mytilus rostratus.
Terebratula ovata, lacunosa, trigonella.

1010. *Fifth secondary formation;* the *third secondary sandstone*, or *variegated sandstone*, or *new red sandstone*. In this formation, besides the sandstone, there are, when the deposit is complete, also beds of marl, with gypsum and rock salt. The *inferior part* of this formation is a red coloured sandstone conglomerate, which rarely contains subordinate beds of dolomite, but no fossil organic remains. Above this reposes what may be called the *middle part* of the deposit, which is the variegated sandstone, so named because it sometimes exhibits different colours, principally red, with yellow and grey blotches. It is composed of fine grains of quartz, with a little mica, and sometimes felspar, held together by a base of ferruginous clay. It contains but few organic remains, principally of vegetables. The *upper part* of the deposit is generally composed of beds of a clayey marl, always more or less slaty, and generally alternating in the lower part with beds of the sandstone. Its colours are red, grey, and yellow; sometimes it is variegated in the same manner as the sandstone with which it alternates. It contains subordinate beds of *gypsum* and *rock salt*, and sometimes also beds of *dolomite*. It contains littoral shells and bones of *saurian* animals.

1011. *Sixth secondary formation;* the *shell limestone*, or *muschel kalkstein*. This interesting deposit, (the only formation of the secondary class wanting in Britain,) in the regular succession, rests immediately upon the variegated or new red sandstone formation. This limestone is of a grey, yellow, or reddish tint of colour. — It is compact, but the fracture surfaces exhibit numerous shining facets from animal fossil remains. Beds of marl, which are sometimes oolitic, alternate with it. It often abounds in well-preserved fossil shells; hence the name shell limestone. It some times contains *gypsum* and *rock salt*. It contains besides numerous species of fossil shells, often very well preserved, bones of great saurian animals, and impressions of fuci and ferns. Corals and echinites are rare, but entrochites are sometimes so abundant that in some parts of Germany it is named trochital limestone (trochiten kalk). The Encrinites liliiformis, very common in this formation, is considered to be characteristic of it. Of the fossil shells, the *Ammonites nodosus* and *Avicula socialis* are considered as characteristic of the shell limestone.

1012. *Seventh secondary formation;* the *third secondary sandstone, red ground, marnes irisées, Keuper.* This deposit is principally composed of sandstone, marls, and dolomites with *salt* and *gypsum*. It has been divided into the following four groups: — 1. Keuper salt and gypsum. 2. Inferior keuper. 3. Variegated marls. 4. Upper or superior keuper. — The *salt* and *gypsum*, with their marls and beds of saline clay, the most important members of this formation in an economical point of view, occupy the lowest part of the series. Several extensive salt-mines occupy this situation. — The *inferior keuper*, that which rests on the gypsum and salt, is a sandstone which is red in the upper strata, but gradually passes into grey in the lower. This sandstone sometimes alternates with marls, slate clay, and dolomites, and contains beds of gypsum and coal. The slate clay contains bivalve shells, a species of *Ophiura*, and several species of *Equisetum*, *Filices*, and also some *Cycadaceæ*. — The *variegated marls* (marnes irisées), resting upon the inferior keuper, exhibit alternate stripes of white, green, violet, red, grey, and blue; they are generally compact or slaty, and soft. They contain few or no organic remains, very little gypsum, and no rock salt. — The *upper keuper* is sandstone of a grey, yellow, or variegated colour. It is composed principally of grains of quartz, generally but loosely held together, so that the mass can frequently be pressed into grains between the fingers. Contains some traces of coal, and a few fossil shells and impressions of plants.

1013. *Eighth secondary formation*, or *fourth secondary limestone*, contains the *lias and oolite limestones* and *Jura limestone* of authors. This, which is one of the most extensive and important of the secondary formations, may be divided into the following members; proceeding, as usual, from below upwards: — 1. Lias. 2. Oolite. 3. Oxford clay. 4. Coral rag. 5. Kimmeridge clay. 6. Portland oolite.

(1). *Lias.* Lias is a provincial name applied to limestone shales, and marl stones, and some sandstones that occur along with them. The marls are sometimes very bituminous, and contain beds of lignite or brown coal, and also fossil shells, and occasionally beds of gypsum. The fossil vegetables of the lias are lignites, fossil wood, sometimes siliceous impressions of ferns, cycadaceæ, and fuci. The animal remains are numerous and interesting. It is in this deposit that bones and skeletons of extinct tribes of saurian animals are met with; such as the genera *geosaurus*, *ichthyosaurus*, and *plesiosaurus*. Different species of *fishes* and of *crabs* also occur. The lias contains an immense quantity of fossil shells, of

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which the predominating one is the *Gryphæa arcuata;* hence the marl stones or limestones of the lias have been named gryphite limestones. Besides, the following may also be mentioned as characteristic fossils, viz. *Ammonites Bucklandii, Plagiostoma gigantea, Belemnites paxillosus,* and *Belemnites digitalis.*

(2.) *Oolite.* The oolite is divided into inferior oolite and great oolite. *Inferior oolite.* This is a limestone composed of round granular concretions, resembling the roe of fishes; hence the name oolite, or roestone, given to it. It is associated with compact limestones and marls, and sometimes it abounds in fossil organic remains. It contains, as at Brora in Sutherland, beds of coal. The fossil vegetables, which are numerous and often well preserved, are of the fern and cycas tribes. It also contains bones and skeletons of great extent, saurian animals, also tortoises and crabs. Species of the tribe echinus, which makes its first appearance in the eighth secondary formation, are not uncommon; the crinoid family has also representatives here, so also have several genera of the coral tribe. The characteristic fossil shells of the inferior oolite are the *Belemnites aalensis* and *Bel. sulcatus.* — *Great oolite.* This is a thick deposit, composed chiefly of an oolitic limestone. It contains beds of dolomite, and sometimes rests upon beds of *fullers' earth.* Resting upon this oolite is the *Bradford clay;* next the *forest marble,* to which belongs the *lithographic limestones* of Bavaria. This forest marble, which includes also the *Stonesfield slate,* contains remains of *flying reptiles, terrestrial mammifera? saurian animals, insects, marine shells,* and *vegetables.* The upper member of this great oolite series is named *cornbrash,* which is a bluish and whitish compact limestone with marl.

(3.) *Oxford clay* and *Kelloway rock.* The Oxford clay is a bluish argillaceous marl, which becomes brown on exposure to the air. It contains subordinate beds of calcareous marl, and also the calcareous clayey nodules, named *septaria.* Underneath is the Kelloway rock, a particular kind of calcareous rock. The marls sometimes contain bones of the ichthyosaurus. The fossil shells are pretty numerous, but our limited space will not allow an enumeration of them.

(4.) *Coral rag* is a loosely aggregated calcareous rock, abounding in different species of madrepores; the rock is sometimes marly, and of a grey colour. Below the coral rag is a bed of ferruginous siliceous sand, containing a calcareous grit or sandstone, and siliceo-calcareous concretions. It is in this part that the fossil organic remains are most abundant and most perfectly preserved. Fossil *Cycadaceæ* occur; also, as in the *calcareous grit,* bones of saurian animals. Nearly all the *madrepores* belong to the genera *Astrea, Caryophyllea,* and *Meandrina. Echinites* of the genera *Cidaris* and *Clypeus* are met with. The fossil shells have not been thoroughly examined.

(5.) *Kimmeridge clay.* The lower beds of the preceding deposit alternate with a blue or yellowish grey marl, which is more or less slaty, and contains beds of a very bituminous slate, and even true lignite or brown coal, sometimes forming beds of considerable thickness. An ichthyosaurus different from that in the lias is found here; also remains of the plesiosaurus, and bones of whales, it is said, have been found in the Kimmeridge clay; also fine impressions of fishes. *Serpula,* also species of *cidaris* and *asterias,* occur in this formation. Many species of different genera of marine shells are enumerated as occurring in it, particularly *ammonites, belemnites,* &c. It would appear that the prevailing fossil shells in the whole oolite formation are *ammonites* and *belemnites.* The belemnites do not occur lower down in the series than the lias.

(6.) *Portland oolite.* This is a limestone which is frequently loosely aggregated, sometimes oolitic, forming the last deposit of secondary limestone with this structure, none of the superior or newer secondary limestones possessing it. It contains petrified monocotyledonous and dicotyledonous plants. Remains of large saurian animals, and also of fishes, are met with in it. *Ammonites, trigonia,* and *gryphites,* are abundant. The most characteristic shells are the *Ammonites triplicatus* and the *Pecten lamellosus.* A *cidaris* and *madrepore* have also been discovered in it.

1014. *Ninth secondary formation. Wealden clay and Purbeck stone. This remarkable formation* abounds in fresh water shells and land plants; but, in England at least, contains no marine species; hence it is an example of a fresh water deposite between two marine deposites, viz. the oolite and chalk. It is probable, however, that future observations will prove that even in England it contains marine shells. There are two members of this formation, viz. the Weald clay, and Purbeck stone.

(1.) *Weald clay.* This is a bluish or greyish coloured clay, containing subordinate beds of argillaceous limestone. The limestone abounds in shells belonging to the fresh-water genus *paludinæ;* also a great quantity of the crustaceous tribe named *cypris. Brown iron ore,* beds of *lignite,* and beds of sandstone much resembling some of the varieties of the coal formation, also occur in it. It contains impressions of ferns, but of different species from those in the coal formation.

(2.) *Purbeck stone* is a clayey limestone, which alternates with marls. It abounds in *paludinæ,* also contains beautiful impressions of fresh-water fishes, and of tortoises and crocodiles.

1015. *Tenth secondary formation, or chalk formation. This formation* is well characterised by its organic remains and flints. Five beds occur in this formation; viz. 1. *Lower green sand.* 2. *Gault clay;* 3. *Upper green sand;* 4. *Tuffaceous chalk;* 5. *Chalk.*

(1.) *Lower green sand.* This sand does not differ from the upper; but the fossil organic remains are less abundant. The shells are ammonites, terebratulites, trigonia, &c. In this island the *trigonia alæformis* is considered as characteristic of this lower green sand.

(2.) *Gault.* The green sand is divided into two by a very thick bed of bluish grey clay, known in many of the districts where it occurs under the name of gault. It contains *ammonites* and other shells, particularly the *Inoceramus sulcatus.*

(3.) *Upper green sand.* The lower part of the tuffaceous chalk, containing a prodigious quantity of fossils and of iron pyrites, becomes more and more charged with green points, and we reach a mass composed of a green sand more or less marly, and often a green coloured calcareous sandstone. Fragments of silicified wood, and also parts of shells penetrated with silica; teeth of fishes, but parts of no other vertebrated animals, occur in it. The fossil shells are very numerous: species of the genera *cidaris* and *spatangus* are met with, and also corals of various kinds.

(4.) *Tuffaceous chalk,* which is generally composed of a cretaceous matter, clay and sand. It is softer than chalk, and towards the lower part of the mass the clay predominates, and slaty clay marl is found. When the sand predominates, a loosely aggregate greyish sandstone is formed. No flints occur in this tuffaceous chalk, their place being taken by chert. Fossil vegetables, even lignite, are found in it. Fossils are most abundant in the lower part of this deposit. The chief are *belemnites, ammonites, nautilites, hamites, baculites, turrilites, echinites,* with *madrepores* and *encrinites.*

(5.) *The uppermost* is the *chalk* properly so called, of which there are two principal kinds, viz. the *upper* or soft or common chalk, which abounds in flints in beds, veins, and imbedded masses; and the lower or hard chalk, in which flint is more rarely met with. These chalks also contain iron pyrites and calcareous spar. The fossils are *vertebræ* and *teeth of fishes;* numerous *echinites* and *terebratulites* occur throughout the whole mass; and in the descending order, *ammonites* and *belemnites* first make their appearance in the lower part of the chalk.

Subsect. 2. *Plutonian or Igneous Secondary Rocks.*

1016. *Igneous rocks* appear, at different determinate periods, to have broken in among the Neptunian rocks of this class, and also to have forced up through them older rocks of various descriptions, forming mountains, mountain ranges, and groups of mountains. The igneous rocks are porphyry, trap, and sometimes also granite and syenite.

Sect. IV. *Tertiary Rocks.*

Subsect. 1. *Neptunian Tertiary Rocks.*

1017. *The rocks of this class were first pointed out by Werner;* but it was not until the publication of the excellent work of Cuvier and Brongniart on the geology of Paris that their importance was felt and acknowledged by geologists. In the regular succession they rest immediately upon the chalk or uppermost member of the secondary class. Although the rocks are looser in texture than those of the secondary class, yet among them beds occur equally compact with those of the secondary class. They abound in fossil remains of the animal and vegetable kingdoms; although many species are different from the present ones, many of the genera are the same. The following are the Neptunian rocks in the order of their occurrence, from below upwards: — 1. Plastic clay. 2. Calcaire grossier, or London clay. 3. Gypsum with bones. 4. Superior marine sandstones and sands, sandstone of Fontainebleau. 5. Upper fresh-water formation.

1018. (1.) *Plastic clay.* This clay is frequently divided into two beds by a bed of sand; the upper bed is more or less mixed with the sand, the lower bed is pure, kneads completely with water, and is infusible in the porcelain furnace. The upper bed abounds in fossil remains; the lower bed contains none. *Jet* and *brown coal,* which are fossilised remains of dicotyledonous and monocotyledonous plants, occur in it. Remains of the *palm tribe* are very frequent; but ferns have not been met with. *Insects* well preserved in *amber* are also met with. The fossil shells are partly fresh-water, partly marine, which are sometimes separate, sometimes mixed together.

1019. (2.) *Calcaire grossier, or à cerites* of French authors, the *London clay* of English geologists. This deposit is sometimes separated from the plastic clay by a bed of sand, which occasionally contains pure and solid sandstone, but no petrifactions. Resting upon this sand is a bed of shelly limestone, abounding in green coloured grains of silicate of iron, and which sometimes passes into a kind of sand; it is in this limestone that the *nummulite* shells are so abundant, and which are mixed with corals and numerous shells in a high state of preservation. Immediately above this lies the great bed of true calcaire grossier. It is so compact, that in the Paris basin, where it abounds, it is used extensively as a building stone. It is the common building stone in Paris. It contains marine shells well preserved, and also remains of plants. In some districts it is divided into two beds by an interposed bed of *lignite* or *brown coal*, which is intermixed with fresh-water shells. It is interesting to notice, that here a limestone abounding in marine shells is separated into two beds by an interposed mass of coal, filled with fresh-water shells. Around London there is a great deposit of clay abounding in the same shells as occur in the calcaire grossier; hence, for this and other reasons, it is considered as the equivalent of the Paris calcaire grossier. The uppermost part of this formation consists of sand, hornstone, and sandstone, with alternating beds of limestone. It sometimes abounds in *cerites.*

1020. (3.) *Gypsum with bones.* This deposit may be considered as consisting of three stages; a lower, a middle, and an upper. The *lower part*, or that which rests immediately upon the calcaire grossier, consists of grey and white limestone, more or less compact, penetrated in all directions by silica. This silica, when it finds its way into cavities in the limestone, lines them with chalcedony or with quartz crystals. It contains species of the fresh-water genera *Lymnea* and *Planorbis.* The *middle part* is composed of gypsum, which alternates with layers of marl. It is in this gypsum that remains of the genera *Palæotherium, Anaplotherium,* of various carnivora, also different species of birds and of fresh-water fishes, likewise the *Tronex, Testudo,* and *Crocodilus,* are met with: and of the shells, the most characteristic is the *Cyclostoma mumia.* Here also in the marls occurs that curious kind of opal named *menilite;* a mineral which in some degree may be considered as characterising this gypsum deposit. In this gypsum is situated the salt of Wielickza. The *upper part* consists of marls, with fresh-water shells of the lymnea and planorbis tribes, remains of fishes, and frequently remains of the palm tribe.

1021. (4). *Superior marine sands and sandstones.* The *lower part* of this deposit is a green-coloured argillaceous marl with *celestine,* upon which there are marls containing fossil *oysters.* The *middle part* consists of micaceous sands, and sandstones without shells. The *upper part* is sandstone with marine shells.

1022. (5.) *Upper fresh-water formation.* The *lower part* of this deposit consists of sands, marls, and vesicular quartz or millstone (meulière), without shells. The millstone occurs rarely in beds, usually in angular masses in the marls and sands. The *upper part* consists of calcareous marls, limestones, and millstones, containing fresh-water shells. This formation contains of fossil plants, species of *Exogenites, Lycopodites, Poacites, Chara,* and *Nymphea.* It is further characterised by the numerous fossil fresh-water shells of the same genera as occur at present in the neighbourhood, but of different species. The genera are, *Lymnæa, Planorbis, Potamides, Cyclostoma, Helix,* and *Bulimus.* This *gyrogonites* of Lamarck, which are small round grooved bodies, are not animal remains, but seeds of the plant *chara.*

1023. *M. Desnoyers describes a marine deposit met with in the basin of the Loire,* as resting upon the upper fresh-water formation. The deposit appears to be the same as the *crag* of English geologists, and has been lately met with also in Provence.

Subsect. 2. *Plutonian or Ignigenous Tertiary Rocks.*

1024. *The rough felspathose porphyries,* known under the name *trachyte,* which occur in vast abundance in many countries, appear to be of the same age with the tertiary rocks. *Basalt,* a greyish-black compound of augite and felspar, in which the minerals are not distinguishable by the naked eye; *greenstone* or *dolerite,* a compound, but of a green colour, in which the augite and felspar grains are distinguishable; *wacke,* which is a clayey greenstone; *amygdaloid,* which is greenstone or wacke with the amygdaloidal structure; and *clinkstone* or *phonolite,* which is a slaty felspar, are found associated with tertiary rocks. Some classes of mountains, as Mont Blanc, and the Scandinavian ranges, are conjectured to have been upraised partly during and partly after the deposition of the tertiary rocks.

Sect. X. *Alluvial Rocks.*

1025. Under this head we include the various *calcoreous deposits,* peat, clays, loams, sands, gravels, and rolled masses or boulders, which, in the regular succession, rest upon the newest or uppermost rocks of the tertiary class. These deposits have been variously arranged according to their supposed relative antiquity: probably they may be arranged with sufficient distinctness, according to their situation, in the following manner: — 1. *Littoral* or sea-coast *alluvium,* as downs. 2. *River alluvium,* that met with on the bottom and sides of rivers. 3. *Lake alluvium,* that on the sides, &c. of lakes. 4. *Spring alluvium,* that formed by springs, as *calc tuffa, calc sinter, travertine, siliceous sinter,* &c. 5. *Rain alluvium,* that deposited by and moved by rain water. 6. *Plutonian alluvium,* that formed and distributed over tracts of country by the upraising of chains of mountains.

1026. *In this alluvium,* remains of vegetables and animals are of frequent occurrence. The vegetables, as far as is known at present, are either foreign species or species identical with those of the country where their remains are found. In the older or Plutonian alluvia, neither remains of human industry nor bones of the human species have been found; but numerous bones and skeletons of land quadrupeds.

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1027. *These quadrupeds are either of extinct species of living genera,* as the elephant, rhinoceros, hippopotamus, tapir, bear, and lion; or of living species, as the beaver, rat, ox, deer, sheep, and dog; or species of extinct genera, as mastodon and megatherium.

Sect. VI. *Volcanic Rocks.*

1028. *These are rocky masses which owe their origin to volcanoes.* They are divided into old and new, or ancient and modern, or extinct and active.

1029. *Ancient volcanic rocks.* Under this division we include those volcanic rocks connected with volcanoes, which have not been in a state of activity since the commencement of our history. These rocks very much resemble basalt, and have been sent from the interior of the earth in the form of streams or currents. In almost every country where they occur, we find *craters* from whence they have streamed. These dark-coloured basalticlike rocks, are accompanied with puzzolana and scoriæ, very much resembling those of active volcanoes. Sometimes lighter coloured lavas, named *leucostine,* and which resemble trachyte, occur along with the darker varieties.

1030. *Modern volcanic rocks.* These, as already enumerated and described at p. 204, 205., are lavas, scoriæ, ashes, sands, &c.

BOOK III.

GENERAL PRINCIPLES OF GEOGRAPHY UNDER ITS RELATION TO ORGANISED AND LIVING BEINGS.

1031. *In considering the extensive range of subjects* which this book embraces, we have arranged them as they successively rise above the scale of inanimate nature.

1032. The *first* chapter treats of geography, in its relation to botany, or to the distribution of plants over the surface of the globe.

1033. The *second* chapter considers it in its relation to zoology, or the distribution of animals, including man viewed simply as to his physical condition.

1034. The *third* chapter views geography in reference to human society, to man in his political, moral, and social condition.

Chap. I.

GEOGRAPHY CONSIDERED IN RELATION TO THE DISTRIBUTION OF PLANTS.

1035. *In proportion as our knowledge increases relative to any of the sciences,* we find a more intimate relation and connection between them. Formerly geography was only studied as it regarded the surface of the earth itself, its figure, the constitution of the several regions and countries, their boundaries, &c.; and botany has had too many votaries who devoted their attention almost exclusively to determining the generic and specific names of plants, neglecting the more beautiful and philosophical parts of the science. Of late years, indeed, our systems of geography have, in some instances, contained a meagre catalogue of the vegetable productions of the different regions, but nothing that could give the least information with respect to the laws of their general distribution: and now that some of the most able naturalists and philosophers of our day have, by their labours, thrown new light upon this interesting subject, we should feel that our work would ill merit the character which we hope it may obtain with the public, were we to omit a notice of it. At the same time, the limits of our publication will permit us to give only a sketch of what indeed must be considered as still in its infancy; and those who have most devoted their attention to botanical geography will most readily join with Mirbel in declaring that "we are even yet far from having arrived at that period when it will be possible to write a good history of this subject. What we do know of climates and of vegetation, is little, in comparison with what we have yet to learn; and hence it would be rash in us to form an estimate of what we do not know by what we are already acquainted with. The surest way is to confine ourselves to collecting and arranging facts, leaving, to those who may follow us, the charge of discovering and developing the theory."

1036. *To exhibit the present state of botanical science, we shall endeavour to put together the more interesting facts,* collected principally from the writings of our most authentic travellers and naturalists; and, devoting this memoir to vegetable geography in its more enlarged and general sense, shall afterwards, in the different countries, under the head of botany, point out some of the most striking and important productions of their respective regions. As the nature of the present work does not permit us to enter minutely into the subject in all its bearings, we shall give a popular view of it, as little encumbered as possible with technical terms.

1037. *That certain vegetables are confined to certain districts or limits,* depending in a great measure, but by no means altogether, upon soil and climate, must be familiar to the most careless enquirer into the works of nature. In regard to climate, the two extremes are represented by the country within the tropics, and that which approaches the poles. In the one, nature exhibits herself in her most lovely and her most magnificent and exuberant form, and the earth is covered with vegetables which indicate a never-ending summer; whilst in the others a brief summer, a few days of freedom from frost and snow, call into existence a thinly scattered vegetation of small and stunted flowering plants, which scarcely rise above the mosses and lichens that surround them; and the intermediate zones will be found to be occupied by other races, gradually, however, increasing in difference as they approach to one or other of these extremities. The same gradation exists, we know, upon a lofty mountain situated within the tropics. At its base may be seen those plants which are peculiar to the tropics; and the beauty, the grandeur and perpetual verdure will gradually diminish in the ascent, until a soil and climate be found on the higher summits similar in respect to climate and productions to those in the vicinity of the poles.

1038. *In regard to climate and vegetable productions,* our globe has been aptly compared, in its two hemispheres, to two immense mountains, placed base to base, the circumference of which at the foot is constituted by the equator, and the two poles represent the summits, crowned with perpetual glaciers.

1039. *That almost every country possesses a vegetation peculiar to itself,* is also well known; and this is particularly the case with countries whose natural boundaries are formed by mountains, seas, or deserts, even in the same or different degrees of latitude. Europe exhibits a widely different class of plants from that part of North America which lies immediately opposite to it. The botany of Southern Africa has little or no resemblance to that of the same parallels in South America, or to that of New Holland. Nay, in our own country of Britain, we have some plants that are confined to the eastern and some to the western side of the kingdom. In Scotland, the *Tutsane* and the *Isle of Man Cabbage* are never found but on the western side of the country, and the same is the case with the *pale Butterwort* (Pinguicula Lusitanica), both in England and Scotland. Nature has constituted the barrier, for by art they may be cultivated as well on one as the other side of the island.

1040. *Botanical geography is constituted* by considering plants in relation to their *habitation,* region, or the country in which they grow, and in regard to their locality or particular *station,* and forming a collection of facts, deduced from these circumstances, from which general laws may be derived: nor is this a science destitute of advantages; such, we mean, as are immediately manifest; for there are few, in the present age, who will be disposed to deny that the study of the works of nature, like every thing that can exalt and refine the mind, is highly deserving of our attention. Vegetable geography is intimately connected with horticulture. Our gardens will be better stocked with vegetables and fruits, our forests with trees, our fields with corn, and our pastures with grasses, in proportion to our knowledge of the relation of plants with the exterior elements. Nay, Schouw has justly observed, that a good chart of the distribution of the vegetable forms over any given country will afford a far more correct idea of the productive strength of that country than many statistical tables. The systematic botanist may thence derive benefit; for by it he will be better able to determine whether certain kinds of plants are species or varieties; he will consider that a different local situation produces different effects upon them; that those growing in wet places are less hairy or downy than those growing in dry; that at great elevations plants are more dwarf in their stature, with fewer leaves, but with larger and more brilliant flowers than those found at lesser heights. The station, too, of certain plants, or groupes of plants, frequently leads to a discovery of characters diverse from other individuals of other countries with which they had been associated. Thus the *Canadian Strawberry* and the *Canadian chickweed Wintergreen* (Trientalis), though long confounded with our *Strawberry* and with our *Trientalis,* are found to be quite distinct. The regions, too, and the limits of those regions, of very important medicinal drugs, are determined by vegetable geography.

Sect. I. *Progress of Botanical Geography.*

1041. *This branch of science had been, however, for a long time, wholly neglected.* Linnæus, indeed, with whom originated so many improvements in botany, besides what related to systematic arrangement, was the first writer who gave stations for plants, as he called them, or rather habitations, or frequently both combined, and this plan has been followed by every succeeding systematic botanist. Yet although these stations or habitations are frequently consulted in the geographical arrangement of plants, they are too vague and uncertain to be generally depended upon; and they must be employed with caution. We are not, however, to forget, with regard to Linnæus, that he has, in some of his writings, entered far more fully into the subject than any of his predecessors. In his beautiful memoir entitled *Stationes Plantarum*, he divides all, primarily, into *Aquatic*, *Alpine*, those growing in *shady places* (*Umbrosæ*), those growing in *open ground* (*Campestres*), *Mountain-plants*, and *Parasitical;* and these again are subdivided into *fresh-water*, *maritime*, *marsh-plants*, *heath-plants*, &c.; and in his oration entitled "*De telluris habitabilis incremento*," he has published that ingenious if not correct theory of the origin and distribution of all plants as well as animals; namely, that, at the beginning, the whole earth was covered with sea, except one island, large enough to contain all the animals and vegetables; that this island was situated within the tropics, and was crowned with a very high mountain, which, in consequence of its varied soil and climate, might contain one or more of every vegetable and animal. He then proceeds to show how, by means of the amazing fertility of plants from seed, they might, at an after period, be scattered all over the globe in the soil and situation best adapted to them; and, lastly, in his *Flora Lapponica*, he pays particular attention to the differences of plants as influenced by the variety of stations, and especially by their altitude above the level of the sea. Tournefort, indeed, is said previously to have found upon Mount Ararat, at its base, the plants of Armenia; a little way up, those of Italy; higher again, those which grow about Paris; afterwards, the Swedish plants; and lastly, on the top, the Lapland alpine ones. De Saussure, who so assiduously studied vegetable physiology, was particularly attentive, on that account, to the elevation at which plants grow above the level of the sea; and appears to have been the first to ascertain *that* elevation barometrically. St. Pierre did not leave this subject unnoticed in his *Studies of Nature;* but he was so led away by his genius, that he believed there was not a square league upon the surface of the globe which did not include within its area some one vegetable, at least, which does not exist any where else. Mr. Young, the celebrated agriculturist, in his *Travels upon the Continent*, determined with considerable accuracy the northern boundaries of several of the most important cultivated plants, the *Olive*, the *Vine*, and the *Maize;* whilst Girand Soulavie, in the south of France, has characterised the limits of them, and of the *Orange* and *Chestnut;* and these two men have, no doubt, excited a spirit of enquiry into the geographical distribution of other vegetable productions. These, and several other authors of less note, prepared the way, during the last century, for the more important labours of the present, when the study has begun to rank as a science. Stromeyer, in 1800, described, to a certain extent, the boundaries of the vegetable kingdom, in a work entitled "*A Specimen of the History of Vegetable Geography*," which appeared at Göttingen. The work of Kielmann, edited at Tubingen, 1804, entitled "*A Dissertation concerning Vegetation in the Alpine Regions*," was followed by that of Treviranus, named "*Biologie*," which seems to be the first wherein attention was paid to the distribution of plants according to their natural families; the latter author dividing the globe into regions or distinct Floras; and De Candolle, about the same time, partitioned France into regions in the same way, and wrote on the influence of height upon vegetation. To the celebrated M. de Humboldt, however, we are indebted for the most valuable writings on vegetable geography, and those which have first given it the true character of a science. His "*Essai sur la Géographie des Plantes*, in 1807, and his beautiful "*Tableau de la Nature*," contained his first ideas on the subject; while his celebrated "*Prolegomena de distributione geographica Plantarum secundum cœli temperiem et altitudinem montium*," forming the introductory chapter to the botanical part of his travels; his invaluable memoir on isothermal lines and the distribution of heat over the globe, published in the Mémoires d'Arcueil, and translated into Brewster's and Jameson's Philosophical Journal, vol. iii. p. 1. &c.; together with his latest work on the subject, "*New Enquiries into the Laws which are observed in the Distribution of Vegetable Forms*," likewise inserted in the Edin. Phil. Journal, vol. vi. p. 273: these may justly be considered as the most important dissertations on a comprehensive scale that have yet appeared. In the mean time, other eminent naturalists, by their well-directed labours, contributed materially to extend the science: Wahlenberg, for example, in his admirable *Flora Lapponica*, and in that of a portion of Switzerland, and of the Carpathian Alps; whilst Von Buch, in his travels in Norway, detailed many curious facts respecting the distribution of vegetables in that climate, and also in his interesting *Voyage to the Canaries*, made in company with the lamented Professor Christian Smith. Mr. R. Brown, who treats with the most masterly hand whatever is connected with the study of botany, has much increased his already eminent fame by those memoirs in which this subject is entered upon; and his profound knowledge of the natural orders, his possession of the richest herbarium and the finest library in the world, both of which he has turned to the best possible account, together with the advantages arising from his extensive travels; these have enabled him to publish memoirs which will be studied with infinite advantage, and which will rank among the most valuable that have ever appeared. We particularly allude to his "*Remarks, Geographical and Systematic, on the Botany of Terra Australis*, 1814," and "*Observations on the Herbarium collected by Professor Christ. Smith, in the Vicinity of the Congo*, 1818." Mr. Boué, a foreigner, but for a long time a resident in Scotland, published a pamphlet at Edinburgh, entitled "*De Methodo Florum cujusdam regionis conducendi*," and Mr. Winch of Newcastle, an "*Essay on the Geographical Distribution of Plants through the County of Northumberland.*" Taking advantage of what others had done, Dr. Schouw compiled, in 1824, an admirable history of the science, of which some portions have been translated into Brewster's and Jameson's Journals; and we regret that, to our knowledge at least, this valuable work exists, in an entire state, in no other language but the Danish and the German. It has the merit of being accompanied by an Atlas of several maps of the world; each exhibiting the geographical extent of certain tribes or families of vegetables, indicated by different colours. This plan of the maps has been successfully followed by Dr. Von Martius, in his History of the natural order *Amaranthaceæ*, in the thirteenth volume of the Nova Acta Acad. Cæsar.-Leopold.; so that we see, at one view, upon a plan of the world, the countries in which these plants are found, their boundaries, and the comparative abundance, indicated by the greater or less depth of colour employed. De Candolle, again, in the "*Nouveau Dictionnaire des Sciences Naturelles*," has given an admirable *résumé* of all these writers, and has added much important original information. A somewhat similar plan is adopted by M. Brongniart in the "*Dictionnaire Classique d'Histoire Naturelle*," vol. vii. p. 275. Mr. Allan Cunningham, both in Mr. Barron Field's "*Memoirs of New South Wales*," and in the second volume of "*Captain King's Survey of the Intertropical Coasts of Australia*," has furnished some further and very excellent remarks upon the distribution of vegetables, especially of the less frequented parts of New Holland. The "*Mémoires du Muséum d'Histoire Naturelle*" contain some important papers on this subject, particularly that of Mirbel, "*Sur la Géographie des Conifères*," a tribe of plants valuable for its economical uses; and his "*Recherches sur la Distribution Géographique des Végétaux phanérogames dans l'ancien Monde, depuis l'Equateur jusqu'au Pôle Arctique:* and, lastly, we shall only name a useful little manual, entitled a "*Lecture on the Geography of Plants*," by Mr. J. Barton.

1042. We might yet have swelled this list to a considerable extent; but enough has been said to show that the subject has merited and received the attention of some of the ablest naturalists; and that it is a science which gives an increased degree of interest both to geography and botany.

Sect. II. *On the Influence of the Elements on Plants.*

1043. In regarding the limits to which certain plants are circumscribed upon the surface of the globe, we shall see that it is with them as with the mighty ocean; they are equally subject to that fiat of the Almighty, "Thus far shalt thou go, and no farther." The Palms, the Tree-Ferns, the parasitical Orchideæ, are ever confined to the tropics; the Cruciferous and Umbelliferous plants almost exclusively to the temperate regions; while the Coniferous plants, and many of the Amentaceous tribes, flourish in those of the north: and since these are all affected by physical agents, we must consider, before proceeding any farther, the influences which the *elements* or *exterior agents* exercise upon plants. These M. de Candolle considers to be *Heat, Light, Moisture, Soil, Atmosphere.*

Subsect. 1. *On the Influence of Heat.*

1044. *Heat* is the most obvious and powerful agent in affecting the existence and growth of plants: and of this we have continual experience before our eyes. In winter all vegetation is at a stand, and we can only cultivate those plants which are in a continued state of vegetation, by artificial heat. Plants are nourished either by water alone, or by substances dissolved or suspended in the water. Hence vegetation is arrested when the temperature is below the freezing point; for the water, becoming solid, cannot enter the vegetable tissue. Again, as in the great deserts of many countries, the heat may be so great that the earth is dried up, and cannot part with its nutritive properties. These effects, however, it is but reasonable to suppose, are more remarkable upon the surface of the earth than at a considerable depth: hence it happens that trees which have long tap-roots resist both the extremes of temperature better than those whose roots are nearer to the surface; their fibres penetrate into a soil whose temperature is greater in winter than that of the outer air, so that the fluids imbibe and keep the interior of large trees, as has been ascertained by experiment, at a degree of heat pretty nearly the same as that indicated by a thermometer placed at the roots of such trees. Hence, the greater the thickness of the stem or branch, and the greater the number of layers interposed between the pith (the softest part being the moistest and the most susceptible of cold) and the exterior air, the better are they able to resist the severity of the cold. It is a well known fact that a shrub or tree as it grows older becomes more hardened against frost. De Candolle relates, that at Montpellier the *Pride of India* (Melia Azedarach) when young is destroyed by a moderate degree of cold; but that when it attains a more advanced age it will endure, in the garden at Geneva, an intensity of atmosphere four times as severe as that which killed the young plant in the south of France.

1045. Again, *in proportion as the exterior layers are deprived of sap or watery fluid, and for-*

tified by a deposit of carbon and resinous matter, the more powerfully they withstand the cold. Every gardener and cultivator is acquainted with the fact, that in cold and wet summers, when the sun and heat have been insufficient to produce good bark upon the new shoots of the fruit-trees, they are liable to be affected by a very moderate frost in the ensuing winter. *Succulent plants* and *Monocotyledonous plants*, in general, which have no distinct bark, are highly susceptible of cold; whilst the *Birch*, which is fenced around with numerous layers of old and dry bark, and the *Fir*, whose bark abounds with resin, endure an intense degree of it without injury. At Fort Enterprise, in North America, lat. 64° 30″, Dr. Richardson has ascertained that the *Banksian Pine* (Pinus Banksiana), the *white*, the *red*, and *black Spruce*, the *small-fruited Larch*, and other Amentaceous trees, bear a degree of cold equal to 44° below zero of Fahrenheit; and in Siberia, lat. 65° 28″, the *common Larch*, the *Siberian Stone Pine*, the *Alder*, *Birch*, and *Juniper*, &c. attain their greatest size, and are not affected by the extremest cold of that severe climate.

1046. *Powerful summer heats* are capable of causing trees and shrubs to endure the most trying effects of cold in the ensuing winter, as we find in innumerable instances; and *vice versâ*. Hence, in Britain, so many vegetables, fruit-trees in particular, for want of a sufficiently powerful sun in summer, are affected by our comparatively moderate frosts in winter; whilst upon continents in the same degrees of latitude the same trees arrive at the highest degree of perfection. Even in the climate of Paris the *Pistacia tree* and the *Oleander* will not bear the winter. Yet the winters there are mild in comparison with those which prevail in the environs of Pekin, where the Oleander was found by Lord Macartney to remain abroad the whole year; and at Casbin in Persia, where Chardin assures us that the Pistacia Nuts, produced in the open air, are larger than those of Syria. On the other hand, the heat of these two countries in summer is infinitely greater than that at Paris; the summer temperature of Pekin especially nearly equals that of Cairo, and surpasses that of Algiers. For the same reason, too, the *Weeping Willow* becomes a large tree in England; while in Scotland, where the winters are at least as mild, but where the summer affords much less warmth, this beautiful tree can only be cultivated in highly favoured situations, and even there its vegetation is exceedingly languid: its young shoots, not ripened by the summer sun, are destroyed even by a slight frost.

1047. Hence *the influence of temperature* upon the geography of plants is ably pointed out by M. de Candolle under *three* points of view: — 1. The mean temperature of the year. 2. The extreme of temperature, whether in regard to cold or heat. 3. The distribution of temperature in the different months of the year.

1048. *The mean temperature*, that point which it has for a long time been the great object of the physician to ascertain, is in reality what is of the least importance in regard to the geography of plants. In a general view, it may be useful to take it into consideration; but the mean temperature is often determined by circumstances so widely different, that the consequences and the analogies to be deduced from it relative to vegetables would be very erroneous.

1049. *By attending to the extreme points of temperature*, results more limited, but far more exact, are to be obtained. Thus, every locality which, though at only short intervals, affords a degree of cold or heat of certain intensity, cannot but produce plants which are capable of supporting those extreme degrees. When, however, these widely different temperatures recur at very long intervals, man may cultivate in such a country a vegetable which cannot exist in a wild state; either because, when destroyed by the rigour of the season, he restores it by seeds or by plants derived from a more temperate country; or because he shelters it from the inclemency of the air; or, as is too often the case in our climate, because he is satisfied with the product of the plant, although it should not bring its seeds to perfection. And thus it is that, in the south of Europe, the *Vine*, and *Olive*, and *Orange* trees often vegetate exceedingly well for all the purposes for which they are required, though, if left to themselves, they could not propagate themselves, nor sustain the winter. Thus we see a wide difference in the geography of plants; between those in a state of nature, and those individuals whose growth is artificially encouraged by man.

1050. This, indeed, is a subject closely connected with the *acclimatation of plants*, or the power which man is supposed to exert over them in inuring them by degrees to a climate not originally natural to them. This power is, however, denied by very able vegetable physiologists. Mirbel, in particular, declares that he has known many species indeed whose wants have been, to a certain degree, artificially supplied; but not one whose constitution has been changed. "If," he says, "from time to time, exotics mingle themselves with our indigenous tribes, propagate as they do, and even dispute the very possession of the soil with the native inhabitants; this, assuredly, is not the work of man, but it is the *climate* which dispenses this faculty of naturalisation." Cultivators, however, maintain that seedlings from *Myrtles*, which had ripened their fruit in Devonshire in the open air, are better able to endure the cold of our climate than those seeds perfected by artificial heat, or that have come from the warmer parts of Europe. It is true, the power of so acclimating itself already exists in the vegetable; but it is man that calls it into action, for naturally the myrtle would never extend itself to our latitudes. Nay, something of the same kind M. Mirbel himself allows, where he says, "When we consider that the *Vine* is cultivated in the plains of Hindostan and Arabia, between the 13th and 15th parallels; that it is cultivated on the banks of the Rhine and Maine, in lat. 51°; in Thibet, at an elevation above the level of the sea of from 9,000 to nearly 11,000 feet, under the 32d degree of latitude; what astonishes and interests us the most is, not that the vine inhabits countries so remote from one another, or that it grows at so great an elevation above the sea, but that it possesses in so eminent a degree the *property of accommodating itself to different climates*; a property, indeed, much more restricted in a great number of vegetables, which extend from the equator to the tropics on both sides, without ever crossing them; for notwithstanding the greater distance between the 23d degree of southern parallel and the 23d degree of northern parallel, the climatic differences are much less from one tropic to the other than from the plains of Hindostan to the banks of the Maine."

1051. The *distribution of heat at different months of the year* is what we shall find to be of the most importance in regard to vegetable geography. Some climates are eminently uniform; a certain mean temperature is produced by a mild winter and a moderate degree of warmth in summer. This is frequently the case on the sea-coasts, because the extremes of heat are continually modified by the sea; that vast reservoir of nearly equal temperature, which therefore imparts heat in winter and cold in summer, and enables even tropical plants to subsist in some situations of the temperate zone. Such are the western shores of Europe and America, and a great portion of the southern hemisphere. A similar mean temperature may indeed be produced by a combination of very severe winters and very hot summers, as in the great continents compared with islands; or the shores of those continents, or the eastern side of continents, as compared with the western; or the northern with the southern hemisphere; but these two climates, as may be expected, will produce a very different vegetation.

1052. *Annual plants*, which require heat during the summer to ripen their seeds, and which pass the winter, so to say, in torpidity, in the state of grain, indifferent to the intensity of cold*, abound most in those regions where the extremes are the greatest; whilst the *perennial plants*, which can better dispense with the maturing of their seeds, and which are injured by the severities of winter, affect the temperate climates. Of these, again, those kinds which have deciduous leaves accommodate themselves best to unequal temperatures; whilst the individuals on which the foliage remains, or *evergreens*, give the preference to districts where the temperature is more constantly equal.

1053. *Mirbel reckons* that there are about 150 or 160 natural groups or families of plants in the Old World, types of all which exist in the tropical parts of it. Beyond these limits, a great number become gradually extinct. In the 48th degree of latitude, scarcely one half of that number appear; in the 65th, not 40; and but 17 in the vicinity of the polar regions. He further estimates, that within the tropics the proportion of woody species, trees and shrubs, equals, if it does not exceed, that of herbaceous, annual, biennial, and perennial plants. The relative number of the woody species with the herbaceous, annual, biennial, and perennial, decreases from the equator to the poles; but, as an equivalent, the proportion of perennial to annual or biennial plants goes on increasing. Near the extreme limits of vegetation these are, at least, as twenty to one.

1054. *We must, however, by no means conclude* that the same elevation in corresponding degrees of latitude is necessarily suited to the vegetation of the same plants. A number of circumstances may exist to modify the degree of heat at the same elevation. In Switzerland, for example, an investigation of the temperature that prevails in districts situated at only a short distance from each other among the mountains will produce very dissimilar results; and on this subject we find some interesting remarks, extracted from Kasthofer, "*Voyage dans les petits Cantons et dans les Alpes Rhétiennes*," in the first number of the *Foreign Review and Continental Miscellany*. The elevation of the valley of Untersee, we are there told, is the same as that of Gestein; yet the thermometer, in 1822-3, fell only to 8° below zero in the former spot; whereas at Gestein it fell to 10½°, and at Berne to 16°. The depth of the valleys influences vegetation; the deeper they are, the more intense is the cold on the summits of the surrounding mountains. Thus, the pine does not thrive on the Bragel, at a height of 5100 feet; whereas it succeeds perfectly, at the same elevation, on the Rhetian Alps, the valleys of the Linth, the Muotta, and Kloen being deeper than those of the latter districts. In like manner, in the valley of the Davos, agricultural produce is certain in places much more elevated than the Bernese valleys, because the latter are deeper. The warm winds from Italy have a perceptible power over the vegetation of the contiguous parts of Switzerland; but the degrees of that influence depend upon circumstances. In the valley of the Inn, barley and flax are cultivated with success at an elevation of more than 5400 feet; whereas at Laret, in the valley of Davos, though the height is only 4900 feet, no grain will thrive. Yet these valleys are alike in most respects, and are surrounded by mountains of similar altitudes; they are both sheltered from the north-east wind; their soil is of the same nature; but in the valley of the Inn, the warm winds from Italy are intercepted only by a single chain of mountains, whereas two chains lie between Italy and the valley of Davos: and, besides, the latter being of smaller extent than the former, it admits of the reception of less solar heat. In the Oberland of Berne, an increase in height of 2000 feet diminishes the crop one third.[*]

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* Seeds being, in general, furnished with few organs which abound in moisture, are in a degree insensible to the extremes of heat and cold; whence it arises that, in conveying them from one country to another, they pass through a variety of climate uninjured.

Subsect. 2. *On the Influence of Light.*

1055. *The influence of the solar light* upon vegetation De Candolle considers to be as important as that of temperature; and although it acts less powerfully upon the geographical distribution of plants, it nevertheless merits a particular notice.

1056. *Light is that agent* which operates in producing the greatest number of phenomena in vegetable life. It determines, in a great measure, the absorption; for plants imbibe less humidity during the night and in darkness. It completely influences the watery exhalations of the green parts of plants; for these parts do not exhale during the night or in obscurity, whilst these exhalations are very considerable during the day, and especially under the direct influence of the rays of the sun. The light affects, in most cases, the decomposition of the carbonic acid; and consequently the deposition of carbon in vegetables, their substance and their growth, the intensity of their sensible properties, and the direction of many organs. It is the principal, and perhaps the only, cause of those singular movements known by the name of the *sleep of plants*; and, lastly, during the absence of light the green parts absorb a certain quantity of oxygen gas. Although these different causes affect all vegetables, yet they are not affected in the same degree.

1057. *Light is more equally distributed than heat* upon the surface of the globe; but its mode of diffusion induces some very important consequences. In the countries situated under the equator, an intense light, since it acts more perpendicularly, influences vegetables nearly equally, during twelve hours each day, throughout the whole year. In proportion as we recede from the equator and approach the poles, the intensity of the more oblique rays gradually diminishes; but in regard to the distribution of these rays, the light is completely wanting during the winter, when the absence of vegetation indeed renders it nearly useless to plants; and it is continued during almost the whole period of vegetation, in such a manner that its lengthened influence compensates wholly or in part for its want of intensity. Thus we see that, independently of what concerns the temperature, plants which lose their leaves can better exist in northern countries, and that those whose vegetation is continued have need of the southern regions. And another beautiful and just remark is made by De Candolle, in reference to the distribution of light; namely, that those plants whose foliage and flowers maintain habitually and constantly the same position, can live in northern climates, where the light is almost continued in summer; whilst it is in the regions of the south that we find, as might naturally be expected, those species which are remarkable for the alternate closing and expanding, or sleeping and waking, of their flowers, a motion which has an intimate connexion with the alternation of days and nights. Thus we see why it is found so difficult in our country to cultivate many of the tropical vegetables, or, at any rate, to bring them to perfection. M. de Humboldt has proved that it is less owing to the absence of heat than to the want of sufficient solar light that the *Vine* does not ripen its fruit beneath the foggy skies of Normandy; and M. Mirbel has satisfied himself that the uninterrupted action of the sun's rays, during a great number of days, is the cause of the astonishingly rapid developement of alpine plants in high northern regions.[†] Dr. Richardson, too, states that the sugar-boilers in the Canadian forests observe that the flow of sap in the *Sugar Maple* (Negundo fraxinifolium) is not so immediately influenced by a high mean temperature as by the power of the direct rays of the sun. The greatest quantity of sap is collected when a smart frost during night is succeeded by a warm sunshiny day.

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[*] The same author, too, mentions a curious fact of vegetation resting upon a basis of ice. The glacier of Roccosecco, which forms one of the branches of the Berneria, has on its summit a nearly horizontal valley filled with ice; and on this the avalanches have brought down masses of earth. This earth produces a number of alpine plants, that afford abundant and nourishing food to the flocks of the inhabitants of Samaden. There are documents which prove that this singular pasture has been used ever since the year 1536.

[†] "Vegetables," says M. Mirbel, in his *Elémens de Physiologie Végétale*, "when secluded from the light, send out long, thin, and whitish shoots; their substance becomes lax, and without firmness; in fact, they are bleached. The operation of the luminous beams on these organised bodies consists chiefly in separating the constituent parts of water and carbonic acid which they contain, and in disengaging the oxygen of the latter. The carbonic acid, with the hydrogen and oxygen of the water, produce those gums, resins, and oils, which flow in the vessels and which fill the cells. These juices nourish the membranes, and bring them into the ligneous state; a result which becomes more marked as the light is strongest and its action most protracted. Darkness and light produce, therefore, diametrically opposite effects on vegetation. Darkness, by keeping up the softness of the vegetable parts, favours their increase in length; light, by ministering to their nourishment, consolidates them, and arrests their growth. Hence it follows that a fine state of vegetation, such as unites in just proportions size and strength, must depend, in a measure, on the nicely balanced alternation of day and night. Now, the hyperborean plants spring up at a period when the sun is constantly above the horizon, and the light which incessantly acts upon them confirms and perfects them before they have time to attain a considerable degree of length. Their vegetation is active, but soon over; they are robust, but small."

Again, Humboldt assures us, that in all places where the mean temperature is below 62° 6′, the revival of nature takes place in spring in that month whose mean temperature reaches 42° [illegible]′, or 46° 4′. At Cumberland House, Dr. Richardson found vernation to begin in May, when the mean temperature was only 49°, nearly 3° below that which Baron Humboldt considered necessary for the evolution of deciduous leaves; but he adds, "*the influence of the direct rays of the sun was at this time very great*, and the high temperature of the last decade of the month compensated for the first." We can imitate the native climes of many of the delicate exotics, as far as regards temperature; and in summer, when our days are long, we see them flourish almost as if they were in their natural situations; but in winter they languish, and often die, especially the more tender species, such as the *Hedysarum gyrans*, and the *humble plant* (Mimosa pudica). It is evident that they want that distribution of light which is most congenial to them.

1058. Plants, then, are arranged in their different localities, according to the certain quantity of light which they may require. All those with very watery leaves, which evaporate much, which are of a succulent nature, which, having few pores or organs of evaporation, need a stimulus to determine their action, all which have a tissue abounding in carbon, or which contain very resinous or oily juices, or which offer a great extent of green surface, require much light, and are generally found in exposed places; the rest, according as they are more or less distinguished by these properties, exist either under the slight shadow of bushes, or beneath the more powerful shelter of hedges and walls, or of forests; or, as is the case with many *Fungi*, in caves and darkness. These last are, indeed, destitute of any green colour; but *Mosses*, *Ferns*, and even some evergreens, such as the *Ivy*, flourish best beneath the shade of dense forests, if the trees of those forests have deciduous leaves; and in situations where plants that vegetate only during the summer could scarcely live.

1059. The subject, however, of the *action of light upon vegetation, has not yet received the attention* which it deserves. Many more observations and experiments are required before we can employ it with certainty in connection with botanical geography.

Subsect. 3. *On the Influence of Moisture.*

1060. *Water being the vehicle by means of which nourishment is conveyed into the plant*, and, indeed, itself yielding a large proportion or even the whole of the nutriment of many vegetables, it follows that this element is not only of the highest importance in vegetable economy, but one of the causes which affects most powerfully the geographical distribution of plants upon the surface of the globe.

1061. *Those vegetables, in particular, necessarily absorb a great quantity of water*, which have a large and spongy cellular tissue; those which possess broadly expanded soft leaves, furnished with a great number of cortical pores; those having few or no hairs on their surface; those whose growth is very rapid, which deposit but little oily or resinous matter; those of which the texture is not subject to be changed or corrupted by humidity; those, in fine, whose roots are very numerous, generally need to absorb much moisture, and cannot live but in places where they find naturally a large proportion of it. On the other hand, those plants which are of a firm and compact cellular tissue, which have small or rigid leaves, furnished with very few pores, which are abundantly clothed with hairs, of which the growth is slow, and which deposit, during the progress of their vegetation, much oily or resinous matter; those whose cellular tissue is liable to be changed and decayed by too much moisture, and of which the roots are not numerous, require little water, and prefer, for their natural situation, dry places. Great differences, however, are produced, according to the nature of the water that is absorbed; the less it is charged with the nutritive principle, the more necessary is it that the vegetable shall absorb, in a given time, enough to suffice for its support. Again, the more the water abounds with substances which alter its fluidity or transparency, and which, inasmuch as they are solid particles, tend to obstruct the orifices of the pores, or to impede absorption by their viscosity, the less do such vegetables imbibe in a given time.

1062. *The very nature even of those substances dissolved or suspended in the water* has a great influence upon the topographical distribution or the locality of plants. The matters so dissolved are, 1. Carbonic acid. 2. Atmospheric air. 3. Animal and vegetable substances. 4. Alkaline principles or earths. Those plants whose cellular tissue is found to contain much carbon, such as trees producing hard wood, avoid, more than others, the vicinity of waters which are extremely pure, and which contain but little carbonic acid gas. Plants which exhibit much azote in their chemical composition, such as the *Cruciferous Plants* and the *Fungi*, seek those spots where there is much animal matter in solution. Those, again, which present, when chemically analysed, a considerable quantity of certain earthy substances, such as silica* in the *Monocotyledonous Plants*, gypsum in the *Leguminosæ*, &c., will require it in a greater or less proportion in the soil where they grow; and if it does not exist there naturally, the agriculturist must supply it artificially; and those species which yield, when burned, a more abundant portion of alkaline substances than usual, can only flourish or even live where these matters abound. The species which have need of carbonate of soda will only grow successfully near the sea or saline lakes or springs. Thus the different property of the substances dissolved in the water is evidently one of the many causes which determine the stations of the vegetable species.

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* This silica, we know, abounds in the grasses, as well as in other monocotyledonous plants; and M. de Candolle observes, that it is in consequence of its existence in the grasses, &c., and of the comparative indissolubility which is the result, that it is preferred by almost all nations of the world for a covering to their houses. The people of the North thus employ straw for that purpose on the same principle that those of the Tropics use the leaves of the palms.

Subsect. 4. *On the Influence of the Soil.*

1063. The influence of soil M. de Candolle considers as perhaps more complicated than that of the preceding agents. He reduces it to three principal heads: —

1064. (1.) *The soil serves as a means of support to vegetables*, and consequently its *consistence* or tenacity ought to possess, in this point of view, a peculiar fitness for sustaining, in a greater or less degree, plants exhibiting very various forms. Thus, soils composed of blowing sand can only serve as a support to vegetables which are of very humble stature and prostrate growth, so that the winds may not overturn them; or to trees, furnished with very deep and branching roots, which may attach them into this moveable matrix. The contrary holds good in regard to very compact soils. Small-rooted plants may thus be firmly enough fixed, and they may subsist; but the very large roots are incapable of penetrating into soils that are very tenacious. The two extremes of these soils present an equally sterile vegetation. Sands which are not sufficiently stationary (as those very remarkable ones on the northern shores of the Moray Firth), water which is subject to very rapid currents, clay of an extremely compact nature, or rocks of great hardness, are equally unfriendly to the growth of plants.

1065. (2.) *The chemical nature of the earths or stones* of which the soil is composed, affects the choice of vegetables, as regards their flourishing in such situations. But this subject, simple as it appears at first sight, is in reality very complicated. For the different earths act upon vegetation by physical circumstances; as, for example, according as they absorb the surrounding water with more or less facility, retain it with more or less force, or part with it more or less easily. Now, the celebrated Kirwan ascertained by a comparative analysis of earths which were reckoned excellent for the growth of wheat in various countries, that they contain more silica if the climate is more subject to rain, more alumine if the contrary be the case; in short, that the soil, to be good for any given vegetable, ought to have the power of absorbing more moisture in a dry climate, less in an humid atmosphere: whence it is plain that in different localities the same species of vegetable may be found in different soils.

1066. (3.) *Every kind of rock has a certain degree of tenacity*, and a certain disposition to decompose or become pulverised: whence results the greater or less facility of particular soils to be formed either of sand or gravel, and to be composed of fragments of a nearly determined form and size. Certain vegetables, from causes which we shall presently indicate, will prefer such or such of this sand or gravel; but the peculiar nature of the soil does not act here immediately; thus, when we find calcareous rocks which decompose like argillaceous schist, the same species of vegetation is observed. These two considerations are particularly applicable to lichens.

1067. (4.) *Rocks, according to their colour or their nature*, are more susceptible of being heated by the direct rays of the sun; and consequently they may, in some degree, modify the temperature of a given place; and influence also, though slightly, the choice of plants capable of succeeding upon them.

1068. But, independently of all these physical causes, it may be asked, whether the *chemical nature of rocks* has any effect upon vegetables? It is generally considered to be so; but it must be allowed that this action has been frequently very much exaggerated. Bory de St. Vincent, indeed, has assured us that calamine, or native carbonate of zinc, in the vicinity of Aix-la-Chapelle, is always indicated, to a certainty, by particular plants; and the fact is confirmed by a little work, since published, called A Flora of the Environs of Spa. The *yellow heartsease*, a small variety of the *common Eyebright* (Euphrasia officinalis), the *white Campion* (Silene inflata), a *Sandwort* (Arenaria), a shrubby *Lichen*, a species of *Bromus* (Brome-grass), constitute this poor but constant vegetation. These, however, no doubt, grow in greater abundance and perfection in other soils: the wonder is that they do not altogether perish here; for even the gallinaceous birds, which eat gravel to triturate their food, die from swallowing fragments of calamine. It must be remarked, in reality, that plants do not often live upon pure rock, but among the decomposed matter of that rock; that the rocks, even though very circumscribed, often present very different natures: that vegetable mould is not only formed by the rocks which immediately surround it, but also by the admixture of earthy substances carried by the waters, transported by the winds, or by the remains of animals and vegetables which have before existed there. Hence it will be understood how the vegetable earths differ much less in themselves, than the rocks which produce them or serve to support them; and that the greater number of plants yield, in most situations, the alimentary earths which are necessary for them. Indeed, after various botanical journeys made through France, M. de Candolle has found nearly the same plants vegetating spontaneously in almost all the different rocky substances. It has been said that the *Box* (Buxus sempervirens) grows only in calcareous soils, and it certainly prefers them; but it is found abundantly in the argillaceous calcareous schistose rocks of the Pyrenees; and it is even seen among the granite of Brittany and upon the volcanic parts of Auvergne. The *Chestnut* has been said to avoid a calcareous country; but there are beautiful chestnuts on both sides of the Lake of Geneva, at the foot of the calcareous mountains of Jura and Chablais.

1069. *Pure magnesia*, M. Carradori has found, by chemical experiment, acts as a poison on most plants; yet M. Dunal, in visiting a portion of the environs of Lunel, where the soil presents a great quantity of almost pure magnesia, found there the same plants as in the surrounding calcareous soil, and the roots flourishing in the clefts of this magnesian rock. Thus we must be careful not to attach too much importance to the nature of the earth, which is frequently acted upon by causes purely physical.

Subsect. 5. *Atmospheric Influence.*

1070. *The atmosphere*, taken in its pure state, we know to be composed, at all times, of the same proportions of *azote* and *oxygen;* and in such cases we may suppose its action to be similar upon all vegetables. But the atmosphere also is of different degrees of transparency or density; it holds in solution other matters or substances, which mix with it in certain places, and render it more or less suitable to certain species of plants. In mines, for instance, the quantity of carbonic acid gas, or of hydrogen, may be so great as to preclude vegetation altogether; or to allow only of the growth of such individuals as are very strong and vigorous, or particularly absorbent of these substances. Then, too, the air charged with saline emanations from the sea injures some plants, and on the other hand encourages the developement of such as require carbonate of soda; as may be seen in the valleys of the south of Europe, where maritime plants affording soda may be cultivated at a considerable distance from the ocean, provided that they lie open towards the sea, and are exposed to the winds that blow from it.

1071. *We cultivate in our inland gardens*, languidly and but for a year or two, many of the *maritime plants*, such as the *Lithospermum maritimum*. The *Nitraria Schoberi* is improved by employing salt where it is grown. Many of the *Statices* may be, however, easily cultivated, and one of them, the *common Thrift* (S. Armeria) even succeeds in crowded towns, whence its English name; yet its native country is either on the shores of the sea or in salt marshes, or upon the summits of the highest mountains.

1072. *The most general influence*, however, exercised by the atmosphere, is its power of containing and parting with moisture, or its hygroscopic action. The atmosphere is habitually charged with moisture; sometimes in such a manner as to be invisible, and then only ascertainable by the hygrometer; at other times visible in a state of vapour or dew; and we find that vegetables in general succeed better in a climate where, at a given degree of temperature, the air is moderately moist, than in another where it is either too much saturated with moisture or too dry. This is a circumstance which cannot well be imitated in the cultivation of plants in the open air: but in our stoves, and especially by the aid of steam, the various degrees of humidity necessary to a vigorous vegetation may be produced to the greatest nicety. Thus, in the magnificent stoves of the Messrs. Loddiges, at Hackney, near London, by an ingenious but simple contrivance, a gently falling dew is imitated; and with what success will best be seen by an inspection of the healthy and beautiful state of those plants which delight in a warm and moist atmosphere.

1073. *The agitation or movement* of the air by winds and other causes exercises some power over vegetation; but we are too little acquainted with this subject to be able to deduce any particular theory from it.

1074. *Of all the atmospheric influences*, the most difficult to reduce to its proper value is that of *density;* or, what is the same thing, the influence of height or elevation above the level of the sea. This M. de Candolle has made the subject of a memoir in the volume of the Society of Arcueil, and we shall here give his general ideas upon it.

1075. *In proportion as we are elevated in the air*, the temperature as well as the moisture continue to diminish; a circumstance which appears to depend upon this, that the rare air has more capacity for heat than dense air. The facts that go to prove that the diminution of the temperature upon high mountains is one of the causes which most affect the distribution of vegetables, are the following:—

(1.) The natural situation of each plant at a determined elevation above the level of the sea is so much the greater in proportion as the country is nearer the equator, and less in more temperate regions; that is to say, the farther we recede from the equator, the greater influence has the exposure upon the temperature.

(2.) In temperate climates, as France, for instance, those plants which are but little affected by temperature, and which grow in all its latitudes, are found also at all those elevations where the earth is not covered by eternal snows; from the level of the sea to the summits of the mountains. M. de Candolle has detected about 700 examples of this law; the *common Heath*, the *Juniper*, the *Birch*, &c. grow indifferently at the level of the sea, and at a height of 10,000 feet.

(3.) If plants which, according to their nature, avoid either too high or too low a degree of temperature, yet grow at different latitudes, we may observe that it is at heights where the effect of elevation may compensate that of latitude: thus the native plants of the northern plains will be seen to grow upon the mountains of the south.

(4.) Plants which are cultivated upon a large scale are guided by laws which entirely correspond with the preceding: those which are cultivated in various latitudes will grow indifferently at various heights; those which are only found at certain latitudes will extend no farther than to proportional elevations. The *potatoe*, which succeeds so well in our plains, is cultivated in Peru at an elevation of 10,000 feet above the level of the sea: the *olive*, which nowhere passes 44° north latitude, will not grow at a height exceeding 1250 feet.

(5.) The elevation above the level of the sea, when we compare the temperature of the seasons, establishes effects very analogous to those which result from the distance from the equator; so that there is the more analogy between the results on vegetation in the two cases. *In proportion as we rise in a direct line*, it follows, from the lessened density of the air, that the intenseness of the solar light continues to increase; this effect is represented in the line of distances from the equator, because the perpetuity of light during the continuance of vegetation is so much the greater in proportion as the latitude is more elevated.

(6.) *In proportion to the greater height upon the mountains*, so will the hygrometer be seen to indicate a less degree of humidity; the same general effect takes place as we recede from the equator towards the poles.

1076. *On mountains*, covered with perpetual snow, where the plants are constantly moistened with water in a freezing state, those species, to which a warm temperature is unfriendly, will live at inferior heights to those which they brave in the same latitude, when they are not watered from those cold sources.

1077. *It would appear*, therefore, from all these considerations, that the situation or fixed locality of plants at certain heights depends mainly on the fall of the temperature attributable to that elevation. Now, the only purely theoretical point of view, says M. de Candolle, according to which we can comprehend how the rarefaction of the air bears in itself a direct influence upon vegetation, is this; that plants require to absorb a greater or less degree of oxygen gas in their green or their coloured parts. It cannot be doubted that there is a certain point of elevation where the atmosphere becomes too much rarefied to supply the wants of plants; but where this is the case the mountains are always clothed with snow. M. de Humboldt, too, inclines to think that the pressure of the air may act in encouraging and increasing the quantity of evaporation. But we must say that direct experiment is still wanting to confirm these opinions (and this is perhaps unattainable in the present state of science), in order that we may form a conclusive judgment on their value.

Sect. III. *Station and Habitation of Plants.*

1078. *The station and habitation of plants* must next engage a portion of our attention. They are both important: the former implies their situation as regarding local circumstances, and the action of physical causes upon vegetables; the latter implies the geographical position. When we say, that such a plant is found in marshes, on the sea-shore, in woods, or upon mountains, in England, in France, in North America; by the marshes, shore, woods, or mountains, we mean what we here term the *station;* and by England, France, or North America, the *habitation:* such is the sense, at least, in which we shall here use the terms; for in systematic botanical writings the meaning is by no means always thus restricted.

1079. *The seeds of plants*, by varied and beautiful means, *are widely dispersed* by the liberal hand of nature: whilst some, however, fall upon barren ground, or a soil unfit for the nature of that particular vegetable, others take root in situations, both with regard to the earth and surrounding medium, which are in harmony with their growth, and produce, "some thirty, some sixty, and some an hundred-fold." There are, again, tribes which, under these circumstances, increase so prodigiously that they destroy vegetables of a less vigorous growth, and, to the exclusion of others, appropriate to themselves a great extent of the surface of the earth. Such are termed by M. de Humboldt "plantes sociales," plants living in society. In this way, and notwithstanding the extreme poverty of the soil, the *Seaside Sedge* (Carex arenaria), the *upright Sea Lymegrass* (Elymus arenarius), and the *Sea-reed or Marram** (Arundo arenaria), occupy a prodigious surface of our sandy shores, almost to the exclusion of other vegetation; their long, creeping, and entangled roots serving to bind the sands together, and thus forming a barrier to the encroachments of the sea. Thus it is with the heaths in our country, where our sterile moors are purple with the blossoms of the heath.

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* The Celtic name of this plant is *Maraim*. A village upon the sea-coast of Norfolk is named Marham, from the circumstance of the great abundance in which the *Arundo arenaria* grows in its vicinity.

1080. The flowers of the *Gentians* cover, as with a carpet of the most brilliant ultramarine blue, the sides of the alpine hills in Switzerland and the south of Europe. Our fields are often, too often, red with *Poppies*, and the marshes are whitened with the "snowy beard" of the *Cottongrass*, and our pastures with the blossoms of the *Cardamine pratensis*, so that they appear at a distance as if covered with linen laid out for bleaching, whence arises the vulgar English name[*] of the latter plant. Some of these plants thus living in society are continually striving with their neighbours, till the strongest obtain the victory. Many low perennial and herbaceous vegetables are overpowered by a colony of taller shrubs; such as the *Whin* or *Furze* and the *Broom:* and these in their turns must occasionally give place to trees and shrubs of a larger and stronger growth. Mr. Brown has, however, noticed a curious fact in regard to the *Field Eryngo* (Eryngium campestre), and the *Star-thistle* (Centaurea Calcitrapa), which cover much cultivated ground upon the continent, that these two engrossers are never mixed together indiscriminately, but that each forms groups of partial masses, placed at certain distances from their rivals.

1081. *On the other hand,* there are plants, which, from the circumstance of their not increasing much by root, or bearing few seeds, or such seeds as from their light and volatile nature are much dispersed, and which are not particular in their choice of soil, do not form groupes, but lie scattered (*Plantes éparses, egrenées,* or *rares,* of the French).

1082. *The former kind, or "social plants,"* are those which it will be most important for us to consider in relation to Botanical Geography.

1083. *The stations of plants* being thus, as we have already mentioned, liable to the influence of physical agents, it becomes necessary to define them by terms which are calculated at once to point out the places and the circumstances in which they grow. This, however, is a task of no small difficulty; for, without swelling the list to an immeasurable length, it will be impossible to define the various local situations of plants. There are many situations which produce only one or two kinds: for example, the snow, in the highest arctic regions to which our enterprising travellers have attained, has been found to nourish and to bring to the greatest perfection that highly curious vegetable, the *Red Snow* (Protococcus nivalis).[†] The *truffle* (Tuber cibarium) is found entirely hid beneath the surface of the earth. Some *fungi* are detected upon the dead horns and hoofs of animals (no plant exists upon living bodies[‡]), and upon dead chrysalides; and both *fungi* and *mosses* grow on the dung of animals. Paper nourishes the minute *Conferva dendroidea:* the glass of windows, and the glass table of the microscope, if laid by in a moist state for a certain length of time, produce the *Conferva fenestralis.* Wine casks in damp cellars give birth to the *Racodium cellare:* and Dutrochet has detected living vegetables in Madeira wine and in Goulard water, (a solution of Saturn). These, however, and many others that might be noticed, may be numbered among the extraordinary stations, and they principally affect cryptogamic vegetables. In a popular view of the subject, though we cannot altogether omit the notice of such minute yet curious vegetable productions, we shall mainly direct our attention to the more conspicuous plants; and they may be thus divided. 1. *Maritime or saline plants.* These are terrestrial, but growing upon the borders of the ocean or near salt lakes; as the *Saltworts* (Salsolæ) and *Glassworts* (Salicorniæ), &c. Hence these plants abound in the interior of Africa and the Russian dominions, where there are saltpans, as well as on the shores. 2. *Marine plants.* This tribe is indeed mostly cryptogamic, and comprises the *Algæ, Fuci, Ulvæ,* &c. The phænogamous, or perfect marine plants, are the *Sea-wracks* (Ruppia and Zostera), and a few others allied to them. 3. *Aquatic plants.* Growing in fresh water. Both stagnant pools and running streams in various situations, abound in plants. Some are entirely submerged, but in this case, with the rare exception of the little *Awlwort* (Subularia aquatica), the flowers rise to the surface of the water for the purpose of fructification.[§] 4. *Marsh or swamp plants.* 5. *Meadow and pasture plants.* 6. *Field plants.*

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[*] *Lady's Smock.* Not Ladies' Smock. Such plants were in olden time dedicated to Our Lady the Virgin Mary.

[†] More will be said of this plant when we come to treat of the plants of the high northern regions.

[‡] Schouw, indeed, has a tribe of plants which he calls "*Plantæ Epizoæ," attached to living animals.* Thus, he says, *Fuci* and other *Algæ* are attached to whales, mussels, and barnacles. But in this case the plants manifestly adhere to a dead portion of the animal; like those vegetables which exist upon the outer and dead part of the bark of trees. I have seen a bee which was brought from Sicily. It had been captured alive, with a substance attached to its head which had all the appearance of a fungus, and from its shape, to that particular genus of Fungi called *Clavaria.* Many persons were deceived into a belief that this vegetable substance was growing on the living insect; but an eminent naturalist, well acquainted with the structure of the parts of fructification in the Orchideous plants, immediately detected that the supposed fungus was nothing more than the pollen-mass, which had attached itself to the nose of the bee by means of its glutinous gland, while the busy insect was thrusting its head into the flower to gather its honeyed sweets.

[§] Raymond certainly observed, in the Pyrenees, a species of *Crowfoot*, the *Water Crowfoot* (Ranunculus aquatilis), producing its flower and fruit wholly under water; but, upon a closer investigation of the phenomenon, he found that in these cases the calyx enclosed a globule of air, with which this important function of fertilisation was performed. The curious aquatic, *Vallisneria spiralis*, has a still more wonderful contrivance

This tribe often includes such as, introduced with the grain sown in those districts, are equally placed there by the hand of man. 7. *Rock plants*, which may include the natives of very stony spots, and such as grow upon walls. Walls, although artificial structures, are known to produce many plants in greater perfection than natural rock; yet we must not suppose that any vegetable is exclusively confined to this habitat. The *Holosteum umbellatum* and *Draba muralis* may be cited as examples of this tribe in England; and amongst mosses, the *Grimmia pulvinata*, *Tortula muralis*, &c. 8. *Sand plants*. 9. *Plants of dry moors*, where our *heaths* (Ericæ) abound. These seem to be included among the *plantes des lieux stériles* of De Candolle; a very heterogeneous groupe it must be confessed, and by no means easy to characterise. 10. *Plants which attach themselves to the vicinity of places inhabited by man*. Such are the *Dock*, *Nettle*, &c.; these species follow every where the human footsteps, even to the huts and cabins of the highest mountains; encouraged, perhaps, by the presence of animal substances, and the azote which in such substances is known to abound. 11. *Forest plants*, consisting of such trees as live in society. 12. *Plants of the hedges*, as are many of our climbing plants, the *Honeysuckle*, the *Traveller's joy*, the *Bryony*, &c. 13. *Subterranean plants*. Those that live in mines and caves, and which, though tolerably numerous and important, are yet mostly cryptogamous. One species, a fungus, yields a pale phosphoric light of considerable intensity. 14. *Alpine or mountain plants*, for it is very difficult to draw the limit, and indeed they will depend much upon latitude. A plant which grows upon a hill of inconsiderable elevation in Norway, Lapland, and Iceland, will of course inhabit the loftiest Alps of the south of Europe. Again, upon mountains that have no perpetual snow lying on them, alpine plants will be found much higher than on such as have continued streams of cold snow-water descending, which affects the state of the atmosphere at much lower regions. 15. *Parasitic plants*, such as the *Misseltoe*, the various species of *Loranthus*, &c., and that most wonderful of all vegetable productions, the *Rafflesia Arnoldii:* these, as their name implies, derive nourishment from a living portion of the vegetable to which they attach themselves. This is the case, too, with many Fungi which subsist upon the living foliage of plants; some exclusively on the upper, others as invariably on the lower side of these leaves; and, lastly, the name of 16. *Pseudo-parasites* has been given to a very extensive tribe, which subsist upon the decayed portions of the trunk or branches of the trees to which they are attached, as many of the *Lichens*, *Mosses*, &c.; or which are simply attached by the surface of their roots to tropical trees, obtaining no nourishment from them, but from the surrounding element. Among this number may be reckoned that numerous and singular family of the *Orchideæ*, called, from their nature and property, "*air plants.*" Greatly as this list might be swelled, we shall find that even here there is a gradation and an approximation of one tribe to another; but these are amply sufficient for our purpose.

1084. *We have been able to account in some measure for the stations of plants*, affected as these are by local circumstances; but the study of the succeeding part, which refers to their *habitations*, considered in their most extensive scale, for instance, as belonging to certain regions or countries, we shall find to be much more difficult; and we must frequently be content to study and to admire the amazing variety of vegetable forms which the beneficent hand of nature has scattered over the different parts of our world, without being able to account for these important phenomena. In New Holland we find, almost exclusively, all the species of *Banksia*, *Goodenia*, and *Epacris*, and the curious *Acaciæ* without leaves, but with petioles so much enlarged as to amusse the shape and perform the functions of leaves. At the Cape of Good Hope, the *Fig Marigolds* (Mesembryanthema), the *Stapeliæ*, the numerous kinds of *Ixia*, *Gladiolus*, *Pelargonium*, and *Protea* abound. The *Aurantiaceæ*, the family of plants to which the *Orange* and *Lemon* belong, are of Asiatic origin; as the *Camellia* and *Thea* are of Chinese. Those curious plants, the *Mutisiæ*, the various species of *Fuchsia*, the *Cinchonæ* or *medicinal barks*, the *Cacti*, are all peculiar to South America. If a few of them are found in other countries, such circumstances are of very rare occurrence, and do not overturn the general laws for the exclusive existence of many plants in certain countries. We have in the temperate parts of Europe one species of *Ixia*, one of *Gladiolus*, and in the north of Africa and south of Europe a few kinds of *Fig Marigold*. Within the tropics the genera of plants, throughout Asia, Africa, and America, are similar, but rarely are the species the same. This rule nearly holds good on the opposite continents in temperate climates. We have the *Oriental Plane* (Platanus orientalis) in the old world, and the Americans have the *Occidental Plane* (P. occidentalis). Even in the two hemispheres, in similar parallels of latitude, the genera of plants have a great affinity: the southern extremity of the great continent of

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for bringing the male and female flowers in contact. The plant is diœcious. The female flower is attached to the parent plant by means of a very long stalk, spirally twisted like a corkscrew, so that when it is in perfection, it rises to the surface by the untwisting of the stalk. The male flowers, upon a separate plant, are almost sessile, borne on a very short straight stem, which never could reach the surface without detaching themselves from the plant. This they do at the proper season; they float upon the top of the water along with the female flowers, scatter their pollen, and die. The female blossoms, on the contrary, by the spiral twisting of their stalks, retire, and ripen their seeds under water.

America has many in common with the north of Europe; and the plants of our regions, transported thither, succeed extremely well.

1085. *To what extent plants migrate,* unaided by man, it is not easy to say; but that such migration is going on, by various means and causes, cannot be questioned. Islands which lie near to continents, and which evidently appear at one period to have been joined with them, as England for example, although they may contain a vegetation similar to that of the neighbouring continental shores, have always a smaller number of species; and this can only be accounted for by the interruption which straits or seas occasion to the progress of the seeds.

1086. *The Field Eryngo* (Eryngium campestre), to which we have already alluded, the *Venus's looking-glass* (Campanula Speculum), and many other plants of France and Germany, seem to stop at the line formed by the sea in approaching our shores; yet these, and many other vegetables of France, reach a limit upon the same continent more northern than any part of England.

1087. *The transmigration of plants* may be reckoned to be facilitated by the following causes. 1. *The sea and its currents,* but to a very limited extent; for if the seed be of such a nature that the water penetrates its integuments and reaches the embryo, life is destroyed. Yet to such a distance are they carried by this medium, that upon the coasts of Britain, of Iceland, and Norway, the seeds of the West Indies are frequently cast, and it is said sometimes even in a fit state for vegetation. 2. *Rivers,* by the continual movement of their waters, convey many plants to a considerable distance from their original place of growth; and the banks of streams are generally adorned with a vegetation of a more varied kind than the districts remote from them. Thus, too, the different species of *Saxifrage* and other alpine plants are, in mountainous regions, brought down from the higher situations, and flourish in the valleys. 3. *Winds,* which waft the light, winged, and pappose seeds to immense distances, and by means of which they are widely dispersed. 4. *Animals,* which, in wandering from place to place, often carry on their coats those seeds which have hooked bristles, &c. 5. *Birds,* which, swallowing berries and other fruits, pass the seeds in a perfect state, and, it is even said, sometimes better fitted for germination than before. In this manner the seeds are often deposited in the places necessary for their growth, and to which they could not otherwise have reached; of which a familiar instance is found in the *Misseltoe.*

1088. *Man is however the most active agent in the dispersion of plants,* and we must not overlook the important consequences. Sometimes, indeed, the causes are accidental, but more frequently intentional. The shipwreck of a vessel on the island of Guernsey, having some bulbs on board from the Cape of Good Hope, caused a plant to propagate in the sands upon the shores of that mild climate, to which has been since given the name of *Amaryllis Sarniensis* or *Guernsey Lily,* and a branch of trade of some importance is carried on in the sale of this very root. At Buenos Ayres, a species of *Artichoke* (Cynara Cardunculus) has increased so much by seeds imported from Europe, that Mr. Head, in his amusing "Sketches of a Journey across the Pampas," &c. tells us that "there are three regions of vegetation between Buenos Ayres and the base of the Cordilleras; a space of 900 miles: the first of which is covered, for 180 miles, with clover and *thistles.* This region," the author continues, "varies with the seasons of the year in a most extraordinary manner. In winter, the leaves of the thistles * are large and luxuriant, and the whole surface of the country has the rough appearance of a turnep field. The clover in this season is extremely rich and strong; and the sight of the wild cattle grazing in full liberty on such pasture is very beautiful. In spring the clover has vanished, the leaves of the thistles have extended along the ground, and the country still looks like a rough crop of turneps. In less than a month the change is most extraordinary; the whole region becomes a luxuriant wood of enormous thistles, which have suddenly shot up to a height of ten or eleven feet, and are all in full bloom. The road or path is hemmed in on both sides; the view is completely obstructed; not an animal is to be seen; and the stems of the thistles are so close to each other, and so strong, that, independent of the prickles with which they are armed, they form an impenetrable barrier. The sudden growth of these plants is quite astonishing; and though it would be an unusual misfortune in military history, yet it is really possible that an invading army, unacquainted with this country, might be imprisoned by these thistles before it had time to escape from them. The summer is not over before the scene undergoes another rapid change: the thistles suddenly lose their sap and verdure, their heads droop, the leaves shrink and fade, the stems become black and dead; and they remain, rattling with the breeze, one against another, until the violence of the pampero or hurricane levels them with the ground, when they rapidly decompose and disappear, the clover rushes up, and the scene is again verdant."

1089. *The strong-scented Everlasting* (Elichrysum fœtidum, vid. Bot. Mag. t. 1987), a native of the Cape of Good Hope, has found a soil and climate equally suited to its growth on the shores of Brest, where it covers a great portion of the sands, to the exclusion of the aboriginal natives of the soil. *Wheat* is supposed to be indigenous to Barbary. The *potatoe*, first found in South America, is now cultivated all over the world. *Rice*, from Asia, is grown to an immense extent in America, &c.; these, and many other plants similarly circumstanced, which we could mention, together with those that adorn our gardens, often owe their wide diffusion to having escaped into uncultivated places, and become to a certain degree naturalised there.

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* From specimens in our Herbarium, we have ascertained that this *thistle* is the *Cardoon* (Cynara Cardunculus), introduced no doubt from Europe as an article of food, but now growing wild, useless, and pernicious.

1090. But *there are limits to migration*, for some of which we can account, and for others we cannot. Even many of our garden plants, which, escaping by accident, or designedly placed in uncultivated spots so as to appear wild, have only for a time maintained a languid existence, and then have disappeared altogether. Thus we know that the beautiful *Gentianella* (Gentiana acaulis) cannot have a title to a place in the British Flora, nor can some others, which are mere outcasts from gardens. Some plants are wholly confined to particular spots, and can be found nowhere else. The *Tree-Pink* (Dianthus arboreus) grows still on the single rock in the island of Crete, where Prosper Alpinus first detected it; and the *Double Cocoa-nut* of the isle Praslin, one of the little groupe of islands called the Seychelles, notwithstanding the annual migration of its nuts for many thousands of miles, has never established itself in any other place. Nature has planted the *common Thrift* (Statice Armeria), the *Scurvy Grasses* (Cochlearia anglica and danica), and the *Rose-root* (Rhodiola rosea), in rocky and stony places, upon our shores and on the tops of the highest mountains; yet these plants are never found in any intermediate places.

1091. *The visible obstacles to the migration of plants* are —

(1.) *The sea*, which, though we have introduced as a means of extending the habitations of plants, is yet a far greater impediment, by the injury it does to the seeds, and the difficulty of their being conveyed to distant countries in a sufficiently short time to prevent the natural death of the seed. It must be observed, too, that the greater number of seeds have a specific gravity heavier than that of water when in a living state. The *Double Cocoa-nut*, when found floating, has always lost its vegetative property. The living nut is immensely heavy, and would inevitably sink.

(2.) *Dry and burning deserts.* These, in spite of their oases, which have been happily assimilated to the isles of the ocean, prove a powerful obstacle to the transport of seeds. Thus, those districts of Africa which are separated from one another by the scorching sands of Sahara exhibit a great dissimilarity in their vegetation. The plants of Morocco and the northern parts of Africa have little resemblance to the indigenous growth of Senegal; whilst the affinity of the vegetables brought by Caillaud from Upper Egypt to those collected by Palisot de Beauvois in Oware and Benin would in themselves lead to the conclusion that no very great and continued deserts intervene between these far distant countries.

1092. *Mountain ranges.* The barriers which these present would almost be insurmountable, were it not for the defiles which here and there occur, forming passages for men and animals, as well as for plants. Thus, the plants on the Italian side of the Alps are quite different from those on the Switzerland side; those of the Spanish Pyrenees from those of the French Pyrenees; and it was a subject of peculiar regret to the enterprising Drummond, when he reached the summits of the Rocky Mountains in North America, that his commission did not allow him to penetrate farther into the western side of that great continent, where he found, every step he took, a vegetation very different from what had been presented to him by the eastern side.

1093. *A knowledge of the Natural Orders of plants* is in no department of botany so important as in treating of their geographical distribution. The system of Linnæus, or the Artificial Arrangement, does not, as we know, regard the habits and affinities of vegetables, but simply and beautifully points out to us, by certain characters, the means of arriving at the knowledge of any given species. The natural method, which owes so much to the labours of Jussieu, Decandolle and Brown, has a higher object in view, that of grouping plants together according to their natural affinities; and by such an arrangement we are often led to other and very important results. The primary divisions of the Natural Method are, first, ACOTYLEDONES, or plants which have no cotyledons to the seed: these are synonymous to the Cryptogamia, and include the *Mosses, Lichens, Sea-weeds, Fungi, Ferns*, &c.; secondly, MONOCOTYLEDONES; those whose seeds have one cotyledon, such as the *Grasses, Liliaceous Plants*, the *Rushes, Sedges*, the *Palms*, &c.; and, thirdly, DICOTYLEDONES, or the plants which have two or rarely more cotyledons to the seed, such as our *Shrubs* and *Trees*, and very many *Herbaceous Plants*. Each of these possesses external characters which, though not very easily defined in words, yet cannot fail to strike the observer who devotes his attention, even for a little while, to the subject; and we find that, in a great proportion of instances, they have not only a peculiar station, but that their geographical distribution is different.

1094. *The* ACOTYLEDONOUS *plants increase in number in proportion to the other great classes*, as we recede from the equator to the poles; with the exception, however, of the *Ferns*. The latter abound more within the tropics than any where else: not, however, so much in open plains as in the sheltered, moist, and hilly countries; so that their maximum is in the mountainous part of the tropics. The island of Martinique afforded to the Abbé Plumier a rich and abundant harvest of ferns; and some isles of small extent are said to have one third of their vegetation composed of this kind of plants.

1095. *Among the* MONOCOTYLEDONOUS *Plants*, the *Palms* are exclusively confined to the tropics: the *Liliaceous plants* abound there and in the warm zones; the three families of *Grasses*, *Sedges* (Cyperaceæ), and *Rushes* (Junci), present some important differences in regard to a comparison with the phænogamous or flowering plants. The disparity between these latter and the *grasses* is not great in each of the zones; whilst the two other families, the *Cyperaceæ* and *Junci*, diminish near the equator and increase towards the north. Nevertheless, there are exceptions to this rule; for the *grasses* are very rare upon the coasts of Greenland. In what we have now said, we allude to the grasses, &c. in a wild state; having no reference to those regions where so many of the grass tribe, as the *Wheat, Barley, Oat, Maize, Rye, Rice,* &c., are found simply in a state of cultivation.

1096. *The* DICOTYLEDONOUS *plants are the most extensively distributed*, and we must offer some further remarks upon them. The *Compound* or *Syngenesious plants* (Compositæ), as every one knows, form a very extensive natural family. They are diffused throughout the whole earth, but they are most abundant in the temperate and tropical climates. Fewer, however, of them are found in the warm regions of equinoctial America than in the sub-alpine and temperate districts of the same country. At the Congo and Sierra Leone in Africa, in the East Indies and New Holland, they exist in comparatively smaller numbers than in other regions situated in similar parallels, but which afford situations more congenial to their growth. Again, in the frozen zone, in Kamtschatka and Lapland, the relative proportion of plants of this family is one half less than in the temperate climates.

1097. *The Leguminous plants* (*to which the Pea, the Bean, &c. belong*, and such as bear papilionaceous flowers,) abound most in the equinoctial regions: they diminish gradually in each hemisphere in diverging from the equator, except indeed in certain countries where particular genera, by the multiplicity of their species, give a peculiar feature to the vegetation, as in Siberia and the vast provinces of Russia, where so many *Astragali* or Bitter-vetches are found.

1098. Mr. Brown has judiciously separated the natural order of *Rubiaceæ* into two groups: those with verticillate leaves and no stipules (the *Stellatæ* of Linnæus), to which belong our *Goosegrass* (Galium), *Madder* (Rubia), &c., and which are almost peculiar to the temperate zones; and the true *Rubiaceæ*, with opposite pairs of leaves, and two opposite stipules (which are in fact abortive leaves, and thus show their affinity with the *Stellatæ*), to which belong the real *medicinal barks* (or Cinchonæ), and some other nearly related plants possessing similar virtues: these latter are almost wholly confined to the equinoctial regions.

1099. The two well known and extensive natural families, the *Umbelliferous* and *Cruciferous plants*, are very rare in the tropics, if we except the mountains. They abound in the south of Europe, and especially about the valley or basin of the Mediterranean.

Sect. IV. *View of Botanical Regions.*

1100. *To divide the globe into botanical regions or districts* will not be difficult, seeing that certain countries possess a peculiar vegetation, and that numerous impediments prevent emigration; seeing, too, that certain forms or tribes are incompatible with certain climates. M. De Candolle has constituted twenty of those regions; but although each is, to a certain degree, peculiar in its vegetable productions, it would require more space than we can devote to such a subject to characterise them. We must, therefore, content ourselves with giving a bare list. 1. *Hyperborean region.* This district includes the northern extremity of Asia, Europe, and America; and gradually merges into the following. 2. *European region;* comprising all Europe, except the part bordering upon the pole, and the southern districts approaching the Mediterranean. To the east it extends to the Altaic mountains. 3. *Siberian region*, comprehending the great plains of Siberia and Tartary. 4. *Mediterranean region;* comprising all the basin of this great inland sea; that is, Africa on this side the Sahara, and that part of Europe which is sheltered from the north by a more or less continued range of mountains. 5. *Oriental region;* thus called relatively to southern Europe, and containing the countries bordering upon the Black and Caspian Seas. 6. *India*, with its archipelago. 7. *China*, Cochinchina, and Japan. 8. *New Holland.* 9. *The Cape of Good Hope*, or southern extremity of Africa, beyond the tropics. 10. *Abyssinia*, Nubia, and the Mozambique Coast (imperfectly known). 11. *Equinoctial Africa;* viz. the neighbourhood of the Congo, the Senegal, and Niger. 12. *The Canary Isles.* 13. *The United States of North America.* 14. *The Western and Temperate Coasts of North America.* 15. *The West Indian Isles.* 16. *Mexico.* 17. *Tropical South America.* 18. *Chili.* 19. *Southern Brazil and Buenos Ayres.* 20. *The Straits of Magellan.*

1101. *Many of the productions of these regions will be considered somewhat at large in other parts of this work;* and we shall conclude our introductory sketch of Botanical Geography by a notice of Professor Schouw's *Phyto-Geographic* or General Botanical Division of the

Globe. This is illustrated by a map, which accompanies this memoir. Unlike M. De Candolle, Professor Schouw characterises the regions by the most remarkable feature of their vegetation, adopting commonly used geographical terms only where he conceives that a certain division of the earth ought to constitute a distinct region, but is not sufficiently acquainted with its productions to determine and define their forms. He makes the characteristic feature of his regions to depend on these facts: first, that at least one half of the species should be peculiar to that region; secondly, that at least a quarter of the genera should belong exclusively to it, or at least have there a decided maximum, so that their species in other districts might merely be considered as their representatives; and, thirdly, that individual families of plants be either peculiar to the region, or else have their *maxima* there; nevertheless, when this last characteristic is wanting, while the difference in genera and species is very considerable, it may yet be admitted as a region.

Professor Schouw in this manner reckons twenty-two regions: —

1102. (1.) *Region of Saxifrages and Mosses*, or the *Alpine Arctic Flora.* — This corresponds with De Candolle's first region, and comprehends all the countries within the polar circle; namely, Lapland, the north of Russia and Siberia, Kamtschatka, Canada, Labrador, Greenland, and Iceland; but Professor Schouw adds to it, with much propriety, part of the Scottish and Scandinavian mountains, as far as they fall within the alpine region, as also the mountains in the southern and central parts of Europe, inasmuch as they are related to the alpine regions. It is characterised by the abundance of *mosses* and *lichens*, the presence of the *Saxifrages, Gentians, Chickweed tribe* (Alsineæ), *Sedges*, and *Willows;* an entire absence of tropical families; a considerable decrease of the peculiar forms of the temperate zone; by the forests of *beech* or *fir*, or else the total want of trees; the scarcity of animals, and the prevalence of cæspitose plants, whose blossoms are large in proportion, and generally of a pale colour.

1103. (2.) *Region of the Umbelliferous and Cruciferous plants.* — This tribe takes in the whole of Europe, except what belongs to the preceding division, from the Pyrenees, the mountains of the south of France, of Switzerland, and the north of Greece, to the greater part of Siberia, and the country about Mount Caucasus. Schouw has characterised it by the *cruciferous* and *umbelliferous* plants, because they form a larger portion of the total number than any other kinds, and because it may thus be best separated from the vegetation of North America in the same parallel. It is not easily distinguished from the next region; but it may be said of it, that *Fungi* abound more, that the *Rosaceous* family and the *Crowfoots* (Ranunculaceæ), the *Amentaceous* and *Coniferous* tribes (Pines), form rather a large proportion; that it bears a resemblance to many of the polar forms, especially in the abundance of its *Sedges* (Cyperaceæ); that its meadows are most flourishing, and that almost all the trees are deciduous in winter. In the northern part of this region, the *Cichoraceæ* (a tribe of the Compositæ or syngenesious plants, including the *Endive, Lettuce, Dandelion*, &c.) much prevail; while in its southern division, or in northern Asia, the *Cynarocephalæ* (Artichoke and Thistle tribes), together with the *Butter-vetches* (Astragali), and *Saline plants* (Sea-worts and Glass-worts), seem to have their maximum.

1104. (3.) *Region of the Labiate flowers* and *Caryophylleæ* (to which the *Pink*, the *Catchfly*, the *Sandworts*, &c. belong); or the *Mediterranean Flora.* — This is bounded on the north by the Pyrenees, the Alps of Switzerland and of the south of France, and the north of Greece, and thus includes the three peninsulas of southern Europe, namely, Spain, Italy, and Greece; on the west by Asia Minor and its islands; on the south it takes in Egypt and all the north of Africa as far as the deserts; and, lastly, it includes the Canary Islands, Madeira, and the Azores. It is marked especially by the two families above mentioned, which are much rarer both to the north and south of the countries just enumerated, and in the corresponding parallels in North America. The *Compositæ*, the *Stellatæ* (*Goosegrass, Madder*, &c.), and the rough-leaved plants (*Asperifoliæ*), are here in considerable numbers, as well as in the similar latitudes. A few tropical plants, or individuals allied to them, now appear; one or two *Palms*, the *Laurels*, the *Arum* tribe, the *Terebinthaceæ* (Pistacia, &c.), some tropical grasses and true *Cyperaceæ*. *Nightshades* (Solaneæ), *Leguminous* plants, the *Mallow* and *Nettle* tribes, and the *Spurges* (Euphorbiaceæ), increase; *Evergreens* are numerous; vegetation never entirely ceases, but verdant meadows are more rare. This region may be subdivided into provinces: of the *Cisti*, Spain and Portugal; of the *Sage* and *Scabious*, the south of France, Italy, and Sicily; of the shrubby *Labiatæ*, the Levant, Greece, Asia Minor, and the southern part of the Caucasian country; and of *Houseleeks* (Semperviva), the Canary Isles, probably also the Azores, Madeira, and the north-west coast of Africa. Many *Sempervivæ*, some succulent plants, *Spurges*, and *Cacaliæ*, characterise especially this province.

1105. (4.) *The Japanese region.* — The eastern temperate part of the old continent, namely, Japan, the north of China, and Chinese Tartary, probably forms a peculiar region; but we are too little acquainted with the botany of these countries to admit it with certainty, and still less are we able to define correctly the characteristics of its Flora. Of the 358 genera found in Japan, 270 occur in Europe and the north of Africa, and about the same number in North America; so that its Flora seems to occupy a middle place between those of the old and new worlds. Its vegetation, indeed, approaches more to the tropical than to the European; for we meet with the *Cycas* family, the *Scitamineæ* (to which belong the *Ginger, Cardamom,* &c.), the *Bananas*, the *Palms*, the *Anonæ* or *Custard-apples*, and the *Sapindaceæ*; so that there is a considerable affinity, as might be expected from its situation, to the flora of India. The families of the *Buckthorns* (Rhamni) and *Honeysuckles* are found in a relatively considerable number, and they exhibit some peculiar genera; thus, perhaps, this region might be correctly termed that of the *Rhamni* and the *Caprifoliaceæ*.

1106. (5.) *Region of the Asters and Solidagos* (Michaelmas-daisies and golden-rods).—The eastern part of North America, with the exception of such as belongs to the first or arctic district, comprehends without doubt two regions; for amongst 417 genera in Walter's Flora of Carolina, 117 are wanting in Barton's Flora of Philadelphia. The northern divisions of the United States have, indeed, but few genera which do not occur also in the southern; but this only shows that a similar relation exists here to what takes place between the north and south of Europe. The southern region will include Florida, New Orleans, Georgia, and Carolina; the northern contains the other states of North America. What characterises this region is (besides the number of species of the genera *Aster* and *Solidago*), the great variety of *Oaks* and *Firs*; the very few *Cruciferæ* and *Umbelliferæ*, *Cichoraceæ* and *Cynarocephalæ*; the total absence of the genus *Erica*, and the presence of more numerous species of the allied family of *Vaccinium* (Whortleberries) than are to be met with in Europe.

1107. (6.) *Region of Magnoliæ.*—This, which comprises the most southern parts of North America, is separated from the preceding region by the number of tropical forms which here appear, and which show themselves more frequently than on the similar parallel of the old continent (such, for instance, as the *Scitamineæ*, *Cycadeæ*, *Anonaceæ*, *Sapindaceæ*, *Melastomeæ*, *Cacti*, &c.). From the old world, too, in corresponding latitudes, it is still further distinguished by a smaller proportion of *Labiatæ* and *Caryophylleæ*; and by having more trees of broad shining foliage and splendid blossoms (the *Magnolias*, the *Tulip-tree*, the *Horse-chestnut*, &c.) and with pinnated leaves (the *Gleditschiæ*, *Robiniæ*, *Acaciæ*, &c.).

1108. (7.) *Region of the Cacti, Peppers, and Melastomas:* a very extensive region, including the lower districts of Mexico, the West Indies, New Granada, Guiana, and Peru, perhaps also a part of Brazil; in short, all intertropical America. The three families here mentioned appear peculiarly to characterise these countries; for the first belongs exclusively to America, and of the other two there exist comparatively few species out of these districts. *Palms*, the *Rubiaceæ*, the *Solaneæ* (in which are classed the *Nightshades* and *Potatoe*), the *rough-leaved plants* (Boragineæ), the *Passion-flowers* and *Compositæ*, are here very common. It may admit of several provinces, as that of the *Ferns* and *Orchideæ* (in the West India islands); of the *Palms* (the continent of South America). Brazil ought certainly to constitute a peculiar province, if indeed it be not a distinct region; and the works of Spix and Martius, St. Hilaire, the Prince de Neuwied, &c., will soon enable us to characterise its vegetable forms. The *Melastomæ* and *Palms* appear to belong to the more numerous inmates of this region.

1109. (8.) *Region of the Cinchonæ* (or Medicinal Barks).—It appears from Humboldt's works that the middle districts (such at least in respect to their altitude) of South America should form a distinct region from that last mentioned, as they differ considerably from the low lands; and the name now proposed seems to be characteristic of their vegetation, at least of Peru and New Granada, though certainly not of Mexico, where the species of *Cinchona* are wanting.

1110. (9.) *Region of Escalloniæ, Vaccinia* (Whortleberries), and *Winteræ* (Winter's Barks).—These, according to Humboldt, occupy the highest parts of South America. Besides the plants mentioned, there belong to this region many species of *Lobelia, Gentian, Slipperwort* (*Calceolaria*), *Sage*, several European genera of *Grasses, Brome, Festuca* and *Poa*, the *Cichoraceæ*, as *Hypochæris* and *Apargia*; as well as the more strictly speaking alpine plants (*Saxifrages, Whitlow-grasses, Sandworts*, and *Sedges*). Perhaps also those parts of the high lands where the species of *Oak* and *Fir* flourish belong to the same region, though in all probability they constitute a peculiar province.

1111. (10.) *Chilian region.*—It appears that Chili should form a distinct region; for amongst the genera which appear there, not one half are found in the low districts of South America. Its character, perhaps, most resembles that of the mountainous country, in its *Slipperworts, Escalloniæ, Weinmanniæ, Bæa, Bellflowers*, and *Buddleæ*; but yet the difference is scarcely sufficient to constitute it a province. The Flora of this country appears to be essentially distinct from that of New Holland, the Cape, and New Zealand; though an approach to them is observable in *Goodenia, Araucaria* (Chilian pine), the *Protea* family, *Gunnera*, and *Ancistrum*.

1112. (11.) *Region of arborescent Compositæ* (syngenesious plants with tree-like stems).—This takes in Buenos Ayres, and in general the eastern side of the temperate part of South America. It has been already remarked, that the Flora of this district of the world agrees to a considerable degree with that of Europe: amongst 109 genera, 70 are likewise European, and 85 in the north temperate zone. On the other hand, it differs considerably from the Floras of the Cape and of New Holland, for the *Proteas*, the *Myrtle tribe*, and the *Mimosas* are either wholly wanting, or are seen but sparingly; and there are no *Epacrideæ, Heaths, Irideæ, Mesembryanthema*, or *Geraniums*. Nor can it be compared with the Flora of the north-west coast of America; for amongst 189 genera mentioned, only 35 are found in Chili. The characteristics of this region seem to lie in the great number of *Arborescent Syngenesiæ* (particularly of the sub-family *Boopideæ*), which, however, do not exclusively appertain to it, but are also seen at the Cape.

1113. (12.) *Antarctic region.* — This includes the countries near the Straits of Magellan. There is a considerable affinity between the vegetation here and what is seen in the north temperate zone; for, amongst 82 known genera from thence, there are 59 of them which have species in the northern hemisphere. The arctic polar forms also appear, such as *Sedges* (Carices), *Saxifrages, Gentians, Arbutus*, and *Primroses*. Some resemblance to the highlands of South America and to Chili is also shown in the *Slipperworts, Ourisia, Bæa, Bolax, Wintera, Escallonia*; to the Cape, in the genera *Gladiolus, Witsenia, Gunnera, Ancistrum, Oxalis*; and to New Holland, in *Proteaceæ* and *Mniarum*.

1114. (13.) *Region of New Zealand.*—This well deserves to be characterised as a separate region, although its vegetation be a mixture of what prevails on the nearest continents, as South America, Southern Africa, and New Holland. It has, in common with South America, *Ancistrum, Weinmannia, Wintera*; with Southern Africa, the *Fig Marigolds, Gnaphalium, Xeranthema* (Everlastings), *Tetragonia* (the famous New Zealand Spinach), *Woodsorrel*, and *Passerina*; and with New Holland, the *Epacris, Melaleuca, Myoporum*; with both the latter, the families of *Proteaceæ* and *Restiaceæ*: some species also are common both to New Holland and Van Diemen's Land, for instance *Mniarum biflorum, Samolus littoralis, Gentiana montana*; the first also a native of the Straits of Magellan.

1115. (14.) *Region of Epacrides and Eucalypti*: comprehending the temperate parts of New Holland, together with Van Diemen's Land.—This region is very marked. The families of *Stackhouseæ* and *Tremandreæ* are quite peculiar to New Holland, the *Epacrideæ* nearly so. *Proteaceæ, Acaciæ, Aphyllæ*, and the greater number of the *Myrtle* family (especially of the genera *Eucalyptus, Leptospermum, Melaleuca*); the *Stylideæ, Restiaciæ, Casuarineæ, Diosmeæ*, separate it from other regions. The tropical part of New Holland, according to Brown, can hardly be united to this, but must be either a particular region, whose Flora resembles that of India, or else a province of this latter region.

1116. (15.) *Region of Fig-Marigolds* (Mesembryanthema) and *Stapelias.*—This comprehends the southern extremity of Africa, the Flora of which is distinguished by a high degree of peculiarity. By the families *Proteaceæ, Restiaceæ, Polygalæ* (Milkworts), *Diosmeæ*, it may be recognised from most others, except New Holland, and from this it is distinguished by the two numerous genera *Mesembryanthemum* and *Stapelia*, and by the family *Ericeæ*, which is here more abundant than any where else. Further characteristics of this region may be found in the many *Irideæ, Geraniæ, Oxalideæ*, and the extremely large proportion of *Compositæ*. On the other hand, there exist in this district, as in New Holland, but very sparingly, those peculiar forms of the northern temperate zones, the *Cruciferæ, Ranunculaceæ, Rosaceæ, Umbelliferæ, Caryophylleæ*.

1117. (16.) *Region of Western Africa.*—We are only acquainted with Guinea and Congo, the vegetation of which, as we have already remarked, possesses but few peculiarities, and is a mixture of the Floras of Asia and America, though most resembling the former. The American tropical families of *Cacti, Peppers, Palms, Passion-flowers*, are either absent entirely, or they occur in small numbers. *Leguminosæ* are more numerous than in America. Above two thirds of the genera and some of the species of Guinea are found also in the East Indies. On the other hand, this region approximates to America, in possessing many *Rubiaceæ*, as also in the genera *Schwenkia, Elais* (a palm), *Paullinia, Malpighia*, and several more which are wanting in Asia, and in several species which it has in common with America. A considerable proportion of *Grasses* and *Sedges* (Cyperaceæ), with the peculiar genus *Adansonia* (the Baobab, which is the largest known tree in the world), belong to the characteristics of this country. The interior of Africa is unknown to us.

1118. (17.) *Region of Eastern Africa.*—Of the coast of this side of Africa and the adjacent islands our knowledge is imperfect. We are tolerably acquainted with the islands of Bourbon and France; of Madagascar we know but little; and of the east coast itself scarcely any thing. The Flora of the two first-named islands has a considerable resemblance to that of India. Amongst 290 known genera, 196 of them (equal to two thirds) are found also in India; and of the species, not a few are likewise Indian; many of these, however, may have been introduced by the constant intercourse that takes place between these two parts of the globe. The genera *Eugenia, Ficus* (fig), *Urtica* (nettle), *Euphorbia* (spurge), *Hedysarum, Panicum, Andropogon, Sida, Pandanus* (screw-pine), *Dracæna* (dragon-wood) *Conyza*, are very numerous in species, as are the same genera in India. In *ferns*, these islands are peculiarly rich. Again, their flora differs considerably from the South African; an analogy existing, however, in their possessing single representatives of the Cape genera *Erica, Ixia, Gladiolus, Bleria, Mesembryanthemum, Seriphium*, and several arborescent *Synge-*

nesiæ. Still less is the affinity to the extra-tropical parts of New Holland. The similarity is stronger to the tropical portion of that country, of which the flora also approaches that of India. Single genera are all that it seems to possess in common with America; for instance, *Melicocca, Ruizia, Dodonæa, Dichondra.* The following are, perhaps, peculiar to this region, *Latania, Hubertia, Poupartia, Tristemma, Fissilia, Cordylina, Assonia, Fernalia, Lubinia,* and others. The flora of Madagascar seems very peculiar. It agrees with the islands last mentioned; and several genera are seen no where else than in them and Madagascar; for example, *Danais, Ambora, Dombeya, Dufourea, Didymomeles, Senacea;* several species also are common to both; as *Didymomeles Madagascariensis, Danais fragrans, Cinchona Afro-inda.* Still, among the 161 known genera from Madagascar, 54 only are found in the Isles of France and Bourbon; so that there might be good grounds for forming a separate region of the first; unless, perhaps, the east coast of Africa should come under the same. With New Holland and the Cape, Madagascar has probably still less in common than the two other islands.

1119. (18.) *Scitaminean region* (of the *Turmeric, Zedoary, Cardamom, Indian-shot,* &c.), or the Indian Flora. — To this appertain India, east and west of the Ganges, together with the islands between India and New Holland; perhaps, also, that division of New Holland which falls within the tropics. The *Scitamineæ* are here in far greater numbers than in America; also, though to a less degree, the *Leguminosæ, Cucurbitaceæ, Tiliaceæ.* The previously mentioned South American forms are rare, or else wanting. This region should be separated into several provinces; but as yet we know too little to undertake such a division with any degree of certainty.

1120. (19.) *The Indian highlands* ought to form one or perhaps two regions, their vegetation being very dissimilar to that of the lowlands: in the middle region, *Melastomæ, Orchideæ,* and *Filices,* appear to prevail; in the higher, the vegetation is more like the European and North Asiatic, and probably the Japanese: these districts perhaps constitute one region with the whole of Central Asia; but of all these countries we shall know much more when the Flora of India by Roxburgh and Wallich is completed.

1121. (20.) *The Flora of the South of China and of Cochinchina* partly resembles that of India, especially in regard to families; but still Loureiro's Flora contains a great many peculiar genera. It is true that perhaps the number of these genera might be reduced; but even then, the vegetation of this tract will probably prove sufficiently peculiar to constitute a distinct region.

1122. (21.) *The region of the Cassiæ and Mimosæ,* which prevail particularly in Arabia and Persia, seems likewise to have a good right to be separated from India, as it is already sufficiently distinct from the Mediterranean region (No. 3.); for, of 281 genera mentioned by Forskäl, 109 only are found in the south of Europe. It is more probable that the Flora of Nubia and part of Central Africa appertains to this region. Abyssinia perhaps forms a distinct region, its elevated parts possessing such a different climate.

1123. (22.) *The islands in the South Sea* which lie within the tropics form perhaps a separate region; though with but a slender degree of peculiarity. Among 214 genera, 173 are found in India; most of the remainder are in common with America; for instance, *Chiococca, Weinmannia, Guajacum.* Of the species which exist equally in them and Asia, are *Zapania nodiflora, Kyllingia monocephala, Fimbristylis dichotoma, Tournefortia argentea, Plumbago zeylanica, Morinda umbellata, Sophora tomentosa.* In common with America, *Dodonæa viscosa, Sapindus saponaria* (soap-berry): with both, *Rhizophora Mangle* (mangrove tree): it has also some in common with New Holland, as *Daphne indica* (a species of *Spurge Laurel*). Peculiar families, or such as have there a decided maximum, can scarcely be cited; though, on the other hand, most of the species are peculiar. The *Bread-fruit* is among the characteristics of these islands; though this tree is not confined to the South Seas.

1124. *The limit of the present essay* does not allow of the intended introduction of the geographical situation of many of our more useful and important plants, which Professor Schouw has so ably delineated; such as that of the *Beech,* the *Vine,* the *Fir tribes,* the *Heaths, Corn,* and such fruits or vegetables as are employed as bread: the *Palms,* the *Proteaceæ,* which form so remarkably striking a feature in the Cape of Good Hope and in New Holland; the *Compositæ,* which are perhaps more universally diffused than any other kind of plant; the *Cruciferæ,* to which the *Cabbage, Turnep, Mustard, Scurvy-grass,* &c. appertain; and the *leguminous tribes,* whose seeds (as the *Pea* and *Bean*) are so valuable for man, and whose foliage, as the *Lupine* and *Trefoil,* &c. affords most of the nourishment to cattle. We must endeavour to incorporate these with the vegetation of the various regions where they are found in the greatest abundance.

Chap. II.

GEOGRAPHY CONSIDERED IN RELATION TO THE DISTRIBUTION OF MAN AND ANIMALS.

1125. *The geographic distribution of animated beings* is a branch of natural history which only of late years has engaged the attention of philosophers. The celebrated Blumenbach was the first, we believe, who generalised the numerous facts connected with the physiology of man, and proved that all the varieties may be referred to certain types of form, equally distinct in their physical structure and in their geographic distribution. Nearly at the same time, the geography of the vegetable kingdom engaged the attention of Baron Humboldt, the most accomplished traveller of the age; while, in our own country, the researches of Robert Brown have equally contributed to place Botanical Geography on a better footing than formerly. In this, as in other respects, Botany has taken precedence of Zoology; although it would be difficult to show why beings, so confessedly inferior in the scale of creation, should be deemed more worthy of attention than those belonging to the animal kingdom. Whether from this prejudice, or from the more varied and comprehensive sphere of zoology, which renders the subject too vast for the power of any one mind, certain it is that animal geography has been almost neglected. Isolated details, relative to particular countries, classes, or families, have been successfully investigated; but no one has yet attempted to generalise these materials, and use them towards the discovery of the laws of creation. It may be urged that the Fauna Suecica of the great Swedish naturalist is an exception; and that the writings of our acute and observing countryman White evince, on this subject, a patience and accuracy of observation hitherto unequalled: but without depreciating the merits of such works, we cannot consider them otherwise than as local lists, highly interesting indeed, so far as their limits extend, but totally distinct, in their object and nature, from such enquiries as regard the laws of geographic distribution. And here we may observe, it has of late become a fashion with certain writers to apply this term in much too general a sense. Any attempt to ascertain the range of particular species simply within a certain district or kingdom, is merely an enquiry into their *local* distribution; but if our views are extended beyond such confines, and we embrace a large portion of the globe, tracing the relations of its animals, with those of the remaining portions, it is then only that we enter upon the comprehensive subject of *geographic* distribution.

1126. *The enquiries relative to physical distribution, when directed to the animal world,* assume a higher importance than those, however interesting, which regard plants; for not only do animals appear incalculably more numerous than vegetables, but their natural range, dependent on a multiplicity of concurrent causes, appears to be much more distinctly marked. Plants, indeed, in a great degree, are stationary beings; but nature has wisely provided for their removal and dispersion to the most distant regions, by the diversified structure or tenacious vitality with which the seeds of numerous families are endowed; hence they become transported by various natural causes to distant shores, and, without any assistance from human aid, take root, flourish, and increase, in lands far distant from those which appear to have been their native regions. It is otherwise with animals: they may, it is true, be removed from their birth-place, and even become domesticated and naturalised elsewhere; but, with the exception of those which seem to have been originally destined for the service of man, such naturalisation is only effected by artificial means, and by slow degrees, through several generations. If such transported animals be left to themselves, or rather to the natural resources for supporting life peculiar to their new abode, they almost invariably pine and die. Again, plants, from being inferior to animals in the complexity of their structure, are, perhaps, necessarily dependent on fewer causes for retaining the vital energy; their dispersion is, consequently, upon the whole, much more extensive. It may be mentioned, in support of this remark, that out of 600 plants discovered in tropical Africa by Professor Smith, one twelfth have been ascertained, by Robert Brown, to be natives also of India and South America. Now, if either the vertebrated or invertebrated animals, not aquatic, of Western Africa, were compared in a similar way with those of the parallel latitudes in America and India, the proportion collectively would hardly amount to one in a hundred: indeed, with regard to the vertebrated orders, it is very questionable whether even one species is truly indigenous to tropical Africa and to America; so totally different are the zoological features of these continents, even at their nearest approximation: and yet, in the above number of plants, no less than twenty-two species are enumerated, as common to equinoctial Africa, India, and America. These facts, while they strengthen the belief that zoology is a more favourable field than botany for discovering the laws of natural distribution, lead us to consider the modes by which such enquiries are most beneficially prosecuted.

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Sect. I. *Modes of investigating the Subject.*

1127. *The powerful effect produced on animals by temperature, food, and locality,* are known to all: whether as regards the range of any particular species, or the numbers of which it may be composed. The effect of these agencies is indeed so great, that some writers have looked upon them as primary causes, and have imagined that by such laws alone has nature regulated the distribution of the whole animal creation. Very many instances, no doubt, from among the diversities of animal structure, may be urged in support of this theory; but how far it can be reconciled with other and more general facts, which will be apparent on a wider view of the subject, we shall hereafter investigate. It is clear that, by whatever laws Nature may have been guided, numerous exceptions will be found, proportionate to the vast and almost infinite variety she has displayed in her productions. There is, perhaps, no theory professing to explain the laws of Nature, whether on animal distribution or natural affinities, which the wit of man could possibly devise, that might not be supported with great plausibility, by certain facts, presented by those radiating threads of connection, and those apparent deviations from her general laws, which are everywhere apparent: yet these will frequently be opposed to other facts; and thus it becomes necessary, before determining on which side the preponderance of evidence lies, that we take as wide a survey of the general distribution of animals as the existing state of knowledge will admit. To set out with the belief that the laws of geographic distribution are fully ascertained, and that nothing remains but to make ourselves acquainted with the range of individual species, is a doctrine which can only be compared to those principles of classification insisted upon by the methodists of the last age in natural history, who considered all the generic groups had been discovered, and that future naturalists had nothing left but to appropriate to them the newly discovered species, in the best manner they could.

1128. *Towards the discovery of the natural geography of animals* there is, however, another mode of investigation, analogous to that we now pursue, in searching after the true series of their affinities: this is, to lay aside all preconceived theories, and to begin with considering the primary causes of geographic distribution to be, what in truth they really are, totally unknown. We are thus compelled to take a general survey of all the existing animals yet discovered, and now dispersed over the globe; and, from the facts so elicited, endeavour to attain such general inferences as are supported by a preponderance of evidence, furnished by nature herself. By the first method, as it has been truly said, we make nature bend to our own arbitrary theories; while by the second we humbly endeavour to receive her instructions; striving to obtain a glimpse of that stupendous plan which can never be fully understood by fallible and imperfect mortals.

1129. *The geographic distribution of man* is connected in our survey with that of animals; not so much in compliance with the popular notion, by which the noblest work of God is classed as a genus next to the brute, but because we may fairly presume, from the great diversity observed among the human species, that their variation and dispersion is regulated by some general plan; and that such plan may be analogous to that which is apparent in the distribution of animals. It may be urged, indeed, that such a remarkable coincidence, if proved, might tend to sanction the modern theory of classing man and brutes together; but the only legitimate construction which we think could be fairly drawn from such a fact would be, that there is but one plan of geographic distribution and of creation throughout nature.

1130. *Against classing man with quadrupeds* we must enter our decided protest. And here we cannot refrain from expressing regret that a naturalist of no ordinary talent has recently adopted this degrading theory, in apparent opposition to his former most just and philosophic views of the subject. He admits "the greatness of the gulf between man and the orang outang;" yet, because they possess certain analogies of physical structure, is it a necessary conclusion that they form one group? (*Linn. Trans.* xvi. 1. p. 22.) This, at least, was not the opinion (as this philosopher candidly admits) of either Aristotle or Ray, whom he justly considers the two greatest zoologists that have ever existed. It has been argued that the natural pride of philosophy withheld such men from classing themselves with brutes; but we are more disposed to think they were influenced by higher considerations. However this may be, there is an innate repugnance, or rather a disgust and abhorrence, in every human mind, enlightened or illiterate, against the admission of such a relationship. Revelation everywhere places MAN, even in his fallen state, in absolute contrast and contradiction with "the beasts that perish." It is not merely a feeling of pride; it is an innate loathing, engrafted in our nature, apparently for the very purpose of teaching us how immeasurably far we are removed from the brutes that have no understanding. Man has fallen, miserably fallen, but this is from the corruption of that pure spirit with which he was created: his form was then, as it is now; nor are we to suppose that *man*, as he came fashioned by his Creator, without sin, was clothed in a different form to that which he now, in a sinful state, exhibits. Are we then to place such a being in a zoological circle, surrounded with apes and baboons? or are material and immaterial natures so closely allied, that they may be classed together?

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1131. *There is another argument against including man in the zoological circle*, furnished by the very theory upon which that hypothesis is built. If the circular system is part of the system of nature, which at this time of day is perfectly demonstrable, every being has two affinities: by the one, it is connected to that which precedes it; by the other, to that by which it is succeeded. Now, before we can bring man within the circle of the Quadrumana, on the strength of his affinity (whether near or remote) to the orang outang, we must show to what class of animals he is connected on the other hand. What then are our double affinities in the vertebrate circle? We may be allied distantly, perhaps, to *Simia*. But where is the second affinity? If this cannot be pointed out, the whole theory, in our estimation, falls to the ground, since the presumed *type* of the animal kingdom contradicts the laws by which creation is supposed to be regulated; man exhibiting a single affinity, and the rest of organised matter a double one. Take him *from* the animal circle, — place him between matter and spirit; — and his double affinities become at once apparent.

1132. *A general sketch of the physical peculiarities of man* in all his variations will first claim our attention; the regions inhabited by the different races, and the affinities by which they appear connected, will also be briefly noticed. This part of our subject will be conducted on a somewhat different plan from that which we shall pursue in the sequel. The profound researches of Blumenbach and Cuvier, and the acute and patient investigations of Lawrence and Pritchard, have all conspired to produce nearly the same general conclusions on those points to which we shall particularly draw the reader's attention. These conclusions, moreover, demand our fullest confidence, from being founded on as rigid analysis as the nature of the subject will admit. Hence, we have no need, in this place, of entering into details, or of pursuing the same mode of investigation to which we shall have recourse when subsequently treating of animal distribution.

Sect. II. *Varieties of the Human Race.*

1133. *The varieties of the human race*, according to the opinion of the greatest comparative anatomist in existence, may all be included under three primary divisions, between which, in their typical examples, a very marked difference is observed. These M. Cuvier has termed, 1. the fair or Caucasian variety; 2. the yellow or Mongolian; 3. the black or Ethiopian.

1134. *The classification proposed by the celebrated Blumenbach*, although apparently different, is but a modification of that promulgated by Baron Cuvier. The former considers the Ethiopian type as divisible into three, 1. the American; 2. the Negro; and 3. the Malay. The latter indicates these additional races, but considers their peculiarities as less prominent than those of the two former; he does not therefore admit them among the primary divisions of the human race. Without, at present, offering any opinion upon this question, we shall first take a rapid survey of the peculiarities, physical and moral, of all these groups.

1135. (1.) *The Caucasian race* (*fig.* 70.) is typically characterised by a white skin; red cheeks; copious, soft, flowing hair, generally curled or waving; ample beard; small, oval, and straight face, with the features very distinct; expanded forehead; large and elevated cranium; narrow nose; and small mouth.

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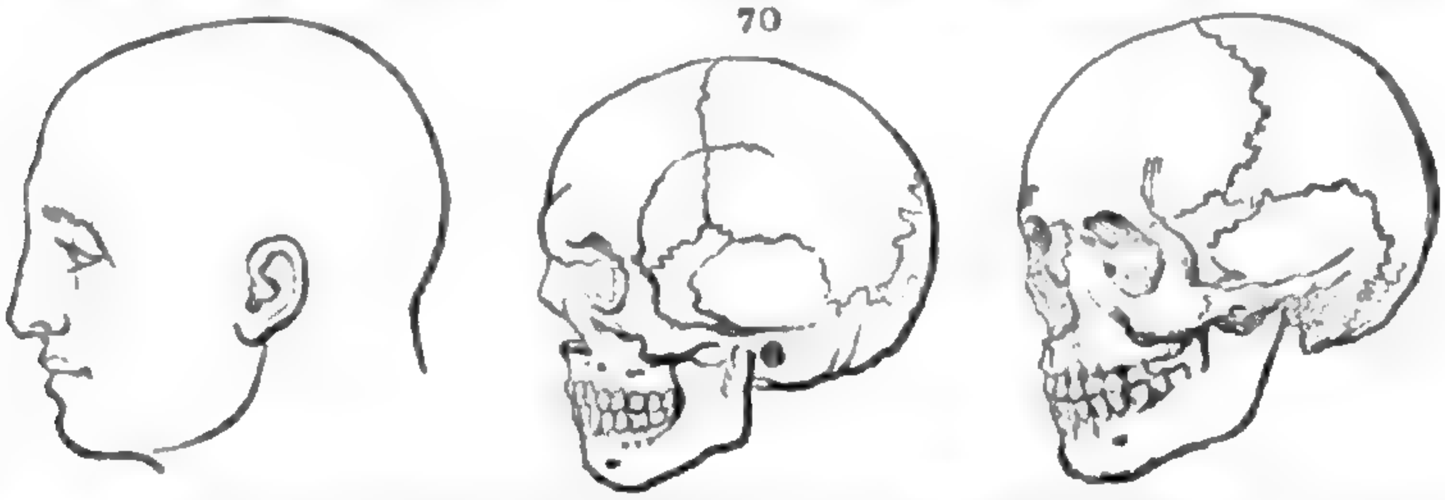

1136. *The moral feelings and intellectual powers of this race* have been developed in the highest degree of perfection which human nature has ever exhibited. The Caucasian has given birth to the most civilised nations, both in ancient and modern times, and has always exercised dominion over the rest of mankind, when not opposed by a vast superiority of physical strength. The mighty nations of antiquity, and the no less resistless powers concentrated in modern Europe, evince the superiority of this race in all that ennobles the immaterial part of man, and all that renders him formidable to his fellow creatures; while every age witnesses a progressive but a surprising advance in all those qualities which indicate intellectual endowment.

1137. *The original seat of the Caucasian race* is supposed, as the name implies, to have been that lofty chain of mountains between the Black and Caspian Seas. This supposition, as Lawrence observes, is in unison with all that can be traced of the original abode of our first parents; and is further confirmed by the natives of these regions being, to this day, the most beautifully formed of all the inhabitants of the earth. From the Caucasian Alps different branches of this race diverge in every direction, as from a common centre; the peculiarities of each being modified, altered, and finally lost, in proportion as they recede from the original seat of their tribe.

1138. *Of the branches of the Caucasian race*, the most powerful is the Pelasgic, which spreads over the greater part of Europe and Western Asia at its most northern limits, while it blends with the Mongolian race by means of the Fins and Laplanders. From this branch sprang the powerful nations of Greece and Rome, which have been succeeded by the mighty kingdoms of modern Europe. The next is the Syrian, which takes a southerly direction; and includes that portion of Asia formerly inhabited by the Assyrians, Chaldeans, and the ancient Egyptians. The Indian branch, by some thought to be the same with the Pelasgic, passes to the East, and loses itself among the inferior castes of Hindostan. A fourth branch is the Scythian or Tartaric, which spread over the more northern parts of Asia; and gave birth to those wandering and ruthless hordes who, by the physical power of numbers, devastated and finally overthrew the polished empires of Greece and Rome. The wandering and pastoral habits of this tribe have conspired to preserve their peculiarities unmixed with those of the neighbouring nations; except, indeed, in Lesser Tartary, where this branch of the Caucasian race loses itself in the Mongolian.

1139. (2.) *The Mongolian variety* (*fig.* 71.) has these characteristics: — The skin, instead of white or fair, is olive yellow; the hair thin, coarse, and straight; little or no beard; broad, flattened face, with the features running together; small and low forehead; square-shaped cranium; wide and small nose; very oblique eyes; and thick lips. Stature inferior to the Caucasian. In this race the moral and intellectual energies have been developed in an inferior degree. Tradition, indeed, has assigned to their most powerful nation, the Chinese, a high degree of civilisation, at a period when Europe was in a state of barbarism. Yet there are many circumstances which throw considerable suspicion on this fact: and even if it be allowed, a stronger proof could not possibly be produced to show the limited intellectual powers of this race; for while the European Caucasian nations have advanced from rude savages to become masters of the world, the Chinese, after reaching a certain state of civilisation, have remained stationary, in every respect, through a long series of ages. Solitary exceptions cannot invalidate the fact; and while we know that, not only in our own times, but so far back as history informs us, neither the sciences, the inventions, nor the improvements of the last three centuries have changed the Mongolian nations from what they then were, we can come to no other conclusion than that they are nationally incapacitated from further improvement. Cuvier supposes that the origin of the Mongolian race may have been in the mountains of Altaï. From thence it has spread over the whole of central and northern Asia, where it is lost among the Esquimaux on the one hand, and the Caucasian Tartars on the other. It further extends to the Eastern Ocean, and includes the Japanese, the Coreans, and a large proportion of the Siberians. Its limits to the south appears to extend no farther than to that part of Hindostan north of the Ganges, while the Mongolian features only predominate over those of the Indo-Caucasian in the lower castes of the Eastern Peninsula.

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1140. *The origin of the Esquimaux and other polaric nations* found on the most northern limits of Europe and America, has given rise to great diversity of opinion. Arguments of nearly equal weight, but of opposite tendency, have been employed to show, on the one hand, that the Esquimaux belong to the American variety; and on the other, to prove their structure more in unison with that of the Mongolian. The latter opinion has been supported by Mr. Lawrence; and although we consider the weight of argument to be on this side, it appears not at all improbable that both these suppositions are in part correct. We have before observed, that the characters of each race become less and less apparent, the farther they are removed from their particular type. The proximity of the northern regions of Asia to those of America, renders it highly probable either that their respective inhabitants mingled their races at a remote period, or that the northern Mongolians, whose civilisation is supposed to be of so great antiquity, were the first to emigrate, and people the northern regions of America. At all events, it appears certain that the Esquimaux nations unite in themselves many of the characters of two distinct races; and the only theory by which we can reconcile these doubts on their true origin, is that of supposing them to form the link of connection between the Mongolian and that race which spreads over the remaining portion of the new world. The brief notice we have now taken of the two most powerful races or varieties of the human form is sufficient to show their marked superiority over all others, whether as regards the symmetry or beauty of their physical structure, or the still more striking developement of their moral powers. Hence they both become typical, although in different degrees, of that perfection which the Creator has bestowed upon man, in this his probatory state of existence.

1141. *The third primary division* or leading variety of the human race, according to the views of the illustrious Cuvier, is the Negro or Ethiopian. This, again, presents three variations, considered by Cuvier as secondary, and by Blumenbach as primary. Although these variations are not so great as those between either the Caucasian, the Mongolian, or the African (the latter being considered the type of the Ethiopian variety), still they are sufficiently important to merit a particular specification under distinct names; and they are accordingly termed the American, the Ethiopian, and the Malay varieties.

1142. *In the American variety* (*fig.* 72.) the skin is dark, and more or less red; the hair black, straight, and strong, with the beard small; face and skull very similar to the Mongolian, but the former not so flattened; eyes sunk; forehead low; the nose and other features being somewhat projecting. The moral and intellectual character of this race is in unison with the great difference it presents in outward form from the Caucasian. Like the Mongolian, it has remained stationary; but stopped at a point very much below that to which the Asiatics have reached. The ancient and now extinct empires of Mexico and the Incas may be considered analogous to those of China and India, exhibiting the highest point of civilisation to which the two races have ever reached; but farther than this the comparison cannot be carried. Arts, sciences, and all those intellectual endowments which have followed the progress of the Caucasian race, and to a certain extent belong also to the Asiatics, appear to have made little or no progress among the Americans, even in the gorgeous court of Montezuma. When that monarch despatched messengers to bring him an account of the first Spaniards who landed on his territories, so ignorant were the Mexicans of figures or of writing, that their report was made in complicated hieroglyphics, mixed with rude figures of the horses and persons of these unknown invaders. Their idolatrous worship enjoined no moral duties, like those of the superstition of Fo; and its rites were celebrated by human sacrifices of such a revolting nature as to be worthy only of demons. It deserves attention, that while the central portion of America presented in its original inhabitants such a degraded picture of the human mind, the northern nations of the new world, partaking more of the Mongolian aspect, evinced a higher degree of intellect. It is true they were only wandering tribes of hunters, yet they appear to have had a full belief in the existence of one "Great Spirit," and in a blissful immortality for themselves. The American race, blending with the Mongolian to the north, spreads over the whole of the new world; but whether any traces of this type exist beyond these limits, is a question which has not hitherto been investigated.

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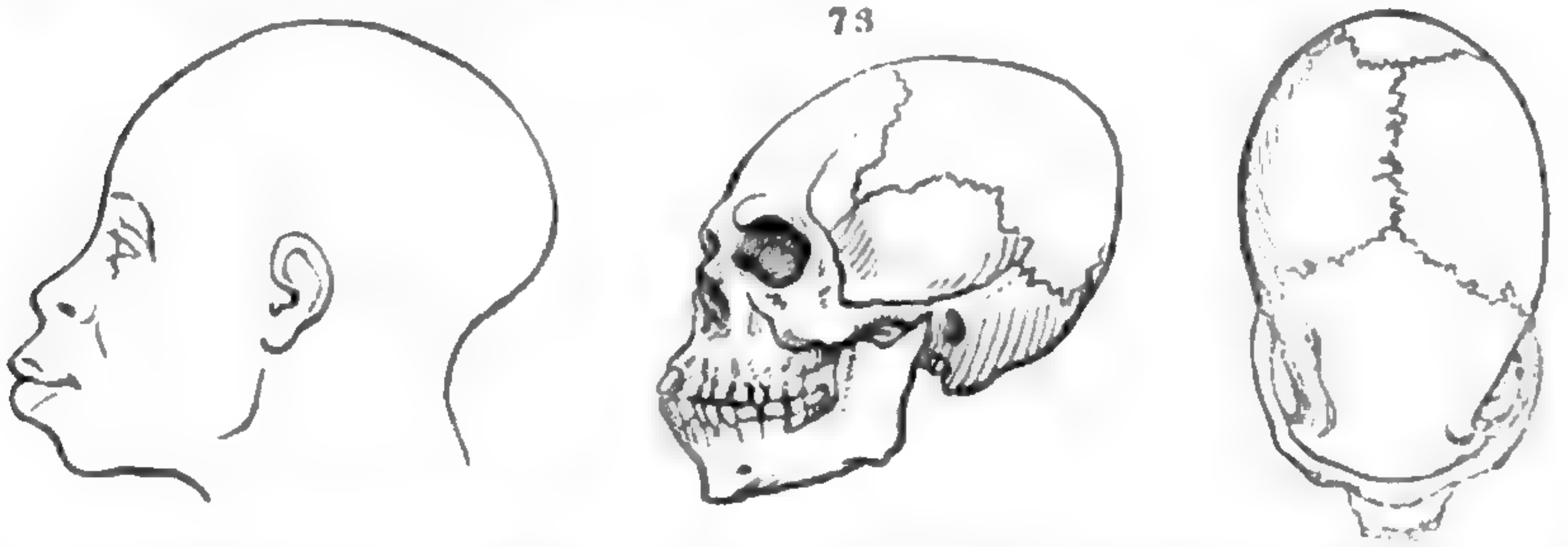
1143. *In the Ethiopian variety* (*fig.* 73.), the skin is black; hair short, black, and woolly; skull compressed on the sides, and elongated towards the front; forehead low, narrow, and slanting; cheekbones very prominent; jaws projecting, so as to render the upper front teeth oblique; eyes prominent; nose broad and flat; lips (especially the upper one) particularly thick. The African or Ethiopian race has ever remained in a rude and comparatively barbarous state. Their cities are but congregations of huts; their laws, the despotic whim of the reigning chief. Incessantly occupied in war or in the chase, they seek not to perpetuate their ideas. They have no written language, nor even a code of hieroglyphics. Abundantly supplied by nature with every necessary of life, they have retained their character unchanged, after centuries of intercourse with the most enlightened nations. Different branches of this type spread over the whole of the African continent, excepting those parts bordering the north and east of the Great Desert, which are occupied by the Caucasian Syrians, and where all traces of the negro formation disappear.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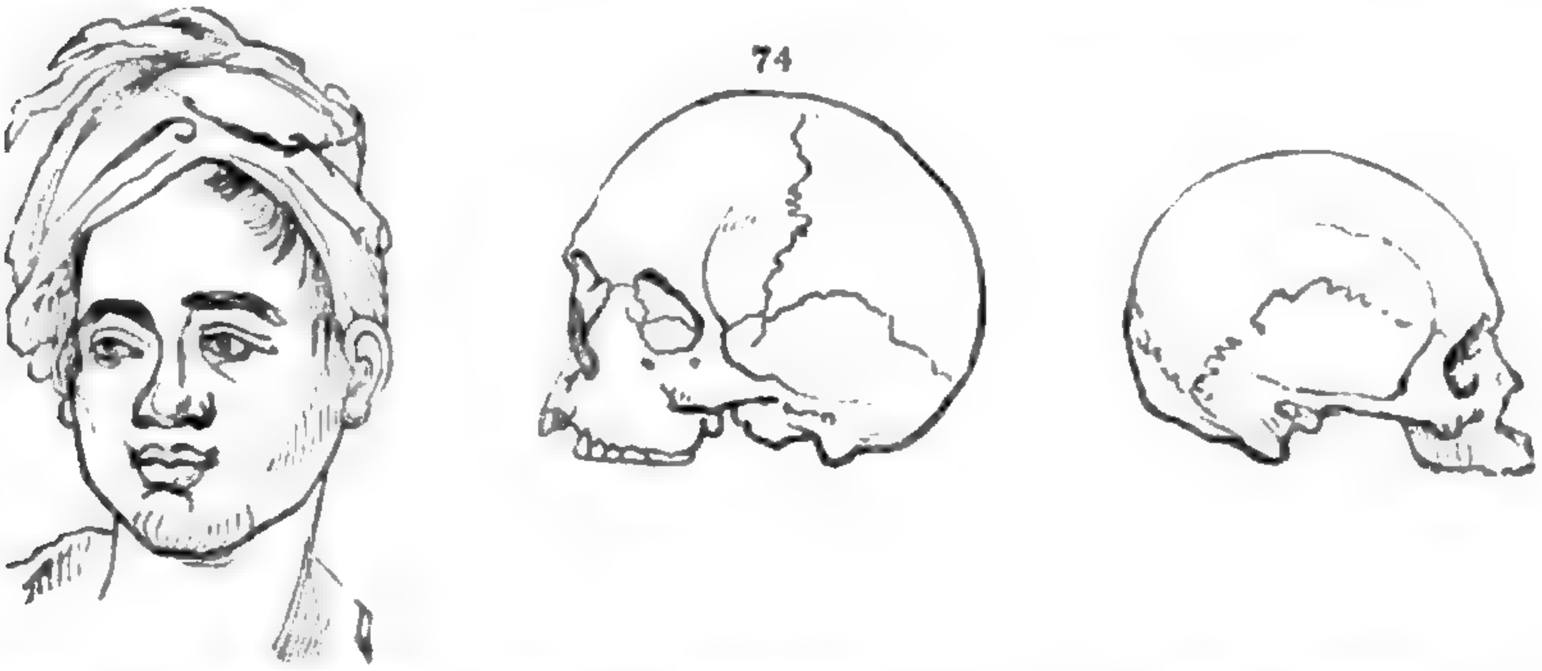
1144. *The Malay variety* (*fig.* 74.) varies in the colour of the skin from a light tawny to a deep brown, approaching to black; hair black, more or less curled, and abundant; head rather narrow; bones of the face large and prominent; nose full and broad towards the tip. Under this variety, observes Mr. Lawrence, are included races of men very different in organisation and qualities. They nevertheless present certain general points of resemblance, which forbid their association with either of the foregoing varieties. Under this head are, therefore, included the inhabitants of Malacca, of Sumatra, and of the innumerable islands of the Indian Archipelago and the great Pacific Ocean. Most of these tribes are stated to speak the Malay language, which may be traced, in the various ramifications of this diversified race, from Madagascar to Easter Island. Their moral character is no less various than their outward form. In such as, by the colour of their skin and their woolly hair, show a general approximation to the African type, the mental powers are little developed. Their language, however, is stated to be peculiar, and they appear to have a copious bushy beard. (*Lawrence*, 489.) Branches of this division of the Malay race spread over the great islands of Sumatra, Borneo, and Andaman; and they appear also to occupy the Molucca and Philippine Islands. They are described as living in the same state of wild and savage barbarity as do the Bushmen of Southern Africa, and such other branches of the Ethiopian variety as appear the lowest in the scale of form and intellect. There is, however, a lighter-coloured and superior race, inhabiting some of the Indian islands, where an oval countenance, longer hair, and finer form, evince a much greater affinity with the Indo-Caucasian type on one side, and a strong analogy to the New Zealanders and Pacific tribes on the other. Proceeding along the same insular chain, we meet with "negro-like men" having curly hair, in the immense island of New Guinea, and in those south-western groups denominated New Ireland, New Hebrides, and New Caledonia. The natives of the vast continent of New Holland show strong indications of the same origin, and of the same untameable barbarism; yet their features are described as not unpleasant, their skin is rather copper-coloured than black, and their hair either curling or straight. The natives of the interior have been described as somewhat more civilised, and as speaking a language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different from that used on the coast. In the neighbouring island of New Zealand a considerable change from the black Malayan tribes takes place. The superior castes of these islanders in their persons are tall, active, and well made; their skin is brown, and their long black hair is sometimes straight, sometimes curling. A degree of intellect, superior to all the tribes we have enumerated, accompanies these personal advantages. Retaining many of the barbarous customs of their neighbours, the New Zealanders have, nevertheless, made some progress in the arts of life since their intercourse with Europeans: they believe in a Supreme Being, and in a happy immortality; and evince, in various ways, a desire to improve their condition. The natives of the Friendly Islands have the dark complexion of the New Zealanders, but are a much superior race. They are of the ordinary European stature, though some are above six feet high; their colour is a deep brown, verging in the better classes on a light olive; their features, like those of the New Zealanders, are various, approximating in some respects to them, and also to the true Europeans. Their progress in civilisation and in intellectual developement is considerable; as a proof of which, it is mentioned that they have terms to express numbers up to 100,000. The Otaheitians have long been celebrated for their personal beauty: the lower orders, indeed, are of the same brown tint so generally prevalent in the Friendly Islands, but in those of a superior caste this is gradually lost, until we find in the higher ranks a skin nearly white, or at least but slightly tinged with brown: and although the usual colour of their hair is black, yet it is of a fine texture, and frequent instances occur in which it is brown, flaxen, and even red. Their persons are well made, their features sometimes even beautiful, and a blush may be readily observed on the cheek of the women. The harmony of their language, and their simple though refined manners, have been universally remarked. These national characteristics extend to the Society Islands. *Lastly*, The natives of the Marquesas have been described as the finest race in the Southern Ocean: "in form they are, perhaps, the finest in the world." Their skin is naturally "very fair," and the colour of their hair exhibits all the varied shades (excepting red), which are found in the different tribes of the Caucasian race.

Sect. III. *On the Causes of these Varieties.*

1145. *The following questions naturally arise from considering* these characteristics of the most prominent varieties of the human race; founded as they are on the concurrent testimony of travellers, and generalised by the most eminent physiologists: — 1. Whether these races, so dissimilar in their typical peculiarities, have originally proceeded from one, or from distinct stocks? 2. Are they so strongly marked as not to present many and great deviations? and, 3. To what causes are they to be attributed?

1146. *In regard to the first origin of the human race,* there have not been wanting those, who, disbelieving the evidences of the Mosaic history, have attempted to establish the hypothesis that these races have each sprung from different stocks; or, that they are, in fact, so many species. Now, this, at the best, is but an assumption perfectly gratuitous; not only because every record from which it could receive any support is expressly opposed to it, but because it is in direct violation of a primary and universal law of nature: a law by which the lowest being of the animal creation shrinks instinctively from intermixing its *species* with that of another. It has, moreover, been fully ascertained that, however great the variations of the human form may be, such variations among different breeds of the same species of animal are even greater. Unless, therefore, it can be proved that the laws of nature with respect to man and animals are contradictory, we shall, by attaching the least weight to the above theory, openly violate every principle of philosophic reasoning, as well as renounce all belief in revealed religion. On this head the Mosaic records are clear and explicit; and however the sceptic may deny their inspiration, he cannot bring forward, on his side, any testimony of such remote antiquity, or of such generally admitted credibility. As to the second question, it must not be understood that, in arranging the varieties of man under a certain number of divisions, and assigning to each a peculiar character, there does not occur many and very remarkable exceptions in each. So much, indeed, is this the case, that there are not wanting instances of native African tribes having the light skin of Europeans, Caucasians combining the Mongolian with the Malay structure, Americans resembling whites, and Africans with the copper-coloured skin of the American; nay, even in the same island or province, a great diversity both in language and in physical structure, is sometimes apparent, and this between tribes bordering close upon each other; so that, with the exception of a comparatively small portion of each principal race, we find so much diversity in the remaining or aberrant branches — the typical peculiarities become so modified, altered, or evanescent, that it is totally impossible to draw an absolute line of demarcation between them. This point has frequently been adverted to by a well-known physiologist, who says, "There is no circumstance, whether of corporeal structure or of mental endowment, which does not pass by imperceptible gradations into the opposite character, rendering all those distinctions merely relative, and reducing them to differences in degree. It is concluded, therefore, that every arrangement of these varieties must be in a great measure arbitrary." (*Lawrence's*

Lect. p. 472.) Yet, admitting this variation to the fullest extent, it cannot alter the correctness of the principle on which these distinctions are founded. Whatever might have been formerly thought as to the nature of terms employed by naturalists to designate particular groups of animals, it is now generally admitted that, throughout nature, there are no isolating distinctions, save such as separate species. The characters of every zoological group, of whatever magnitude or denomination, are subject to exceptions equally numerous. The typical peculiarities may, indeed, be prominent; but in proportion to the number of objects which are embraced under any definition, will be the diversity of those imperceptible gradations, those threads of connection, which shoot out in all directions, and unite not only genera and orders, but the primary kingdoms of the animal and the vegetable worlds. It is, therefore, irrelevant to argue that, because these divisions are liable to numerous exceptions, and are not always uniform and constant, they are either artificial or objectionable: for as we find that all natural groups, both in the animal and vegetable worlds, are subject to the same variations, they are therefore liable to the same objections. In short, if such reasoning is valid, the distinction between plants and animals can no longer be maintained; for it is to this day unsettled at what point the peculiarities of one are lost, and those of the other assumed.

1147. *The causes that may have led to these variations* in the human species, form the only question of a general nature remaining to be discussed. It has been argued by some writers, that particular climates, food, and modes of life, have gradually operated, through a succession of ages, to produce these effects on the colour, stature, and intellect of different nations. But, however greatly these causes may affect individuals, or even to a certain extent a whole people, they entirely fail when brought to solve our present question; were it otherwise, the same causes would naturally have the same effect on all the inhabitants of a particular region; but such, as is well known, is far from being the case. The negro, under a tropical sun, is black; while an Indian of Parà, in the same degree of latitude, is reddish brown. No race produces men more athletic, or more finely formed, than we ourselves have witnessed among the Gold Coast negroes; yet they inhabit, proverbially, some of the most pestilential districts of Africa. On the other hand, the New Hollanders, and the South African Bushmen, living in a salubrious climate, are described as lean, squalid, and with an appearance scarcely human. It is therefore obvious, that neither the physical nor the moral condition of man can be so affected by climate, or other external agencies, as to produce any great or permanent variation in his form. Indeed, when we consider that such agencies have not produced any physical change in any one nation, within the memory or the records of man, we are tempted to believe that, in a general point of view, their influence has been very slight: otherwise, there is no reason to doubt but that the same *natural* causes which operated at one period of time, would still continue to do so at another; and that we should find the descendants of Europeans long since settled in the New World, and in Southern Africa, beginning to assume the red tinge of the American, or the black skin of the Ethiopian. Still less can it be supposed that this departure from one common standard has been effected by civilisation, a consequent developement of the mental faculties, or even by diversified modes of life. Man, in remote ages, must have lived pretty nearly the same life in every region; whether as shepherds, hunters, or tillers of the field, their food, habits, and modes of life, must have been simple and regular. Whence comes it, then, that nations which still retain a great portion of what may be conceived their primitive simplicity, do not exhibit a corresponding resemblance in physical structure? If food, raiment, and moral improvement have such a powerful effect in modifying the human frame, it would naturally follow that tribes living nearly in a state of nature would all show a close approximation to one common type; that they would, in short, retain more of the lineaments and characters which must have belonged to our first parents, than if they had deviated from their primitive simplicity: yet the very reverse of this is the fact. The apparent aborigines of every nation are those in which the leading characters of their own tribe are most conspicuous; and which exhibit the strongest contrast to those of others. It is only when they have made some progress in the arts of life, when conquest or commerce has led to a union with other races, that the national characteristics, both personal and mental, give way, and begin either to blend or be lost in other modifications. These reasons, did they more immediately concern the purposes of this essay, might be much enlarged upon, more particularly as they have been offered by some deservedly eminent writers as a satisfactory solution of the question we are now discussing. Yet, allowing to all these causes the full effect they are known to have produced, we must yet confess they appear to us totally inadequate to explain the origin of the races of man. A writer intimately versed on this subject has well observed, that "external agencies, whether physical or moral, will not account for the bodily and mental differences which characterise the several tribes of mankind." (*Laurence's Lectures*, p. 431.) We have, in short, now brought the enquiry to a point where human reason is baffled: there is neither history nor tradition to guide us in a research which carries us back to the obscurity of ages; to that remote period when the earth, for a second time, was again peopled, if not by a single pair, yet by the *three* sons of a single family.

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1148. *We are now to view the question in another light.* It has been generally admitted, even by those who reject the Mosaic testimony, that the diversity in the human structure can in no way be accounted for by any known combination of *natural* causes: are we, therefore, to suppose, in a question which concerns the most perfect earthly being made by Omnipotence, that nothing *supernatural* is to enter? that causes which effect the developement not only of the material but of the spiritual essence of man, have been left to chance? Is it not more reasonable to conclude, that, for purposes unknown to us, a supernatural agency *was* employed? and that the immediate descendants of the sons of Noah were as distinctly marked in their outward form as they were in their moral character? The sacred writings, it is true, are silent on this particular point; but it has been well observed that the Mosaic records were not written to answer philosophic enquiries. Those who, in the present age, have been the most profound investigators of nature, discover in every part of creation a symbolic relationship; a mysterious system of types and symbols, which extends from the most complex to the most simple of organised beings: and when we know, for instance, that even the colours of a bird or an insect have a direct reference to such a system, and are employed as typical indications of its station in nature, can it be supposed that such a system does not extend to man? That this will not, in the present infancy of our enquiries, admit of such direct and unanswerable proof as amounts to mathematical demonstration, we do not attempt to deny; but that such a supposition is in harmony with that perfection which belongs to the works of Omnipotence, every reasonable person must admit. Nor are there wanting circumstances which give some degree of sanction to this belief. The curse pronounced upon Canaan as the son of Ham has unquestionably been fulfilled. Learned commentators agree in considering that central Africa was peopled by his descendants, and these have been for ages, and still continue to be, "a servant of servants," to their more favoured brethren. Even their own despotic governments render the subjects but slaves. In them the human form is most debased, the divinity of mind least developed. They still exhibit those leading resemblances which rendered Cain a type of Canaan: with few exceptions, they are, to this day, but "wanderers and vagabonds" on the earth. The blessings pronounced on the two remaining sons of Noah, it has been well observed, are of a very different nature: Shem was more peculiarly favoured than his brother; from his race not only the great patriarchs who typified Christ, but even Christ himself, descended. The peculiarity of the Jewish polity, which preserved the physical peculiarities of their race pure and unmixed through successive generations, leaves us in no doubt that they belong to the Caucasian type, in which, both in structure and intellect, a marked superiority over all the nations of the earth has been universally admitted. The early descendants of Japheth, as is plainly intimated by Moses, were eminently warlike. All writers agree in considering that from the Mongolian race descended those vast and overpowering hordes of barbaric warriors who at remote periods of time conquered all Asia, and devastated Europe under Attila, Zingis Khan, and Tamerlane. "It is remarkable," says Dr. Scott, "that the first king of whom we read in authentic history, is Nimrod, the mighty hunter." The same learned writer mentions that there is some ground for believing that the greatest part of Asia (now peopled by the Mongolian race) descended from Japheth. The population of Asia has been frequently mentioned as in an equal ratio to the superiority of its size over Europe, or rather, of those countries over which the Caucasian variety has spread. Thus, in every sense, it appears, that the promise to Noah's first son, "God shall enlarge Japheth, and Canaan shall be his servant," has literally and figuratively been fulfilled.

1149. *That the three sons of Noah overspread and peopled the whole earth,* is so expressly stated in Scripture, that, had we not to argue against those who unfortunately disbelieve such evidence, we might here stop: let us, however, enquire how far the truth of this declaration is substantiated by other considerations. Enough has been said to show that there is a curious, if not a remarkable, analogy between the predictions of Noah on the future descendants of his three sons, and the actual state of those races which are generally supposed to have sprung from them. It may here be again remarked, that although, to render the subject more clear, we have adopted the quinary arrangement of Blumenbach, yet that Cuvier and other learned physiologists are of opinion that the *primary* varieties of the human form are more properly but *three*; namely, the Caucasian, the Mongolian, and the Ethiopian. This number corresponds with that of Noah's sons: assigning, therefore, the Mongolian race to Japheth, and the Ethiopian to Ham, the Caucasian, the noblest race, will belong to Shem the *third* son of Noah, himself descended from Seth the *third* son of Adam. That the *primary* distinctions of the human varieties are but *three*, has been further maintained by the erudite Pritchard, who, while he rejects the nomenclature both of Blumenbach and Cuvier, as implying *absolute* divisions, arranges the leading varieties of the human skull under three sections, differing from those of Cuvier only by name. That the three sons of Noah, who were to "replenish the earth," and on whose progeny very opposite destinies were pronounced, should give birth to different races, is what might reasonably be conjectured. But that the observations of those who *do*, and of those who do *not* believe the Mosaic history should tend to confirm its truth, by pointing out in what respect these three races do actually differ both physically and morally, is, to say the least, a singular coincidence. It amounts, in short, to presumptive evidence that a mysterious but a very beautiful analogy pervades throughout; and teaches us to look beyond natural causes, in attempting to account for effects apparently interwoven in the plans of Omnipotence.

1150. *To reconcile the different theories regarding the number of primary variations* in the human form is our next object. The greatest authorities on this subject are Blumenbach and Lawrence, Cuvier and Pritchard. The first two, as already observed, maintain that the primary divisions are five; while the latter, with more show of reason, contend that there are but three, although they readily admit the distinctions assigned to the other two. In what manner, therefore, can these opposite theories be reconciled? To do this, we must revert to a third and a very remarkable one, which, although it has hitherto been solely detected to the animal kingdom, will yet be found to exercise a very important influence on the present question: we allude to the circular theory of MacLeay. It is the opinion of this learned naturalist that every group of organised beings divides itself, as it were, into two branches of affinities, which, finally uniting again at their opposite extremities, form a circle; and that this disposition of affinities holds good, not only in every group, of whatever magnitude or denomination, but throughout the animal and the vegetable world. It has been further shown that as such a circular arrangement of beings cannot, of necessity, present any absolute or isolated divisions, (for it could not then be continuous and circular), yet, that there may be traced, in each circle, five deviations or varieties of structure; which, however conspicuous in their typical examples, are blended and lost the nearer they approximate to each other. Now, so far as regards the affinities of animals, this circular theory has been demonstrated; but it long remained a matter of doubt what number of *primary* divisions every group contained. Mr. MacLeay considers there are five; and this accords with Blumenbach's arrangement of the human species. M. Cuvier, and Dr. Pritchard, as we have before stated, limit the leading varieties of man to three. In our arrangement of the order Insessores (*North. Zoology*, vol. ii.), one of the most comprehensive divisions in ornithology, we have shown that the primary divisions of every natural group are only *three;* one of which, by forming a circle of its own, includes three of those pointed out by Mr. MacLeay, — thus making the number *five*. Now, this theory, on the natural divisions of birds, rests upon no speculative assumption; it is founded on the most rigorous and minute analysis, and has thus been capable of mathematic demonstration. The question, whether this theory is applicable to one part only of the animal creation, or whether there is presumptive evidence to conclude that it pervades all nature, has been discussed at some length in the "Introductory Observations on the Natural System," prefixed to the same work. In some respects the *trinary* and the *quinary* theory of divisions may be thought virtually the same; and so far as regards our present subject, considered abstractly, this observation may be true. We can analyze a group of insects, of birds, or of other animals, but how are we to analyze the different modifications of man? The thing is utterly impossible. Now, as every true theory must rest upon analysis, our present views on this subject would be purely speculative, did they not so strikingly and wonderfully coincide with those in other departments of nature, into which we can prosecute minute research, and attain logical demonstration. Besides, by supposing that there are *five* principal variations in man, each equally important with the other, we entirely destroy the beautiful analogy between these variations and the sacred writings. But without entering farther upon this question, it will be sufficient for our present purpose to repeat, that, in regard to man, the views of Blumenbach and Cuvier are virtually the same; for if, with the former, we reckon five, there will be two groups more conspicuously typical of perfection, and three others, which, however distinct in many respects, possess several characters in common. If, on the other hand, we follow Cuvier and Pritchard, and restrict the number to three, we have the Caucasian and the Mongolian as the two principal groups, while there is a third, typically represented indeed by the Ethiopian, but still so diversified as to admit of a threefold division, into the American, the African, and the Malay varieties.

1151. *That the variation of man has been regulated* by similar laws to those which have been traced throughout nature, is a conclusion supported by strong and presumptive evidence; drawn both from the sacred writings, and from inferences in zoological science, which no one has ventured to dispute. In establishing this point, I have studiously confined myself to such facts, connected with the physical history of man, as rest on high and indisputable authority. On a subject so vast and intricate, illustrated by the united labours of the most acute philosophers now living, little that is new could have been said, and that little might have been suspected of being brought forward to favour a particular theory. In the preceding sketch of the principal differences in man, we have, therefore, merely condensed the observations and facts detailed in the writings of Blumenbach, Cuvier, Pritchard, Lawrence, and Sumner; rather wishing, that, whatever inferences are drawn from such sources, the facts themselves should rest on testimonies of so much weight.

1152. *The order in which these races are here placed* leads us to other considerations. Blumenbach is of opinion that the American form is intermediate between the Caucasian and Mongolian; but we have failed to discover any assigned reason for such a disposition, which also seems at variance with the progression of developement. The geographical situation of the two continents, as we have before observed, renders it highly probable that the American variety is more immediately connected with the Mongolian; and the simple fact, that the Esquimaux have been by some considered as of Asiatic origin, while by others they are thought to exhibit more of the American type, is, perhaps, the strongest proof of their intimate relationship to both. Neither does the American race exhibit any direct affinity to the Caucasian; while, on the contrary, both their physical structure and mental developement seem to place them in close approximation to the Africans. For these and subsequent reasons, we have felt no hesitation in adopting the series intimated in the *Règne Animal*. We must now advert to another peculiarity in this arrangement, which renders its similitude to the zoological series still more remarkable. This is the progressive series of affinities, resulting from placing the five leading varieties in the order in which they have been here noticed. The Caucasian and the Mongolian races present the highest degree of civilisation, although in very different degrees when compared with each other: the regions they respectively inhabit, in like manner, approximate so closely as not to be divided by water. Yet the configuration of these races is so remarkable, that they cannot be mistaken or confounded. In the third race, comprehending the American, the Malay, and the Ethiopian, very marked deviations from the typical endowments of the two former are manifest. This inferiority is first shown in the American, whose outward form and moral capacity is nevertheless superior to the African. Yet, as nature in the animal kingdom is ever prone to retrace her steps, and to return again to her original type; so we observe that, after exhibiting, in some of the African hordes, the lowest debasement of the human form, and the least capacity for mental improvement, she begins, as Blumenbach observes, in the diversified races of the Malay variety, to show a progressive but a very marked inclination to return through them to the Caucasian type. So strong, indeed, does this appear in many tribes of the South Sea Islanders, not only in the beauty of their forms, but in the advance they are continually making towards intellectual improvement, that every voyager, who has visited their shores, concurs in likening them to Europeans.

1153. *The inferences to be drawn from this circular disposition* are important, if merely considered in relation to those systems, which, by presupposing a lineal scale in creation, would place the negro in immediate contact with the monkey. Now, without laying any stress upon that primary characteristic of man, a reasoning, thinking, and immaterial soul, of which the body is but a temporary receptacle, we must, before we consent to this hypothesis, get over difficulties which appear insurmountable. That the Ethiopian holds the lowest station among the varieties of his species, is fully granted; but that this admission implies an affinity to the ape, does by no means follow. There may be an approximation: but it is necessary, before we decide on the *degree* of such approximation, that we should examine the relative affinity which the Ethiopian bears to the Caucasian. For if it should appear that the difference between the most perfect and the most imperfect of the human races is unquestionably less than between the latter and the brutes; or, in other words, that the similarities between the negro and the Caucasian are decidedly greater than those between the negro and the ape; we must admit that this latter approximation is too slight to be termed an affinity. If, on the other hand, we consider man only as a material being, he stands so far removed from brutes — the interval between him and them is so great — that it would be a violation of natural affinities, and certainly an insult on his better nature, to class him in the same system. To arrive at a just conclusion on this subject, we must not look so much to any *one* point of comparison, or to mere anatomical analogies, but bring the distinguishing characters of each into direct comparison. Does the negro, it may then be asked, evince a deficiency of those qualities which belong to the Caucasian? we allude not to the natural affections, for these are, in some degree, common to brutes; but in self privation, compassion, and heroic love of their country. Are they incapable of learning European arts, or of inventing others suitable to their wants or habits? To deny them such qualities would be preposterous: they possess the germs of others infinitely higher, which, under favourable circumstances, have produced expert artisans, skilful physicians, pious divines, and pleasing poets. "I protest especially," observes Mr. Lawrence, "against the opinion which either denies to the Africans the enjoyment of reason, or ascribes to the whole race propensities which would degrade them even below the level of the brute. It can be proved most clearly, that there is no circumstance of bodily structure so peculiar to the negro, as not to be found also in other far distant nations; no character which does not run into those of other races, by as insensible gradations as those which connect together all the varieties of mankind." (p. 428.) To pursue this comparison farther is needless; and to ask whether the least indication of such powers have ever been manifested by the quadrumanous animals would be ridiculous. The learned and eloquent Bishop Sumner forcibly observes, "There is nothing philosophical in the comparison of a being possessed of improvable reason, with one that is governed by natural instinct, because there is no just affinity between the talents which are compared." (*Records of Creation*, vol. i. p. 23.) We consider this argument as conclusive. To class man, therefore, in the same zoological division with apes, merely because both have a hyoid bone, is, to our apprehension, as glaring a violation of natural affinities as to arrange bats with birds, because both fly in the air, and possess a crest to their sternum. So far, indeed, from considering man as the type of a zoological order of brutes, we cannot allow that he even belongs to the same system in which they are arranged. It may be, that the deviations of his structure are regulated by those laws which govern the universe; yet, nevertheless, by his nobler qualities (which in fact are his true distinctions) he belongs to a higher order of beings: that he is, in short, a link between matter and spirit; that he carries this evidence, through revelation, within himself; and will hereafter be most assuredly rewarded or punished, according as he suffers his spiritual or his earthly nature to preponderate.

Sect. IV. *On the Geographic Distribution of Animals.*

1154. *The geographic distribution of animals* over the globe, is the next subject of enquiry. In the general outline of the variations in man which has been given above, we have deemed it more important to seek after general results than to enter upon minute details. Our attention has been fixed, not so much on those ramifications which shoot out near the extremities of every branch, and become too indistinct for clear elucidation, but rather to the leading branches themselves, on the nature of which there has been little diversity of opinion.

1155. *In the enquiry regarding the geographic distribution of animals,* on which we now enter, the same mode will be adopted, but with this difference, that whereas we have hitherto drawn our inferences solely from the facts and general opinions of others, we shall now put aside all theories heretofore promulgated on the distribution of animals, and merely depend on simple facts for the support of those inferences which they may appear to sanction. We shall first briefly notice those principles which have been applied to elucidate the phenomena of animal distribution, and then enquire how far they appear conducive to that end.

1156. *That climate, temperature, soil, and food,* exercise a paramount influence on the distribution of animals, has been generally believed; and on this assumption naturalists have divided the world into climates, zones, or provinces regulated by degrees of longitude or latitude. Such has been the favourite theory not only of physiologists, but of professed naturalists, whose knowledge of details might have furnished them with insuperable objections against such views. Thus, the celebrated entomologist Fabricius conceived that the insect world could be naturally divided into eight climates: one of which is made to comprehend all those mountains, in every part of the world, whose summits are covered by eternal snow. It is, therefore, not surprising that M. Latreille should consider such a theory as altogether vague in some respects, and arbitrary in others. But will not the latter objection be equally applicable to the distribution which this eminent naturalist has himself proposed for this part of the creation? At least, such is the opinion of one fully competent to judge the question. "A chart of animal geography," says Mr. Kirby, "which is divided into climates of 24° of longitude and 12° of latitude, wears upon its face the stamp of an artificial and arbitrary system, rather than of one according with nature." On much the same principles another theory has been built, by which the earth is divided into seven zoological provinces, or zones, mainly dependent on the respective degrees of latitude they occupy. Now, so far as regards one of these provinces — that comprehended within the arctic circle — this view of the subject, at first sight, appears perfectly just: for there is not only a strong analogy between the groups of animals inhabiting such parts of the two continents as enter into this circle, but there is also an absolute affinity between them; inasmuch as the arctic regions contain not only genera, but numerous species, common to both continents. This theory, however, loses all its force when applied to such divisions as are made to include the tropical regions of Africa, America, and Asia, in one province, and the southern extremities of America and Africa in another. The zoologist immediately perceives that the only relation which these countries bear to each other in their animal productions, is purely analogical; and we are thus compelled to relinquish a theory which appears correct only in one point of view. These and other less eminent writers appear to have erred in the very foundation of their methods. They assume as granted, what has never yet been proved, that temperature exercises a primary influence on animal distribution. Were such the case, it would naturally follow that the animals of such parts of America, Africa, and Asia, as are placed in corresponding degrees of latitude, would be nearly of similar species; or, at least, of the same natural genera. Yet such, as we shall hereafter show, is not the fact. Between the animals of these regions there is, indeed, in very many instances, a strong analogy: such, for instance, as is apparent between the *Trochilidæ* of the New World, the *Cinnyridæ* of Asia and Africa, and the *Melliphagidæ* of the Australian islands. Such, again, is that between the Toucans of America (*fig.* 75. *a*), and the Hornbills of Asia (*fig.* 75. *b*). Yet not one species of these birds occur in any two of these countries. Nevertheless it cannot be denied, that the temperature and configuration of a country exercises a powerful influence on the distribution of animals. But these effects are of a secondary nature, and totally fail when employed to elucidate those general principles which appear to regulate the whole system of animal geography. Such agencies, however, may be safely allowed to possess much weight, when we descend to details, and investigate the local Fauna of any particular country or district. It has been observed by the celebrated Humboldt, and confirmed by an authority of nearly equal weight, that, with regard to certain tribes of insects, their geographical distribution does not appear to depend solely on the degree of heat or humidity to which they are exposed, or on the particular situation they inhabit; "but rather on local circumstances, that are difficult to characterise." This opinion is in unison with the whole tenor of the facts to which we shall hereafter advert. We must, therefore, agree with Mr. Kirby, and consider that the distribution, not only of insects, but of animals in general, is "fixed by the will of the Creator, rather than certainly regulated by any isothermal lines." (*Introduction to Entomology*, vol. iv. p. 484.)

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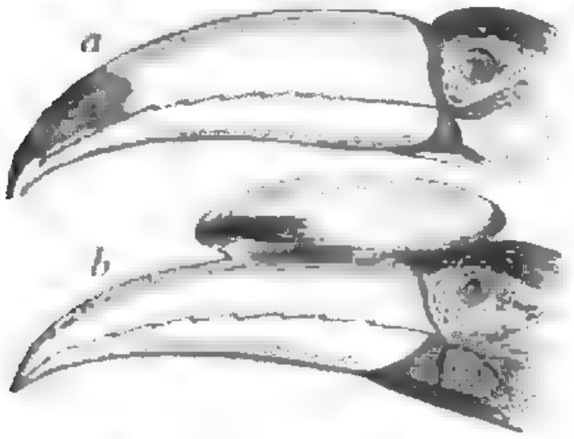

1157. *The distribution of animals, in connection with that of the human race, remains to be considered.* From what has been already stated, there appears strong reason to believe, that the variations in the structure of man and of animals are regulated by similar laws; and this supposition will receive considerable weight, should it appear, upon investigation, that those divisions of our globe which have been apportioned to the different varieties of man, are equally characterised by certain peculiarities in their animal tribes. Now, to establish the truth of such a theory, it is necessary to wave all general abstract reasoning, and to draw deductions from known facts. And it is equally obvious that, if such facts are to be collected from the whole animal kingdom, this essay must be extended to several volumes, even admitting that our materials were sufficiently extensive for such a purpose. But the truth is, that the data for such a comprehensive investigation are so few, so meagre, and so unsatisfactory when compared with the diversity and vastness of the subject, that they sink into insignificance. Nor will this appear surprising, if we consider the astonishing number of animals that have been already described by naturalists, or are known to exist in cabinets; setting aside the hosts of species yet unknown, which, in many departments, may possibly amount to double or treble the number we are acquainted with. Yet, as details of some sort must be gone into, it becomes absolutely necessary to select for such a purpose some one department of nature; and the results which might follow, we may fairly presume, would be in unison with those that would attend the investigation of other divisions of the animal world, could they be investigated upon the same principles. Nature, in all her operations, is uniform: and it cannot be supposed that the distribution of quadrupeds, birds, insects, or reptiles, would each be regulated by different laws.

1158. *In choosing, therefore, from the animal kingdom some one order* of beings for particular investigation, it might be thought that the distribution of quadrupeds would present the best field of enquiry. It possibly might, did not their investigation involve certain points of controversy connected with geology, which, however important, are not so intimately connected with our present object as to render their discussion necessary in this place. The division of reptiles is subject to the same objection, and is not sufficiently extensive for our purpose. The annulose animals, on the other hand, are so numerous that they appear to baffle our enquiries; nor can we hope, while yet in the infancy of geographic natural history, to do more than has been already done by the genius of Latreille. Birds alone remain. It has, indeed, been argued, that no very certain results can attend the study of their distribution; because, from possessing the powers of locomotion, and the instinct of migration, in a high degree, they appear more widely dispersed than any other class of animals. How far this may be true has never, indeed, been made apparent; yet, allowing the assertion its full weight, we may safely conclude, that if, under these disadvantages, any definite notions of geographic distribution can be gathered from the study of such volatile beings, the results would be materially strengthened if found to harmonise with what is already known on the distribution of other orders of animals, which, from their physical construction, are less capable of extending their geographic range. It is here, however, necessary to premise, that in this, as in all other branches of natural history, the accounts and relations of travellers, not in themselves zoologists, must be received with great caution. Unacquainted with those nice distinctions upon which not only the differences of species, but of genera and families, are now known to depend, they perpetually contradict, by a hasty application of well-known names, some of the most acknowledged truths in animal geography. Nor can the facts detailed in the compilations of more scientific writers be always depended upon. The voluminous works of a most industrious and zealous ornithologist of the Linnæan school abound with mistakes of this nature; wherein not only species but genera are said to inhabit countries where they have never been found except in the vague and erroneous narratives of travellers. It is the misfortune of those who complain against the multiplicity, and regret the adoption, of modern divisions, that by so doing they debar themselves from studying the variations of physical structure, and neglect the main clew to enlarged conceptions of zoological science. It is necessary to make these allusions, that the reader may be apprised of our adoption, in this place, of the principal modern genera; and our rejection of many of the localities erroneously given to certain species in the general histories of birds.

1. *The Caucasian or European Province.*

1159. *The ornithological features of the Caucasian range,* or of the regions over which the Caucasian variety of the human species is said to be distributed, will first claim our attention. It has been already shown that this range comprises such portion of Africa as lies north of the Great Desert, nearly the whole of Europe, and a considerable extent of Western Asia. The ornithology of the countries bordering upon this region has been but partially investigated; yet sufficient is known to show that it presents a mixture of those species which have their chief metropolis in other countries. It has been thought that the animals of the arctic circle are so peculiar, as to justify us in considering that region in the light of a distinct zoological province. The objections against this idea have already been alluded to; and they become more forcible when we discover, that on calculating the number of birds, both terrestrial and aquatic, which occur within the arctic circle, they do not amount to more than twenty-two; and that most of these, during the greatest portion of the year, are found in the more northern parts of Britain and America. They probably occur in similar latitudes on the Asiatic continent; but on this point our information is defective.

1160. *The swimming birds* are known to possess a very wide range; but this is less extensive, perhaps, than is generally imagined. The number of species found on the shores of Europe and Northern Africa, independently of those more peculiar to the arctic circle, is sixty. Of these, two alone have been discovered in the four quarters of the globe; three are common to Europe, Asia, and America; one to Europe, Asia, and Southern Africa; and twenty-seven to Europe and Northern America: thus leaving twenty-seven (or nearly one half the number of European natatorial species) as peculiar to this zoological division of the world.

1161. *Among the Grallatores, or waders,* some particular species are so widely dispersed as to suggest the idea that the geographic range of this order is even wider than that of the *Natatores;* and this, generally speaking, may be true. Of the sixty-five species described as natives of Europe, thirteen only occur in America, and two only can be reckoned arctic birds, although several others occasionally frequent those regions. Of the remainder, four occur in Asia; two in Asia and Africa; four in Asia and America; seven in Asia, Africa, and America; and the Whimbrel (*fig.* 76.) (*Numenius Phæpus*) is said to be the same in all the five divisions of the globe. It is consequently among the wading birds that we find those whose range is most extensive; yet, on a general calculation, the number of species peculiar to Europe is considerably greater than those of the *Natatores*; the former being as one to two, the latter nearly as one to four. It thus appears, that, even among birds of the most vagrant habits, the ornithology of Europe is characterised by a decided superiority in the number of its own peculiar species.

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THE WHIMBREL.

1162. *The rapacious birds, next to the aquatic orders,* are thought to be the most widely distributed; particularly the nocturnal species. It is very remarkable, that out of thirteen different owls inhabiting Europe, five only are peculiar to this continent; and two of these more particularly frequent the arctic regions. Of the rest, five occur in America, two in Southern Africa, and one both in Asia and America. The *Falconidæ,* or diurnal birds of prey, in regard to their species, have a more restricted distribution; yet, of these, the eagles enjoy no inconsiderable range. Out of eight discovered in Europe, one is more properly arctic, three have been found in several parts of Africa, and one occurs in America; leaving three only to Europe. It is singular that those rapacious birds which, from the peculiar structure of their wings, have been supposed to enjoy the greatest powers of flight among their congeners, are those most restricted in their geographic limits. This is proved by the fact, that out of eight genuine falcons occurring in Europe and Northern Africa, two only have been discovered in America. It has, however, recently been stated that the Falco peregrinus of Australia is identically the same as that of Europe: neither does Southern Africa, we believe, possess a single European species, or not one of those inhabiting the northern extremity of that peninsula; the *Montagnard* of Le Vaillant, long confounded with the European Kestril, being a decidedly distinct species. Upon the whole, the distribution of the forty-four species of European *Raptores* will stand thus: three are Arctic, eleven are found also in America, two in Asia and Africa, and one in Asia and America; leaving twenty-seven, or more than one half, peculiar to European ornithology.

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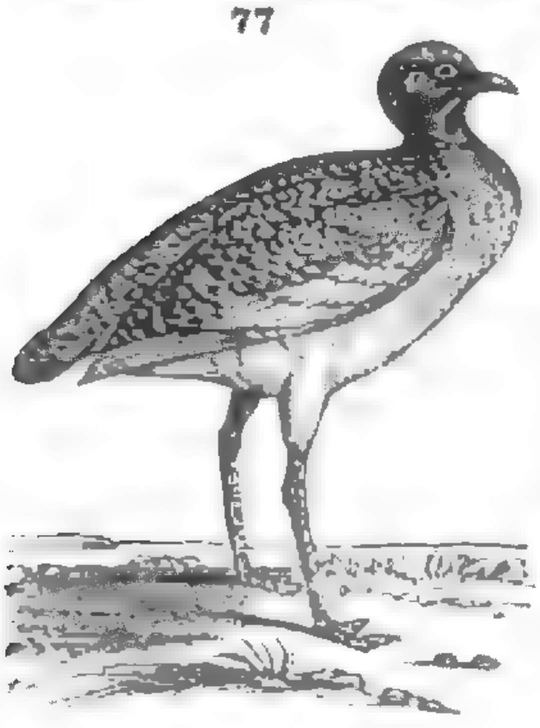

THE GREAT BUSTARD.

1163. *The Gallinaceous genera* are few; and their wide dispersion is decidedly against the theory, that all birds with heavy bodies and short wings are more limited in their geographic range than other terrestrial tribes. This argument has been ingeniously used to account for the very restricted limits within which many of the Indian parrots have been found; one or two species being frequently confined to a particular island. Ornithologists, however, need not be told that the wings of the *Psittacidæ* are peculiarly adapted for strong and vigorous flight; and those who have seen these birds in their native regions cannot fail to have remarked that their flight is *peculiarly rapid;* many genera, in this respect, passing through the air with the celerity of the hawk. The wide dispersion of the *Gallinaceous* order is very evident. The range of the great bustard (*fig.* 77.) extends from one extremity of temperate Europe to the confines of Asia; and the quail, remarkable for its heavy body and short wings, performs two annual migrations, from and to Northern Africa, over Europe and Western Asia. We consider very few of the European Gallinaceous birds as truly arctic; for nearly all the species appear to occur as plentifully beyond those regions as within them. Many of the meridional European birds, as Upupa Epops, Oriolus galbula, Coraceas garrulus, &c., might with equal justice be classed as peculiarly characteristic of Central or Southern Africa. It nevertheless appears that, even among the Gallinaceæ, fourteen out of twenty-seven have their principal seat in Europe. The remainder are thus apportioned: five extend to Western Asia, five to the confines of the great African desert, two are dispersed in Central Asia and Africa, while two only occur in North America.

1164. *The Fissirostral birds,* typically represented by the swallow, are, of all the insectivorous tribes, most conspicuous for their powers of flight. With but one exception, the European Kingfisher (*Alcedo europæa, fig.* 78.), they are all migratory: hence we find that most of the species occur beyond the limits of the European Fauna. The proportion of those which appear confined to Europe and Northern Africa is as one to three.

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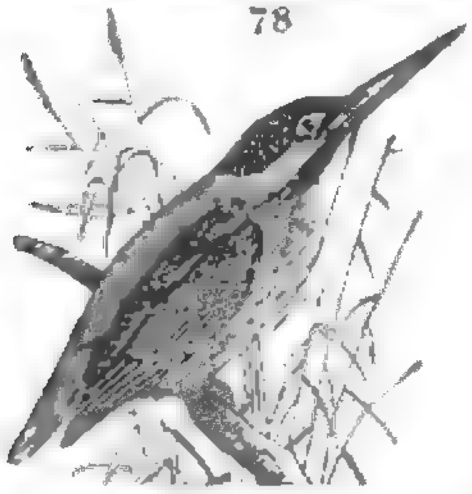

EUROPEAN KINGFISHER.

1165. *The small Granivorous birds* not only present a great diversity in their species, but a considerable preponderance in their numerical amount. Forty-one are included in the European list; two of which, at certain seasons, frequent the polar regions in great numbers, but are nevertheless abundant in all the northern latitudes; seven inhabit North America, and three extend both to Asia and Africa; so that Europe may be considered the metropolis of nearly thirty peculiar species.

1166. *The Scansorial birds* are few; yet eight out of the fifteen recorded as European are unknown in other regions. It is among the *Insectivorous* and soft-billed birds that we must look for the principal ornithological features of any particular region. The immense family of Humming-birds in the New World, and of Melliphagidæ, or Honey-suckers, in the Australian islands, would alone be sufficient to mark these regions with a distinct zoological character. To what cause we are to attribute the fact that these birds, by no means deficient in the power of flight (which, indeed, in many of them is considerably developed), should nevertheless be so strictly confined within certain geographic limits, remains unexplained. We can only in this place illustrate the fact. Of eighty-five species belonging to the Linnæan genera of Turdus, Sylvia, Parus, and Muscicapa, eighty-two are strictly European. In this number we of course include those which migrate, at certain seasons, to Northern Africa and Western Asia; for these regions, it must be always remembered, come within the zoological province we are now treating of: yet, if we deduct the number of those which have actually been detected in parts *beyond* the shores of the Mediterranean on one side, and Western Asia on the other, they will amount only to ten; leaving seventy-two as a marked peculiarity in the ornithology of Europe. In further proof of the limited range of these families, it may be remarked, that three only out of eighty-five have been detected in America; and that the identity of one of these (Parus atricapillus *L.*) with an European species (Parus palustris *L.*) is very questionable.

1167. *The Omnivorous birds, as the Sturnidæ, Corvidæ,* &c., are the last requiring notice. A few of these appear widely dispersed; but upon the whole, several species, and even peculiar genera, are left to characterise this portion of the world. We may state their number at twenty-one: thirteen of which, or more than one half, habitually reside in Europe; four occur in Northern and Central Africa; one (Pastor roseus T.) inhabits both the table land of Asia and the deserts of Central Africa; and three have been found in America.

1168. *These details*, tedious perhaps to the general reader, but interesting to the man of science, it becomes necessary to dwell upon, before any valid deductions can be drawn from the facts they exhibit. In this difficult and somewhat laborious investigation we have been much assisted by the writings of Wilson, Temminck, and Le Vaillant; but more than all by the liberality which throws the magnificent collections of the French Museum open to the use of all scientific enquirers, whatever their object or their nation may be.* It cannot, however, be supposed that, even with greater sources of information, some inaccuracies may not have occurred. Such calculations, in short, from their very nature, can never be perfect; because they are founded upon present knowledge, and *that* is perpetually extending. The most that can be done is to make as near an approximation to the truth as circumstances will admit; and having done this, the result may be entitled to some degree of confidence.

1169. *As a general recapitulation of the European birds*, we may state the total number, exclusive of a few which occasionally appear at remote intervals as stragglers, at 388. Of these, thirty-one are more peculiar to the arctic regions of Europe, America, and probably of Asia; the proportion being as one to thirteen. Sixty-eight (forty being aquatic) occur also in temperate America; nine are dispersed over four divisions of the globe, to neither of which can they be particularly appropriated; and either one (Numenius Phœpus) or two extend to Australia. With these deductions, the number will thus be reduced to about 280. If from these we abstract such others as may *possibly* have a partial range beyond the limits already defined, the number may be further reduced to about 250; so that, even with this allowance, nearly two thirds of the birds of Europe, Northern Africa, and Western Asia may safely be considered as zoologically characteristic of those countries.

1170. *Another character in European ornithology* deserves attention. This regards the superior number of generic types which it exhibits, in proportion to the number of species. These genera amount to 108, omitting those which have not been generally adopted, or which, from the modifications of form being but slight, should more properly be termed sections. The proportion which these genera bear to the number of species (estimated before at 388) amounts to more than two to seven; or, in other words, does not give seven birds to two genera. It is further remarkable, that most of these exhibit in their structure the *greatest perfection* of those orders or families to which they respectively belong; and which groups are denominated by naturalists *typical*. True it is that such genera are widely dispersed; but in no division of the world do they appear so numerous, in proportion to the species, as in Europe. This remark not only applies to the typical genera, but is frequently applicable to the number of species they respectively contain. One instance may suffice. The noble falcons, or those to whom the generic name of Falco is now restricted, are generally considered the most typical group of their family: of these, the Kestril (*fig.* 79.) and five others have their metropolis in Europe and Northern Africa. The whole of North America has hitherto produced but four. Le Vaillant enumerates the same number from Southern and Central Africa. Those of Central Asia are not known; but only two have been recently described as peculiar to the vast regions of Australia. Now, if we merely look at these respective numbers, the difference does not appear very remarkable; but when the great inferiority between the Caucasian regions and those of America, Africa, and Australia, *in point of extent*, is taken into the account, it will be immediately seen that the proportion of these eminently typical species in the European regions is particularly great. Among the typical groups of the wading and swimming birds this is still more apparent; so that, if we endeavour to define what is the most striking feature in the ornithology of this zoological province, none is so remarkable as the number of purely typical groups. This peculiarity will be more apparent on looking further into the matter. The total number of birds throughout the world, existing in museums or clearly described in authentic works, may be estimated at 6000. These have been arranged under about 380 genera; but as several of these genera will comprise more than one sub-genus, we will put down 400 as a nearer approximation to correctness: this would leave rather more than fourteen species to each generic group; while, if the ornithology of Europe and Northern Africa is alone considered, the proportion is no more than one to three; and even this will be further diminished when those geographic groups among the *Fringillidæ* and *Sylviadæ*, which are decidedly peculiar to this portion of the globe, are investigated and defined. Now, it is very

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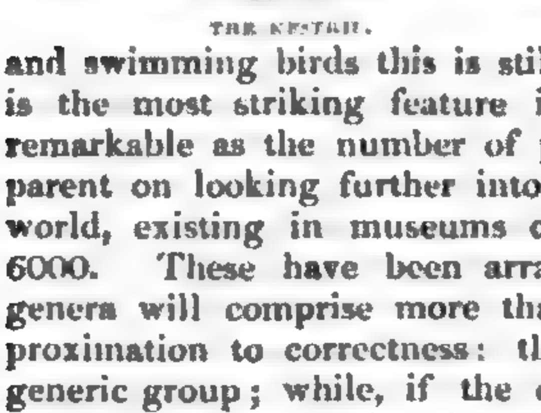

THE KESTRIL.

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* We have been *officially* informed that, by the laws of the Zoological Society of London, no one can receive permission to make use of their Museum, for general scientific purposes, who is not a member.

singular that, in speaking of the leading varieties of the Caucasian race, a writer, whose testimony is no mean authority, observes, "that the tribes among the Caucasians are more numerous than in any other." And again — "Whether we consider the *several nations* or the individuals in each, bodily differences are much more numerous in the highly civilised Caucasian variety than in either of the other divisions of mankind." (*Lawrence*, p. 442. 475.) When we glance over the list of those nations generally supposed to have sprung from this type, we are struck with the justice of these observations. It is the more remarkable, as the regions they occupy are disproportionably small, when compared with those peopled by the Mongolian and Ethiopian races. That there are instances wherein typical forms of higher groups than genera do *not* occur within the European range, is a circumstance which will not materially affect the question. Thus the only bird we possess belonging to the *Tenuirostres* of M. Cuvier is the European Hoopoe (*Upupa Epops*), which is certainly not a typical example; but this, so far as tribes are concerned, is the only exception to the rule. It is curious, also, that this exception should occur in that division which comprises the smallest and weakest of birds. If we descend to families, there is scarcely one *pre-eminently typical* of its own perfection which is not European. A further objection may possibly be urged, that, although such forms are indeed abundant in this Fauna, they are nevertheless found in nearly every other part of the world; and cannot, therefore, be looked upon as characterising Europe more than any other country: but this will not be a just conclusion, unless it is first shown that the proportion of such types to the total number of European species is not decidedly greater than in any other region. Now the facts we have already stated prove this beyond doubt.

1171. *These results*, obtained from unquestionable data, are so important to our present enquiry, that their hasty notice would not have been sufficient. The materials for illustrating the ornithology of Europe are naturally more numerous than can be expected for other portions of the globe; and it became very desirable to ascertain how far the ornithology of those regions, occupied by the Caucasian race, presented a peculiarity of character sufficiently strong to show a mutual relationship with the geographic distribution of this variety of man. We are, I think, sufficiently authorised to consider that both are in unison. At least, there are so many singular points of analogy, as to render it highly probable that there exists an intimate relationship between the distribution of one race of mankind and one of the principal geographic divisions of birds.

1172. *How far this view of European ornithology* would be borne out by an extended investigation of other orders of animals, it is impossible to say. Yet even if our present limits would permit the enquiry, we should have to rely more upon theory than facts. Many of the quadrupeds of Europe have long been slowly but certainly disappearing, in proportion as culture and civilisation has advanced; and any conclusions drawn from those which still remain in a wild state would be open to great objections, particularly as the question must necessarily embrace the nature of those no longer existing, but whose bones occur in a fossil state throughout Europe. We think it may fairly be presumed that, in all those convulsions which have agitated our globe, birds have suffered less than any other vertebrated animals. Their fossil remains are few, and of rare occurrence; while extensive deposits of bones and skeletons, belonging to quadrupeds, reptiles, and fish, occur more or less abundantly in almost every region, and attest the wide destruction to which such animals were exposed. It naturally follows that, in tracing the distribution of the feathered creation, we are left unshackled by geological controversy.

1173. *The few observations on the Ichthyology, Entomology, and Conchology of the Mediterranean* we shall hereafter make, in conjunction with those of Britain, will be found in unison with those features in the geographic distribution of birds we have already traced; and will equally evince the propriety of including the whole under one zoological division. This we propose to name the *European*. Such a designation is, indeed, somewhat objectionable, inasmuch as it embraces not only Europe, but Northern Africa and Western Asia: yet it will, perhaps, convey more definite ideas than if the name were adopted from the particular race of men belonging to these regions.

2. *The Mongolian or Asiatic Province.*

1174. *The birds of the Mongolian range* will be now adverted to. The typical nations of this variety of man occupy the remaining portion of the vast continent of Asia; while their characteristic peculiarities appear blended with the Malays in the more eastern islands of the Indian Archipelago. The ornithology of such a vast proportion of Asia is as varied as it is remarkable; but the very imperfect nature of the materials hitherto furnished for its elucidation, renders it impossible for us to give those satisfactory data which have been furnished by writers on the birds of Europe. Naturalists look forward with the greatest interest to the speedy termination of the zoological researches of General Hardwicke, as likely to supply these deficiencies. The vast stores of knowledge which a long residence in the East, and an ardent passion for natural history, have placed at the command of this naturalist, render him peculiarly qualified for such an undertaking.

1175. *For our present purpose, minute detail* is not, however, essential. Whatever doubts might at first have arisen on the propriety of considering Europe as the centre of an ornithological province, there can be none with respect to Asia. It is in these regions that the chief seat of the typical Gallinaceæ is placed; they abound in China, Thibet, the Indian Peninsula, and even extend to those islands which are considered the confines of the Mongolian race. The larger species, arranged in the genera *Pavo* and *Polyplectron*, appear to characterise the more elevated and central parts of the continent; while those of the genus *Gallus* are more numerous in Sumatra, Java, and the adjacent islands. The pheasants of China and Thibet form a no less striking feature in Asiatic ornithology; five species of magnificent plumage are peculiar: one of these, the elegant Silver Pheasant (*Nycthemerus argentatus*) (*fig.* 80.), has been long domesticated in our aviaries. Three other superb species represent a group (*Lophophorus* Tem.), discovered only upon the continent. The whole of these Gallinaceous genera are totally unknown in Africa, Australia, or in the New World. When to these we add the Hornbills (*Buceridæ*), the Sun-birds (*Cinnyridæ*), the short-legged Thrushes (G. *Brachypus*), the short-tailed Thrushes (*Pittæ*), certain groups among the *Psittacidæ*, and many others totally unknown in Europe, Northern Africa, and Western Asia, yet abounding in the Mongolian nations, no further details appear necessary to mark the ornithological peculiarities of Asia, as distinct from those of Europe.

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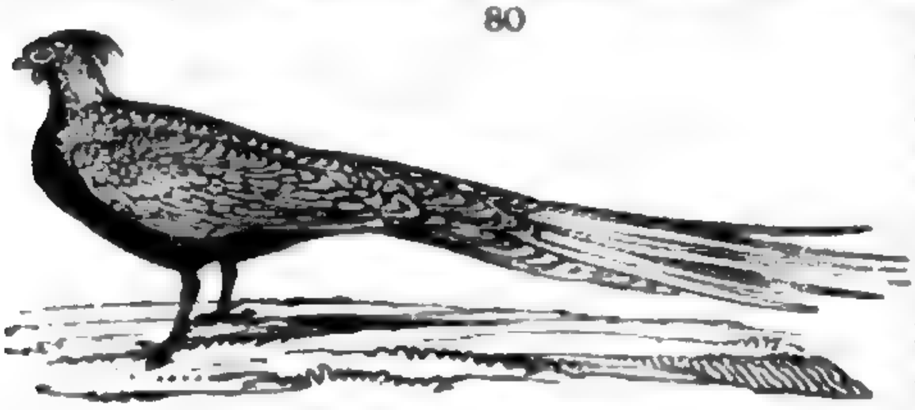

THE SILVER PHEASANT.

1176. *From the Asiatic islands* it would, perhaps, be more natural if we proceeded at once to notice the Malay or Australian range, as it is here that the Faunas of these divisions of the globe evidently meet. But as this would interfere with the order observed in the early portion of this essay, we shall pass from the northern regions of Asia to those of the New World; particularly as both present a mixed race of men, probably originating from the Asiatic continent.

3. *The American Province.*

1177. *We proceed to a rapid sketch of American ornithology.* It has already been shown that, excepting the Natatorial birds, there are fewer species common alike to Northern America and to Europe than might, perhaps, have been supposed; yet, were the proportion much greater, the circumstance would only prove that nature knows no abrupt distinction. It is not to the remote ramifications which she employs to connect her chain of operations that our attention is to be fixed; for they are too subtile to be unravelled by beings with faculties so limited. But as soon as she quits these inexplicable mazes, and again displays herself in a new but decided form, we may hope to gain some acquaintance with her laws. It is not, therefore, from either extremity of the New World that we must form our opinion on its zoological peculiarities. The ornithology of the Northern latitudes is evidently blended with that of Europe, and in all probability many of these species exist in Northern Asia; yet those of the more southern parts of America, beyond the Rio de la Plata and Paraguay, are nearly unknown. It is only within the last few years that the provinces, elevated on the Mexican Cordilleras, and now constituting a great republic, have been opened to the naturalist; and although, as yet, but superficially explored, there is perhaps no region in the New World which promises to yield more interesting facts, as connected with the animal geography of that hemisphere. Even the configuration of the continent, at the junction of its two great divisions, is typical of this distribution. It appears as if nature, elevated as on a throne upon this vast table land, 7200 feet above the level of the sea, had dispensed her forms to the right hand and to the left, retaining immediately around her a typical representation of every group. To the north she has given innumerable flocks of slender-billed insectivorous birds (*Sylvicolæ*, &c.), which annually depart to breed in those more temperate climes. These are accompanied by particular species of Flycatchers, Thrushes, Pigeons, and Hangnests (*Icterina*); the two latter in such countless numbers as to darken the air. To Southern America has been more particularly assigned the Macaws, Toucans, Scansorial Creepers (*Dendrocolaptes*), Ant Thrushes (*Myotherina*), Ground Doves (*Chamæpelia*), Tanagers (*Tanagra*), Trogons, Fruit-eaters (*Ampelidæ*), and the numerous and splendid race of Humming-birds. Yet of all these groups, save one (*Ampelidæ*), typical examples are concentrated on the table land of Mexico. These, moreover, are accompanied by some peculiar forms, not yet discovered in either portion of America, and by species among the natatorial tribes hitherto found only in the more northern latitudes.

1178. *The typical Gallinaceous birds* begin to show themselves adjoining the Equator, nearly in the same parallel of latitude as they occur in Asia: they belong, however, to distinct and

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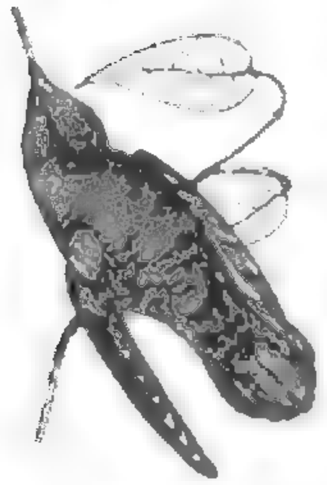

HUMMING BIRD.

peculiar types; as the genera Meleagris, Crax, Penelope, Ourax, Phosphea, Ortalida, and Opisthocomus. These find their representatives, for the most part, in the ancient continents, but not one species has been detected beyond the New World. A large collection of Mexican birds, now in the possession of John Taylor, Esq., F.R.S. &c., and which he obligingly submitted to our examination, have proved valuable materials to illustrate this part of our subject. The foregoing remark applies to the two great divisions of the *Simiæ*, or Monkeys, so accurately illustrated by those distinguished naturalists, MM. Cuvier and Geoffroy St. Hilaire.

1179. *The Melliphagous groups of America*, at the head of which shine the splendid family of Humming-birds (*fig.* 81.), form the chief peculiarity of its ornithology; other races, scarcely less beautiful, occur in Africa, Asia, and Australia: yet the natural genera are totally distinct. The number of species, and the variety of forms, among the frugivorous birds is another striking feature in the productions of the New World. Under this term we must include the richly coloured Chatterers (*Ampelidæ* Sw.) and Manakins (*Piprinæ* Sw.); together with the whole family of Tanagers (*Tanagrinæ*), Hangnests (*Icterinæ*), and Parrots (*Psittacidæ*). The first four belong solely to this continent, which more than any other abounds in vast forests of lofty trees, affording a perpetual and countless variety of fruits and berries, adapted to nourish all the families of hard and soft-billed frugivorous birds. If we turn to the other orders of vertebrated animals, the *Mollusca*, *Annulosæ*, or *Radiatæ*, each and all conspire to stamp certain peculiar features on the zoology of the New World, and to mark it as a distinct zoological empire.

4. *The Ethiopian or African Province.*

1180. *The chief seat of the Ethiopian variety* of our species is central Africa; while most writers agree in thinking that its northern limits do not pass the Great Desert. The pestilential atmosphere of tropical Africa has been an insuperable bar to the researches of Europeans; and all the ideas that can be formed on the zoology of such regions must be gathered from the partial gleanings made by travellers on the shores of Senegal and of Sierra Leone. The ornithological productions received from these districts evince a total dissimilarity from those of Northern Africa, but intimately accord, both in species and genera, with the ornithology of the south: to this, however, there are several exceptions. The Plantain-eaters (*Musophagidæ*), and the bristle-necked Thrushes (*Trichophorus* Tem.), are among the groups hitherto found only towards Sierra Leone. The Guinea Fowl, as its name implies, is most abundant in the interior of that country, where three species have been discovered. The common Bee-eater and the Golden Oriole are the only species among the land birds of Western Africa that occur in the European range; and these extend southward to the Cape of Good Hope. The whole extent of Africa south of the desert exhibits, in short, a marked difference in its ornithological groups and species from those belonging to Europe, Northern Africa, and Western Asia. The comparatively few exceptions of birds common to Europe and the Cape cannot diminish the general force of this remark, but merely shows that a few exceptions must never be taken as the groundwork of any particular theory. It is to one of the greatest ornithologists that France, or indeed any other nation, has produced, that we are indebted for the most perfect account of South African ornithology yet published; but it must ever be regretted that this portion of M. le Vaillant's labours terminated abruptly; leaving the Gallinaceous, Wading, and Swimming orders to be completed by some other, who, with equal enterprise and observation, should visit the same regions, and record their manners with the same veracity. Such a naturalist our own country has produced; and although an ardent thirst for knowledge has now taken him to the New World, we may yet hope that Mr. Burchell will give to science some further memorials of his African discoveries.

1181. *Between the ornithology of Africa and of America* there is, within the same parallels of latitude, a very strong analogy, although (in the sense which we apply the term) there is none of affinity. We know not, in short, a single perching bird common to both continents; although in the rapacious order, which among terrestrial birds are well known to have nearly the widest range, two or three species occur which likewise inhabit both extremities of Africa no less than Northern America.

1182. *The other vertebrated animals*, and the insects of Southern Africa, furnish similar results. On examining the large collection of insects formed by Mr. Burchell, in the territories of the Cape of Good Hope, we could not discover one out of many hundreds which was to be found in a much more considerable collection brought by us from South America, although many generic groups, particularly among the Lepidoptera, appeared common to both continents.

1183. *Between the faunas of Africa and America* the difference is unquestionably striking; yet there are several points of connection between the ornithology of Africa, Asia, and Australia; and these appear not merely in generic groups, but even in species. The Drongo Shrikes (G. *Edolius*), the Larva-eaters (G. *Ceblepyris*), the typical Flycatchers (G. *Muscipata*, C.), the Crab-eaters (G. *Halcyon*), the Grakles (*Lamprotonis*), the African Saxicolæ, the two groups of tropical Finches (*Estrelda Amadina* Sw.), are all genera common to these three regions, — to neither of which, in a geographic division, can they be exclusively assigned. But we need not dwell further on such resemblances, which, after all, are but so many points of connection between geographic divisions, sufficiently distinct in their more prominent characters.

5. *The Malay or Australian Province.*

1184. *The regions peopled by the Malay tribes* is the last zoological division requiring elucidation. We have already adverted to the great diversity of tribes comprised under this variety of the human race, and the little authentic information yet collected concerning their origin or history. The zoological results, however, are more definite.

1185. *On looking to the Indian Archipelago*, as to that region where physiologists concur in thinking that the Malayan form is first apparent, we are told that several of these islands are peopled by two different races of men (*Lawrence*, p. 489. and *Cuvier*, p. 187.); the one frequently confined to the inland tracts, while the other people the maritime districts: their respective origins, however, are so little known, that it is still a matter of doubt which has usurped the territories of the other. (*Marsden's Sumatra*, 326, 327.) We confine these remarks to Sumatra and Java; for, with regard to the vast islands of Borneo, Celebes, and those smaller groups to the eastward, we know little or nothing of their productions or of their people.

1186. *That the isthmus of Malacca and the adjacent islands exhibit the first indications of a peculiar race of people*, is a fact upon which all writers appear to agree; and that we here begin to discern the indications of a new zoological region is equally certain: yet it would be altogether rash, with our present limited information, to hazard any theory which would respectively assign to these islands a definite character in its inhabitants or productions. But the zoology of Java and Sumatra have been of late so zealously and ably investigated not only by two distinguished British naturalists *, but by others † sent from France, that we shall in this place attempt to draw some results from their labours. The ornithology of these islands, with some few peculiarities, differs in no very decided manner from that of southern India. In both, the Gallinaceous genera, when they occur, are the same, although some of the Javanese species differ. Of the more typical *Sturnidæ*, common to the Old World, but as yet unknown to the Australian or Oceanic islands, no less than three inhabit Java. To these groups must be added, *Parus, Sitta, Bucco, Cursorius, Glareola, Buceros, Oriolus, Brachypus*, and many other genera characteristic of the ancient continents. The number of typical Scansorial birds within the narrow limits of these two islands is truly remarkable. Eight species of *Picus* are described by Dr. Horsfield, and four or five others; one, the Malacolophus Concretus, *Sw.* (*fig.* 82.), of a remarkably small size, have been sent to France by M. Diard. ‡ The total absence of this family throughout the whole Australian range, is a circumstance in itself sufficiently strong to place the ornithology of Java and Sumatra beyond such limits; to which, nevertheless, it approximates very closely.

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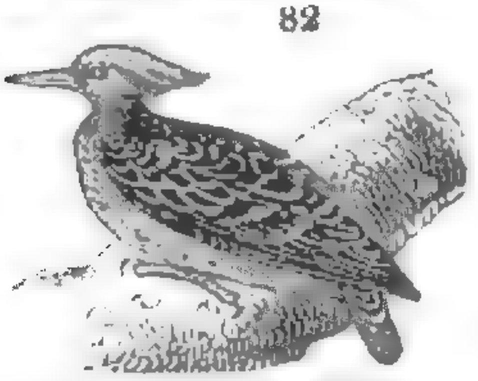

MALACOLOPHUS CONCRETUS.

1187. *The birds of Java and Sumatra*, which indicate an approximation to the Australian province, belong to certain genera common to both regions; but unknown in Africa or India: these are, *Pitta, Centropus, Ocypterus, Prinea, Pogardus, Crateropus, Dacelo*, &c. In the Suctorial birds (the *Tenuirostres* of M. Cuvier), we find in Java an evident departure from the typical form of *Cinnyris* towards the *Melliphagida* of Australia, in the genus *Dicæum*; four of the known species being Javanese, and three Australian. What little is yet known of the birds of New Guinea, and its surrounding islands, exhibits a still greater deviation from the ornithological features of India. These enchanting regions, long the fairy-land of naturalists, remained nearly unknown until visited by learned Frenchmen, to one of whom has been assigned the distinguished honour of giving to the world the fruits of their scientific and important discoveries. § It is in these islands that the Melliphagous genera begin to be developed in the most novel forms, and the most sumptuous plumage. The grand *Promerops* of New Guinea can only be likened to the Australian *Ptiloris*. Several *typical Melliphagidæ* are in M. Lesson's collections. To these we can now add two species of genuine *Philedons*[*] (Cuvier), and two of the genus *Vanga*. The group of which the *Muscicapa carinata* (Sw.)[†] is the type, displays itself in three new and beautiful birds, accurately described and figured by M. Lesson. The stay of the French naturalists on the coast of New Guinea was comparatively short, and their gleanings of its ornithology could not, from necessity, be otherwise than scanty; yet it is surprising that, among the birds thus procured, so large a proportion should belong to groups hitherto supposed peculiar to New Holland. It is clear, therefore, in a natural arrangement of ornithological geography, that the islands of New Guinea may be safely brought into that division which includes New Holland, New Zealand, and their dependencies: this distribution has, indeed, been generally adopted by geographers, merely from the relative positions of these islands.

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* Sir Stamford Raffles and Dr. Horsfield.

† MM. A. Duvaucel and Diard. By the untimely death of the first, an amiable and enthusiastic naturalist, France was deprived of talents which, even at an early age, were of no common promise. The rarest and most beautiful Javanese birds in the galleries of the Jardin des Plantes attest the zeal, and record the name, of M. Duvaucel.

‡ We believe this enterprising naturalist is still prosecuting his researches in the East. Again must we attest the liberality of a foreign nation in furthering the objects of this essay. When in Paris, we were allowed full and unrestrained permission to examine the *entire* collections of birds (whether arranged or not) made by M. Diard. The same permission was asked for those brought home by the late and lamented Sir S. Raffles, and deposited in the museum of the Zoological Society, but this permission was refused.

§ M. Lesson, Voyage autour du Monde, now in course of publication.

1188. *On the zoology of New Holland* it is scarcely necessary, in this place, to expatiate. All naturalists concur in viewing this insular continent as the chief metropolis of a peculiar creation of animals; whose limits on one side we have already traced, and whose range on the other extends over the innumerable islands scattered in the great Pacific Ocean. The Menura Superba (*fig.* 83.) is the most remarkable gallinaceous bird of this range. The Australian province is thus in full accordance with the distribution assigned to the Malay variety of our species: its connection with Asiatic zoology is unquestionable; but we have no means of judging into which of the three remaining divisions it blends, at its opposite extremity. Of the birds peculiar to those remote clusters of islands adjoining the north-west coast of America we are completely ignorant; nor are our materials sufficient to furnish even a plausible conjecture on the subject. Whether the Australian province, at its northern limits, unites again with the Asiatic, the American, or the European, must therefore be left to future discovery.

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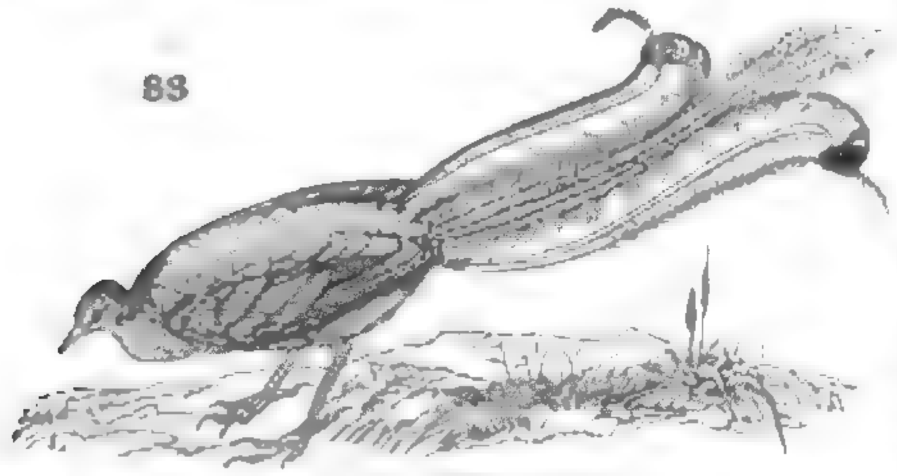

MENURA SUPERBA.

1189. *We have now completed a general survey* of the distribution of birds over the globe. The facts we have stated show the propriety of arranging the whole under five great divisions or provinces, which may be distinguished as the European, the Asiatic, the American, the African, and the Australian: each of these corresponds, with little variation, to the geographic distribution assigned by others to the different races of man. We must, therefore, now adopt one out of the two following conclusions: either that there is just and sufficient grounds for believing that the distribution of man and animals in general has been regulated by the same laws; or, that man and birds have been distributed alike, and all other animals differently. To us, at least, the latter conclusion appears highly improbable; not only as being unsupported by the least shadow of evidence, but as opposed to that harmony in creation, which is more apparent the more it is viewed in all its relations.

Sect. V. *General Summary of the Subject.*

1190. *In offering these elucidations* of a subject so vast in itself, and so important in all its bearings, it will be readily perceived that two different relations between animal groups are alluded to; one we have considered as of affinity, the other of analogy: and as the truth or fallacy of these views will mainly depend on the justness of these distinctions, a few observations upon them appear necessary. Naturalists, in general, have considered those resemblances which exist between certain groups placed in different regions, but in the same parallels of latitude, as indicating affinities; and on this supposition, as before stated, have framed theories by which animal geography has been divided into zones or provinces, limited more or less by certain degrees of latitude. It must be confessed that, upon a superficial view, there are many circumstances which appear to justify such a theory. Confining our attention to that department of nature which we have throughout selected, we shall partly recapitulate our former observations.

1191. *The arctic regions*, in one sense, may be considered an ornithological zone; for not only the same groups, but the same species, are found in such parts of Europe, America, and probably Asia, as enter within its limits. But, admitting this to the full extent, let us ask if these regions — by the number, variety, or peculiarity of their animals — are entitled to hold a primary rank with the great geographic groups already mentioned? Is there to be met with among the arctic birds numerous species which are not distributed far beyond such limits? Are there any generic or sub-generic groups which do not occur even towards the central parts of Europe, Asia, and America? These questions, which must be answered in the negative, sufficiently prove that the arctic regions do not possess the characteristics of a primary division; they must rather be looked upon as a point of junction, where the ornithology of the three northern continents blend and harmonise together.

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[*] We see no reason that, in the recent divisions proposed for the *Melliphagæ* of Lewin, the name of *Philedon*, given to these birds by M. Cuvier, should be obliterated. It is very questionable, at the best, to whom the priority of nomenclature belongs; because groups, in such a work as the *Règne Animal*, must of necessity be defined and *printed* long before they can be published. At all events, greater merit for the distinction belongs to a naturalist whose penetration enabled him to seize characters from external structure, than to him who had the living objects constantly before his eyes: for these reasons, we do not adopt the new name of *Tropidorhynchus* (Vigors), but join the Continental naturalists in retaining *Philedon* (Cuvier) to that group of which the type is *Merops corniculatus* of Dr. Latham (White's Voy. pl. at p. 190.).

[†] Zoological Illustrations, vol. iii. pl. 147. Zool. Journ. i. p. 306.

1192. *The tropical regions of the Old and the New Worlds* have likewise been united in one province. How widely the ornithology of these countries really differs, has been already explained. True it is, that in numerous instances one group typifies another, as in the case of the American Humming-birds (*Trochilidæ*) being represented in the Old World by the Sunbirds (*Cinnyridæ*); and such relationship, in one sense, is certainly an affinity, inasmuch as in the natural system they appear to follow one another; but if we admit such a degree of affinity to be a sufficient guide to a distribution of birds, we must also do the same with regard to the varieties of man, since both appear dispersed upon the same plan. The red Indian of America as certainly represents the black negro of Africa as the latter does the sooty inhabitant of New Guinea; yet no one would think of classing them in the same race, merely because they inhabited countries under similar degrees of latitude. The dispersion of particular groups and of their species, upon the whole, is more in a longitudinal than in a latitudinal direction. This is exemplified in a remarkable manner by the migratory birds, which invariably proceed from north to south, or from south to north. It would, indeed, appear, that if animal distribution is to be regulated by geographic degrees, as accurate notions might result from making the divisions of longitude as of latitude: both, however, would be clearly artificial.

1193. *These parallel relations of analogy,* which every where present themselves in the animal kingdom, nevertheless deserve our greatest attention, as fraught with peculiar interest to the reflecting mind. There are throughout nature so many immediate and remote relations, so many unexplained ties of connection, that the most careful of her students are perpetually misled in attempting to trace her footsteps. In ordinary cases, the admirable distinction that has been drawn between affinity and analogy (*Hor. Ent.*) is, perhaps, the best that can be given; yet instances might be named, in which even this is totally inadequate to the end proposed: Natural relations are so complicated, that series of affinities apparently incontestable, will frequently, upon rigid analysis, turn out completely erroneous; proving no more than that nature, however diversified, presents so many points of general resemblance and of connection, that *partial* harmony will result even from a false combination of parts. Let us not therefore conclude, as is now too generally done, that by synthesis alone we can exhibit the true affinities of nature; that we may henceforward, without hesitation, assign to each of her productions its true station in the scale of being; that we have suddenly, and as if by magic, got full possession of that mighty secret which at once explains her laws, and expounds all that has perplexed the wise, and confounded the learned since science first dawned upon man. That the circular system is the nearest approach yet made to the *true* disposition which pervades nature, — a system which, from the perfections of its Creator, must be replete with order and beauty surpassing our utmost comprehension, — is indisputable, because none other has attempted to explain the relations of parts and the unity of the whole; but farther than this its pretensions must not be carried: it still involves questions of great weight, since by one theory the number of its primary divisions is stated to be *five*, while by another, founded on much more extensive analysis, it is maintained to be *three*. The searcher after truth will give to these his patient investigation, his cool and unprejudiced judgment: he may then hope to make one step nearer to truth; for science, in all ages, has ever remained most stationary when the advocates of any system have been most prejudiced.

1194. *It is with these qualifications* that the views here taken on the distribution of man and animals are given to the reader. It has been our desire to trace a connection, and a unity of plan, in both, and to simplify a subject hitherto involved in much intricacy. How far this object may have been attained, it is not for us to determine; but he who draws proofs of a Divine Creator from the harmony and design apparent in his works, has surely not written in vain.

Chap. III.

GEOGRAPHY CONSIDERED IN ITS RELATION TO MAN IN SOCIETY.

1195. *Man, when considered not as a mere animal, but as a being endowed with thought, reason, and contrivance,* capable of social intercourse and union, must be regarded as the most conspicuous object in the delineation of the globe. These attributes raise him to the first rank in this lower world; and in every region occupied and improved by him, the communities which he has formed become the most prominent characteristic; all other beings are there subordinate and subservient to him. The description therefore which, in the succeeding part of the work, will be given of the different regions of the globe, must be chiefly employed in delineating the aspects which man, as an active and social being, presents. At present, however, it would be premature to enter into the numerous details which this subject embraces. We can do little more than indicate the following general heads, under which it will be treated: — 1. Historical Geography. 2. Political Constitution of the different countries. 3. Productive Industry. 4. Civil and Social State of Man. 5. Languages.

Sect. I. *Historical Geography.*

1196. *A survey of the history of man* is necessary for enabling us accurately to understand, and duly to estimate his present condition. Not only inanimate nature, but even the animal and vegetable kingdoms, if left to themselves, would remain constantly in the same situation: the changes and modifications undergone by them have been produced entirely by man's interposition. That improved and civilised form under which he now appears, is the result of a continued succession of changes, which have been taking place from the earliest periods of authentic history. All the revolutions, both of ancient and modern times, have had a greater or less influence in producing the present moral, political, and social condition of man in the more improved quarters of the globe.

Subsect. 1. *Ancient History.*

1197. *Ancient history* is generally considered as comprehending the period which elapsed from the earliest authentic records, and particularly from the rise of the great monarchies, to the downfall of the Roman empire. The various forms which government and society assumed during that long period, though they were instrumental in preparing those which have existed in the modern world, did not bear any exact resemblance to them. Through the conquest of Rome by the barbarous nations, with which the first of these eras closed, almost every connection between them was cut off, except those of record and tradition.

1198. *The rise of the great monarchies,* Egypt, Assyria, and Babylon, constitutes the first grand epoch in ancient history. It nearly coincides with that of the great commercial republics, Tyre and Carthage. Human society, which had before existed in a very rude and imperfect shape, began to assume a regular, orderly, and even splendid character. All the arts which contribute to man's support and accommodation were carried to a considerable degree of improvement; and the foundation was laid of those intellectual attainments, which were to constitute his highest honour. Alphabetic writing was invented and widely diffused; the arts of painting, sculpture, and architecture, made a considerable progress; there were even formed some elements of science and philosophy. During this period, too, while the world generally was buried in the darkest superstition, a divine revelation, preparatory for another more perfect, having been first communicated to the patriarchs, was more formally disclosed to the legislator of the Jewish nation.

1199. *The Persian empire* embraced a wider extent of the globe than any that had previously existed, and comprehended those countries which had been most remarkable as the seats of improvement and civilisation. Although, however, it thus became instrumental in linking distant nations together, it bore chiefly the character of empty and barbarous pomp, and does not appear to have produced any material advance in knowledge and improvement.

1200. *The rise of the Grecian States* formed, perhaps, the proudest era in the history of the human race. The constitutions then formed afforded a degree of political liberty, and a developement of the higher energies of the human mind, which could not be attained in extensive empires, subjected to the arbitrary rule of a single individual. The military exploits of the Grecian people, by which they baffled the force of almost the whole known world united under the sway of Persia, were the most splendid that had hitherto illustrated the annals of mankind. Genius was exerted with nearly unrivalled power in every department; the historic page unfolded its utmost degree of energy and beauty; and many sublime lessons of morality were taught by the Grecian sages. The fine arts, poetry, painting, and architecture, reached an eminence which they have scarcely since regained, and in each the purest models were left for future imitation. After Greece had long maintained a glorious defensive war against Persia, her arms were directed to conquest. The reign and

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triumphs of Alexander, while they subverted her admired forms of civil polity, diffused her language, her arts, her knowledge, over a wide extent of the eastern world, and thus spread a circle of civilisation, the traces of which have never been wholly obliterated.

1201. *The dominion of Rome*, which succeeded and overpowered that of Greece, extended over a still greater variety of countries and people, than had been comprehended under any former empire. Her character, at first stern and austere, was gradually softened; and on arriving at her highest pinnacle of wealth and power, she made at the same time an unrivalled display of the pomp and refinement of polished life. She emulated, without fully equalling, what was most brilliant in the arts and intellectual attainments of Greece. But the most signal service which Rome rendered to the cause of civilisation, was by extending its empire over wide regions in northern and western Europe, which had previously been the seat of almost complete barbarism; though they now form the most enlightened and improved portion of the globe.

Subsect. 2. *Modern History.*

1202. *The downfall of the Roman Empire*, which marked the commencement of modern history, formed one of the most remarkable and disastrous eras in the destiny of the world. During the fourth and fifth centuries, a succession of barbarous hordes from Germany, Scandinavia, Russia, and even the remotest extremities of northern Asia, poured in upon civilised Europe, and exterminated or reduced to bondage the greater part of its people. All the arts and sciences, which had shed such a lustre on the Greek and Roman name, disappeared, leaving only some imperfect remnants, which were preserved in the depth of monasteries. The empire was partitioned into a number of disorderly little kingdoms, gradually merged into a few great monarchies, which, in their general outline, have continued to the present day. This era was also distinguished, in the East, by the introduction of the religion of Mohammed, and the rise of the Saracen power, which undertook, by force of arms, to diffuse that religion over the world. Its armed votaries overran a great part of Asia, Africa, and even of Europe, and continue still to maintain a powerful influence over the destinies of the human species. For some time, the states formed under this system presented a somewhat enlightened aspect, and even revived the expiring lamp of science; but the final issue of Moslem ascendency has been, to diffuse through the world, ignorance, despotism, barbarism, and every principle hostile to human improvement.

1203. *The feudal system* was established gradually among the barbarous states formed out of the dismembered portions of the Roman empire. The king, or chief, distributed the territory among his nobles or followers, subject only to the condition of military service. These nobles, possessing almost uncontrolled jurisdiction within their own limits, holding at their disposal the services of numerous vassals, took advantage of every interval of weakness in the power of the sovereign, and rendered his power little more than nominal. They reduced the body of the people to a state of comparative slavery, waged numerous private wars with each other, and practised various robberies and extortions. During this turbulent era, all refined arts and pursuits languished, while, on the basis of ignorance, superstition erected an absolute and tyrannical dominion. The institutions of chivalry, however, which were then formed and gradually improved, introduced a sense of honour, and a dignity and refinement of manners, which have beneficially influenced modern society. This period was also marked by the piratical inroads of the Scandinavians or Northmen, who ravaged all the coasts of Europe, and obtained at least a temporary possession of considerable districts and even kingdoms. It was marked, lastly, by those memorable expeditions into the East, called the crusades, which, though attended with great extravagance, and occasioning much disaster and bloodshed, tended, on the whole, towards the improvement of European policy and social life.

1204. *The subversion of the feudal power, accompanied by the revival of knowledge, arts, and industry*, formed a most memorable era in the history of mankind. This change, which had been for several ages silently preparing, was carried into complete effect during the fifteenth and sixteenth centuries. The turbulent rule of the great nobles was then broken down, and was succeeded by several extensive but mildly administered monarchies, along with some free and commercial republics, and in one instance a limited constitutional monarchy. The reformation of religion eminently distinguished this period; but being opposed by the violent intolerance of the Catholic church, it gave rise to a series of dreadful and sanguinary struggles. A general activity prevailed throughout the whole sphere of human exertion. The revival of learning, the invention of printing, the extension of maritime enterprise, leading to the discovery of new regions, and of new routes to those formerly known, rendered the age peculiarly eventful and interesting. It derived, however, a somewhat disastrous character from the establishment of the Turkish empire in the East, by which the throne of the Greek emperors at Constantinople was finally subverted, and very serious alarms spread through the whole body of the European nations.

1205. *The modern system of polity* followed, as the result of the great changes which had taken place in the preceding period. During the seventeenth and eighteenth centuries, when

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it prevailed, civilisation made very remarkable advances. The manners of social life became more polished and refined. The arts and sciences were carried nearer to perfection, and more widely diffused through the great body of mankind. Amicable relations, before unknown, were established between the different nations of Europe; fixed laws were agreed upon for regulating their intercourse; and war, when it did occur, was carried on with greatly diminished ferocity. The system of colonisation in the other quarters of the globe was also carried to a vast extent, particularly in America; and though its first establishment was attended with many circumstances of injustice and tyranny, it had the effect of bringing those quarters of the world into a more improved and civilised condition.

1206. *The era of political revolution*, which commenced towards the end of the eighteenth century, being that which is still in progress, cannot be characterised in so decided a manner. The formation of the great monarchies had delivered Europe from the turbulent sway of the feudal chieftains; yet the almost absolute power with which the sovereign was then invested, was found productive of many evils. The hereditary nobles, exchanging their rural seats for a residence in the great capitals, and indulging in ease and luxury, lost all influence over the body of the people. The diffusion of intelligence and wealth through the middling and, in some degree, even the lower ranks, was followed by a demand, on their part, to be admitted to some share in the administration of public affairs. This spirit, after fermenting for some time, and being diffused by the exertions of many distinguished writers, produced the French revolution, and the extraordinary series of events which have thence arisen. That great crisis did not merely agitate the interior of France, but by exposing it to foreign interference, and then impelling its own rulers to schemes of conquest, it changed for some time, in an extraordinary manner, the aspect of all Europe. Then, however, by a grand re-action, France was driven back within her original boundaries, and the political relations of the Continent were re-established nearly on their former footing. Considerable agitations, however, still prevail in the interior of different kingdoms, and their political constitutions have suffered, and are likely to suffer, material alterations.

Sect. II. *Political Constitution.*

1207. *The political constitution* under which any community subsists, forms a most important element in their social condition. Being usually established within certain local boundaries, and accompanied with a similarity in manners, religion, and other characteristic circumstances, it is the leading agent in constituting a country or state. In distributing, therefore, the four quarters of the globe into their smaller portions, the geographer uses chiefly political divisions. He finds states which have made any progress in civilisation arranged into kingdoms, empires, and republics. The elements of political power appear to consist of monarchy, aristocracy, and democracy; while the public functions, to be exercised within any state, are the executive, legislative, and judicial.

1208. *A kingdom* is a state of considerable though not vast extent, governed by a single person, as France, Spain, Prussia. The subjects are usually united by a similarity of language and manners, and pervaded by a national spirit. The power of the sovereign is commonly extensive, though controlled in some instances by national assemblies; and there is almost always a body of nobles possessed of high privileges and immunities.

1209. *An empire* generally consists of a number of detached kingdoms, which have been united by conquest under one head, as the Turkish, Persian, and Chinese. Being thus formed of an aggregation of different states, empires are usually of very great extent; and as military force has been the instrument of their combination, the sovereigns exercise almost always an unlimited authority. The different members having been brought into union by force only, rarely feel united by any national tie, and remain very dissimilar in manners, religion, and social institutions.

1210. *Republics* consist of states which own the supremacy of no king or sovereign, but are governed by a senate, an assembly of the people, or by both conjoined. Though these governments have acted a conspicuous part in the history of the world, they have been generally of small extent, consisting, in many instances, of not more than a single city, with a limited circle of territory. Where this form of government has been diffused over a great surface of country, it has consisted usually of a number of states, joined in a federal union. This is remarkably the case with the United States of America, where such a government has been introduced on a scale of greater magnitude than in any other quarter of the globe.

1211. *Monarchy*, among the elements which compose the political system, holds the most conspicuous place, and is the most generally prevalent. In some cases, the power of the monarch is wholly or very nearly absolute. In a majority of instances, however, it is more or less controlled by the influence of certain powerful and privileged bodies. In some constitutions the power of the monarch is combined with that of aristocratic and popular bodies, which share with the sovereign all the higher functions of government. These are called limited monarchies, and are now generally considered of all others best adapted for the preservation of a great people in a state of peace and prosperity. This form of govern-

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ment, after being for a long time confined to Britain, is now spreading, though with some difficulty and confusion, over the rest of Europe.

1212. *Aristocracy*, or the power vested in a distinguished and privileged class, is found existing much less frequently as a distinct and decided form of government, than as an element combined with monarchy and democracy. Venice, perhaps, afforded almost the only example in which aristocracy subsisted for a series of ages pure and unmixed. In monarchies, the aristocracy consists of a body of nobility, possessing various gradations of personal and hereditary titles and rights; while in a republic it is formed into a deliberative body, or senate, exercising or sharing the powers of the state. In mixed monarchies, both these privileges are usually held by the nobles.

1213. *Democracy* is the name given to the government in which the sovereignty resides in the great body of the citizens. They exercise it, either in a general assembly of the whole nation, or by means of persons elected, during a certain period, to act for the body of their constituents. The former was the mode usual among the ancient republics; the latter is more prevalent in modern times, and is alone compatible with the great extent of territory occupied by the leading republics of the present day. Popular government has been very generally combined in a greater or less degree with aristocracy, though there seldom fails to be an almost incessant opposition between the two parties.

1214. *The legislative*, among the different functions of the body politic, is justly considered supreme; it establishes the laws and regulations, according to which all public affairs are to be administered, and to which the persons exercising the other functions are bound to conform. Countries in which the legislative as well as the executive power is exercised by one man, form absolute monarchies, where every thing depends upon the arbitrary will of that single individual. Even a purely aristocratic legislature is commonly felt to be severe and oppressive by the great body of the people. A government cannot be considered as free, unless the various classes of which the nation is composed have a voice in legislative arrangements. Those political systems, however, in which the laws are enacted by the whole body of the assembled people, are fitted only for a single city with a territory of limited extent. Of such a nature and scale were the ancient republics of Greece, and also that of Rome, during the earlier periods of her history. But when the whole of a great people are convened into one place, they form a mere tumultuary crowd, incapable of any regular or effectual exercise of legislative functions. This disadvantage has, among modern nations, been studiously remedied by the representative system, under which the inhabitants of each different district elect an individual understood to possess their confidence, who exercises in their stead the popular part of the legislative function. Upon this basis have been founded the British constitution, and others that have been considered as exhibiting the most perfect forms of civil polity.

1215. *The judicial power* provides for the security of person and property among all ranks of individuals composing the political body, and forms thus one of the arrangements most essential to general prosperity and well-being. The institutions for this purpose vary greatly in different nations and stages of society. Among very rude tribes, the individual has only his own strength and that of his kindred to aid in repelling aggression. As society advances, the administration of justice between man and man becomes a leading object of public concern. In the earlier forms of polity, however, the executive and legislative functions are usually blended; the monarch, or his deputy, sits on the tribunal of judgment, and the forms of procedure are exceedingly simple. The parties appear, and plead their cause *vivâ voce;* while the judge decides promptly and on the spot. In the further progress of improvement, it is discovered that this branch of public economy cannot be duly executed, without being entirely separated from the legislative and judicial departments, and made independent of them. Hence arise the different orders, judges, lawyers, and agents, by whom the different stages of procedure are conducted; written and voluminous codes of law are formed, with the view of providing for every particular case. Yet the expense and delay consequent upon these complicated arrangements sometimes cause the society to look back with regret on the simple and expeditious machinery employed by their rude ancestors.

1216. *Other important particulars* are comprehended in the political state of a society: — the *titles of nobility*, and the badges of honour and distinction among individuals; the *military and naval force* employed in the defence of a country; the *elements* which compose it; and the manner in which these are arranged and directed. The same subject embraces also the *revenue*, its amount, the sources whence it is derived, and the manner in which it is levied and expended.

Sect. III. *Productive Industry.*

1217. *The industry* of a nation is employed in producing the necessaries, the conveniences, the ornaments, and the luxuries of life — all that is comprehended under the name of *wealth*. It forms thus one of the most important constituents of their prosperity and well-being.

1218. *The sources of national wealth* are usually divided into three; agriculture, manufactures, and commerce: each of these is divisible into several distinct branches, nor can the catalogue be completed without including the two occupations of mining and fishing.

1219. *Agriculture*, including the means of procuring every part of the produce of land, or what land bears on its surface, is unquestionably the grand source of human subsistence and accommodation. Hence chiefly are derived the materials used in manufacture; the objects, in the exchange of which commerce consists. The modes in which support and the means of enjoyment are obtained from land may be divided into three; hunting, pasturage, and tillage, which last being the only form in which labour is employed upon the ground itself, is more specially considered as agriculture. The collection of the spontaneous fruits of the earth, being confined to a few tribes in the lowest stage of improvement, scarcely requires to be taken into consideration.

1220. *Hunting*, or the chase of wild animals, to obtain their flesh as food, and their skins as raiment, is the earliest and rudest mode of procuring human support. This employment requires art and contrivance as well as bold adventure; but is usually accompanied with rude and turbulent habits, and, combined with them, constitutes what is called the savage state. As culture advances, and the greater proportion of the soil is devoted to the plough, or to the support of tame animals, its range is greatly limited, and in a high state of cultivation becomes little more than the amusement of the opulent. The chase of the fur-bearing animals, however, still affords one of the most valuable materials of commerce.

1221. *Pasturage*, or the deriving of subsistence from herds and flocks, tamed and trained so as to be subservient to the use of man, forms a more improved and comfortable occupation than hunting. Peculiar habits of life usually distinguish nations subsisting solely by pasturage. They are often destitute of any fixed abodes, moving from place to place in large bands or encampments, living within their tents in patriarchal simplicity, but towards other nations practising on a great scale war and robbery. These habits constitute what is called the barbarous state, still prevalent among the Arabs, Tartars, and other nations occupying an extensive portion of the earth's surface.

1222. *Tillage*, or the culture of the soil by the processes of ploughing or sowing, is employed, by all the more improved nations, as the most efficacious means of drawing subsistence from the earth. In proportion to the general improvement which any people have attained, is usually the skill and diligence with which this most important art is practised. The community which derives its chief subsistence from the culture of the soil, merits generally, to a great extent, the character of civilised. Some of the oriental people, as the Hindoo and Chinese, practise this important art with an indefatigable industry applied to every available portion of their soil, which is scarcely to be paralleled elsewhere; but in Europe, and especially in Britain, the use of machinery, the skilful rotation of crops, and various improved processes, render the same measure of industry much more productive. The objects of culture vary exceedingly, and for the most part according to the varieties of soil and climate. Grain, the main staff of human subsistence, forms every where the most extensive and important object of tillage. Climate chiefly determines the grain cultivated in any particular region. In the tropical countries it is rice; in the best part of the temperate zone, wheat and barley; in the colder tracts, oats and rye. Of luxuries, wine and oil are the most grateful, and in the most general demand; they have their almost exclusive growth in the warmer tracts of the temperate zone. The delicate fruits, from which they are produced, do not flourish in the excessively luxuriant soil of the tropics. There, however, the fragrant aromatic plants, and those filled with rich and saccharine juices, produce valuable substances, which are eagerly sought after by the natives of less genial climates.

1223. *Fishery*, by which subsistence and wealth are derived from the waters, forms a peculiar branch of industry, which flourishes in every stage of society. Even the rudest savages, wherever their situation admits, conjoin it with hunting, as a means of affording an immediate supply to their wants. They practise it often with a great degree of diligence and contrivance; but the progress of industry leads to various processes for extending and improving this branch. By the operations of salting and drying, fish is rendered fit to be conveyed as merchandise to the most distant countries. Some of the great maritime nations send large fleets into remote seas, where they find situations favourable to this pursuit. The whale and the herring fisheries have, in this manner, been raised to the rank of great national concerns.

1224. *Mining*, or the extraction of valuable substances from beneath the surface of the earth, can be extensively practised only in a somewhat advanced state of human industry. Yet nature has lodged in these dark repositories objects the most essentially conducive to the use and comfort of mankind, and others which afford his most brilliant ornaments. Here are found the bright and attractive metals of gold and silver; there the solidly useful ores of iron and copper; here glitter the diamond, the ruby, and the amethyst; there extend vast beds of coal, lime, and freestone. Gold, the most precious of the metals, is often the most easily accessible; but we can scarcely give the name of mining to the operation by which the savage merely collects its grains in the sands of the rivers, or even extracts it by pounding, when mechanically combined with other substances. But metals, in general, when lodged in the bowels of the earth, exist in the form of ore, intimately and even chemically united with other materials, from which they can be separated only by smelting, refining, and other elaborate and even scientific processes. From the toilsome nature of these operations, and from the gloomy depths in which they are conducted, it is often difficult to procure a supply of workmen; hence slaves and individuals condemned for crimes have been employed to a later period in this than in most other species of labour. Whatever skill may be employed in mining, it is necessarily a local occupation, nature having irregularly and almost capriciously distributed its objects over the different regions of the globe. Even the experiments made to discover whether metals are lodged in any particular spot, are often attended with considerable cost, and even peril.

1225. *Manufactures* may be regarded as a process by which man creates, as it were, a value for himself. He cannot, indeed, make any new substance; he can seldom even alter essentially the quality of that which is furnished to him; but he can altogether change its character and quality, can convert a rude and shapeless substance into one eminently conducive to benefit, convenience, or ornament. The excrescence shorn from an animal, the pod hanging from a shrub, objects in themselves neither useful nor beautiful, are converted into commodious and magnificent robes, adorned with the most brilliant tints. Almost every natural product requires to undergo some change before it is fitted for the use of civilised man. Grain must undergo the process of grinding and baking; the juice of the vine, that of fermentation; even animal food, that of cooking. But the name of manufacture is not given to these processes, nor to any which do not, to a material extent, increase the value of the substances on which they are employed. The various articles of clothing form the principal objects of manufacture; next to which rank stuffs for furniture, metallic implements, and utensils. Manufacturing skill and industry, carried to a certain extent, mark, beyond almost any other circumstance, the advance of a people in arts and civilisation. The savage usually employs unaltered the substances with which nature furnishes him. He feeds on the flesh of the animals which he has killed in the chase; he clothes himself in their skins; he consumes in their crude state the roots and herbs which the earth spontaneously affords. Even the nations which subsist by pasturage, and have made, perhaps, a certain progress in agriculture, though they have usually acquired a desire for articles of fine manufacture, prefer to obtain them from more industrious neighbours, in exchange for their own rude produce. The eastern empires, for the consumption of their courts and great men, produce a few articles of exquisite fineness and beauty by mere manual labour, without any capital or any machinery at all costly or complicated. It is in Europe, and pre-eminently in Britain, that the two principles, the division of labour and large capital employed in the construction of the most ingenious machines, have enabled the manufacturer to produce fabrics which, for abundance, elegance, and cheapness, have surpassed those of every other age or nation, and have found their way into all the markets of the globe.

1226. *Commerce*, the third grand source of national wealth, does not even aim at producing any new article, or altering the texture or quality of that in which it trafficks. It merely conveys it from a place in which it is superabundant, to another in which it is wanted. This sometimes confers an exchangeable value on that which previously had none; in every case, where judiciously exercised, it very considerably enhances the value attached to the article which it conveys from one place to another.

1227. *The home and the foreign trade* form the two great branches into which commerce is divided. The former, in consequence of each of its transactions being on a smaller scale, and affording little scope for brilliant adventure and splendid speculation, attracts, in general, less notice, and is considered of inferior political importance; yet it is proved by Smith to be by much the most extensive, as well as the most conducive to national prosperity. Its basis consists in the exchange between the country and the town, of the grain, cattle, and other raw produce of the one, for the varied commodities framed by the manufacturing industry of the other. Home trade is either coasting or inland, the former, where practicable, being preferred for bulky commodities, or those to be conveyed between distant parts of a kingdom; much of the interior commerce also passes along rivers and canals. Foreign trade has no limits but those of the habitable globe; and, for reasons similar to those just hinted at in another case, the more distant branches are considered generally as the most brilliant and important; while, in fact, the trade with the countries most closely contiguous, from its quicker returns, ranks highest in real amount and value. Unfortunately, it has been hitherto much fettered by the jealousy and rivalry between neighbouring nations, which make each imagine the prosperity of another to be gained at its expense, and every commodity received from them, to be so much abstracted from its own wealth. Although this illiberal system has somewhat abated, yet the consequence still is, that intercourse with distant colonial possessions is more sure and steady than with any power entirely foreign. The extensive capitals now possessed by some European powers, especially Britain, enable them to carry on the most extensive commerce with countries situated at the greatest distance, and even at the opposite extremity of the globe. In the interior, also, of the great continents, there is a foreign trade by land, carried on by caravans, which are so numerous as to resemble armies, and proceed to an immense distance.

1228. *The instruments employed in conducting and facilitating commerce*, and which are chiefly shipping, roads, and canals, form the most important part of what is called the fixed capital of a country. Under the head of roads, the invention of railways, though yet only in its infancy, promises to facilitate, in a remarkable manner, the interior communications of the countries in which it is employed.

Sect. IV. *Civil and Social Condition of Man.*

1229. *The population*, or the number of individuals, of whom any community is composed, forms, if not the most important, at least the most prominent circumstance in its social condition, and one on which its magnitude, and its place in the scale of nations, intimately depend. The ancient statesmen considered the increase of the numbers of a people as one of the most important of national objects, with a view both to its prosperity in peace and its strength in war. Politicians of the present day take a different view of the subject; observing that population in all circumstances of tolerable peace and prosperity easily maintains itself on a level with the means of subsistence, has even a tendency to rise higher, and by its superabundance to produce a distressing degree of national poverty: they have withdrawn all encouragement to the multiplication of the species; some have even suggested schemes for checking its progress. Still it must be admitted to be desirable that the earth should contain as many rational and intelligent beings as can subsist upon it with ease and comfort.

1230. *The actual amount of the population* in any particular period or country, has been involved in considerable uncertainty. It is only in modern Europe, and in the United States of North America, and there very recently, that general or careful enumerations have been made. But in all the other quarters of the globe, the estimates are formed upon very vague observation, founded on the density with which, on a superficial view, the districts appear to be peopled.

1231. *A national character* is found to pervade every community. The particulars have been often exaggerated, fancifully delineated, and rashly and indiscriminately applied to individuals; but to a certain extent such a variation may be always traced between one people and another. The grand distinction, founded upon the progress of arts, letters, knowledge, and refinement, is into savage, barbarous, and civilised: the first being marked by the total absence of these improvements; the second, by the possession of them in only an imperfect and progressive degree; the third, by their having arrived at a certain maturity. The savage state prevails among the natives of America, and the islanders of the South Sea; the former, however, being now in a great measure supplanted by European colonists. The barbarous state is general throughout Africa, and extends over a great part of Asia. The civilised state is found in the great empires of Eastern Asia, and in a higher degree, as well as under different characters, among the nations of Europe. In these last, too, civilisation appears to continue in a progressive and advancing state, while over the rest of the world it is nearly stationary.

1232. *The religion* professed by any people is a remarkable and most important feature in their social condition. Religious opinions do not come directly under the cognizance of the geographer; but he is called upon to mark this, as a particular in which nations strikingly differ from each other. The inhabitants of the earth may, in regard to religion, be divided into three great classes,—Christian, Mahomedan, and Pagan. The first, as to numerical amount, does not exceed the second, and still falls short of the third; but the nations possessing it have acquired such an ascendency in arts, social improvement, and political power, while their colonies have filled, and are multiplying over all the lately savage and unoccupied portions of the globe, that in all probability this faith will, in a few generations, be more widely diffused than any other. The Mahomedan nations, though in numbers they perhaps equal the last mentioned, and though they occupy a large proportion of the most fertile regions of the globe, are yet sunk into such a state of slavery and degradation, and so decidedly surpassed by the Christian people, that their sway is not likely to endure above two or three centuries. Of the Pagan religions, much the most numerous, and the only civilised, professors, are those attached to the kindred creeds of Brahma and Boodh, established, the one over the greater part of Indostan; the other in China and other continental kingdoms and insular territories of Eastern Asia. From their peculiar habits, and the immutable nature of their institutions, they are likely to adhere to these systems with greater pertinacity than the votaries of superstition in Africa, the South Sea, and other quarters, where the train of belief and observance, however fantastic, is of a slighter and looser texture.

1233. *The progress of knowledge* forms a most conspicuous chapter in the history of the human species: it follows generally that train of civilisation which we have already delineated. In surveying particular communities, various particulars connected with this subject are highly deserving of the attention of the geographer. Among these we may mention the most eminent philosophers, men of science, and authors who have flourished in any nation, — the institutions formed for the promotion and advancement of science, — the degree in which knowledge is diffused throughout the community, — the establishments formed for public and private education.

1234. *The fine arts*,—which are intimately connected with the more elevated and intellectual part of man's nature, and of which the successful cultivation confers glory on a people, and polishes and improves their manners,—merit to be considered similarly, and under the same general heads, as their intellectual attainments.

1235. *There are various points of minor importance*, which yet are distinctive and characteristic of a people, and excite thus a just and natural curiosity. Such are the amusements in which they chiefly delight, the peculiar costume in which they are attired, the species of food on which they subsist, and the liquor by which they are exhilarated, as well as the mode in which these articles are prepared for their use.

Sect. V. *The Languages of the World.*

1236. *On the subjects now enumerated*, it has been judged sufficient to indicate their nature, and the light under which they will be treated, reserving the details for the succeeding part of the work, when they come to be considered successively in reference to the various regions of the globe. But there is one subject into which it will be expedient, even at the present stage, to enter more particularly.

1237. *Language* is one of the strongest characteristics by which nations are distinguished from each other; at the same time the dialects spoken by different communities, even when most widely dissimilar, display in many cases relations and alliances indicative of a common origin. There exist over the world classes of languages, each of which comprehends the speech of numerous people, and forms a tie beween them, marking early relations and connections. Language thus acquires a character especially geographical, illustrating the origin and families of nations, and the connections between different countries. It will then be advantageous to consider, in a large and comprehensive view, first, the language spoken generally over the globe, and then those which prevail in its different quarters.

1238. *The languages by which the nations of the earth are distinguished*, and from which are derived the *names*, not only of its principal features, natural and artificial, but of its different regions, and of the *places* contained in them, constitute an important department of geography. When we contemplate those names in maps, a little reflection suffices to convince us that most of them are to be regarded, not as mere arbitrary or fortuitous appellations, but as terms of definite meaning, or as significant memorials of the people by whom they were imposed; and, in tracing those of ancient origin through the mutations they have undergone, we are compelled to summon history to the aid of geography, for the purpose of explaining them with reference to the great events which have, from time to time, altered the political, civil, and social condition of the nations composing the great family of mankind. Thus, without adverting to the rise, growth, and extinction of kingdoms and empires in Asia, we may observe, that the series of revolutions which ended in the overthrow of the Roman empire, and the foundation of the existing system of Europe on its ruins, is in nothing more remarkable than in the change which it contributed to produce in the greater part of the world, through the migration of nations; a change so absolute, that it has served to mark the distinction between ancient and modern history, ancient and modern geography, and ancient and modern languages. Of this change the geographer, equally with the historian, is at every step of his investigations reminded. *France*, for instance, commemorates in her modern name that branch of the Germanic family of nations who prevailed in *Gaul*; yet she retains, not less in her topographical vocabulary than in her language generally, unequivocal traces of Roman dominion; and we recognise, though strangely curtailed, the imperial appellations *Augustodunum* and *Aureliana*, in *Autun* and *Orleans*. Italy and Spain, preserving a semblance of their ancient names, exhibit similar instances of disfigurement in those of particular places: *Forum Julii* and *Cæsar-Augusta* survive in *Friuli* and *Saragossa*; but the Trasimene suggests a less classic reminiscence as the lake of Perugia; nor can the Betis and the Durias be recognised under the more sonorous names, the Guadalquivir and the Guadalaviar (the *great river* and the *white river*), conferred on them by the Arab conquerors of Spain. Appellatives, also derived from languages little known, whether ancient or modern, are liable to mutilation from the varying orthography of travellers; and we can no longer wonder at the confusion caused by French voyagers in this particular, when we call to mind the difference not only between foreign and vernacular names, but between their written and oral expression; as when a German spells his native country Deutschland, and pronounces it Teytshland; or a Persian writes for Persia *Irān*, and pronounces it *Eeraun*. But the different idioms of the human race claim our attention from far higher considerations than the mere naming of places or of countries; for geography, considered as an auxiliary to what has been emphatically called "the proper study of mankind," is principally valuable as combining, with a description of the earth, a view of the different branches of the great human family by whom such vast portions of it have been "replenished and subdued."

1239. *Ethnography* is the term which has been employed to designate this branch of geographical science. It distinguishes nations by their languages, and professes to class them in kingdoms, genera, species, and varieties; but this systematic arrangement is as yet far from being completed. Of the numerous languages that are or have been spoken on the earth, many are so imperfectly known that it is difficult to determine to what family they belong. For this and other reasons it has been deemed expedient by a modern writer, who appears to have collated the labours of his predecessors on the subject*, to adopt a geographical arrangement, and consider languages in their relation to the five great divisions of the globe; the *Asiatic*, the *European*, the *African*, the *Oceanic*, and the *American*. It is obvious, however, that the ethnographical and geographical limits of a nation and its language may be widely different; the Spanish and the British, for instance, extend ethnographically to the remotest regions of both the Indies. Adopting this arrangement, not only as most convenient in regard to a branch of knowledge still in its infancy, but as most suitable to a *geographical* treatise, we shall proceed, without pausing to discuss the merits of any particular theory, to offer, in this and subsequent parts of the present work, such a succinct view of the known languages of mankind as its just proportions will allow.

1240. *The distribution of languages into Shemitic, Hamitic, and Japhetic*, according to the scriptural account, seems however entitled to some notice, as being well warranted in relation to the early languages of the world, if we can reconcile our thoughts to an affinity of languages after their confusion, and the consequent dispersion of the human race. It has been placed in a striking point of view by the very able author of the "History of Maritime and Inland Discovery," in Dr. Lardner's *Cabinet Cyclopædia*; and a brief sketch of his observations may be useful as an introduction to an account of languages more strictly geographical.

1241. *On reference to the sacred records*, we find that in the order in which the generations of the sons of Noah are given, Japheth takes precedence of Ham and Shem, and is called the elder. This the learned writer we are now citing has not noticed; he has taken the names in the order which long and universal usage has sanctioned.

1242. "*The family of Shem*," he observes, "comprised the pastoral nations which were spread over the plains between the Euphrates and the shores of the Mediterranean, from Ararat to Arabia. The Hebrews themselves were of this stock; and the resemblance of their *language* with the Aramean, or ancient Syrian, and with Arabic, sufficiently proves the identity in race of what are called the *Semitic* nations. There is no difficulty in assigning to each of the sons of Shem his proper situation. Elam founded the kingdom of Elymeis; Assur, that of Assyria; and Aram, the kingdom of Aramea or Syria, a name still clearly preserved in that of Armenia. From Arphaxad were descended the Hebrews themselves, and the various tribes of Arabia; and this close affinity of origin was always manifest in the *language* and in the intimate correspondence of the two nations. Some of the names given by Moses to the children of Shem are still used in Arabia as local designations: thus there is still in that country a district called Havilah; and Uzal, the name given to Sana by the sacred historian, is not quite extinct.

1243. "*The descendants of Ham*," continues this learned writer, "constituted the most civilised and industrious nations of the Mosaic age. The sons of that patriarch were Cush, *Mizraim*, Phut, and Canaan. The name of *Ham* is identical with *Cham* or *Chamia*, by which Egypt has in all ages been called by its native inhabitants; and *Misr* or *Mizraim* is the name by which the same country, or more probably the Delta, is still known by the Turks and Arabians." [We may add, that it is the name by which, in the original Hebrew, Egypt is called in the admonition that precedes the decalogue.] "The land of Phut appears to signify Libya in general; and the name Cush, though sometimes used vaguely, is obviously applied to the southern and eastern parts of Arabia. The names of Saba, Sabtah, Raamah, and Sheba, children of Cush, have long survived in the geography of Arabia. The posterity of Canaan rivalled the children of Mizraim in the early splendour of arts and cultivation. Though the Canaanites, properly speaking, and the Phœnicians, were separated from each other by Mount Carmel, yet, as the same spirit of industry animated both, they may in a general sense be considered as one people. The Phœnicians possessed the knowledge of the Egyptians, free from superstitious reluctance to venture upon the sea. Their local position naturally engaged them in commercial enterprise. Their chief cities, Tyre and Sidon, had reached the highest point of commercial opulence, when the first dawn of social polity was only commencing in Greece."

1244. *To Japheth*, "*the Japetus of the Greeks*," this writer concurs with others in ascribing the superiority over the other sons of Noah, if not in the number of his descendants, in the extent of their possessions. All the Indo-Teutonic nations, stretching without interruption from the extremity of Western Europe, through the peninsula of India, to the isle of Ceylon, he considers as belonging to this common ancestor. The Turkish nation also, occupying the elevated countries of central Asia, boasts the same descent. Their own traditions accord with the Mosaic history; and indeed the affinities of language, which are still evident among all the nations of the Japhethian family, fully confirm the relation of the sacred writer: yet the meaning assigned to the patriarch's name in the Sanscrit language, *Yapati,* "lord of the earth," tells for nothing unless we can suppose the name Japheth to be thence derived.

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* Dr. Balbi, Atlas Ethnographique du Globe. Paris, 1826.

1245. *To Gomer, the eldest of Japheth's sons,* is ascribed, on the authority of Josephus, the distinction of being ancestor of the Celts. Magog may have been the founder of some Scythian nation. Madai is recognised as the ancestor of the Medes. The posterity of Javan and Tubal, and Meshech and Tiras, may be traced from Ararat, always called Masis by its inhabitants, through Phrygia into Europe. Tubal and Meshech left their names to the Tibareni and Moschi, Armenian tribes, whose early emigrations appear to have extended into Mœsia. In like manner the Thracians may have owed their origin to Tiras.

1246. *That the progeny of Japheth peopled Europe,* seems apparent on another ground, which we shall explain, after mentioning the remaining branches of his posterity. Askkenaz, the son of Gomer, is thought to be that Ascanius whose name so frequently occurs in the ancient topography of Phrygia, and from whom probably the Euxine, at first the *Axine,* Sea derived its appellation. "In Togarmah," observes this writer, "we see the proper ancestor of the Armenian nation, and it is even asserted by the Turks."

1247. "*Javan was the Ion of the Greeks, the father of the Ionians.* In the names of his sons we find fresh proofs of the consistency of the Mosaic history. In Elishah we see the origin of Elis or Hellas. The name of Tarshish is supposed, with little foundation, to refer to Tarsus in Cilicia. Kittim is said to mean Cyprus; and Dodanim, or Rodanim, is understood to apply to the island Rhodes." Here we may remark, that the sacred text contains a most important record relative to the descendants of Japheth: "By these were the *isles* of the Gentiles divided in their lands, every one after his *tongue,* after their *families,* in their *nations.*" Now, if the Oriental latitude of expression be allowed in this instance, the *isles* of the Gentiles must include not only the ISLES of the Mediterranean and other European seas, but the PENINSULÆ of *Asia Minor,* of *Greece,* of *Italy,* and of *Spain.*

1248. *To the Phœnicians* must be partly ascribed the discovery of those territories collectively called "The isles of the Gentiles," and the earliest intercourse with them. Unfortunately those early navigators have left no records of their discoveries; and the little we know of their enterprises is derived from Scripture, and from the scattered notices of the Greek and Latin authors. They were, as elsewhere observed, the pilots of Solomon's fleet; and as often as the fleets of Egypt are mentioned by ancient historians, we find them manned and guided by Phœnicians. Their commercial enterprises had contributed to augment the wealth of that kingdom, which had attained a high degree of social order and economy seven hundred years before the Greeks became acquainted with the use of money. The numerous colonies which they planted along the shores of the Euxine, the Mediterranean, and the Atlantic, beyond the Straits of Gibraltar, attest the extent of their early voyages. Those of Utica, Carthage, and Gades or Cadiz, were founded between twelve and eight hundred years before the Christian era; but the seas of the west were probably explored for ages before settlements were formed at such a distance from the parent state. Their geographical knowledge, even in the fabulous times of Greece, probably embraced as large a portion of the earth as that of the Romans in the time of Augustus; but, with the caution characteristic of a mercantile people, they forbore to communicate that knowledge to the rest of mankind. The silence of these descendants of Ham leaves us in uncertainty as to the progress of those of Japheth in peopling the *continent,* the *peninsulæ,* and the *isles* of Europe. In still deeper mystery is involved the descent of the negro tribes of Africa from the father of Canaan. Having thus briefly characterised the Shemitic, Hamitic, and Japhetic races, we leave to the consideration of the curious the theories that have been framed upon them in respect to the different idioms of mankind, and revert to the geographical arrangement which we proposed to adopt.

1249. *Separating all the known languages of the globe* into five grand divisions, we name them the *Asiatic,* the *European,* the *African,* the *Oceanic,* and the *American,* according to the part of the world in which they are spoken. Then tracing, according to the best authorities, the several languages by their affinities, we class those which appear to be sister idioms in one group, assigning to it a distinctive name; as the *Mongolian* family, the *Celtic* family, or the *Sanscrit* family, conformably, in most cases, to the name of the principal people of each of those families. But here a difficulty arises from the variance between geographic and ethnographic limits. Several nations included in one of these groups have dwelt from time immemorial at once in Asia, Africa, and Europe; others in regions partly European, partly Asiatic: to which part of the world then must the family be assigned to which those nations belong? Two reasons influence the decision; the historical importance of the people, and its mass, or relative number, as may be better understood from one or two examples.

1250. *That the Chaldeans, the Assyrians, the Arabs, the Hebrews,* and other nations of the great Shemitic family, were from the earliest times inhabitants of Western Asia, we know from the writings of Moses, with which the results of the most eminent philologers and arith-

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maticians wonderfully agree. These nations, therefore, belong unquestionably to Asia; the comparison of the Gheez and Amharic vocabularies having demonstrated an indisputable affinity between the people of Abyssinia, who speak the idioms comprehended in the branch called Abyssinian: their languages also are classed in the Asiatic branch, though in all epochs, even anterior to historical tradition, those nations have dwelt in Africa.

1251. *The great mass of the Malay people* occupies almost all the isles of the Indian Archipelago, all those of Polynesia, and some of Australia. Hence we regard the Malay family as Oceanic, and class all the people characterised by this idiom as belonging to that great ethnographical group. Thus, besides the Malays of the peninsula of Malacca, whose settlement in the extremity of Asia is of no remote date, this division includes the Si Deïa or Formosans of Asia, and the Madecasses of the African isle Madagascar.

1252. *The Uralian nations* belong equally to Europe and Asia; because, from the little we know of them, they have inhabited, time out of mind, the north-east and east of Europe, and the north-west and west of Asia. Following the demarcation prescribed by M. Malte Brun, we find that the great mass of the Uralian or Finnish nations belongs to Europe. We therefore regard the Finnish family as European, and class among them all the ancient and modern nations who, from striking analogies in their respective idioms, seem to belong to them.

1253. *The Esquimaux* have from time immemorial extended over all the north of the New World; while the sedentary Chutchkis, who speak a language evidently related to the idioms of those American tribes, occupy only the extreme north-east of Asia. The Chutchkis we therefore consider as American colonies, and, following the precedent of Dr. Balbi, re-unite them as such to the other nations of America who form the family of the Esquimaux.

1254. *Under a perfect ethnographical arrangement*, the languages of the Indo-Germanic nations, extending from Ceylon and the Ganges to the extreme west of Europe, and even to Iceland, would form, not a single family, but rather an ethnographic kingdom divided into six families.

1255. *In subsequent parts of this work*, the languages of the earth will be considered as divided into five principal branches: the *European*, the *Asiatic*, the *African*, the *American*, and the *Oceanic*.

PART III.

GEOGRAPHY CONSIDERED IN RELATION TO THE VARIOUS REGIONS OF THE GLOBE.

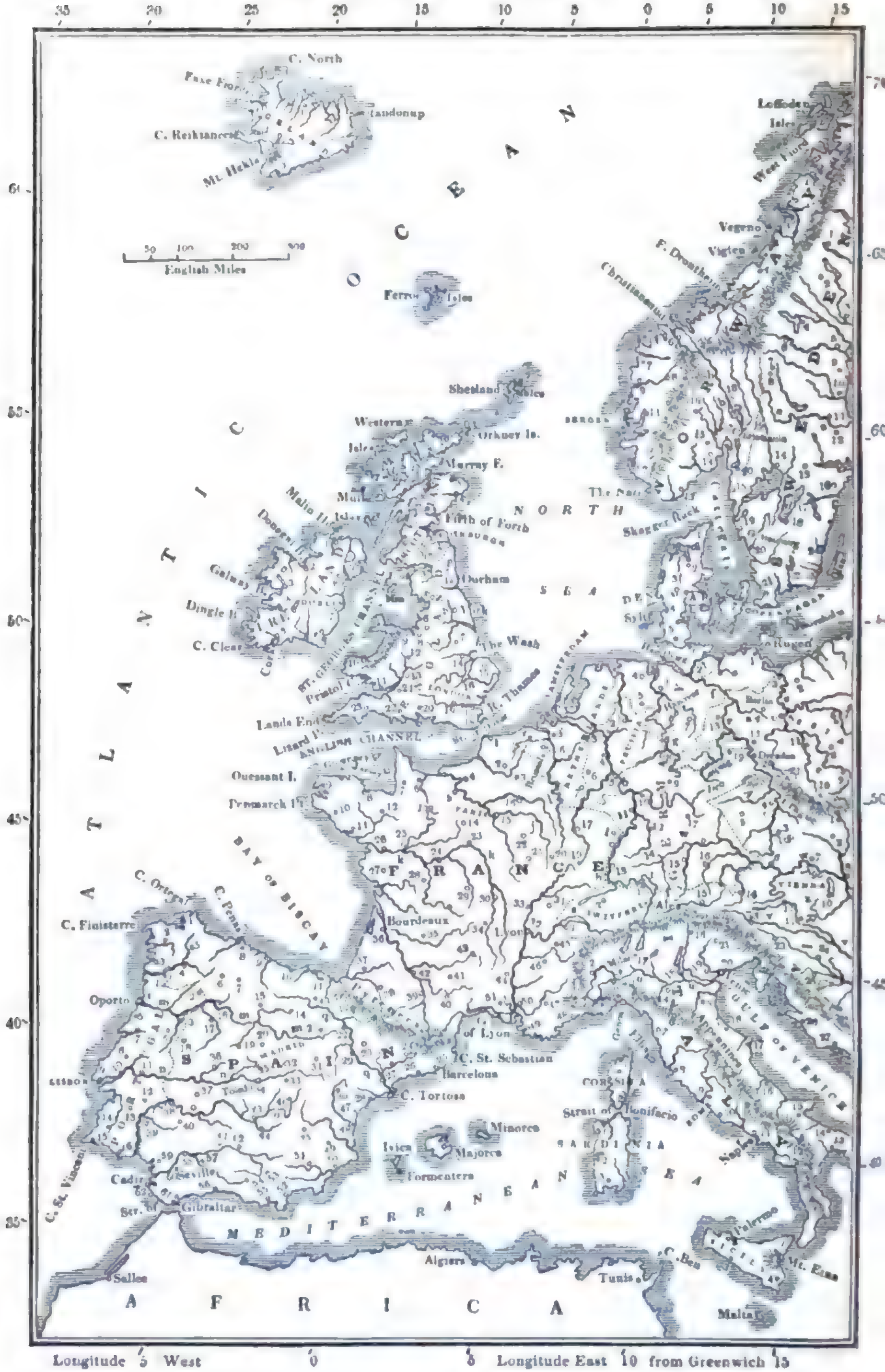
1256. In *the second part of this work*, the principles of geography have been treated of as founded upon a general survey of the globe. The most extensive portion of our task still remains. We must delineate the leading objects of nature, art, and human life, as they appear successively in each different region into which the earth is divided.

1257. *Five great general divisions of the earth* are now usually recognised: — 1. Europe. 2. Asia. 3. Africa. 4. America. 5. The extensive and numerous islands of the South Sea, to which the French give the name of Oceania, the English those of Australasia and Polynesia, to which we may add the islands of the Polar Sea. Each of these will form the subject of a separate book.

BOOK I.

EUROPE.

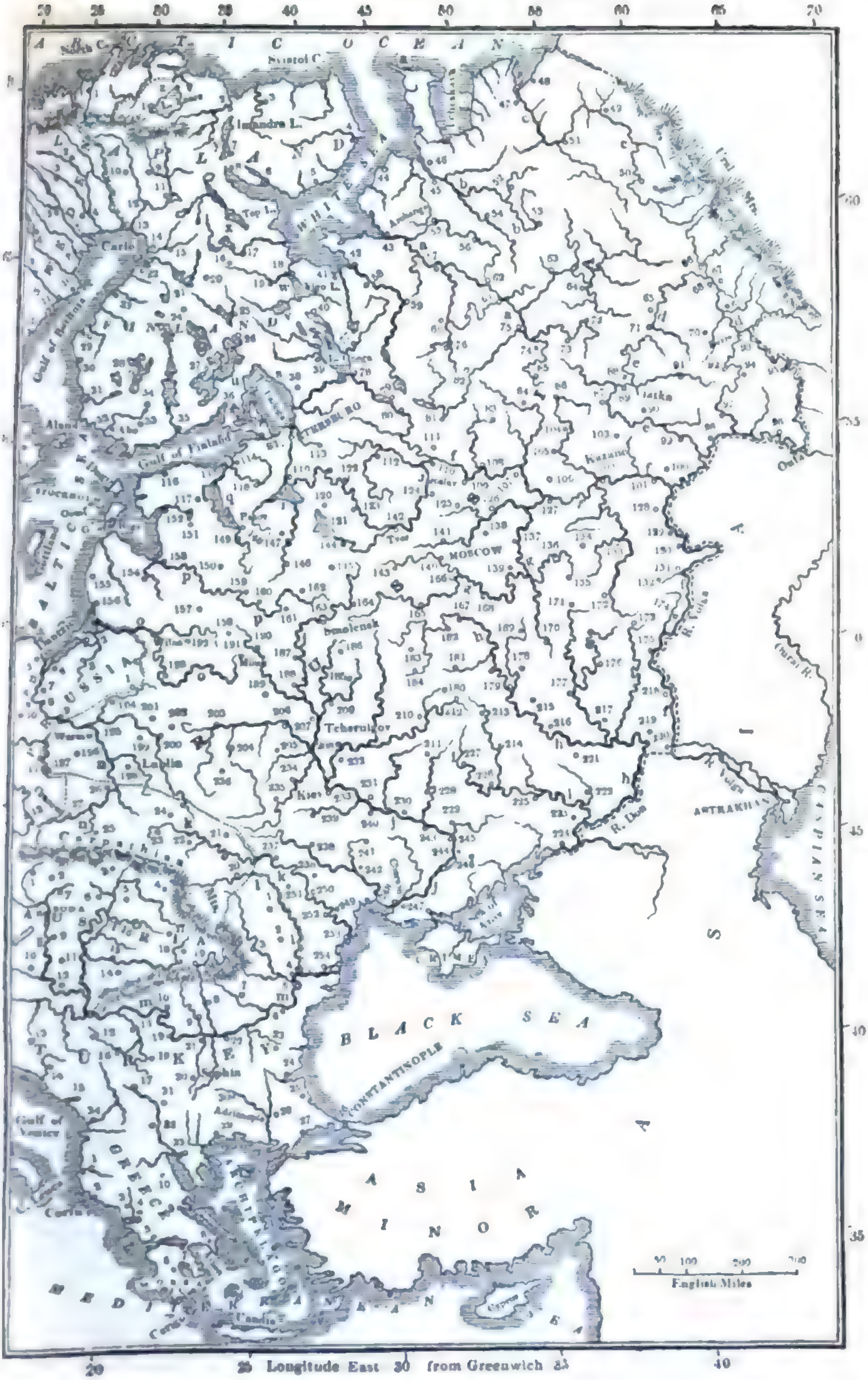
1258. *Europe* is the smallest in extent of the four great continents, and yet, without being liable to any suspicion of partiality, we may pronounce it the most important of all the divisions of the globe. Asia, indeed, was the cradle of civilisation and knowledge; but her empires soon became, and have ever since continued, stationary; while Europe has carried the sciences, arts, and refinement, with almost uninterrupted progress, to the comparatively elevated state at which they have now arrived. All the branches of industry are conducted with a skill and to an extent unattained in any other part of the earth. European vessels carry on the commerce of the most distant regions. The military and political influence of Europe is now of a magnitude with which the most powerful and populous empires of the other continents can no longer be compared. European colonists have now peopled, and



MAP OF EUROPE—WEST PART.

Fig. 84.

Fig. 85. MAP OF EUROPE — EAST PART.



are *more* and *more* peopling, all the formerly savage and unoccupied quarters of the earth; and, with the exception of some strongholds of ancient and imperfect civilisation, the whole world is, through their influence, rapidly becoming civilised and European.

Chap. I.

GENERAL SURVEY OF EUROPE.

1259. *Europe is bounded on the north by the Arctic Ocean, and on the west by the Atlantic.* On the south, the grand inlet of the Mediterranean divides it from Africa; and the Grecian Archipelago, with its subordinate branch, connected only by a narrow strait, the Euxine or Black Sea, divides it from a great part of Asia. Between the south-east extremity of the Black Sea and the Northern Ocean is an interval of 1400 or 1500 miles of land, forming the eastern boundary of Europe. Had this been known to the ancients, they would perhaps have identified Europe with Asia; but the separation is now too deeply marked, and is defined by too many characters, moral and political, ever to be altered. The absence of sea, the natural and most obvious boundary of a continent, has somewhat embarrassed modern geographers; for even a river limit is here wanting. The chain of the Urals, running from north to south, forms so important a feature, that it has been taken as the grand line of division; and is protracted to the Black Sea by means of continuous portions of great rivers Kama, Volga, and Don.

1260. *The form of this continent is singularly broken and varied.* While Asia, Africa, and the two Americas are each formed into a vast inland expanse, Europe is split into many distinct portions; peninsulas, large islands, and kingdoms, with extended and winding coasts. This form arises chiefly out of its inland seas, which penetrate farther, and are more

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References to the Map of Europe. — West Part.

ENGLAND.
1. Durham
2. Morpeth
3. Carlisle
4. Kendal
5. York
6. Manchester
7. Lincoln
8. Chester
9. St. Asaph
10. Cardigan
11. Llandaff
12. Worcester
13. Gloucester
14. Peterborough
15. Norwich
16. Cambridge
17. Canterbury
18. Dover
19. London
20. Manchester
21. Bristol
22. Poole
23. Exeter.

SCOTLAND.
1. Thurso
2. Inverness
3. Banff
4. Aberdeen
5. Perth
6. Edinburgh
7. Selkirk
8. Ayr.

IRELAND.
1. Londonderry
2. Sligo
3. Galway
4. Limerick
5. Cork
6. Wexford
7. Dublin
8. Drogheda
9. Belfast.

NORWAY.
1. Saltdalen
2. Selnes
3. Rys Vand
4. Sorvug
5. Drontheim
6. Romsdal
7. Forde
8. Ardal
9. Loerig
10. Bergen
11. Tondal
12. Stavanger
13. Christiansand
14. Tonsberg
15. Kongsberg
16. Goel
17. Christiania
18. Faaldberg
19. Tongsinger
20 Friderickshall.

SWEDEN.
1. Tarna
2. Tasjo
3. Liden
4. Ostersund
5. Sundswall
6. Hede
7. Tara
8. Sarna
9. Hudikswall
10. Soderhamn
11. Husby
12. Sala
13. Orebro
14. Carlstad
15. Ovills
16. Nykoping
17. Linkoping
18. Jonkoping
19. Gottenburg
20. Folkenberg
21. Malmo
22. Christianstad
23. Kalmar
24. Emin.

DENMARK.
1. Aalborg
2. Niborg
3. Veile
4. Ripen
5. Sleswick
6. Kiel
7. Copenhagen.

ICELAND.
1. Holar
2. Bessested
3. Sandfall.

PRUSSIA.
1. Colberg
2. Stargard
3. Stettin
4. Berlin
5. Frankfort
6. Posen
7. Gnesna
8. Lissa
9. Breslau
10. Glatz
11. Sagan
12. Torgau
13. Magdeburg.

AUSTRIA.
1. Olmutz
2. Brunn
3. Tabor
4. Prague
5. Pilsen
6. Lintz
7. Krems
8. Presburg
9. Vienna
10. Sopron
11. Gratz
12. Bruck
13. Villach
14. Saltzburg
15. Hall
16. Brixen
17. Milan
18. Mantua
19. Padua
20. Venice
21. Belluno
22. Rimini
23. Laybach
24. Agram
25. Carlstadt
26. Zara
27. Spalatro.

ITALY.
1. Genoa
2. Turin
3. Alessandria
4. Parma
5. Bologna
6. Florence
7. Leghorn
8. Orbetello
9. Rome
10. Nettuno
11. Naples
12. Policastro
13. Taranto
14. Bitonto
15. Foggia
16. Pescara
17. Ancona
18. Pesaro.

GERMANY.
1. Stralsund
2. Hamburg
3. Bremen
4. Oldenburg
5. Osnaburg
6. Hanover
7. Brunswick
8. Cassel
9. Fulda
10. Darmstadt
11. Worms
12. Heilbronn
13. Freyburg
14. Ulm
15. Augsburg
16. Munich
17. Nuremburg
18. Hof
19. Leipzig
20. Dresden.

SWITZERLAND.
1. Constance
2. Berne
3. Geneva.

WEST PRUSSIA.
1. Munster
2. Wesel
3. Cleves
4. Cologne
5. Coblentz
6. Pruym.

NETHERLANDS.
1. Amsterdam
2. Rotterdam
3. Antwerp
4. Ghent
5. Brussels
6. Liege
7. Luxemburg.

FRANCE.
1. Calais
2. Amiens
3. St. Quintin
4. Rouen
5. Evreux
6. Caen
7. St. Lo
8. St. Brieux
9. Brest
10. Quimper
11. Vannes
12. Rennes
13. Alençon
14. Chartres
15. Paris
16. Soissons
17. Metz
18. Strasburg
19. Epinal
20. Chaumont
21. Châtillon
22. Troyes
23. Orleans
24. Tours
25. Angers
26. Nantes
27. La Roche
28. Poitiers
29. Gueret
30. Moulins
31. Lons
32. Lyons
33. Maçon
34. Clermont
35. Perigaux
36. Bordeaux
37. Dax
38. Pau
39. Toulouse
40. Alby
41. Rodez
42. Agen
43. Aurillac
44. Privas
45. Chamberry
46. Grenoble
47. Digne
48. Draguinan
49. Toulon
50. Avignon
51. Nismes.

SPAIN.
1. Ferrol
2. Santiago
3. Vigo
4. Orense
5. Lugo
6. Astorga
7. Leon
8. Oviedo
9. Lanes
10. Santander
11. Bilbao
12. Pampeluna
13. Vittoria
14. Burgos
15. Palencia
16. Zamora
17. Salamanca
18. Ciudad Rodrigo
19. Avila
20. Segovia
21. Soria
22. Tudela
23. Huesca
24. Ago
25. Barcelona
26. Tarragona
27. Lerida
28. Peniscola
29. Saragossa
30. Teruel
31. Utrilla
32. Guadaxara
33. Huete
34. Toledo
35. Madrid
36. Placentia
37. Truxillo
38. Badajos
39. Moura
40. Zafra
41. Cordova
42. Andujar
43. Ciudad Real
44. Torrenueva
45. Alvacete
46. Ville de Canas
47. Murviedro
48. Valencia
49. Villencia
50. Alfuente
51. Murcia
52. Vera
53. Baza
54. Granada
55. Almeria
56. Malaga
57. Ecija
58. Carmona
59. Huebla
60. Seville
61. Gibraltar
62. Cadiz.

PORTUGAL.
1. Molgaco
2. Bragança
3. Almeida
4. Oporto
5. Aveyro
6. Guarda
7. Coimbra
8. Leria
9. Lisbon
10. Obidos
11. Abrantes
12. Evora
13. Alvito
14. Ourique
15. Lagos
16. Faro.

Rivers and Lakes.
a Dal, R.
b Moisen, L.
c Wener, L.
d Wetter, L.
e Oder, R.
f Elbe, R.
g Weser, R.
h Rhine, R.
i Meuse, R.
j Seine, R.
k Loire, R.
l Garonne, R.
m Douro, R.
n Tagus, R.
o Guadiana, R.
p Guadalquivir, R.
q Ebro, R.
r Rhone, R.
s Geneva, L. of
t Constance, L. of
u Po, R.
v Drave, R.
w Danube, R.

CORSICA.
1. Corte
2. Porto Vecchio.

SARDINIA.
1. Sassari
2. Oristagni
3. Cagliari.

SICILY.
1. Messina
2. Palermo
3. Sciacca
4. Syracuse.

deeply embayed, than those of any other part of the globe. Numerous gulfs, scarcely secondary in magnitude and importance, branch out from them. The Mediterranean, which forms, as it were, a little ocean, separating Europe, Asia, and Africa, is connected with the Atlantic only by the celebrated Straits of Gibraltar, twenty miles in breadth. Its great enclosed branches of the Adriatic and the Black Sea penetrate, and render maritime, some of the most inland districts of the continent. In the north, the Baltic, with its great gulfs of Bothnia and Finland, is neither indeed so extensive nor so accessible; but it is of the highest commercial value, as affording a channel by which the rude necessaries, the metals and woods of the north, may be exchanged for the wines, the silks, and other luxuries of the south. The British isles, by their varied configuration, enclose between themselves and the opposite continent several important seas and channels. We may add, that the mountains and the plains of Europe do not display those immense unbroken groups, or those level and almost endless expanses, which give so vast and monotonous a character to the interior regions of Asia and Africa. In general they are separated into smaller portions, and are happily and commodiously interchanged. They have kept Europe divided into a number of separate nations, holding easy intercourse. Probably, this relative position has been one great cause of that intellectual activity, and those vigorous exertions in all liberal and ingenious arts, which have raised this part of the globe to so high a pre-eminence. The immense inland plains of Russia and Poland, presenting an aspect wholly Asiatic, remained, even after the civilisation and improvement of all western Europe, sunk in the deepest barbarism, from which they are but slowly and with difficulty emerging.

Sect. I. *Natural Features.*

1261. *The surface of Europe*, as we have observed, is very diversified. Its mountains do not reach that stupendous height, nor stretch in such unbroken chains, as those of Asia and America: nevertheless, we may trace pretty distinctly two highlands, the northern and southern, and an intermediate lowland. The southern highland comprises the most elevated

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References to the Map of Europe. — East Part.

SWEDEN.
1. Altengaard
2. Jukas Jervi
3. Gellivare
4. Of Kalix
5. Gorjan
6. Arjeplog
7. Lulea
8. Pitea
9. Lyckzele
10. Lofangers
11. Umea
12. Sarga
13. Upsal
14. Stockholm.

RUSSIA.
1. Enare
2. Kola
3. Voronenskaya
4. Panoi
5. Palitza
6. Ourala
7. Ekostrovskaya
8. Kandalakava
9. Salankyla
10. Kartila
11. Kemitrask
12. Rovaniemi
13. Tornea
14. Ajo
15. Uleaborg
16. Krest Novolok
17. Kounze
18. Vigo
19. Andessero
20. Sotkamo
21. Kajana
22. Brahestad
23. Carleby
24. Pie Pijajarvi
25. Pielis
26. Kuhetiro
27. Pannaala
28. Rianvest
29. Wasa
30. Christinestad
31. Biorneborg
32. Abo
33. Kilkala
34. Tavastehus
35. Borgo
36. Vyborg
37. St. Petersburg
38. Olonetz
39. Petrozavodsk
40. Povienetz
41. Vaservskaya
42. Onega
43. Archangel
44. Rougt
45. Staroishtache
46. Mezena
47. Labavko
48. Nikilza
49. Ousa
50. Ovinnika
51. Gelova
52. Stchemaas
53. Borovskaya
54. Mouslejskaya
55. Pinega
56. Verkouskei
57. Shentdzerskoi
58. Chalchelskaya
59. Karshakovska
60. Makaovska
61. Krasnoborsk
62. Metverskava
63. Varensk
64. Oust Sisolsk
65. Kai
66. Tcherdin
67. Solikamsk
68. Vitrenskoe
69. Ortova
70. Obva
71. Garshkova
72. Misharovskava
73. Ivotovska
74. Aksentevskoe
75. Velikoustoug
76. Vinisk
77. Pudog
78. Vitegra
79. Bielozersk
80. Kirilov
81. Vologda
82. Totma
83. Tchuchloma
84. Kologhiv
85. Nikolsk
86. Sergievitza
87. Kotelnitch
88. Slobodskov
89. Viatka
90. Nolinsk
91. Glasov
92. Ochansk
93. Perm
94. Osa
95. Krasnoufimsk
96. Birsk
97. Sarapoul
98. Elabouga
99. Malmish
100. Kazane
101. Sviajsk
102. Kozimodemiansk
103. Yaransk
104. Vetlouga
105. Varnavin
106. Semenov
107. Inrevetz Povolskoe
108. Kostroma
109. Jaroslav
110. Ribinsk
111. Poshechon
112. Ostinjna
113. Tikvin
114. Yamburg
115. Narva
116. Revel
117. Derpt
118. Luga
119. Novgorod
120. Valdai
121. Ostashkoff
122. Borovitchi
123. Vishnei Volotchoki
124. Ouglitch
125. Petrovsk
126. Kovrov
127. Nizney Novgorod
128. Bouinsk
129. Sinbirsk
130. Singilei
131. Sizran
132. Kanadei
133. Ardotov
134. Potchinki
135. Norovtchat
136. Temnikov
137. Murom
138. Sudogda
139. Kasimov
140. Moscow
141. Pokov
142. Tver
143. Majaisk
144. Zubtzov
145. Bieloi
146. Velikie Luki
147. Cholm
148. Pskov
149. Ostrov
150. Lutzin
151. Valk
152. Penau
153. Riga
154. Mitau
155. Libau
156. Memel
157. Sventziani
158. Vileika
159. Drissa
160. Polotsk
161. Witepsk
162. Veliz
163. Smolensk
164. Dorogobus
165. Kalouga
166. Kalomna
167. Toola
168. Kiazane
169. Kozlov
170. Tambov
171. Tchembar
172. Penza
173. Petrovsk
174. Volsk
175. Saratov
176. Balashev
177. Novokhopeck
178. Usman
179. Voronez
180. Phatez
181. Livni
182. Krapivna
183. Bolchov
184. Orel
185. Saran
186. Koslovl
187. Moghilew
188. Rogatchev
189. Sloutzk
190. Borisev
191. Minsk
192. Wilna
193. Grodno
194. Nowograd
195. Warsaw
196. Rawa
197. Vidava
198. Lublin
199. Mienjrietz
200. Brest Litoy
201. Bielsk
202. Kobrin
203. Pinsk
204. Visotsk
205. Ovroutch
206. Mozir
207. Cholmitch
208. Tchernigov
209. N. Bieletza
210. Rilsk
211. Soumi
212. Koursk
213. Oskol
214. Volouiki
215. Bobrov
216. Pavlorsk
217. Zatovskaya
218. Kamishin
219. Ilotinskaya
220. Tzaritzin
221. Tiikha
222. Kodlin
223. Sheulibalotchkaya
224. Tcherkask
225. Donetsk
226. Isiuna
227. Charkov
228. Poltava
229. Novomoskovsk
230. Krement
231. Zolotonosha
232. Kozelets
233. Kiev
234. Padornist
235. Jitomir
236. Rovno
237. Kamets
238. Balta
239. Gaisin
240. Tcherk
241. Novomirgorod
242. Olviopol
243. Novogrigorevsk
244. Aleksandrovsk
245. Ekaterinoslavl
246. Oriekhov
247. Aleshki
248. Cherson
249. Tiraspol
250. Nov Doubassari
251. Billzi
252. Bender
253. Akermann
254. Ismail.

PRUSSIA.
1. Scanaryn
2. Konigsburg
3. Heilsberg
4. Marienburg
5. Dantzic
6. Gnesna
7. Calm
8. Thorn
9. Plotsk
10. Posen
11. Sieradz
12. Ratibor.

AUSTRIA.
1. Treutsen
2. Schemnicz
3. Eperies
4. Husa
5. Debreczen
6. Agria
7. Hant
8. Buda
9. Salt
10. Pets
11. St. Maria
12. Bacs
13. Belgrade
14. Temeswar
15. Arad
16. Bihar
17. Clausenburg
18. Carlsburg
19. Hermanstadt
20 Kuti
21. Tarnopol
22. Sery
23. Sember
24. Lemberg
25. Sandecz
26. Sendomirje
27. Cracow.

TURKEY.
1. Jassy
2. Birlat
3. Adgrad
4. Galatz
5. Ibraila
6. Silistria
7. Bukarest
8. Slatina
9. Cratova
10. Tchernets
11. Jogodina
12. Usitza
13. Serajevo
14. Mostar
15. Cattaro
16. Novibazar
17. Scopia
18. Nissa
19. Widin
20. Sophia
21. Orsova
22. Nicopoli
23. Shumla
24. Burgos
25. Midieh
26. Constantinople
27. Rodosto
28. Adrianople
29. Cavalla
30. Philippoli
31. Isbar
32. Petolia
33. Salonica
34. Scutari.

GREECE.
1. Berat
2. Butrinto
3. Jannina
4. Arta
5. Lepanto
6. Tripolitza
7. Corinth
8. Athens
9. Zeitoun
10. Larissa.

Rivers and Lakes.
a Dwina, R.
b Mezene, R.
c Pitchora, R.
d Kama, R.
e Viatka, R.
f Volga, R.
g Oka, R.
h Don, R.
i Donetz, R.
j Dnieper, R.
k Dniester, R.
l Pruth, R.
m Danube, R.
n Vistula, R.
o Niemen, R.
p Dwina, R.
q Tchudskoe, L.
r Ilmen, L.
s Ladoga, L.
t Onega, L.
u Puruvesi, L.
v Sego, L.
w Vigo, L.
x Top, L.
y Imandra, L.
z Enare, L.

mountains of the continent, the Alps and the Pyrenees connected together by the low chain of the Cevennes. Inferior branches from the Pyrenees extend through the Spanish peninsula; while from the Alps branch forth the Apennines, which range through all Italy, and spread their lower slopes over the greater part of southern Germany. The extremity of the Julian Alps, and the mountains of Dalmatia, connect the range with the great Turkish chains of Hæmus and Rhodope; parallel to which, though with a large group intervening, stretches the circuit of the Carpathian mountains. North of this, the great European lowland comprises the largest part of France, the south of England, the Netherlands, Northern Germany, all Poland, and the greater part of Russia. In the extreme north of Europe the mountainous character again prevails. The Dofrines reach through Scandinavia; while the north of England and nearly all Scotland is covered with mountains of secondary magnitude. Of all the European mountains the Alps are by much the highest, and perhaps may rank fourth to the Himalayah, the Andes, and Caucasus, among the mountain chains of the globe. Mont Blanc and Monte Rosa exceed 15,000 feet above the sea. The numerous other summits of this chain exemplify all the descending grades of elevation. The Apennines vary from 3000 to 6000 feet; but Ætna, at their utmost extremity, is nearly 11,000. The most elevated of the Pyrenees rises somewhat above that height. The Spanish summits are in general of the level of the Apennine, except the Guadarrama, which exceeds 8000 feet, and the Sierra Nevada, which equals the Pyrenees. The Thracian chains have not yet been subjected to survey; but they doubtless exceed those of Greece, which ascend to 6000 or 7000 feet. The Dofrines, notwithstanding their snowy and terrible aspect, are not of first-rate elevation. The great Norwegian chain does not quite reach 9000 feet; Ben Nevis is only 4300 feet; and none of the English mountains reach that altitude.

1262. *The rivers of Europe* are numerous, but none of them of the very first magnitude. The two largest flow through the great eastern plain, a semi-Asiatic region, and terminate in distant and interior seas, where they contribute little to commercial intercourse. The Volga, which alone can come into rivalry with the great rivers of Asia, passes the Asiatic limit, where it spreads into the great interior expanse of the Caspian. The Black Sea absorbs the other rivers from the great plain of Russia and Poland: it receives also the noble stream of the Danube, which belongs indeed to the central region of Europe; but directing its lower course through barbarous and uncultivated regions, and terminating in this distant receptacle, it conduces only in a secondary degree to the distribution of wealth and plenty through the continent. Western Europe is too much broken into separate portions, and crossed by high mountain barriers, to allow to its rivers a length of more than from 400 to 600 miles; and they have usually their entire course through a single country, — the Rhine, the Elbe, and the Oder, through Germany; the Loire, the Rhone, and the Garonne, through France; the Po through Italy; the Ebro, the Douro, the Tagus, and the Guadalquivir, through Spain. The northern rivers of Britain and Scandinavia, restricted to a still narrower field, seldom accomplish so long a course as 200 miles. Yet, though Europe does not present the grand rivers which distinguish the greater continents, it is on the whole happily and commodiously watered. Almost every part of it enjoys the benefit of river communication; it is neither overspread by the dreary swamps of America, nor the sandy deserts which render uninhabitable so great a part of Asia and Africa.

1263. *The lakes of Europe* are numerous, chiefly enclosed within its mountain regions; but few of them are of sufficient magnitude to rank as inland seas. Those alone entitled to this distinction are the Ladoga and the Onega, which, forming a sort of continuation of the Gulf of Finland, and being situated in bleak and frozen regions, minister very little to internal intercourse. Finland is covered with similar lakes. The Wener and Wetter of Sweden rank next in magnitude, and, surrounded by immense woods and iron mines, possess considerable beauty and value. Switzerland, with its Italian border, is the chief lake-region of Europe: its waters, particularly those of Geneva and Lucerne, enclosed between the loftiest snowy pinnacles of the Alps, present scenes of grandeur and beauty almost unrivalled; but they are not on such a scale or so situated as to afford any important inland navigation. Those of England and Ireland are merely small picturesque features. Those of Scotland are larger and more numerous; and a chain of them, having been connected by a broad canal, was expected to form a great naval route across the island.

1264. *The European soil* is distinguished for productions, perhaps surpassing in value those of any other quarter of the globe. It does not, indeed, possess that brilliant luxuriance of vegetation which adorns the equatorial regions of Asia and America. But corn and wine, the most substantial and most agreeable articles of human diet, are nowhere produced on so great a scale or in such high perfection. Grain, of one description or other, is raised over its whole surface, excepting in the extreme north; wines throughout all its southern kingdoms. In hemp, flax, and wool, those staple materials of clothing, Europe is equally pre-eminent. Silk, another valuable commodity, it produces copiously, though not so as to be independent of supplies from India and China. Cotton is the only great material which the immense manufactures of Europe derive almost entirely from the regions within the tropic. If we except the horse and the camel, for which Asia is renowned, Europe contains the most valuable as well as the most numerous breeds of domestic animals. Its northern forests produce the finest timber in the world, with the exception of the teak; and its iron, the most useful of metals, surpasses that of the rest of the world: but all the more precious substances, gold, silver, pearls, jewels, exist in an extent so limited as scarcely to be deserving of mention. The cultivation of the soil is carried on with much greater diligence than in any countries except in the south east of Asia; while in science, skill, and the extent of capital employed upon it, European agriculture is quite unrivalled.

1265. *In manufacturing industry*, this quarter of the world has, within these few centuries, far surpassed all the others of the globe. Asia, indeed, has long boasted some fabrics of extraordinary beauty, — silks, muslins, carpets, and porcelain, — which are not yet altogether equalled: but the looms and workshops of Europe now yield a variety of fine and beautiful fabrics, in such profusion, and at so cheap a rate, as to place them within the reach of almost every class of society. This continent thus clothes all the young nations which have issued from her own bosom, and which fill nearly two entire quarters of the habitable earth.

1266. *Commerce*, on so great a scale as to connect together the distant quarters of the world, cannot be said to exist out of Europe. European vessels are found in the utmost bounds of Asia and America, in the snowy regions of either pole, and crowding the ports of the Austral continent. There is not now a place on earth, however remote, affording any scope for the employment of commercial capital, which is not immediately filled with the same promptitude as if it had been situated in the heart of Europe. The ships of that continent exceed those of all the others in number and dimensions: they are also the most skilfully constructed, and navigated by the only seamen who are qualified to guide a vessel across the great oceans. All these observations are liable to one slight exception: the new American states are beginning to form a commercial and maritime system, modelled on that of Europe — a system which, though existing yet on a very small scale, may one day, perhaps, surpass the original.

Sect. II. *Inhabitants.*

1267. *The population of Europe*, though more closely calculated than that of any other quarter of the globe, is yet far from being ascertained on data that are very precise. In regard to some districts, and in particular to the whole of the Turkish empire, no census has ever been instituted; in others the computation is founded only on the number of houses; and in some, ten, twenty, and thirty years have elapsed since any was attempted. The following is the best estimate which Hassel, in 1819, was able to make; but that of Balbi, in 1828, includes the result of various and more recent enumerations and estimates, though it is still probably in some respects defective: —

—	Hassel.	Balbi.
European Russia - - - -	34,400,000	56,525,000
France - - - - -	29,328,000	32,000,000
Austria - - - - - -	28,180,000	32,000,000
Great Britain - - - -	17,224,000	23,400,000
German States - - - -	12,058,000	13,246,000
Prussia - - - -	10,378,000	12,464,000
Spain - - - - -	10,373,000	13,500,000
Turkey - - - -	7,500,000	9,500,000
The Two Sicilies - - - -	6,620,000	7,420,000
Netherlands - - - -	5,227,000	6,145,000
Sardinian States - - - -	3,975,000	4,300,000
Portugal - - - - -	3,683,000	3,530,000
Sweden and Norway - - -	3,468,000	3,806,000
States of the Church - - -	2,374,000	2,500,000
Switzerland - - - - -	1,729,000	1,980,000
Denmark - - - - -	1,618,000	1,950,000
Tuscany - - - - -	1,179,000	1,275,000
Parma, Lucca, Modena, San Marino -	892,000	975,000
Cracow - - - - -	96,000	111,000
	180,702,000	226,283,000

The chief discrepancy is in Russia, where Hassel has not included recent acquisitions; but Balbi has undoubtedly taken in part of Asiatic Russia. There is also a more recent census of Switzerland, of which Balbi does not seem to have been aware, which states its population above two millions.

1268. *The people of Europe* are divided chiefly into three great races, which differ, to a very marked degree, in language, political situation, and habits of life. These are the Sclavonic, the Teutonic, and a third which Hassel calls the Romish, as occupying the chief of those countries which once composed the Western Empire.

1269. *The Sclavonic races* cover the greater extent of Europe, since they occupy the whole of the eastern plain bordering on Asia, which it resembles. The people have a similar resemblance to those of that continent; and were considered almost as beyond the social and political pale of Europe, till within the last half century. They have now forcibly thrust themselves into the European system, and rank among its most influential members. The Sclavonic people consist of about twenty-five millions of Russians, ten millions of Poles, Lithuanians, and Letts, and about ten millions of other races, known under the uncouth names of Windes, Tcheches, Slawakes, Croats, Morlachians, which have found their way into eastern Germany, Hungary, and Illyria. Without wishing to consider intellectual and moral qualities as necessarily belonging to any particular race exclusively, we may notice it as a fact, that the Sclavonians are, in both respects, less improved than other Europeans. They have only some infant forms of art and literature, which have sprung up from the imitation of those of the eastern nations. They are generally subjected to absolute monarchy, and the greater part of them are only beginning to emerge from the degrading condition of personal slavery. All the habits of life which connect them with polished society have been recently and studiously imported from the west, and are still intermingled with deep remnants of barbarism. The majority profess that superstitious form of Christianity acknowledged by the Greek church. Yet they are a brave, enterprising, and persevering race, and have established themselves as a ruling and conquering people, in reference to all the contiguous nations of Europe and Asia.

1270. *The Teutonic race* occupies generally the centre and north of Europe; besides Germany, their original seat, they have filled the greater part of Scandinavia, the Netherlands, and Great Britain, and may be reckoned at upwards of fifty millions. Under the limitations above stated, we may describe the Teutonic people generally as brave, hardy, intelligent, and industrious, though somewhat blunt and unpolished. All the sciences, and even the arts, both useful and ornamental, have been carried among them to the highest perfection; yet they are accused of wanting some of the graces and *agrémens* which embellish the courts and fashionable circles of the south, by whom they are treated as semi-barbarians. A great majority of the Teutonic nations are Protestants; and that enlightened profession is in a great measure confined to them, and to the nations in the other parts of the world who have sprung from them.

1271. *The race called Romish*, which comprehends the modern inhabitants of France, Italy, and Spain, has only a very imperfect claim to that title. The Teutonic nations, in conquering these countries, poured into them a vast mass of their own population: but Roman manners and the Roman language had taken such deep root in countries which once constituted the main body of the western empire, that the latter forms still the chief basis of the dialects spoken in this part of Europe. The Romish were the most early civilised of the modern nations. They have carried the polish of manners and the cultivation of the elegant arts to a higher pitch than any other known nation. In solid energy and intelligence, they scarcely maintain their ground against the Teutonic nations, who despise them as servile, artificial, and effeminate. If France has fully vindicated herself from some of these reproaches, it has been after imbibing a copious infusion of northern ideas, especially from Britain, upon whose political system she has studied to model her own. The Roman Catholic is the ruling religion in all these countries, and has among them her metropolitan seat. Previously to the rise of the spirit of philosophy, it was bigoted and persecuting in the extreme; nor is this temper thoroughly banished from some of its dark and benighted regions.

1272. *Certain interesting and antique races* inhabit the rude and mountainous extremities of Europe. The *Celts* were the most numerous people, and at a period of high antiquity, the possessors of all Western Europe. Subdued and disarmed by the Romans, they rapidly declined when the falling empire could no longer protect them, and became the helpless victims of that mighty torrent of barbarous invasion which poured in from the remotest extremities of Europe and Asia. At this dreadful period they sought or found a refuge, partly in Ireland and the Highlands of Scotland, where they exist under the name of Gael; partly in Wales and Britany, where they are called Cymri; and partly in the north of Spain, where they are termed Basques. Ages of adversity have completely banished those tame and effeminate habits which rendered them the prey of the invader. They are now the most rough and hardy of all the races, and those among whom civilisation has made the least progress. Having retained their condition unaltered during so many ages, they cherish a fond attachment to antiquity, and trace their pedigree higher than any of the Romish or Teutonic nobles. They have a traditional poetry celebrating the exploits of their ancestors, to which they are fondly attached; but in general they have, in the rapid progress made by the more modern races, been left somewhat behind; though individual emigrants have raised themselves to eminence in every department. Hassel calculates the Gael at 3,720,000, which, from the last census of Ireland, must be much too low; the Cymri at 1,610,000; the Basques at 630,000. The *Greeks*, once the most illustrious of all the races, no longer plant their colonies along the shores of the Mediterranean, but still occupy their old seats, and are spread through different parts of the Turkish empire. Depressed by two thousand years of slavery, they had ceased to display those high attributes which excited the admiration of mankind; but the prospects of independence which they have now opened for themselves, afford some hope that they may regain their place in the scale of nations. Their number may be about 2,100,000. The *Jews*, that singularly interesting people, are spread through all Europe, but especially the eastern countries, Poland, Russia, and Turkey. They are supposed rather to exceed 2,000,000. The *Gipsies*, in an humbler sphere, are strangely scattered over all Europe to the supposed number of 340,000; a wild, roaming, demi-savage race, of unknown origin, but probably Asiatic rather than Egyptian.

1273. *Several Asiatic nations* have penetrated by conquest or migration into the east of Europe. These are chiefly Tartars, whom Hassel estimates at 3,250,000 heads. The most prominent branch is that of the Turks, the ruling people in the Ottoman empire, though they form in a few districts only the majority of the population. It seems doubtful, however, if all the Tartars who wander over the southern steppes of Russia can be considered as Asiatic in their origin. The Magyars, who, to the number of 3,000,000, prevail in Hungary and Transylvania, appear to be also Asiatic, or at least to have sprung from that most eastern border of European Russia, which can scarcely be distinguished from Asia.

1274. *The religion of Europe* is almost entirely monotheistic. A mere handful of pagans, the Samoiedes, are found in its north-eastern extremity, on the shores of the Icy Sea. Europe is almost entirely Christian; and the small population of Mahomedans who have found their way into it consist of Asiatic races, Turks, and Tartars. The Jews, however generally diffused, have nowhere a national church, nor are they in any nation fully identified with the body of the people. The Christians of Europe are divided into three great churches, the Greek, the Latin, or Roman Catholic, and the Protestant.

1275. *The Greek or Eastern church*, which was that of the Constantinopolitan empire, was severed from the Latin by the great schism in the ninth century, caused by some abstruse questions respecting the nature and person of Christ. It is still professed by the modern Greeks, is the established religion of Russia, and has votaries in Hungary and all its appendant territories. Hassel reckons its numbers at 32,000,000; Malte-Brun at 50,000,000 — a strange discrepancy. We should think the former much nearer the truth, though perhaps somewhat under it. This religion, having been long prevalent among unenlightened and degraded nations, has become encumbered with empty pomp and childish ceremonies; and many of its clergy are ill-informed and of irregular lives.

1276. *The Roman Catholic religion*, which reigned so long with supreme sway over Europe, embraces still a numerical majority of its people. In Italy, Spain, France, and the dominions of the house of Austria, it is dominant and almost exclusive. It still holds attached to it a large portion of the smaller states of Germany, and of the Cantons of Switzerland. The greater part of Ireland and of Russian Poland continue attached to it, without regard to the opposite systems supported by the state. That deep intolerance which gave birth to so many struggles in attempting to extirpate the Protestant faith, has been greatly mitigated, and, except in Italy and Spain, all professions enjoy an almost complete toleration. The number of Roman Catholics seems to be fairly estimated at between 90,000,000 and 100,000,000. The absolute authority of the Pope in matters of faith and worship, auricular confession, the prohibition of the Scriptures in the vulgar tongue, and a splendid ritual calculated to dazzle the eyes of the multitude, form the peculiar characters of the Roman Catholic system. The monstrous pretensions once advanced to excommunicate and depose kings, and to grant indulgences to commit crime, seem now to be generally withdrawn.

1277. *The Protestant or Reformed religion* raised its standard early in the fifteenth century, and made most rapid progress, especially in the north of Europe. It sought to purge Christianity from the superstitious observances which had enveloped it during many ages of darkness; to introduce a more spiritual and simple form of worship; to break up the institutions devoted to celibacy; to deny human authority in matters of doctrine, and rest it solely on the foundation of Scripture. It had to maintain a dreadful struggle against the Romish see, which armed in its cause all the great monarchs of Europe; and in France and Bohemia, after taking deep root, it was nearly extirpated. It has been finally established, however, in Great Britain, in the Netherlands, the north of Germany, and the Scandinavian peninsula. Notwithstanding its numerical inferiority, it now ranks among its votaries the most powerful, the most opulent, and the most intelligent nations of Europe and the globe. Its rejection of human authority and direct appeal to the Scriptures, has caused it to be split into numerous sects and divisions. The most prominent is into Lutherans and Calvinists; the Lutherans retaining still many of the Romish rites and doctrines, to which, in every point, the Calvinists place themselves in the most decided opposition. The English church may be considered a sort of medium between the two, inclining nearer to the Lutheran. In the Protestant countries, numerous smaller sects have asserted the right of private judgment, on which the Reformation was founded. Among these are the Anabaptists, chiefly in Germany, the Netherlands, and England, whom Hassel perhaps under-rates at 240,000; Methodists and Quakers in Britain, estimated at 190,000; the Moravian brethren in Germany, 40,000. The Unitarians have an established church in Transylvania, comprising 40,000 souls, and are diffused, openly or secretly, through the other European countries, especially Britain.

1278. *In learning, art, science,* all the pursuits which develope the intellectual nature of man, which refine and enlarge his ideas, Europe has far surpassed every other continent. The empires of Southern and Eastern Asia alone have an ancient traditional literature, of which the remains are yet preserved. But, besides being now in a very decayed state, it never included any authentic history, sound philosophy, or accurate knowledge of nature. An extravagant though sometimes poetical mythology, proverbial maxims of wisdom, and a poetry replete with bold and hyperbolical images, compose almost its entire circle. The science of Europe has been employed with equal success in exploring the most distant regions of the universe, and in improving the condition of man in society. Astronomy, which elsewhere is a mere mass of superstition and wild conjecture, has here not only delineated with perfect precision the situation and movements of the heavenly bodies, but has disclosed numberless systems of worlds, of which without her aid the existence could never have been suspected. Chemistry, which was formerly a mere collection of empirical receipts and chimeras, is become a mighty science, which analyses the most secret operations of nature, and discovers important, and before unknown, substances. A similarly sound and comprehensive character marks her attainments in physical science, and in every branch of natural history. In regard to poetic fancy, although some natural flights may be found among the rudest tribes, and though the Orientals possess a peculiar vein of learned and studied ornament, it is in Europe, during either ancient or modern times, that the polished and classic models of poetical composition have been exclusively produced.

1279. *The invention of printing,* and the consequent general diffusion of information among all classes, are features especially European. By their means, in its enlightened countries, the essential branches of knowledge are now placed within the reach of the humblest classes, and even the highest are not absolutely beyond their attainment. The endowments for the support of learning are very extensive, founded in a great measure during the middle ages, and bearing some stamp of the then infant state of literature; but they are now adapting themselves to modern improvements. The extensive and extending institutions for the instruction of the lower orders have produced a general diffusion of intelligence, to which in the other parts of the world there is nothing analogous.

1280. *The political state of Europe is also peculiarly fortunate.* Elsewhere a turbulent anarchy prevails, or vast empires are subjected to the absolute sway of a single despot. It is in this continent only that the secret has been found of establishing a regular and constitutional liberty, in which the extremes of tyranny and licentiousness are equally avoided. Even the absolute monarchies are generally administered with mildness, according to legal forms, and afford to the bulk of the people a tolerable security of person and property. The European states have also established among themselves a balance of power, which sets bounds to the encroachments of any particular state, and has repeatedly rescued the whole continent from the imminent danger of universal subjugation. This military and naval power has been raised to a height, to which none of the other continents can offer any effectual resistance. A great proportion of them has now been conquered, occupied, or colonised by Europe; and if the whole is not reduced under this condition, it is only through distance and extensive deserts that many great countries still preserve their independence.

1281. *The geology of Europe* will be more advantageously treated of under its respective countries.

Sect. III. *Botany.*

1282. *The botany of Europe* presents some general characters, which it may be important to notice. In the preliminary observations, we have given a very general and rapid sketch of the vegetable geography of the globe, taken in its more enlarged sense. We must now survey it in its subordinate divisions; and the plan which we have prescribed to ourselves, is, in the first instance, under the great principal divisions of the earth, to mention the more striking vegetable features; and then, under each respective country, to give a more particular statement of the plants belonging to it which deserve notice, either from their extreme abundance, their rarity, their peculiar properties and qualities, or some circumstance of general interest.

1283. The nature of the present publication only allowing us to consider, in a very general way, *the vegetable productions* as connected with their geographical distribution, we cannot devote much space to what concerns the primary divisions. The artificial boundaries of Europe, especially to the east and to the south, are of that nature that many of what might otherwise be ranked among its more striking botanical features are gradually blended into those of Asia on the one hand, and of the north of Africa on the other. The difficulty of speaking of the botany of Europe, exclusively of its neighbouring countries, is the less to be regretted, because we have already made remarks on the different regions of this and other parts of the globe, as indicated by the predominance of certain vegetables. Local circumstances, as we have there seen, affect the presence or absence of certain plants, to an extent more than equal to that of any artificial geographical arrangement. Temperature, which has so powerful an effect upon them, varies in a regular progression upon a lofty mountain; but it is not so in all situations, and with the same regularity, especially on the great continents, upon the plains and low grounds. "Sometimes," says the eloquent Mirbel, "a chain of mountains forms a barrier against the freezing winds of the north *, and receives and refracts upon the plants the heat which it derives from the solar rays; sometimes a parching sirocco from the south raises the temperature; in some places, the winters are tempered by the proximity to the sea; whilst at other times all these causes combined, produce a climate so mild, that, to judge of its geographical position only by the indication of the thermometer, we should suppose its latitude to be much nearer the tropics than it actually is. Again, continued plains of vast extent, exactly on a level with the sea, are of rare occurrence; and if there be but an elevation of 1000 or 1100 feet, it suffices to produce a considerable reduction of temperature. This, in its turn, obtains an influence over the vegetable creation; it changes the line of the progress of plants in their migration; it arrests them, and limits their boundaries. Sometimes the northern species proceed southward towards the tropics; sometimes those of the south migrate northwards; and sometimes groups belonging to both of these tribes exchange countries, passing one another; each about to establish colonies in privileged stations, in the midst of a vegetable population to which they are no less strangers by their physiognomy than by their temperament."

1284. *Notwithstanding, however, the many anomalies which must exist* in consequence of these and other circumstances of a similar nature, Europe being, to us especially, the most important division of the globe, the one with which we are most concerned, and being also that of which the botany has been best explored, we shall be pardoned if we enter a little more into detail with relation to it than to the other quarters of the world. But we shall confine, as much as possible, our observations to a most interesting table, by M. Mirbel, of the phænogamous (or flowering) plants of Europe; to which have been added, with great judgment, and for reasons already alluded to, part of those of Asia and of Northern Africa. We introduce this table with the more pleasure, because, the work in which it is inserted (*Mémoires du Muséum d'Histoire Naturelle de Paris*) being a foreign one, and both voluminous and very costly, it cannot be expected to be accessible to the general reader.

1285. *In the present instance*, our author divides the northern hemisphere into imaginary belts or zones; the *equatorial*, the *transition temperate*, the *temperate*, the *transition frozen*, and the *frozen zones*. Wherever these zones are not interrupted by any natural limits, he compares them to the hues of the prism, which melt gradually one into another at their point of union; in such a manner as that the eye cannot separate them, though it distinguishes them perfectly. In what concerns the table in question, the *equatorial transition*, where European vegetation commences, is limited, to the north, by the disappearance of the *Olive;* the *temperate zone* by the cessation of the Oak; and the *frozen transition* by that of the Fir (*Pinus sylvestris*) in the west, and of the Spruce (*P. Abies*) in the east. The *frozen zone* is divided into two bands; the *lower* or *southern*, and the *upper* or *northern*. Both are entirely destitute of trees; but in the *first* band are many shrubs and suffruticose plants †: whilst in the *second* scarcely any thing is found but small

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BORASSUS. DATE TREE. DWARF PALM.

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* A striking circumstance, corroborative of this fact, has been stated to us upon the most unquestionable authority: it is, that in one spot, in the extreme south of Sweden, facing the sea, and backed by lofty hills, *olives* have succeeded in the open air, and ripened their fruit; while, at the distance of six Swedish miles northward, the inhabitants clothe themselves with furs in the winter, to protect themselves from the severity of the cold.

† The shrubby or suffruticose plants of the southern band of the frozen zone, are fifteen willows: the Dwarf Birch (*Betula nana*), the Humble Birch (*B. pumila*), the White Birch (*B. alba*) — this last is only found on the southern coasts of Greenland; the Hoary Birch (*B. incana*), the Juniper (*Juniperus communis*), the

herbaceous plants; and these cease where the line of perpetual snow commences.* Here, too, another important fact must be considered, — that, in the frozen or arctic regions, almost exactly the same flora is exhibited in Europe, Asia, and America.

1286. *In the extent of country* to which the following table is more peculiarly applicable, the Dwarf Palm (*Chamærops humilis*), and the Date Tree (*Phœnix dactylifera*), (*fig.* 86.), are the plants that have the nearest approximation to a tropical vegetation, and which are, of course, the most southern. The plant which is found the nearest to the pole, and which, there is every reason to believe, ascends to it, is the *Palmella nivalis* (*Hooker*, in Parry's Second and Third Voyages), the *Red Snow* (*fig.* 87.) of our arctic navigators, belonging to the Cryptogamic family, and which will be more especially noticed hereafter. In speaking of vegetation, however, generally, and except the contrary is otherwise expressed, the Cryptogamic plants are not taken into account; partly because we are at present but imperfectly acquainted with their extent or limits, and partly because they are not of such general interest.

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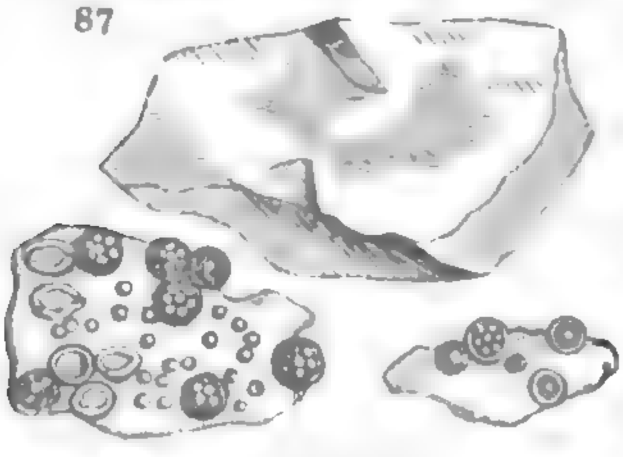

RED SNOW.

Comparative Table of the phænogamous vegetation of a part of the *Temperate Transition Zone* (Palestine, Syria, Asia Minor, and the Caucasian regions; a portion of the north of Africa and the south of Europe being comprised in this zone); of the *Temperate Zone* (Central Europe as far as the Ural Mountains and the Caspian Sea, and parts of Tartary bordering upon that sea); of the *Transition Frozen Zone* (Northern Europe, Siberia, and Kamtschatka); and all the *Frozen Zone* (Polar Regions) of the Old and New World. Extracted from M. Mirbel's table.

Names of Natural Families.	Temperate Transition Zone.		Temperate Zone.		Frozen Transition Zone.		Frozen Zone.		Amount of Species of each Family of the Four Zones.
	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	
Reed-Maces (Typhinæ) and Arums (Aroideæ) - - -	22	0·002	10	0·002	8	0·003	- -	- -	25
Grasses (Gramineæ) - -	503	0·061	246	0·061	134	0·062	37	0·088	617
Sedges (Cyperaceæ) - - -	195	0·023	275	0·069	90	0·042	33	0·071	265
Restio (Restiaceæ) - -	- -	- -	- -	- -	1	- -	- -	- -	1
Rushes (Junceæ) - - -	40	0·004	42	0·010	27	0·012	11	0·026	52
Water-Plantains (Alismaceæ) -	28	0·003	30	0·007	19	0·008	2	0·005	33
Asparagus (Asparageæ) - -	28	0·003	11	0·003	8	0·003	- -	- -	31
Colchicums (Colchicaceæ) -	12	0·001	9	0·002	4	0·001	2	0·005	16
Lilies (Liliaceæ) - - -	180	0·021	78	0·020	38	0·018	1	0·002	207
Narcissus (Narcisseæ) - -	40	0·004	11	0·002	- -	- -	- -	- -	42
Iris (Irideæ) - - - -	51	0·006	26	0·006	17	0·008	- -	- -	70
Orchis (Orchideæ) - -	106	0·012	54	0·013	42	0·019	5	0·012	128
Frogsbit (Hydrocharideæ) - - Pondweed (Naiades) - -	13	0·001	8	0·002	6	0·002	- -	- -	14
Balanophoreæ - - -	1	- -	- -	- -	- -	- -	- -	- -	1
Palms (Palmæ) - - -	3	- -	- -	- -	- -	- -	- -	- -	3
Pines (Coniferæ) - -	34	0·004	12	0·003	9	0·004	1	0·002	38
Amentaceous (Amentaceæ) -	106	0·012	63	0·015	46	0·021	20	0·045	178
Elms (Ulmaceæ) - - -	8	0·001	3	0·001	- -	- -	- -	- -	9
Nettles (Urticeæ) - - -	20	0·002	9	0·002	6	0·003	- -	- -	21
Spurges (Euphorbiaceæ) - -	103	0·011	38	0·009	11	0·005	- -	- -	112
Birthwort (Aristolochiæ) - -	16	0·002	2	- -	2	0·001	- -	- -	16
Sea Buckthorn (Eleagneæ) - - Sandal-wood (Santalaceæ) - -	8	0·001	10	0·002	3	0·001	- -	- -	12
Daphne (Thymeleæ) - -	30	0·003	8	0·002	4	0·001	- -	- -	32
Laurel (Laurineæ) - - -	1	- -	- -	- -	- -	- -	- -	- -	1
Buckwheat (Polygoneæ) - -	63	0·007	46	0·011	36	0·016	9	0·021	86
Goosefoot (Chenopodeæ) - -	104	0·011	126	0·031	47	0·022	- -	- -	166
Amaranth (Amaranthaceæ) -	17	0·002	5	0·001	2	0·001	- -	- -	18
Plantain (Plantagineæ) - -	65	0·007	24	0·005	[illegible]	0·005	3	0·007	73
Thrift (Plumbagineæ) - -	57	0·006	21	0·005	17	0·008	1	0·002	71
Marvels (Nyctagineæ) - -	3	- -	- -	- -	- -	- -	- -	- -	3

Trailing Azalea (*A. procumbens*), the Blue Menziesia (*M. cærulea*), the *Ledum palustre* and *L. latifolium*, the Lapland Diapensia, the Downy Whortleberry (*Vaccinium pubescens*), the Marsh Whortleberry (*V. uliginosum*, the Red Cowberry (*V. Vitis Idæa*), the Cranberry (*V. Oxycoccos*), the Glaucous Kalmia, eight species of Rhododendron, the Alpine Arbutus, the Crowberry, the Common Heath, the Shrubby Potentilla, and the Rowan Fir (*Pyrus aucuparia*), on the southern shores of Greenland.

* Almost the only shrubby plants of the northern band of the frozen zone, are the little Arctic Willow (*Salix polaris*), the reticulated Willow (*S. reticulata*), and the four-sided Andromeda (*A. tetragona*).

TABLE — *continued.*

Names of Natural Families.	Temperate Transition Zone.		Temperate Zone.		Frozen Transition Zone.		Frozen Zone.		Amount of Species of each Family [illegible] Zones.
	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	Number of Species of each Family.	Relative Proportion of the Families to the whole of the Species of this Zone.	
Globularia (Globulareæ) - -	10	0·001	3	0·001	- -	- -	- -	- -	10
Primrose (Primulaceæ) - -	65	0·007	56	0·014	30	0·013	11	0·025	100
Butterwort (Lentibulariæ) - -	10	0·001	8	0·002	9	0·004	2	0·005	14
Figwort (Scrophularinæ) - -	298	0·036	150	0·037	95	0·043	23	0·054	365
Nightshade (Solaneæ) - -	78	0·010	38	0·009	10	0·004	- -	- -	92
Gentian (Gentianeæ) - -	41	0·005	50	0·013	36	0·016	4	0·009	83
Swallowwort (Apocyneæ) - -	22	0·003	8	0·002	3	0·001	- -	- -	25
Acanthus (Acanthaceæ) - -	4	- -	- -	- -	- -	- -	- -	- -	4
Polemonium (Polemoniaceæ) -	1	- -	1	- -	2	0·001	2	0·004	3
Bindweed (Convolvulaceæ) - -	48	0·006	11	0·003	7	0·003	- -	- -	52
Borage (Boragineæ) - -	192	0·023	80	0·020	48	0·022	- -	0·005	252
Labiatæ (Labiatæ) - -	431	0·052	135	0·035	77	0·036	1	0·002	475
Vervains (Verbenaceæ) - -	4	- -	1	- -	1	- -	- -	- -	4
Jasmine (Jasmineæ) - -	19	0·002	2	- -	- -	- -	- -	- -	19
Heaths (Ericineæ) - } Rhododendrons (Rhodoraceæ) - }	37	0·004	28	0·007	32	0·015	27	0·063	61
Ebony (Ebenaceæ) - -	2	- -	- -	- -	- -	- -	- -	- -	2
Bellflowers (Campanulaceæ) - } Cardinal-flowers (Lobeliaceæ) - }	123	0·015	56	0·014	16	0·007	3	0·007	146
Compound (Synthereæ) -	1165	0·142	520	0·131	223	0·104	41	0·095	1450
Teasels (Dipsaceæ) - -	80	0·010	35	0·008	11	0·005	- -	- -	94
Valerians (Valerianeæ) - -	40	0·005	20	0·005	6	0·003	- -	- -	48
Madders (Rubiaceæ) - -	112	0·014	64	0·016	23	0·010	- -	- -	140
Honeysuckles (Caprifoliaceæ) -	27	0·003	19	0·005	13	0·005	2	0·005	34
Umbelliferous (Umbelliferæ) -	368	0·045	182	0·045	74	0·030	3	0·007	443
Saxifrages (Saxifrageæ) - -	70	0·008	49	0·013	31	0·014	26	0·059	94
Purslanes (Portulaceæ) - -	13	0·001	8	0·001	5	0·002	- -	- -	16
Knawels (Paronychiæ) - -	31	0·004	14	0·009	3	0·001	- -	- -	32
Houseleeks (Crassuleæ) - -	80	0·009	36	0·009	15	0·007	4	0·009	91
Currants (Ribesiæ) - -	6	0·001	7	0·001	8	0·003	- -	- -	12
Prickly Pears (Opuntiaceæ) -	*1	- -	- -	- -	- -	- -	- -	- -	1
Fig-Marigolds (Ficoideæ) -	8	0·001	1	- -	1	- -	- -	- -	9
Gourds (Cucurbitaceæ) - -	10	0·001	5	0·001	- -	- -	- -	- -	13
Willow-herbs (Onagrariæ) -	24	0·003	23	0·005	18	0·008	6	0·014	26
Myrtles (Myrtaceæ) - -	3	- -	- -	- -	- -	- -	- -	- -	3
Lythrum (Salicariæ) - -	19	0·002	11	0·003	7	0·003	- -	- -	21
Roses (Rosaceæ) - - -	200	0·024	132	0·033	108	0·050	38	0·061	225
Leguminous plants (Leguminosæ) .	975	0·119	280	0·070	155	0·072	16	0·038	1108
Sumachs (Terebinthaceæ) -	16	0·002	2	- -	- -	- -	- -	- -	16
Buckthorns (Rhamneæ) - -	30	0·003	13	0·003	5	- -	- -	- -	35
Coriaria (Coriareæ) - -	1	- -	- -	- -	- -	- -	- -	- -	1
Rue (Rutaceæ) - -	36	0·004	6	0·001	2	0·001	- -	- -	39
Woodsorrels (Oxalideæ) - -	5	- -	3	- -	2	- -	- -	- -	5
Balsams (Balsamineæ) - -	1	- -	1	- -	1	- -	- -	- -	1
Geraniums (Geraniaceæ) - -	70	0·009	28	0·008	12	0·007	- -	- -	76
Vines (Ampelideæ) - -	1	- -	1	- -	- -	- -	- -	- -	1
Azadarach (Meliaceæ) - -	1	- -	- -	- -	- -	- -	- -	- -	1
Horsechestnut (Hippocastaneæ) -	1	- -	- -	- -	- -	- -	- -	- -	1
Maple (Acerineæ) - -	9	0·001	5	0·001	2	0·001	- -	- -	10
St. John's Wort (Hypericineæ) -	39	0·004	12	0·003	5	0·002	- -	- -	41
Orange (Aurantiaceæ) - -	2	- -	- -	- -	- -	- -	- -	- -	2
Linden (Tiliaceæ) - -	3	- -	4	0·001	1	- -	- -	- -	5
Mallow (Malvaceæ) - -	55	0·006	13	0·003	6	0·003	- -	- -	60
Flax (Lineæ) - - -	31	0·004	17	0·004	4	0·003	1	0·002	35
Pinks (Caryophylleæ) - -	382	0·046	180	0·045	125	0·058	36	0·080	536
Frankenia (Frankeniaceæ) - -	8	0·001	2	- -	- -	- -	- -	- -	8
Milkworts (Polygaleæ) - -	16	0·002	7	0·002	3	- -	- -	- -	22
Sundews (Droseraceæ) - -	5	- -	4	0·001	4	0·002	- -	- -	8
Violets (Violeæ) - -	18	0·002	24	0·006	19	0·009	2	0·005	39
Gum Cistus (Cistineæ) - -	150	0·018	21	0·005	- -	- -	- -	- -	154
Caper (Capparideæ) - -	35	0·004	4	0·001	- -	- -	- -	- -	35
Cruciferous plants (Cruciferæ) -	540	0·065	252	0·063	140	0·065	50	0·118	717
Fumitory (Fumariæ) - -	22	0·003	12	0·003	15	0·007	1	0·002	37
Poppy (Papaveraceæ) - -	31	0·004	15	0·004	6	0·003	2	0·005	40
Waterlily (Nymphæaceæ) - -	5	0·001	5	0·001	3	0·001	- -	- -	7
Barberry (Berberideæ) - -	6	0·001	2	- -	2	0·001	- -	- -	8
Moonseed (Menispermeæ) -	1	- -	- -	- -	1	- -	- -	- -	2
Ranunculus (Ranunculaceæ) -	192	0·023	126	0·031	116	0·054	21	0·050	272
	8193		3982		2159		408		10,202

In the temperate transition zone, out of 8193 species, 1262 have been ascertained to be woody, and 6898 herbaceous; and of these latter 3861 are known to have perennial, and 2378 annual or biennial roots.

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* This solitary Cactus is introduced from America.

In the temperate zone, out of 3982 species, there are 357 woody, and 3625 herbaceous; of which 2610 are understood to have perennial, and 944 annual or biennial roots.

In the frozen transition zone, out of 2129 species, are 193 woody plants, and 1936 herbaceous; of which 511 are supposed to have perennial, and 363 annual or biennial roots.

In the frozen zone, of the 438 species, 46 are woody, and 392 herbaceous; of which 371 are estimated to have perennial roots, and only 15 annual or biennial roots.

1287. We have already stated that *in the frozen or polar region* the vegetation is very similar throughout the north of Europe, Asia, and America; which may in part arise from its limited extent, and from the continents approaching comparatively so near to each other. There must necessarily, too, be a greater equality of temperature than in the other zones; the vegetation every where appearing nearly upon a level with the sea. In Greenland, Schouw estimates that there is hardly one sixth of the plants that are not equally found in Lapland. Of the genera of Greenland only two are not found in Lapland (*Streptopus* and *Coptis*), and both occur in North America. We shall, by and by, notice how analogous is the vegetation discovered during Captain Parry's arctic voyages to that both of the European and American continents, in corresponding latitudes. Even in Kamtschatka, one half of the plants found by Wormskiold are European; and of the genera only eight or ten are not European, and they are North American. But, as we proceed from the Arctic Regions to the south, we find the vegetation gradually becoming more and more dissimilar between America and Europe; except, indeed, when the high mountains in the respective countries are examined, and then the resemblance again appears. Pursh, whose flora comprises, to a very limited extent, the plants of the arctic or sub-arctic regions, or of the lofty mountains of North America, but is principally confined to Canada, and to those districts of the United States whose latitude corresponds pretty nearly with that of the more temperate parts of the European continent, has about one seventh of his species only European; and if the doubtful natives, those *probably* introduced from the Old World, be taken into account, only one tenth: out of 716 genera of North American plants, 480, or two thirds, also occur in Europe, or in Northern Africa.

1288. *Schouw estimates the most striking disparities* between the vegetation of the western parts of the Old World, and the eastern parts of the New, to be as follows: —

1. The *Cruciform* (*fig.* 88. *a*) and *Umbelliferous families* (*b*): those of the *Pinks* (*c*) and *Labiate* flowers (*d*) are much the most numerous on the old continent. The first, in North America, may be estimated at $\frac{1}{37}$, in Europe at about $\frac{1}{18}$; and the other families may be classed in the following proportions:—

	North America.	France.	Denmark.
Umbelliferous - - -	$\frac{1}{54}$	$\frac{1}{31}$	$\frac{1}{23}$
Pink Family - - - -	$\frac{1}{78}$	$\frac{1}{23}$	$\frac{1}{27}$
Labiate flowers - - -	$\frac{1}{58}$	$\frac{1}{23}$	$\frac{1}{23}$

2. Of the family with *Compound flowers* (*Compositæ*), the groups of the Endives (*e*) (*Cichoraceæ*), and of the Artichokes and Thistles (*Cynarocephalæ*), are more abundant in Europe; whilst, on the other hand, North America possesses such a number of species of Michaelmas Daisy (*Aster*), and Golden Rod (*Solidago*), that they constitute one third of the compound flowers of that country, forming a striking feature in the vegetation of the United States, and carrying the preponderance in favour of North America.

3. The family of Bellflowers (*f*) (*Campanulaceæ*) abound most in the Old World; that of the Cardinal Flowers (*Lobeliaceæ*), in the New.

4. Not a single species of Heath (*g*) is found in the new continent; while, in the old, immense tracts are covered with them; but their places are taken in America by the Whortleberries (*Vaccinia*).

5. Both in North America and in Europe, the forests are constituted by the families of

the Cone-bearing (*Coniferæ*) and Amentaceous (*Amentaceæ*) trees; but in America they far exceed those of Europe in respect to the number of species.

6. In North America we find the types or representatives of many tropical families; as, for example, of the *Cactuses*, *Scitamineous plants*, the Sago (*Cycadeæ*), the Custard Apples (*Annonaceæ*), the *Sapindaceous*, and the *Melastomaceous* plants: these are wholly wanting in similar latitudes in the Old World; and in regard to many others, which are common to both countries, such as the Palms, Laurels, Swallowworts (*Asclepiadeæ*), Sumachs, Cassias, and Mimosas, they are more abundant, and generally reach a higher northern latitude, in North America than in the Old World. In Europe, again, there are fewer arborescent plants; for, according to Humboldt, while North America has 137 trees whose trunks reach the height of 30 feet and upwards, Europe possesses only 45 of that character.

1289. *Siberia*, bounded as it is on the side of Europe by the Ural Mountains, differs from the latter country in a much less degree; and it is mostly in North American genera that this difference lies; as in the presence of the genus *Phlox*, *Mitella*, *Claytonia*, &c. and in the predominance of the tribes of Michaelmas Daisy (*Aster*), Golden Rod (*Solidago*), Meadow-Sweet (*Spiræa*), and especially of the Milkvetches (*Astragalus*) and Wormwoods (*Artemisia*), as well as (on account of the numerous saline lakes) the *Goosefoots* and *Saltworts*.

1290. *In the southern hemisphere*, the vegetation is very different from that of Europe in the corresponding degrees of latitude. In Southern Africa, Thunberg enumerates 118 species which are analogous to those of Europe; which would probably be found considerably to exceed the truth, if the species were accurately examined. Mr. Brown assures us that the Alpine Catstail Grass (*Phleum alpinum*) and the Moonwort Fern (*Botrychium lunaria*) exist in the Banksian herbarium, which were gathered in the extreme parts of South America: and the same accurate writer observed 45 European phænogamous plants in Terra Australis, of which 23 are dicotyledonous and 21 monocotyledonous, and 121 acotyledonous or Cryptogamia; namely, 2 of the Fern family, 25 Mosses, 14 Hepaticæ, 38 Lichens, 10 Fungi, 12 Algæ.[*] The very general distribution of plants of this class over the surface of the globe, we have before, indeed, had occasion to notice.

Sect. IV. *Zoology.*

1291. *The zoological features of Europe*, although sufficiently important to render this continent a primary division of geographic natural history, are neither so extensive nor so varied as those of more genial regions. We have already shown the propriety of including within this range the southern parts of Africa bordering the Great Desert; while the western provinces of Asia appear to partake both of the European and the Oriental zoology. It might be imagined that such a division, including countries suffering by the extremes of cold and heat, would present animals of the most diversified nature: but such is by no means the case, at least to any great extent. The chief seat of this zoological province appears to be on the southern side of Central Europe, towards the Alps, or those countries lying between the latitudes of 40° and 50° N.; as within these parallels the greatest proportionate number of species appear to be found. It may, however, be more natural to consider this zoological region as presenting three minor divisions: 1. The arctic; 2. The central; and, 3. The southern.

1292. *The arctic division* will include Greenland, the islands of Spitzbergen and Iceland, and a considerable part of Norway, Sweden, and Northern Russia. The *central* division may be said to commence towards the northern limits of Scotland, and to reach the shores of Northern Italy; or, more properly, to about the 45th degree of north latitude. The *southern* range includes the whole of the Mediterranean countries, Northern Africa, and Asia Minor.

1293. *The animals more particularly belonging to the arctic circle* are few in species. Those dreary and inhospitable regions afford but little sustenance to ruminating quadrupeds, or to insectivorous land birds; while the intense cold is as inimical to vegetation as to the production of insects. Yet these undisturbed solitudes are instinctively chosen by multitudes of marine animals, as secure retreats from the interruption of man, for breeding and providing for their young. The polar seas abound with innumerable water fowl; they congregate and build among the rocks, whose surface they almost cover by their numbers.

1294. *Of the Herring*, (*fig.* 89.) *Pennant* was among the first naturalists who believed that the countless myriads which annually visit the northern shores of Europe, migrated from the Arctic Ocean. The account given by this eloquent writer is so interesting, that we shall repeat it nearly in his own words: — "The great winter rendezvous of the herring is within the arctic circle. There they continue for many months, in order to recruit themselves after the fatigue of spawning; the seas within that space swarming with insect food in a degree far greater than in our warmer latitudes. Thus renovated, this mighty army begins to put itself in motion in the spring. They appear off the Shetland Isles in April and May: these are only the forerunners of the grand division, which comes in June; and their appearance is marked by certain signs, and

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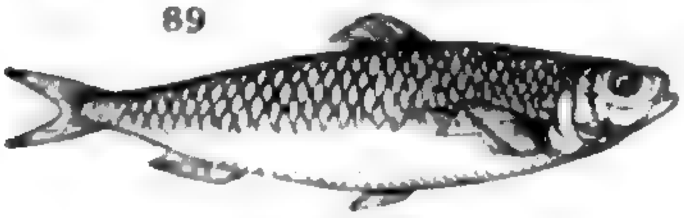

BRITISH HERRING.

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[*] Of the 121 acotyledonous plants it may be observed, that all, except one, the Marsilea quadrifolia, are found in Great Britain.

by the numbers of birds which follow to prey upon them: but when the main body approaches, its breadth and its depth is such as to alter the appearance of the very ocean. It is divided into distinct columns, of five or six miles in length, and three or four in breadth; and they drive the water before them with a kind of rippling. Sometimes they sink for ten or fifteen minutes, then rise again to the surface, and, in bright weather, reflect a variety of splendid colours, like a field of the most precious gems."

1295. *The migration of the herring*, as related so circumstantially by Pennant, has, nevertheless, been questioned by other naturalists, who suppose that it is incapable of making such a rapid voyage in so short a time; and they further suppose that these fish, like the mackarel, merely seek refuge during winter in the depths of the ocean, and return to the shallower parts in spring, to deposit their spawn. A modern writer, indeed, confidently asserts that Pennant's account has no existence in nature; but we are by no means disposed to go such a length, considering that there are many circumstances to be explained before a denial so unqualified can be implicitly admitted. That herrings may be *occasionally* found, at all seasons, about some of the European coasts, is by no means conclusive against the arctic retreat of the greater number; for among other animals, whose migratory nature is unquestionable, occasional stragglers are continually occurring in places far beyond their general haunts, and at seasons the most unusual.

1296. *The zoology of arctic Europe* has received much less attention than that of Northern America; we must, therefore, be somewhat concise on this head. Among the few original writers who have treated on the fauna of arctic Europe, the learned and acute Otho Fabricius, many years a resident in those dreary regions, deservedly ranks foremost. He enumerates thirty-two species of *Mammalia* as natives of Greenland, nine of which belong to the genera of Walrus and Seal (*Trichecus* and *Phoca*), and fifteen to the cetaceous order; thus leaving but eight species of terrestrial quadrupeds, a proportion at once explained by the wild and desolate nature of these regions. The number of birds, comprehending such as are occasional visiters, amount to fifty-two. Seven of these are rapacious, and five are referable to the families of Warblers and Finches (*Sylviadæ* and *Fringillidæ*); the remainder, with the solitary exception of the Ptarmigan (*fig.* 90.), or *Lagopus mutus*, belong to the wading and swimming orders, to whose nourishment and increase the arctic solitudes are particularly congenial. Nevertheless, by far the greater number of these birds occur abundantly in more southern latitudes; and many extend their flight to the warm shores of the Mediterranean. Those species, in fact, which habitually live within the arctic circle, as if by preference, are remarkably few, and offer no good foundation to ground a belief that these regions constitute one of the primary groups in animal geography.

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PTARMIGAN.

1297. *The zoology of Central Europe* may be said to commence towards the 60th degree of northern latitude, where a sensible change in the number and species of animals may be perceived; vegetation assumes a marked and decisive character; and those animals which depend for their support both on the produce of the earth and on the insect world are greatly increased, at once in number and in species. Vegetables furnish nutrition to insects, and seeds to birds: the former, again, become the prey of the latter; and thus the supplies of nature are nicely and accurately balanced, with a just regard to the preservation of all her creatures. The dark pine forests of Norway, Sweden, and Lapland are the most northern boundaries of the Woodpeckers; one of which (*Apternus tridactylus* Sw.) is remarkable for having but three toes to its feet (*fig.* 91.), and is more peculiarly a native of these high latitudes. The insectivorous and omnivorous tribes begin, also, to be common; while the wading and natatorial birds diminish in numbers, though not in species; for as they congregate at certain seasons in the polar seas, so during winter they disperse themselves on the shores of Great Britain and the Continent. We have no very precise information as to the extreme northern range of those birds whose chief metropolis is in Central Europe; and we are still deficient in a Fauna Scotica.

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THREE-TOED WOODPECKER.

1298. *Most of the Arctic birds occur in the northern shores of Scotland*, the islands of Orkney and Zetland, and on the coasts of Norway, Sweden, and Denmark. Müller, in his *Zoologia Danica*, enumerates 57 species of *Mammalia*, and 131 of birds, as natives of that kingdom. Among the former, [illegible] only are marine, and 14 are *Cetaceæ*: while the land birds amount to 87, exclusive of 26 belonging to the rapacious genera of Eagles, Falcons, and Owls. On comparing these numbers with those of the Greenland fauna, we observe, on the one hand, a considerable diminution of marine *Mammalia*, and a very large addition to the list of terrestrial birds; this latter circumstance is easily accounted for, — they are not formed to endure extreme cold; and being dependent upon insects and seeds for their support, their dispersion is naturally limited by the facilities afforded by nature for supporting life. Proceeding to those countries which lie towards the centre of Europe, there is a gradual augmentation of animal life: we may even trace this change in the local distribution of the animals peculiar to our own islands. Many species, in every department of zoology, are common in the southern and western counties of England, but which are totally unknown in the northern counties and in Scotland. The Red-backed Shrike breeds in the southern parts of Britain, but seems not to reach Scotland, where several of our most common summer visiters among the warblers and soft-billed birds appear to be equal strangers. The same may be said of numerous insects and a variety of marine animals. Even among the domesticated races, a greater developement of structure under a more genial climate is apparent in the Horse, the Sheep, and the Ox of Britain, when compared to those of the islands and mountains of Scotland; while among birds the gallinaceous genera, which, in our more southern climates, breed and live at all seasons in the open air, are reared and preserved with great difficulty in countries farther north; of these the Peacock and Guinea Fowl may be cited as examples.

1299. *The southern part of central Europe* is, then, the field best calculated for studying the peculiarities of European zoology. Commencing with the existing quadrupeds, we may remark, that while two species alone appear to inhabit the cold countries of Denmark, there are thirteen described as natives of France and the adjacent kingdoms, seven of which have been enumerated among British quadrupeds. The great white Bear, which is perhaps more truly an arctic animal than any other, disappears on the southern shores of the Polar Sea, and is replaced in temperate Europe by the common brown species, once a native of our own islands, and still found in the solitary seclusions of central Europe and Asia. Of this genus there are, according to Cuvier, but two recent species belonging to Europe, the brown (*fig.* 92.) and the black Bear. Others imagine, with some show of reason, that there are more; as the varieties from the first are very remarkable. The second is the black bear of Europe, differing from that of America in many important points of structure: only one living example appears to have been seen and dissected; and this, having died in confinement, afforded no clue to a knowledge of its haunts or manners.

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BROWN EUROPEAN BEAR.

1300. *The Wolf and the Fox,* under different varieties or species, appear generally distributed over Europe: to these we must add the Lynx and the Wild Cat, as the only true rapacious or carnivorous animals that have been appropriated to this division of the globe. The Lynx, once common in central Europe, has for some time been extirpated, and is now only known in some parts of Spain, the Apennines, and in the northern kingdoms. The mountaineers of Sicily have frequently described to us a ferocious animal as still occasionally met with in that island. This, in all probability, is a lynx, as the Sicilians are well acquainted with the wolf, the only beast with which, by the vulgar, the animal they describe could be confounded. The wild cat is still said to be a native of Britain, and is spread over other kingdoms on the Continent. A recent author includes among the "extinct animals" of Britain the hyæna and tiger whose bones have been found in the caves of Kirkdale, as forming part of the modern geographic distribution of animals. This hypothesis no doubt is ingenious, but lies open to many and great objections. If such formidable and terrific carnivorous animals have existed in Europe since the last revolution of our globe, what others constituted their prey? Their food being flesh alone, what were the other races of quadrupeds destined by nature to furnish them with subsistence? These questions must be first considered, before we can assent to an opinion so confidently advanced. Whatever might have been the character of European zoology before the deluge, certain it is, that in its present state it exhibits that harmony and consistency which peculiarly marks a wise provision for all created things. As the number of European *Mammalia* are so disproportionably small, when compared with those of Asia, Africa, and America, so are the species which are to keep their own class under subjection feeble and few; and this law is not only apparent among quadrupeds, but is equally observable in every other division of animals. Now, as birds are much more numerous, we find that in addition to the natural enemies in their own class, there is a group of quadrupeds more particularly destructive to the feathered tribes. These are the *Mustelæ*, or Weasels; few perhaps in species, but important in their numbers, and in their powers of destruction. No less than eight species inhabit different parts of Europe. Like the monkeys of the tropics, many of them climb trees and suck eggs; and by thus destroying birds in every stage of life, from the egg to the adult, are peculiarly adapted to prevent an undue increase of numbers.

1301. *On the granivorous quadrupeds* it may be observed, that although the woods of Europe are deficient in that variety of pulpy fruits so abundant in tropical countries, and upon which the numerous monkeys, bats, and other animals of those regions principally live, yet there is a great diversity of nuts and grain. Hence we find a proportionate number of small quadrupeds, whose subsistence entirely depends upon these bountiful supplies of nature: under this head may be enumerated the Hedgehog, Squirrel, and the various Mice, of which seven species belong to Europe. The Beaver (*fig.* 93.), unknown now to our own fauna, appears recorded by our early historians as a British animal; and is still found in the vicinity of the Rhone, the Danube, the Rhine, and other of the larger European rivers. If naturalists are correct in considering

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BEAVER.

this to be identical with the American beaver, it is one of the very few instances of the same species of animal inhabiting the temperate parts of the old and the new continents. The black bear of Europe was long confounded with that of America; and a similar difference may possibly exist between the beavers of the two continents.

1302. *The different species of Mice*, &c., now arranged under many genera, form an important part of European zoology; as will appear from the following list, furnished by Mr. Griffith from the valuable *Mammalogie* of M. Desmarest: —

Arvicola amphibius	Water Rat.	Mus musculus	House Mouse.
——— arvalis	Field Mouse.	—— messarius	Harvest ditto.
——— fulvus	Fulvous ditto.	—— minutus	Small ditto.
——— argentoratensis	Strasburg ditto.	—— agrarius	Setnic ditto.
Georychus Norvegicus	The Lemming.	—— soricinus	Shrew-like ditto.
———— terrestris	Land ditto.	—— dichrurus	Partycoloured Rat.
Mus sylvaticus	Field Mouse.	—— islandicus	Iceland ditto.
—— campestris	Plain ditto.		

The Hamsters, remarkable for their cheek pouches, and belonging to the same natural family as the mice, have their chief metropolis in Siberia; yet one species (*Cricetus vulgaris*) extends to central and northern Europe. The Marmots (*Arctomys Marmotta, Bobac*) are likewise nucivorous, and occur on the mountains of central and northern Europe, together with the *Spermophilus citillus*, or Soulisk of the Germans. Of the Hare, four species are European, the snowy, the common, the calling, and the rabbit; and these complete the list of European *Glires*.

1303. *Among ruminating quadrupeds*, the Elk and the Reindeer are well known inhabitants of the northern countries; the latter giving place to the Fallow-deer, the Stag, and the Roebuck, in the midland parts of Europe. In the lofty mountains and inaccessible precipices of the Alps and Pyrenees, the Chamois, Yzard, and Ibex still live in partial security, notwithstanding the daring intrepidity of their hunters. The Musmon is another European quadruped deserving particular notice, as being generally considered the origin of all our domestic breeds of sheep. It appears still to exist in a state of nature among the high mountains of Corsica and Sardinia; and although now extirpated upon the continent, is well ascertained to have formerly been common in the mountains of Asturia in Spain. Lastly, it appears incontestable that the ox, one of the most valuable of nature's gifts to man, originally existed in a wild state over the whole of Europe, but whether as a distinct species or mere variety is still uncertain. The white ox of Scotland is a peculiar breed, still preserved in some few parks of the nobility, and will be noticed hereafter. But a much larger race, distinguished by Hamilton Smith under the name of the Fossil Urus (*Griff. Cuv.* iv. 414.), although, probably, in existence long after the invasion of Cæsar, is now only known, like the elk of Ireland, by its gigantic bones.

1304. *From this brief enumeration of the European quadrupeds* it will be perceived that their numbers are too few, and their original dispersion too obscure, to allow of any correct notions being formed as to their natural distribution. With regard to the origin of our domestic animals, and the several races, breeds, or varieties that have apparently sprung from them, the reader must be referred to the writings of F. Cuvier, and the extensive researches of Hamilton Smith, whose acquaintance with the order of ruminating animals, more particularly, is, perhaps, superior to that of any other living zoologist.

1305. *The ornithological features* of the zoological province to which Europe belongs, have already claimed our attention. We shall, therefore, now merely notice a few circumstances connected with the ornithology of central Europe. On the highest summits of the Alps, and in the vast forests which clothe their sides in Hungary, Switzerland, and the Tyrol, are found all the four species of European Vultures: only one of these, *Vultur fulvus* (*fig.* 94.), appears to have a range in countries farther north; yet all are distributed over the southern kingdoms, and two are again met with on the northern limits of Africa and western Asia. The Iceland or gyr Falcon, long supposed to be peculiar to the high northern latitudes, is now considered the same with the *Falco candicans* of the northern parts of Germany. The wide geographic range of the rapacious order has already been adverted to; nor do we find any species besides the Vultures which serve to mark the ornithology of central Europe. The forests of Germany, Austria, Switzerland, and France appear to contain all the European Woodpeckers, which, notwithstanding their wide dispersion, are but thinly and partially scattered in the northern and southern kingdoms.

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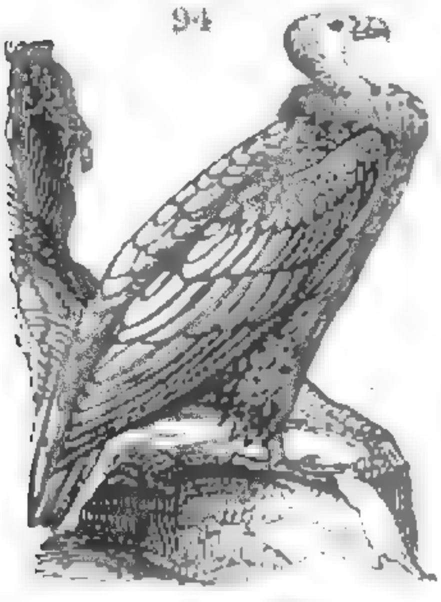

FULVOUS VULTURE.

1306. *The range of the small insectivorous birds, or warblers*, requires much investigation; nor are we at this moment aware of any species in Germany which does not occur in France or towards northern Italy. The few gallinaceous birds of Europe are nearly all found towards its centre, although the different species of grouse seem to affect the more northern latitudes. The warm covering of feathers which protects their feet, is peculiarly adapted as a defence from the intense cold of the polar regions. The Bustards, on the contrary, occupy the middle regions of Europe, and extend latitudinally from the confines of Asia to the shores of the Atlantic. The Bee-eater (*Merops apiaster*), the Roller, the Hoopoe, and the Golden Oriole, in their annual migrations from Africa, visit all the central parts of the Continent, but become progressively scarce as we advance northward.

1307. *In the third portion of the European range,* we comprehend the south of France, the whole of Spain, Italy, and Turkey, together with the coasts and islands of the Mediterranean Sea bordering Asia Minor and Northern Africa.

1308. *On the geographic range of the quadrupeds* more peculiar to these countries, little can be said; as the materials to be gathered from the relations of travellers unacquainted with zoology are generally most imperfect. There is no evidence of the great northern ruminating animals, such as the Elk and the Reindeer, being found wild in any of the countries which border the Mediterranean Sea, although a small species, probably the fallow deer or the roebuck, is represented as still to be met with in the extensive forests of Calabria. The Porcupine, now wild in those countries, is supposed (but with a slight show of reason) to have been introduced from Africa; but for what purpose we are uninformed. The Buffalo is domesticated in Greece and Turkey, and some parts of southern Italy; where it is sometimes, though rarely, used for draught.

1309. *The ornithology* of the countries bordering upon the Mediterranean presents many interesting peculiarities. The vultures, which are seldom found northward of the Alps, occur more frequently as the climate becomes warmer. This tribe appears to follow the course of the Apennines in Italy, and of the higher mountains of Spain and Greece, from whence they extend their range to Asia Minor and northern Africa. The Imperial Eagle (*Falco imperialis* Tem.) is chiefly found in southern Europe, while the Golden Eagle is much more numerous in the colder latitudes. The gigantic Owls of the polar regions are here unknown; but two or three horned species, of diminutive size, follow the migratory troops of smaller birds in their annual journeys across the Mediterranean. Two of these small owls have not yet been described. In the extensive family of the warblers, many appear peculiar to Italy, Spain, Sicily, and Sardinia; and in the latter island there has recently been discovered a second species of European Starling (*Sturnus unicolor* Tem.) (*fig.* 95.). The grouse of northern Europe are rarely, if ever, seen. But two species of bustard (*Otis Tetrao* and *Houbara*) seldom met with farther north, are common in Spain, Italy, and Turkey. Here also we first meet with the African and Asiatic genera *Cursorius* and *Hemipodius*; birds which delight in the dry and arid plains of those continents, where they run with amazing swiftness. The rocky and uncultivated wastes of Spain, Turkey, and Asia Minor furnish two species of rock grouse (*Pterocles*) long confounded with that northern genus, of which it is the representative in warm climates. The beautiful Wall-creeper, with its bright rosy wings, although rare in other parts of Europe, is not uncommon in Italy; while the Golden Oriole, the Bee-eater, the Hoopoe, and the Roller, four of the most beautiful European birds, are so abundant in the two Sicilies during the spring and autumnal migrations, that they may occasionally be seen hanging in the poulterers' shops of Naples and Palermo. The union of the African, European, and Asiatic ornithology on the coasts of the Mediterranean is further apparent among the water-birds. The Pelican, the Spoon-bill, and the Flamingo are still to be met with in these countries; although, from their large size attracting the sportsmen, they are never seen in any considerable numbers.

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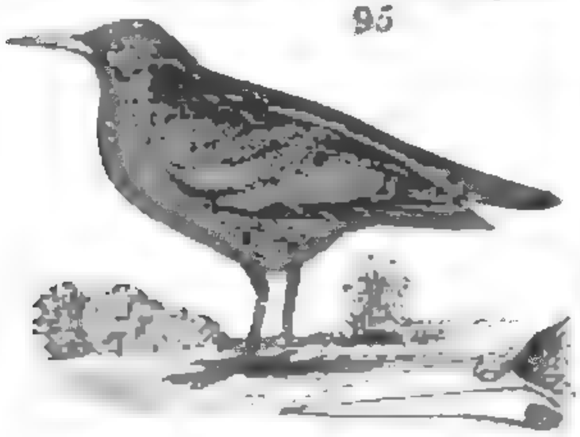

STURNUS UNICOLOR.

1310. *The European reptiles are too few* to afford any material illustration of animal distribution. The most remarkable forms and the greatest numerical proportion occur in southern Europe, particularly in Italy and Greece, and the islands of Sicily and Malta: some of these, as the Gecko, or house lizards of Naples and Sicily, belong to genera not met with farther north, but common on the opposite shores of Africa and Asia Minor.

1311. *The fish and other marine animals* of the Spanish and Portuguese coasts bordering on the Atlantic have not been well investigated, and our slight acquaintance with them is insufficient to give us any correct idea of their nature; but, on entering the Mediterranean, we find, at Gibraltar, many of those peculiar to much more southern latitudes. Spain and Portugal cannot be said, like England, France, or Holland, to have national fisheries; but no sooner do we pass Gibraltar, than these natural sources of prosperity and plenty are again opened to the industry and support of man. The enormous shoals of Anchovies (*fig.* 96.) annually employ, in their capture and preparation, a great number of persons: and the exportation of this highly flavoured little fish, to all parts of the world, creates an important branch of permanent commerce. The Herring and, we believe, the Pilchard, are not unknown in the fish-markets of Sicily and Malta; but, notwith-

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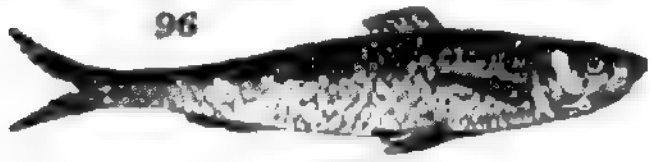

ANCHOVY.

standing their abundance in northern Europe, they are scarce in the Mediterranean, and never seen in any considerable numbers. The tunny fishery is peculiar to Sicily, although there is very little doubt that the same fish frequents the shores and islands of the Peloponnesus; yet the total disregard of the Turks to all sources of national wealth blinds them to this, and to every other advantage which Nature has placed within their grasp. The Ichthyology of southern Europe is certainly of a more marked and peculiar character than any other department of European zoology. It is at all times hazardous to venture upon numerical estimates, but it can be safely stated, that of nearly 150 species observed by us in the Mediterranean Sea, not more than one third belonged to the Ichthyology of Great Britain and northern Europe.

1312. *The Turtle of the Mediterranean* is that described by authors under the name of *Testudo caretta:* writers have uniformly copied each other in asserting that this is the same as the Loggerhead Turtle of the West Indies; and that its flesh is coarse, rank, oily, and not edible. The accuracy of both these statements may be questioned. Whatever may be the qualities of the West Indian Loggerhead, we know, from personal experience, that the flesh of the Mediterranean species is delicious. We were once becalmed off the Isle of Elba, and in one morning captured a sufficient number of small turtle to supply the cabin table for a week. They made exquisite soup; and although one of the company was ill, it arose from repletion. We omitted to draw and describe the animal, from a belief that it was the Hawk's-bill Turtle, the only species described as inhabiting the Mediterranean; the figure given by Gottwold (*fig.* 97.) has been considered, by Dr. Shaw, as representing the *Testudo caretta.*

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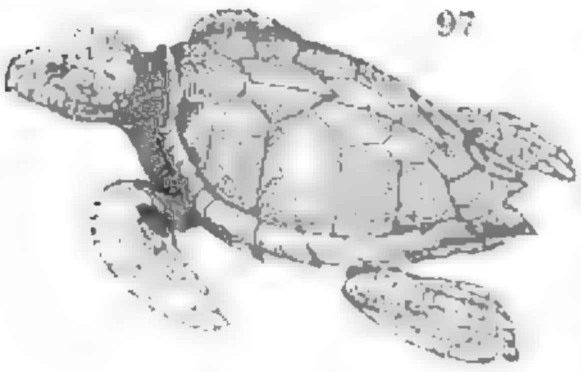

LOGGERHEAD TURTLE.

1313. *Of European insects*, a bare enumeration of the genera would alone fill a volume; and in the half-artificial, half-natural, arrangement in which our entomological systems at this moment remain, it is impossible to form any precise idea even on the natural distribution of the families. As we approach the provinces of southern Italy and the Peloponnesus, we find many genera which more properly characterise Western Asia and Africa; while, in Sicily and Malta, the geodephagous groups, particularly the Linnæan *Carabii*, are diminished; apparently in species, but certainly in numbers. It is in these countries that the Ants, those universal scavengers of nature in tropical countries, begin to appear in almost every situation, and to perform those offices which in more temperate regions have been assigned to the *Geodephaga*, *Brachelytra*, and *Necrophaga* among coleopterous insects. Most of the northern Butterflies (*Papilionæs* Sw.) are common even in Sicily, where, notwithstanding a dissimilar vegetation and a more heated atmosphere, we find only three or four species unknown to the British fauna: among these, the *Gonepteryx Cleopatra* (*fig.*98.), or Cleopatra's Butterfly, much resembles a British species, but has the middle of the anterior wings of a rich orange.

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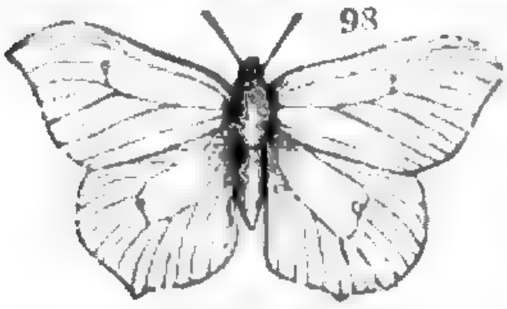
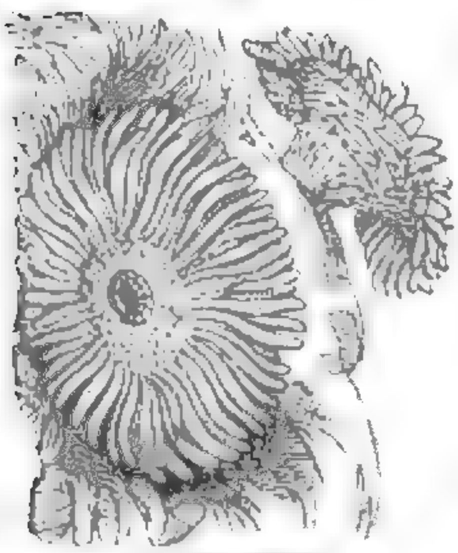


CLEOPATRA'S BUTTERFLY.

1314. *The Radiated animals* of the Mediterranean are particularly numerous; the many harbours, coves, and sub-immersed rocks, sheltered from those violent commotions which agitate the mighty Atlantic, afford them secure protection, and contribute to their rapid increase. Their investigation, hitherto much neglected, offers a wide field for the discoveries of naturalists who can study them in their native seas. Numerous species of Sea Anemone, or animal flowers, unfold themselves in the crevices of the rocks; one of these (*fig.* 99.), ornamented with rich purple, is particularly common on all the shores of Sicily.

99



ANIMAL FLOWERS.

1315. *The tubular and cellular polypes,* whose habitations ar termed corals and corallines, are generally abundant in warm latitudes. Among these a vast number of species occur on the shores of Sicily, Italy, and the Greek islands, which do not inhabit the British coasts. Sicily, for many ages, has been celebrated for its fisheries of the true red coral (*fig.* 100.); and it still affords employment at certain seasons to many fishermen: but the produce of the old grounds of late years has materially diminished, through want of care and due preservation. The Bay of Naples likewise produces this beautiful substance, but the pieces usually found are small, and in no great abundance.

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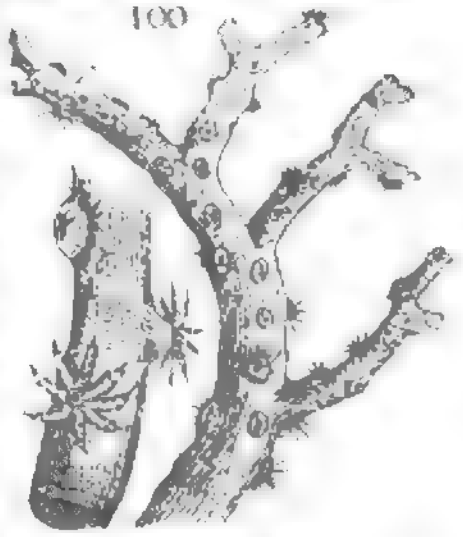

RED CORAL.

1316. *The Molluscous animals* or *shell fish* of southern Europe are in great variety; and are much more prized by all classes there, as general articles of food, than among us. This may, in part, be accounted for by the people being Catholics; and compelled, by the tenets of their religion, to abstain from meat twice a week, exclusive of the longer and more important fasts. Why, however, fish and cockles are not to be termed meat, or animal food, does not exactly appear. Nature has given an abundant supply of both; and although the Italians do not possess the British oyster, their seas produce a much greater variety in other species than we can boast of. It is no uncommon thing to see from twelve to fifteen different sorts of shell-fish, none of a small size, exposed in the principal market at Naples; and we have been assured that double this number are not unfrequently served at the tables of the higher ecclesiastics and nobility of Tarentum during Lent, that city being highly celebrated for its shell-fish. The *Solen strigilatus* (*fig.* 101.) is abundant at Naples, and considered most delicate food.

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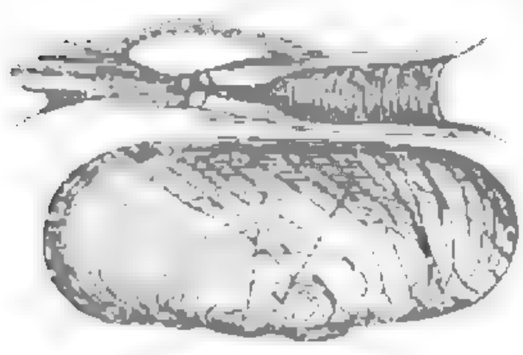

SOLEN STRIGILATUS.

1317. *On comparing the conchology* of the Mediterranean with that of Britain, there does not appear so much difference as at first might have been imagined; nor are we aware of more than three or four genera in those southern latitudes of which examples have not been found in our own. Yet, on descending to species, the difference is much greater. Our limits would not permit an enumeration of such as are common to both seas; but perhaps two thirds or three fifths of the Mediterranean shells have been found by our industrious conchologists in the Channel, and on the western or other coasts of Britain. The remaining portion indicate a strong affinity with the conchology of India and the Red Sea on one hand, and that of Africa, towards Senegal, on the other. The fluviatile species are most numerous in central Europe, where the heat of summer is less calculated to dry up those small pools and shallow streams, in which most of these univalve mollusca delight to dwell. The fluviatile bivalves are few; but are of species which seem peculiar to the European range. Independently of those common alike to Britain and the Continent, there are others in France and the south of Europe (*fig.* 102). *Unio littoralis* (*a*) and the true *U. batava* (*b*) are common in the Seine; and we have received another shell from near Gibraltar, which we suspect to be a new species, intermediate between the latter and *ovatus*; we name it provisionally *Unio intermedius* (*c, c*).

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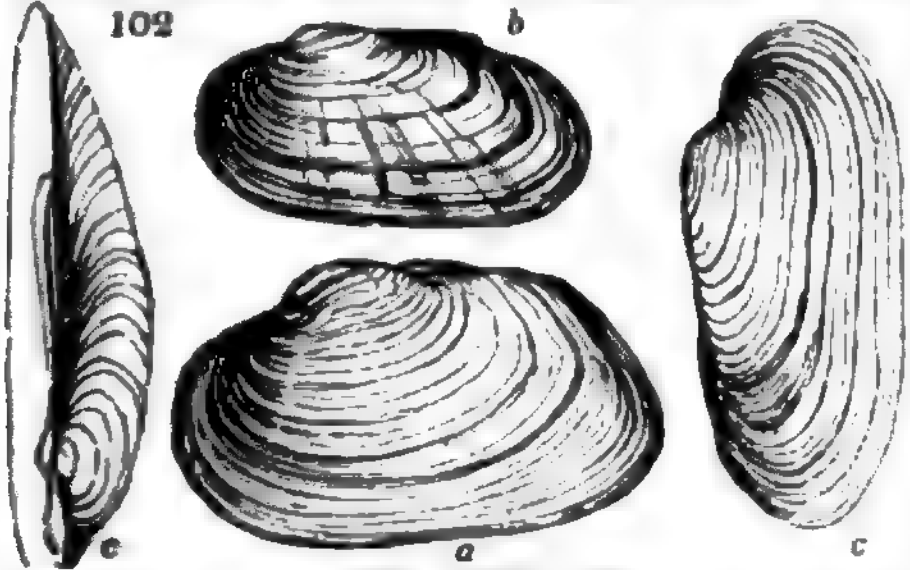

RIVER BIVALVE SHELLS.

1318. *The Cephalopoda*, or cuttle-fish of the Mediterranean, though not of many species, are sometimes found in prodigious numbers, and frequently grow to an enormous size. The zoology of the Black and Caspian Seas is very little known.

1319. *The phosphorescence of the Mediterranean* is at times so brilliant, that it excites the admiration of all voyagers; it therefore deserves to be particularly mentioned. This phenomenon, frequently to be witnessed, in a less degree, in the British seas, is entirely produced by various marine animals. Spix, the Bavarian naturalist and traveller, in his passage down the Mediterranean, caused several buckets to be filled with this luminous water; and the following results attended his experiments:—

1320. *These luminous animalcula* adhered to whatever was wetted with the water, and continued to shine thereon; the buckets, when shaken, appearing full of luminous particles. The water, examined by a microscope, was filled with little bodies, some roundish, some oblong, and generally about the size of a poppy-seed; each of these had, at one end, a small navel-like opening, encircled by from six to nine delicate filaments which float within the bladder, and with which the animal seems to attach itself to other bodies, and to seize its nourishment. In the inside of these bladders there were many other small darker points, crowded together on one side, or here and there some larger ones, which might be either the remains of smaller animals which they had swallowed, or their own spawn. These globular animalcula (which Spix considers to be of the nature of Medusæ) have been named by Péron and Lechenault *Arethusa pelagica*, and by Savigny *Noctiluca miliaris*. They swim in greater or less numbers at night, but in the sunshine they appear to the naked eye like little drops of grease. When put into a vessel they soon die and fall to the bottom; when they come near together, they appear involuntarily to attract each other, so that they form whole groups. The same phenomenon is sometimes observed in the day-time, when the sky is dark, which rarely happens: as these animals are seldom found in water taken up in the day-time, it is probable they then sink to the depths of the ocean, and only return near the surface towards night. (*Spix, Trav.*)

1321. *Other luminous bodies* resemble balls as large as a nut; and every wave striking a ship, when filled with these animals, lights up all surrounding objects. Besides these, there are sometimes insulated luminous bladders, like fiery balls, a foot in diameter, which rise singly above the water; and the striking of two waves together produces a shallow bluish streak of light, resembling the reflection of lightning on the water. (*Spix, Trav.* i. 44. 47.)

1322. *The quadrupeds of Europe*, according to the most recent distribution of the species (*Griff. Cuv.*), under the modern divisions, comprise about ninety species, arranged under the following genera and sub-genera. To these must be added the fish-quadrupeds, or Cetaceæ, chiefly inhabiting the high northern latitudes:—

Bats.	
Rhinolophus	2
Plecotus	1
Vespertilio	13
Land Quadrupeds.	
Erinaceus	2
Sorex	8
Mygale	2
Talpa	1
Ursus	2
Meles	1
Gulo	1
Putorius	4
Martes	2
Lutra	1
Canis	1
Vulpes	3
Felis	1
Lynx	1
Castor	1
Arvicola	4
Georychus	1
Myoxus	2
Mus	8
Cricetus	2
Gerbillus	1
Aspalax	1
Arctomys	3
Sciurus	2
Pteromys	1
Hystrix	1
Lepus	3
Lagomys	2
Cervus	3
Antilope	1
Rupricapra	1
Capra	1
Ovis	1
Taurus	2
Marine.	
Phoca	1
Trichecus	1
Otaria	1
Mirounga	1

1323. *The genera of European birds*, in reference to our former remarks on the geographic distribution of animals, deserves particular attention. Those marked * are typical of families or sub-families; those † include sub-genera, or subordinate variations of structure to which we shall not attach a distinct patronymic name; either because the higher groups have not been sufficiently analysed, or because these subordinate forms have been mistaken for genera. Decided stragglers are excluded; other genera, of uncertain rank, are not marked. The typical genera of the wading birds have not yet been ascertained.

Raptorious Birds.

* Vultur *Auct.*
* Gypaetos *Stor.*
Neophron *Sav.*
Pandion *Sav.*
Haliaetus *Sav.*
Aquila *Ray.*
Astur
Accipiter
* Falco
† Buteo
† Circus
† Strix.

Fissirostres.

Caprimulgus
* Hirundo
Cypselus *Ill.*
* Merops
Coracias
* Alcedo

Dentirostres Cuv.

* Muscicapa
* Lanius
* Merula *Ray.*
Cinclus
* Oriolus
* Saxicola
Erythaca *Sw.*
Phœnicura *Sw.*
* Philomela *Sw.*
† Curruca *Bech.*
* † Sylvia *Lin.*
* † Parus *Lin.*
Accentor *Bech.*
Budytes *Cuv.*
* Motacilla *Lin.*
† Anthus *Bech.*
* Bombycilla *Bris.*
* † Alauda
* † Emberyza
* Carduelis
Pyrgita *Cuv.*
* † Fringilla *Sw.*
* Pyrrhula *Cuv.*
* Sturnus
* † Pastor *Tem.*
Nucifraga *Bris.*
* † Corvus
* Garrulus
Fregilus *Cuv.*

* Coccothraustes *Bris.*
Corythus *Cuv.*

Climbers.

* Cuculus
Dryotomus *Sw.*
Dendrocopus *Sw.*
Apternus *Sw.*
Chrysoptilus *Sw.*
* Sitta *Lin.*
* Certhia *Lin.*
Tichodroma
Troglodytes
* Upupa *Lin.*

Gallinaceous Birds.

Tetrao *Lin.*
Lagopus *Ray.*
Lyurus *Sw.*
* Columba *Lin.*
* Phasianus *Lin.*
* Perdix *Lin.*
* Coturnix *Tem.*
Pterocles *Tem.*
* Otis *Lin.*

Waders.

Balearica *Bris.*
Grus *Aut.*
Ardea *Aut.*
Phœnicopterus *Lin.*
Platalea *Lin.*
Tantalus *Lin.*
Ibis *Aut.*
Numenius *Bris.*
† Totanus *Bechst.*
Recurvirostris
† Limosa
Scolopax
† Machetes *Cuv.*
† Phalaropus
Phæopus *Cuv.*
Glareola
Rallus
Crex *Bech.*
Gallinula *Bris.*
Porphyrio *Bris.*
Fulica
Hæmatopus
† Calidres *Illiger.*
Tachydromus *Ill.*
Strepsilas *Ill.*
† Tringa, *L.*
Vanellus *Bris.*
† Charadrius *Lin.*
Œdicnemus *Cuv.*
Himantopus *Bris.*

Swimmers.

* † Anser
* † Anas
* † Mergus
† Cygnus
Podiceps *Lath.*
Colymbus
† Uria
Mormon *Ill.*
† Alca
Halicus *Ill.*
Dysporus *Ill.*
* Pelecanus *Lin.*
* Sturna *L.*
Thalassidroma *Vig.*
* Larus *L.*
Lestris *Ill.*
Procellaria *L.*
Puffinus *Ray.*

Sect. V. *Languages.*

1324. *Europe, considered in regard to its languages, comprehends the whole globe,* through those immense colonies which have been founded by the nations of this continent in every other quarter of the world.

1325. *The European languages, ancient and modern, form six families:* — 1. The family of the *Iberian* languages; 2. That of the *Celtic* languages; 3. That of the *Thraco-Pelasgic* or *Græco-Latin* languages; 4. The family of the *Germanic* languages; 5. That of the *Sclavonic* languages; 6. The family of the *Uralian* languages, commonly called the *Finnish* or *Chudic.*

Subsect. 1.

1326. *The Iberian or Basque family* has been divided into the two following branches: — 1. Ancient languages long extinct, under which are classed the idioms spoken by the Iberians in the greater part of the Spanish peninsula, in southern Gaul, and in some parts of Italy and its three great islands. 2. Ancient languages still living; of which the only one remaining is the *Escuara* or *Basque,* formerly spoken in a large portion of Spain and of southern Gaul, and now spoken only by the *Vascongados* or *Basques* in the Spanish provinces of Biscay and Navarre, and in some parts of the south of France. The Basques are the descendants of the ancient Vascones. Their language, which resembles no other European idiom, though it has adopted several Latin and some German words, appears to have a certain affinity to the Shemitic languages, and, in its conjugations, some analogy to the languages of America.

Subsect. 2.

1327. *The Celtic family exhibits, like the Basque, two branches:* — 1. Ancient languages long extinct, among which are classed the idioms spoken by the numerous Celtic nations in Gaul, in Belgium, in the British Isles, in parts of Germany, Italy, and also Galatia in Asia Minor. 2. Ancient languages still living, of which there are two: 1. The *Gallic, Gaelic,* or *Celtic Proper,* spoken in different dialects by the descendants of the true Celts, in a large portion of Ireland, in the Highlands of Scotland, in the Hebrides, and in the Isle of Man. 2. The Cambrian or Celto-Belgic, formerly spoken by the Cymri or Belgæ in Belgium and Britain, and now confined to a part of England and France. In this language are distinguished three principal dialects: the *Welsh,* spoken and written by the people of that name descended from the ancient Britons; the *Cornish,* formerly spoken throughout Cornwall, but extinct since about the middle of the last century; and the *Bas-Breton,* called also by French writers the *Celto-Breton,* spoken in the part of France formerly called Lower Bretagne, by the descendants of those British fugitives who, in the fifth century, sought refuge and settled in Armorica. The *Bas-Breton* has many sub-dialects and varieties.

Subsect. 3.

1328. *The numerous family of the Græco-Latin languages* may be divided into four branches: I. The *Illyrian;* II. The *Etruscan;* III. The *Hellenic;* IV. The *Italic,* including the Latin, the Romanic or Romano-Rustic, the modern Italian, the French, the Spanish or Castilian, the Portuguese, and the Valaque or Wallachian.

1329. I. *The Thraco-Illyrian branch* includes all those Thracian and Illyrian nations once seated in Asia Minor west of the river Halys, and in Europe all over its eastern portion, from Noricum, occupied by Celtic tribes, to the mouths of the Danube and the Dnieper, and even beyond. Of those nations, long extinct, or confounded with others, the principal were the Phrygians, the Trojans, the Bithynians, the Lydians, the Carians, the Lycians, the Cimmerii, the Tauri, the Thracians properly so called, the Mæsi, the Getæ, the Macedonians, the ancient Illyrians, among whom were the Dalmati and the Istri, the Pannonians or Pæones, the Veneti, and the Siculi. In this branch, according to M. Malte-Brun, may be not improperly placed —

1330. *The Albanian,* spoken in Albania and other countries by the *Skipatar,* named *Arnauts* by the Turks, and generally known under the name of Albanians. They form the principal population of Albania, and are scattered throughout European Turkey, especially in Roumelia, Bulgaria, and Macedonia; others on the Slavonic military confines of the Austrian empire, and others in various parts of the kingdom of the Two Sicilies. This *Scyp,* or Albanian language, according to M. Malte-Brun, appears to be formed of one third of ancient Greek, especially the Æolic dialect, one third Latin, one third of an idiom not yet ascertained, probably the Illyrian. The Albanians have three different alphabets: one sacred or hieratic, now fallen into disuse; another, the Greek alphabet; a third the modern Italian or Latin.

1331. II. *The Etruscan,* (we are here reminded of the *Osci* and *Heterosci,* quasi *Etrusci ?*) spoken by the Etrurians, called also Tyrrhenians by the Greeks. This nation, according to some, appears to have been a mixture of Rhætian Celts with the Aborigines of Italy. The Etruscan alphabet was the same with the primitive alphabet of the Greeks; it had sixteen letters, and was written from right to left.

1332. III. *The Pelasgo-Hellenic,* including the idioms in ancient times spoken by the famous *Pelasgi* and *Hellenes,* long since incorporated with other nations. The people of early origin who may with probability be classed under this branch are, the Pelasgi, the Leleges, and other tribes enumerated by ancient geographers among the population of Greece and its isles, especially the Græci, originally a small community of Thessaly, but remarkable for having given name to the whole of that celebrated nation, whose language was —

1333. *The Hellenic,* or *ancient Greek,* formerly spoken in Greece and its dependencies, and at a later period in a great part of Sicily, Lower Italy, Asia Minor, Egypt, and its dependencies, in part of Gallia Narbonensis, and in other districts bordering on the Mediterranean.

1334. *During the Macedonian empire* the Hellenic was spoken at all the courts of the descendants of Alexander, and by persons of distinction in all the countries subject to the Macedonians. In a subsequent age, it was studied by all the most distinguished subjects of the Roman empire, and was the prevailing idiom in the East until the fall of Constantinople, at which period it was studied with renewed ardour in the West. In this language, 270 years before Christ, was written the famous version of the Hebrew Scriptures called the Septuagint; in this language also was the Gospel promulgated by the Apostles; and it thus became for ever sacred. It appears not the least wonderful among the dispensations of Providence, that the light of Christianity should have been originally diffused under the most powerful empire and in the most cultivated language of the ancient world, and that it should prevail notwithstanding the power of the one, and the learning and philosophy for which the other was so proudly distinguished. The literature of the Greeks, comprehending some of the finest productions of the human mind, is, perhaps, the richest in the world, and presents an unparalleled series of eminent writers, extending from the age of Homer to the middle of the fifteenth century. The language is one of the most flexible, harmonious, and copious that have ever existed; its grammatical forms are almost identical with those of the Latin, to the formation of which it has greatly contributed, but in many essential points it is superior, and especially in the unlimited faculty of making as many compounds as can be required. M. Malte-Brun distinguishes in the ancient Greek two different idioms: — 1. The *primitive Hellenic,* which he subdivides into three principal dialects — the Arcadian, the Thessalian, with the ancient Macedonian, and the Œnotrian, transported into Italy and mingled with the Latin; 2. *The Hellenic of the historical times,* divided into four principal dialects and several varieties.

1335. III. *The Romaic,* or *modern Greek,* spoken by the Greeks of our own times, especially in the Morea, in Livadia, Thessaly, the isle of Candia, the Archipelago, part of Albania, Macedonia, Roumelia, Thrace, Asia Minor, Cyprus, and by the Greeks established in Wallachia, Moldavia, Syria, and Egypt. The Romaic is also spoken by the inhabitants of the Ionian Isles, by considerable numbers of Greeks in the Austrian and Russian empires, and some hundred of Mainotes in Corsica, near Ajaccio. It is divided into two principal dialects, the Romaic and the Æolo-Dorian, each including various sub-dialects.

1336. IV. *The Italic branch,* so called, as including the languages of the aborigines of Italy, which form the stem of the modern idioms comprised in this branch. Those *aborigines* were, the Euganei, the Ausones, the Lucani, the Brutti, the Piceni, the Marsi, the Latini, the Sabines, and the Samnites. From a mixture of the three last idioms, primarily with the original Hellenic, afterwards with the old Æolian and ancient Doric, was formed, as M. Malte-Brun inclines to think, the language spoken by the Romans, and called the Latin language. The languages included in that branch are, —

1337. *The Latin,* which was the written and current language of the higher classes in Italy and throughout the Roman empire. It was very different from the *lingua plebeia* or *rustica,* spoken in the rural districts of the peninsula, and by the lower classes in Spain, Gaul, and the other provinces. Its grammatical forms are similar to the Greek, though less perfect. Latin literature, formed on that of Greece, is very rich in all branches of knowledge, and, together with the Greek, is the source from which flows the literature of the modern nations of Europe. Its most brilliant epoch was the Augustan age. In this language St. Jerome wrote the Vulgate, or Latin translation of the Bible which is used in the Romish church. The overthrow of the Roman empire in the fifth century gave birth to a corrupt Latin, mingled with a great number of barbarous words, and named low Latin, which, until the fourteenth, was, almost exclusively, the written language throughout the West. In the two succeeding centuries, Latin literature again flourished, especially in Italy; but it was only to contribute to the improvement of modern languages, which being diligently

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and successfully cultivated, the Latin was restricted to works of erudition alone. Its phraseology has had a marked influence on that of the most polite nations of Europe. It is now a dead language, except in Poland and Hungary, where some educated persons speak it in ordinary life with considerable purity, and with the Continental pronunciation, of course almost unintelligible to travellers from the English universities, who cannot or will not relinquish the Saxon diphthongal sounds of the vowels A, I, and U, the chief causes of their embarrassment. Latin is no longer employed except in the Catholic liturgy, in medicine, in the diplomacy of the court of Rome, and partially in the literature of all the civilised nations of Europe. The alphabet, of twenty-three letters, having been improved in its characters by the Italians and French, is used by all the people of Europe, except the Greeks, the Russians, and some other nations who have particular alphabets. This same Latin alphabet, with the Gothic forms it assumed under the pen of the writers of the middle ages, is used by the Germans and Danes, and by the Bohemians, and other Slavonic nations; and, according to some authors, its capital letters, truncated and squared to facilitate the inscription of them in wood or stone, constitute the Runic alphabet, formerly used in the north of Europe.

1338. *The Romana*, or *Romana Rustica*, spoken in the brightest ages of Rome by the lower classes in the south of the empire, excepting Greece, and some other countries. After various modifications more or less considerable it appears still to subsist among the vulgar dialects spoken throughout a great part of Spain, France, Switzerland, and some districts of Italy. The chief of those dialects, according to M. Champollion Figeac, are the following, classed with reference to those four regions:—In Spain, Sardinia, and the Balearic Isles, the Catalan, the Valencian, the Majorcan. In France, the Languedocian, the Provençal, the Dauphinois, the Lyonnais, the Auvergnat, the Limousin, and the Gascon. In Switzerland, the Romanic, or Celto-Romanic, (frequently called Romance, Churwelsh, and Rhætish,) the Valaisan in the Valais. In the states of the king of Sardinia are spoken the Savoisian; and the Vaudois in the vales of Lucerne, Perosa, and part of Piedmont. To these might be added the jargon call *lingua Franca*, in which Catalan, Limousin, Sicilian, and Arabic are the principal ingredients. The Romance literature is also called that of the Troubadours. From the mixture of this language with the different Germanic, Slavonic, and other idioms, were formed, in the tenth century, the following languages: —

1339. *The Italian*, spoken by the Italians in almost all Italy, in the isles geographically connected with that peninsula, and in various Alpine territories; also frequent in Dalmatia and the isle of Tino; very common at Constantinople, and in several mercantile towns of the Ottoman empire. The *written* language, which is nowhere *generally* spoken, is common with all well-educated Italians, and differs little from the vulgar tongue, which is subdivided into a great number of dialects. The principal of these are, the Piedmontese and Genoese; the Milanese, or Lombard proper; the Low Lombard; the Bolognese, the Bergamasc; the Venetian, the Friulian, the Tyrolean, the vulgar Tuscan; the Roman; the Sabine and Abruzzan; the Calabrian and Apulian; the Tarentine; the Neapolitan; the Sicilian, and the Sardinian.

1340. *The French language*, spoken by the French almost throughout the north of France; by the Walloons and Flemings in various Netherlandish provinces; by the Swiss, in several of their cantons; by the people of Jersey and Guernsey; also in some parts of the Austrian and Russian empires, and of the Prussian monarchy; by the French colonists in Asia, Africa, and America. In its infancy there were two idioms respectively designated by their word of affirmation, their "Yes," the *langue d'oc*, which was used in the southern provinces, and the *langue d'oui* in the northern. This prevailed, and became the French tongue; the other was commemorated in the name of *Languedoc*, given to the province where it was most current. Without entering into farther detail respecting the French language, or analysing its structure, we may distinguish, after M. Champollion, the following as principal dialects: — the *Picard*, the *Flemish*, the *Norman*, the *Walloon* or *Rounchi*, the *vulgar French*, the *Breton French*, the *Champénois*, the *Lorraine*, the *Burgundian*, the *Franche-Comté*, the *Neufchâtelain*, the *Orléannois*, the *Angevin*, and the *Manceau*. To these might, perhaps, be added the jargon spoken by the negroes and creoles in the French West Indies.

1341. *The Spanish* or *Castilian language*, spoken by the Spaniards in the greater part of Spain, and, with some variation and admixture, by their descendants in Oceania, Africa, and America; also by the numerous Spanish Jews established in the Ottoman empire, and in other states of Europe, and of North Africa; in the isle of Trinidad belonging to the crown of Great Britain; in the Floridas and some part of Louisiana; and in the eastern part of Hispaniola or St. Domingo. This language is also common to all the inhabitants of the towns of Spain where the Basque and Romance languages are spoken. The written and polished language is almost identical in its grammatical forms with the Romance and the Portuguese; and differs little from the Italian; it is very rich and harmonious, notwithstanding some guttural and aspirate sounds taken from the Arabic, from which it has borrowed many words. It is singular to remark, that the *German* is characterised by similar gutturals or aspirates. The reigns of the emperor Charles V. and of his son Philip II. were the golden age of Spanish literature; after which it fell into decay, but partially revived under the Bourbon kings Philip V. and Charles III. Of the dialects, which differ little from each other, the following are the principal:— the dialect of Toledo; that of Leon and the Asturias; the Andalusian; the Murcian; the Galician, or Gallego; and the Transatlantic, spoken in America; where, next to the English, the Spanish language is spoken by the greatest number of inhabitants.

1342. *The Portuguese language,* spoken by the Portuguese in Portugal and the Azores, and, with some differences, by the Portuguese Jews settled in Hamburg, Amsterdam, the Tyrol, and other parts of Europe, Asia, and Africa; also by the descendants of the Portuguese in their Asiatic, African, Oceanic, and American colonies. The Portuguese is as rich and concise as its sister languages; it has borrowed some words from the Arabic and the French; to the French it seems indebted for the soft sound of *g*, and for the nasal syllables; it is sonorous, soft, and unimpeded by the aspirates and gutturals of the Spanish; but the frequency of hiatus, and of the modern nasal *ao*, equisonant with the French *am* or *an*, injure the harmony of the language. Its origin, like that of the Spanish, is dated in the eleventh century; and it had attained its maturity in the sixteenth. The Portuguese literature, which Camoens illustrated with one of the finest epics in existence, is as varied and rich as the Spanish, though less known. It revived in the memorable reign of Joseph. The language may be said to exhibit no differences of dialect; there are only varieties: those which differ most from the written language are, the Minho, Algarve, and Azores varieties in Europe; the Brazilian in America; those of Congo and Mozambique in Africa; and of Goa and Macao in Asia. Some, however, regard as a dialect of the Portuguese, the jargon called *lingua geral,* spoken along the east and west coasts of Africa, especially in the region called by the French *Senegambia,* and in Guinea; also along the coasts of Ceylon and the Indian peninsula. In Africa, as well as in Asia, it presents the phenomenon offered by the *lingua Franca* in the Mediterranean, and attests the power formerly held by the Portuguese in those regions.

1343. *The Valaque* or *Wallachian,* spoken by the Rumanje or Roumouni, better known as Valaques, a people apparently descended from the ancient Roman colonists settled in Dacia and Thrace, and the Slavonic and other nations dwelling there. Its literature is very meagre. Among its numerous dialects the more remarkable are the Roumounic or Valaque proper, spoken in Wallachia, Moldavia, and Bessarabia; the Hungarian Valaque, the Macedo-Valaque, and the Kutzo-Valaque, spoken in various sub-dialects, in several parts of European Turkey, south of the Danube.

Subsect. 4.

1344. *The family of the Germanic languages* next claims our notice. Without entering into the history of the Germanic nations, which rivals in importance that of the Græco-Latin, we may class these different idioms, according to M. Malte-Brun's theory, in four branches; the *Teutonic,* the *Saxon* or *Cimbric,* the *Scandinavian* or *Normanno-Gothic,* and the *Anglo-Britannic.*

1345. *The Teutonic* branch, which comprises the idioms of the various ancient nations and tribes recognised as German by the Roman historians and writers; as the Bastarnæ, the Suevi, the Marcomanni, the Hermonduri, and the Franci, presents the following idioms:—

1346. *The ancient high German* (*alt hoch Deutsch*), formerly spoken in different dialects throughout South Germany, Switzerland, Alsace, Hesse, Thuringia, Wetteravia, and a great part of the countries once subjected to the Franks. It has been extinct for several centuries: its three principal dialects were, the Francic, and the Alemannic, which are of contemporary origin, and contain the most ancient productions of that language, and the *Middle* High German, which succeeded them. The *Francic* or *Tudesque* was the language of the Franks: it was spoken at the court of the Merovingian and Carlovingian sovereigns, until Charles the Bold; after whose reign it gave way to the old French in France, but continued to be the court language in Germany until the times of the Hohenstaufen. The Middle High German, according to the erudite Dr. Grimm, is the language in which were composed the numerous works of the Suabian, Bavarian, Austrian, and Swiss writers, and several other authors in Middle and Lower Germany, from the eleventh to the fifteenth centuries. Its finest productions are dated in the period of the Hohenstaufen, from 1136 to 1254, called also the *Minnesänger,* the trouveurs and troubadours of Germany. The Nibelungen-lied, the finest epic in this language, is supposed by Winter to have been composed in 1290, by Conrad of Würtzburg.

1347. *The German,* called also *neu hoch Deutsch,* in which distinction must be made between the written and the spoken language. The latter is divided into a great number of very different dialects, subdivided into several sub-dialects and varieties. The written language is nowhere spoken by the people; it was formed at the period when Luther, rejecting the *Middle High* and the *Middle Low German,* adopted in preference the dialect of Misnia or Meissen, which had begun to be written much later. This Misnian dialect, ably employed

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by that great man and his numerous followers, soon became, as the language of books and of good society, common to all well-educated Germans, and also ranked as the learned language of the north and great part of the east of Europe. The literature of Germany, in regard to the quality of its productions, rivals those of France and England, and surpasses them in abundance. The German is the richest in words of any language in Europe; and this distinction it owes to the great number of its monosyllabic roots, with which it creates new terms *ad infinitum*, by derivation and composition. Its principal dialects are, the Swiss; the Rhenish; the Danubian, with its four sub-dialects, the Bavarian, the Tyrolean, Austrian, and Bohemo-Hungaro-Silesian; and the Franconian, or Mittel-Deutsch. To these, on the authority of Adelung, we may add two others, remarkable for the strange admixture of words totally foreign; these are, the *German Jewish;* and the Rothwelsh, spoken by the Jenisch or Jauner, who are generally reported to be thieves and vagabonds. It contains a multitude of terms and expressions quite different from German.

1348. *The Saxon*, or *Cimbric*, which comprises the idioms anciently spoken by the Cimbri; also by the Angli, who, with the Jutes and Saxons, afterwards made so great a figure in northern history; the Bructeri and Chauci, the Menapi, the Tungri, the Batavi, the Frisones, and other nations of less note, the ancient Saxons, and probably the Longobardi. This branch includes the four following idioms: —

1349. *The ancient low German* (*alt nieder Deutsch*), called also the ancient Saxon, after the people who spoke it. This language, now extinct, was current throughout Lower Germany and the Netherlands, except in the countries occupied by the Frisones and the Angli. About the commencement of the seventeenth century it wholly ceased to be written. Its principal dialects are, the *Saxon proper*, or idiom of Lower Saxony; the *Eastern Saxon*, spoken in various subdialects in Prussia, and the *Westphalian*, or Western Saxon.

1350. *The Frisic*, formerly spoken along the coast, from the Rhine to the Elbe, by the Frisones, and their allies the Chauci, the ancestors of the present Frisians, who are now far from numerous, and speak a language very different from the ancient Frisic, being mixed with other idioms. Its three principal dialects are, the Batavian Frisic, the Westphalian Frisic, and the North Frisic, or Cimbric.

1351. *The Netherlandish*, or *modern Batavian*, has two principal dialects, the *Flemish*, and the Hollandish, or, as it is commonly called in this country, the *Dutch*. The Flemish is spoken in the southern provinces of the kingdom of the Netherlands, excepting those where German and French are spoken. It was the written and oral language of the seventeen provinces once subject to the Counts of Burgundy. After their extinction, and under the Spanish rule, the Flemish idiom gradually gave way in the north to the Dutch, in the south to the French language. *The Dutch* is spoken in different varieties in the seven provinces of the North, and in some bordering districts of the South: with certain changes and admixtures it is also spoken, or at least understood, in the various settlements founded by the Dutch of Africa, Oceania, and America, and in several places in Ceylon, India, and the peninsula of Malacca; in South Africa; at the Cape of Hope; and on the American continent in Guiana. Some thousands of Dutch settlers also in New York, Pennsylvania, and New Jersey, retain their native language. It was only in the sixteenth century that this vulgar idiom of the province of Holland, in some degree polished and improved, became the national language of the Dutch. It is a mixture of ancient Francic, Frisic, and low German.

1352. *The Scandinavian*, or *Normanno-Gothic*, comprises the idioms formerly spoken by the Jutes, the Goths or Gutæ, and other less considerable nations of pure Gothic race. There are five different idioms in this branch: —

1353. *The Mœso-Gothic*, formerly spoken by the Goths established in Mœsia. According to Dr. Grimm, this is the richest of the Germanic languages in grammatical forms: it has not less than fifteen declensions, with 120 cases, and sixteen conjugations. The Mœso-Gothic has been dead many centuries. Its most ancient productions are, the famous *Codex Argenteus* of Upsal; and other fragments of the translation of the Bible, made between the years 360 and 380, by Bishop Ulphilas. The Mœso-Goths appear to have been the first to embrace Christianity of all those nations who overthrew the Roman empire. According to M. Bopp, the Mœso-Gothic resembles the Sanskrit more than the Sanskrit resembles the Bengalee.

1354. *The Normannic*, called by Dr. Grimm the *Alt-Nordish*. It is the language of the Edda, of the Voluspa, and other poems of uncertain date, and was generally spoken throughout Scandinavia in the eighth, ninth, and tenth centuries.

1355. *The Norwegian, ancient Norwegian, Norræna tunga*, not to be confounded with the modern Norwegian or Norsk, which is only a dialect of the Danish. Its principal dialects are, the Icelandic, the Norwegian proper, the Dalska, or Western Dalecarlian, the Jämtlandish, and the Norse, spoken in the Shetland Isles.

1356. *The Swedish* (*Svenski*), spoken by the Swedes throughout the greater part of the Swedish monarchy; also in the principal towns of Finland and the isle of Runoe, in the Russian empire. It has two principal dialects, the Swedish, and the modern Gothic, subdivided into several sub-dialects and varieties.

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1357. *The Danish*, spoken by the Danes in Denmark, and in their Asiatic, African, and American settlements; also by the higher classes in the Feröe Isles, and in Iceland. It has two principal dialects, each having several sub-dialects and varieties: the *Danish proper*, which includes the insular Danish, the ancient sub-dialect of Bornholm, the modern Norwegian, and the idiom of Scania. The *Jutlandish*, or modern Jutic, including the Normanno-Jutic, the Dano-Jutic, and the Anglo-Jutic.

1358. *The Anglo-Britannic* (not to be confounded with the *British*, which is *Welsh*,) comprises only two idioms.

1359. *The Anglo-Saxon*, formed by a mixture of the idioms spoken by the Angli, the Saxons, and the Jutes, who, invited by the Britons against the Picts, finally took possession of the country, where their language was successively preserved in three dialects, until the eighth century. During the invasions and temporary ascendency of the Danes, it was so modified as to become *Dano-Saxon*, or rather this may be called a dialect of the Anglo-Saxon. For several centuries this language has been totally dead; but from its literary importance it is studied in the English universities, and has of late attracted much attention.

1360. *The English*, spoken in England, in the east and south-east of Scotland, in part of Ireland and of Wales; in the Shetland Isles, in the isles of Jersey and Guernsey, in the British colonies of Asia, Oceania, Africa, and America. It is the national language of the United States of America. It is also cultivated and spoken by a great number of persons of different nations in all parts of the world on account of its literary, political, and commercial importance: the two latter considerations render it very current in the kingdom of Hanover, in the Ionian Isles and Malta, in Portugal and Brazil, and in the republic of Hayti. The English language is a mixture of the Anglo-Saxon and the Neustrian French or Franco-Norman, with some Celtic words, and a few of ancient British origin. It has imported largely from the Greek and Latin, as knowledge and culture advanced in the nation. If the number of words in the language be taken at thirty-eight thousand, those of Saxon or northern origin will be found limited to about eight thousand, the rest being principally Greek and Latin derivatives. Copious and energetic, the English language is the simplest and most monosyllabic of all European idioms; and it is that also of which the pronunciation differs most from the orthography. It did not become the language of the state until the reign of Edward III., since which time it has rapidly improved. Towards the commencement of the seventeenth century may be dated its regular developement, and in the beginning of the eighteenth it took its fixed and invariable form. The English language occupies one of the most eminent places in European literature; it is comparable with any of them in elegance, and perhaps, surpasses them all in energy. It is no less graceful than concise; its poetry is at once manly and harmonious; and, like that of the cognate languages of the north, is admirably adapted to depict the sublimities of nature and portray the stronger passions: as the language of political and parliamentary eloquence, *it is without a rival*. Of the number of its dialects it might be difficult to speak with precision: foreign philologers distinguish four as the principal: — the *English* proper; the *Northumbrian English*, called also Dano-English from the great number of Danish words retained in it, and spoken in various sub-dialects in Yorkshire, Lancashire, Cumberland, and Westmoreland: the *Scottish* or *Anglo-Scandinavian*, including the *Lowland Scottish*, with the Border language; and lastly the *Ultra-European English*, prevalent in all the English colonies and in the American United States. It has been observed that the English language is spoken by the *greatest number* of the inhabitants of the New World.

Subsect. 5.

1361. *The family of the Slavonic languages* is widely diffused. From the neighbourhood of Udina in Italy, from Sillian in the Tyrol, and from the centre of Germany to the remotest extremities of Europe and of Asia, and even to the north-west coast of America, are nations of Slavonic origin to be found; the tract of country over which they hold sway amounting to about a sixth part of the habitable surface of the globe. These nations exhibit almost all the varieties of the human race, both physical and moral, if not from the most exalted, at least to the most degraded.

1362. *The Slavonic* languages, so far as is at present known, may be regarded as forming three branches: — 1. The Russo-Illyrian. 2. The Bohemo-Polish. 3. The Wendo-Lithuanian.

1363. (1.) *The* Russo-Illyrian is so called from its chief people, the Russians, and from the general appellation Illyrian given to most of the nations who speak Servian or Croate. The languages comprised in this branch are: —

1364. *The Slavonic, Servian, Serbe*, or *Illyrian*, called also by some authors *Rutena*, spoken in different dialects by the more southern Slavi, generally denominated Illyrians. They dwell in the Austrian and Ottoman empires, excepting a small number, settled as colonists in south Russia. The dialects differing most from each other, and from the ancient Slavonic are, the *Servian* or *Serblin*, with various sub-dialects; the *Italiano-Slavonic*, spoken on the coast of Dalmatia; the *Uskoke*, spoken by the wandering tribes in Servia, Bosnia, Dalmatia, Croatia, Maritime Hungary, and Carniola. It is mixed with many Turkish words. Lastly, the *Bulgarian*, spoken in Bulgaria, in the Ottoman empire.

1365. *The Russian, Ruski, or modern Russian*, spoken throughout the Russian empire by the Russians, who are the ruling nation; also spoken in a great part of Gallicia and part of Hungary in the Austrian empire. Since the reign of the Czar Peter, when the Slavvenski was abandoned for the Ruski, it became the language of literature and of business throughout Russia. It has the following dialects, which differ little from each other, the *Veliki-Ruski*, or Russian of Great Russia; the *Malo-Ruski*, or Russian of Little Russia; the *Suzdalian*; the *Olonetzian*, and the Rusniac.

1366. *The Croate*, spoken by the Croates or Khorbates, who delight to call it the *Illyrian*.

1367. *The Wende* or *Winde*, spoken by several Slavonic nations subject to the Austrian empire, and known by different names in the countries they inhabit. In the Wende appear to be distinguished three principal dialects, the Carniolan, the Carinthian, and the Styrian.

1368. (2.) *The* Bohemo-Polish, named from its two principal nations, the Bohemians and the Poles. The languages belonging to this branch are, the *Bohemian* or *Chekhe*, including the Bohemian proper and certain idioms, bearing the character of principal dialects, and spoken in the Austrian empire.

1369. *The Bohemian proper*, or *Chekhe*, is spoken in several very different sub-dialects by the Chekhes or Czecks, better known by the appellation of Bohemians. The dialect of Prague is the most elegant and pure. The others are the *Slowac*, the *Hannac*, the *Straniac*, the *Passekarsk*, the *Sallashac*, and the *Szotac*.

1370. *The Polish* is spoken by the Poles, called, in the middle ages, Lechen or Liachy. They form more than three fourths of the population of the present Russian kingdom of Poland, almost the whole population of the republic of Cracow, and of the western part of Gallicia, in the empire of Austria. They also form three fourths of the population of the grand duchy of Posen, two thirds of that of West Prussia, and part of that of Silesia. The Polish is also the national language of the nobility and part of the commonalty in all the countries formerly belonging to the kingdom of Poland; and is spoken by thousands of colonists in Russia. Its principal dialects are those of Great Poland, of Little Poland, of West Prussia, of Mazovia, of Polish Silesia, of the Geralys or highlanders, belonging to part of the Crapacks in Gallicia. The preference given in Poland to the Latin, long retarded the progress of this national language.

1371. *The Serbe* or *Sorabe*, spoken until the fourteenth century by the Serbes or Sserske. It has two dialects; the Upper Lusatian, and the Lower Lusatian.

1372. (3.) *The* Wendo-Lithuanian, called also the *Germano-Slavonic*. This branch comprises the following idioms:—

1373. *The Wend*, spoken until the fourteenth century in different dialects throughout the north of Germany, from Holstein to Pomerania, by various nations, as the *Wagrians*, the *Polabes*, the *Wilzians*, the *Obotrites*, the *Rugians*, and the *Pomeranians*. Since the fourteenth century it has been extinct, with the exception of the *Linonish*, improperly called the *Polabish* dialect, which subsisted in some districts until the latter half of the eighteenth.

1374. *The Prucze* or *ancient Prussian*, formerly spoken in eleven very different dialects, by the tribes forming the powerful nation of the Pruczi, dwelling between the Vistula and the Pregel. It is almost entirely extinct.

1375. *The Lithuanian* or *Littauish*, formerly spoken by those powerful nations the Lithuanians and Kriwitschi, and now current only among the common people; as the higher classes speak Polish, with Russian or German, according to their different countries. Its principal dialects have been thus classed: — The *Lithuanian proper*, the *Samogitian*, the *Kriwitsh*, and the *Prusso-Lithuanian*.

1376. *The Lette, Lettwa, Lettonian*, or *Lettish*, spoken by the Letts or Lettons, forming the bulk of the population in the government of Mittau, a large part of that of Riga, a small portion of that of Witepsk in Russia, and of the province of East Prussia. It has five principal dialects, subdivided into a multitude of very different sub-dialects. The former, according to Mr. Watson, are, the *Lette proper*; the *Semgallian* or *Semgallish*; the *Letto-Livonian* or *Lieflandish*; the *Seelian*, spoken by the Seeles in Courland: the *Wende*, by the Wendes, in the north-east of that duchy, particularly in the neighbourhood of Windau. This language abounds with German phrases and expressions.

1377. *The Slavonic nations employ five different alphabets*:—1. The Cyrillian, invented by St. Cyril in 865, called also the Servian or Ruthenian. 2. The *Glagolitic, Slavonic, Krukowitza*, or *Divinca*, called also that of St. Jerome. 3. The Russian alphabet of the Czar Peter, which is the Cyrillian modified by that emperor: it has thirty-five letters, and is in use throughout the Russian empire. 4. The Sorabes, Bohemians, and Slavo-Silesians use the *German* alphabet or character. 5. The other Slavonic nations, as the Poles, Lithuanians, Lettes, and Wendes, use the *Latin* or *Roman* letters. To these five alphabets may be added the *Runic Wend*, the Greek alphabet, adopted, according to Karamsin, by those Slavi who, in the eighth century, settled in Peloponnesus; and, lastly, the *Bulgarian*, imitated from the Glagolitic, and used by the Bulgarians.

Subsect. 6.

1378. *The family of the Uralian languages*, also called the Finnish or Chudic, completes the ethnographic division of Europe.

1379. *From the north-west coast of Norway to the long chain of the Urals*, and beyond those mountains to near the Yeniseï in the centre of Siberia, in another direction from the Leitha to the Seret, and from the Krapacks to the Danube, nations of Uralian race live among other nations, and retain the manners, habits, and language of their forefathers. In marking the gradations among the people composing this family, we may consider the Hungarians and the Ostiaks as exhibiting the two extremes in a moral as well as physical respect, notwithstanding the great affinity of their respective languages.

1380. *The Uralian family includes four branches*, according to M. Klaproth; but some languages not included in them may be separately considered as a fifth.

1381. *The Finnish, or Germanised Finnish branch*, includes the four following languages:—

1382. (1.) The *Finnish proper*, or *Sumenkieli*, spoken by the Suomi, better known as the Fins or Finlanders. Its principal dialects are, the Finlandish, the Tawastian, the Carelian or Kyriala, the Olonetzian, and the Watailaiset.

1383. *The Esthonian* spoken by the Esthonians or Esthen, whose ancestors were formidable pirates, and who now form the most numerous part of the population of the government of Reval, and of the circles of Pernau and Dorpat in that of Riga. Its two principal dialects are that of Reval and that of Dorpat.

1384. *The Lapponian*, spoken by the Sames, better known as the Lappons or Laplanders, inhabiting the northern extremity of Europe, partly under the monarchy of the Swedes, and partly under the Russian empire. This language, which is said to have more affinity with the Hungarian than with the Finnish, has a great number of very different dialects, which have been classed under the *Lappo-Norwegian*, the *Lappo-Swedish* (western and eastern), the *Lappo-Russ*, spoken in the circle of Kola, in the government of Archangel. Through the beneficent care of the Swedish government, at the close of the last and the beginning of the present century, the Laplanders have been reclaimed from idolatry, and have begun to enjoy the blessings of Christianity and civilisation.

1385. *The Livonian*, spoken formerly by the *Lives* or *Liven*, who gradually abandoned this idiom for the Lettish, in consequence of which it is become nearly extinct.

1386. (2.) *The Wolgaic branch* includes the languages spoken along the Wolga and its tributaries. They have a strong admixture of Turkish, and may rank under two classes, the Cheremisse and the Morduine, including as dialects the Mokshau and the Ersan.

1387. (3.) *The Permian branch* includes two languages, the *Permian proper*, spoken by the Komi or Permians, and the Syrenes or Syranes; and the *Wotieque*, spoken by the Udi or Wotiaks scattered among the governments of Wiatka, Oremburg, and Kasan. They are all Christians, and, though exceedingly filthy, the most industrious people of Uralian race in the Russian empire, except the Fins and perhaps the Esthonians.

1388. (4.) *The Hungarian branch* includes the following languages:—

1389. *The Hungarian* or *Magyar*, spoken by the Magyars and Hungarians. They form about a third of the population of Hungary, and almost a fourth of that of Transylvania; several thousands also of this people are settled in the Boukowine in Gallicia, and about forty thousand in Moldavia, under the Turkish sway. The Hungarian, according to M. Czaplovicz, has four principal dialects:—1. The *Paloczen*. 2. The dialect of the *Majyars beyond the Danube*. 3. That of the *Magyars of the Theiss*; and 4. That of the *Szekler*, living in Transylvania, in the Boukowine, and in Moldavia. The Hungarian language is very harmonious; and is mixed with many foreign words, especially Slavonic, German, and Latin.

1390. *The Wogoule*, spoken by the Mansi or Manskum, more known as the Woguls, and called Wogoulitsbe by the Russians. They are almost all Christians, and live principally as hunters and fishermen, scattered over the government of Saratow, in the high valleys of the Ural, in that of Perm, and in that of Tobolsk, between Kourjan and Beresow. Klaproth distinguishes in it four dialects, that of Chiosow, those of Werchoturia, and Cherdin, and that of Beresow in the government of Tobolsk.

1391. *The Ostiak*, or *Obi-Ostiak*, which is not to be confounded with the Yeniseï family. The *As-jachs* or *Ostiaks* of the Obi, who speak this language, are mostly Christians; some are still idolaters. The principal dialects are those of *Beresow*, *Lumpokol*, *Wass-i-gun*, and *Narym*. Under the branch still uncertain are ranked the *Hunniac*, the *Awar*, the *Bulgarian*, and the *Chasar*.

SHETLAND ISLANDS
Yell I.
Unst
Fetlar I.
Whalsay I.
Foula
Bressay I.
Fair I.
ORKNEY ISLANDS
Mainland
Papay
Westray
Nth. Ronaldshay
Sanday
Hoy
Sth. Ronaldshay
Pentland Firth
Duncansby Hd.
C. Wrath
The Minch
Lewis
WESTERN ISLES OR HEBRIDES
St. Kilda
North Uist
Benbecula I.
South Uist
Barra
Mingalay
Rum
Egg
Coll I.
Tiree
Oransay
Islay
Rathlin
Malin Hd.
Tory I.
N. Arran
Tillen Hd.
Donegal B.
Achil I.
Galway B.
S. Arran I.
R. Shannon
Dingle
Kenmare R.
Mizen Hd.
Cork
Cork Har.
Carnsore Pt.
Wicklow
Dublin
Dundalk B.
Murray Firth
Kinnairds Hd.
Aberdeen
Arbroath
Firth of Forth
Berwick
Holy I.
Newcastle
R. Tees
Whitby
Flamborough Hd.
R. Humber
The Wash
Solway Firth
I. of Man
IRISH SEA
Anglesey
Cardigan B.
St. Brides B.
Milford Haven
BRISTOL CHANNEL
Lundy I.
ST. GEORGE'S CHANNEL
Lands End
Scilly Is.
Lizard Pt.
Start Pt.
Portland Bill
I. of Wight
ENGLISH CHANNEL
Harwich
London
Alderney
Guernsey
Sark
Jersey
St. Lo
Caen
Havre
Rouen
Dieppe
Evreux
St. Brieuc
FRANCE
ATLANTIC OCEAN
NORTH SEA
ENGLAND
SCOTLAND
IRELAND
WALES
10 20 40 60 80 100 120
English Miles
10
8
6
Longitude West 4 from Greenwich
2
0

Chap. II.

ENGLAND.

1392. *The British islands* may reasonably claim priority of notice in a general survey of Europe. Independently of their peculiar interest to us as natives, they derive a fair title to this distinction from their pre-eminence in arts, in arms, in all that constitutes the greatness and prosperity of a state. This insular empire, placed nearly in the north-western angle of Europe, commands peculiar advantages in its relations with that continent, no less for natural strength in war, than as an emporium of commerce in peace: on its southern side, it is almost in contact with France, Holland, and Germany, for ages the most enlightened and flourishing countries of the civilised world; on the east, a wide expanse of sea separates it from the bleak region of Scandinavia; on the west, it overlooks the Atlantic Ocean, whose limit in another hemisphere is the coast of America; while, in the extreme north, it may be

References to the Map of the British Islands.

ENGLAND.
1. Alnwick
2. Rothbury
3. Morpeth
4. Blythe
5. Newcastle
6. Hexham
7. Bellingham
8. Carlisle
9. Cockermouth
10. Egremont
11. Ravenglass
12. Ulverston
13. Kendal
14. Keswick
15. Penrith
16. Appleby
17. Aldstone
18. Darlington
19. Durham
20. Sunderland
21. Stockton
22. Stokesley
23. Guisborough
24. Whitby
25. Pickering
26. Thirsk
27. North Allerton
28. Hawes
29. Ripon
30. Kendal
31. Lancaster
32. Garstang
33. Poulton
34. Bradford
35. Skipton
36. Knaresborough
37. Leeds
38. York
39. New Malton
40. Billington
41. Scarborough
42. Great Driffield
43. Hornsea
44. Hedon
45. Kingston on Hull
46. Barton
47. Grimsby
48. Havendale
49. Saltfleet
50. Thedlethorpe
51. Boston
52. Alford
53. Horncastle
54. Lincoln
55. Gainsborough
56. Ashby
57. Doncaster
58. Sheffield
59. Pontefract
60. Manchester
61. Preston
62. Liverpool
63. Chester
64. Newcastle
65. Newport
66. Stafford
67. Burton
68. Derby
69. Ashbourn
70. Chesterfield
71. Mansfield
72. Alfreton
73. Nottingham
74. Melton Mowbray
75. Grantham
76. Newark
77. Sleaford
78. Spalding
79. Lynn Regis
80. Wells
81. Cromer
82. Yarmouth
83. Beccles
84. Harleston
85. Norwich
86. Reepham
87. East Dereham
88. Diss
89. Thetford
90. Ely
91. March
92. Peterborough
93. Oundle
94. Stamford
95. Harborough
96. Leicester
97. Coventry
98. Tamworth
99. Lichfield
100. Birmingham
101. Bridgenorth
102. Shrewsbury
103. Plynlimmon
104. Ludlow
105. Tenbury
106. Leominster
107. Bromford
108. Tewkesbury
109. Worcester
110. Alcester
111. Warwick
112. Evesham
113. Towcester
114. Northampton
115. Wellingborough
116. Thrapston
117. Huntingdon
118. Bedford
119. Cambridge
120. Mildenhall
121. Bury St. Edmund's
122. Framlingham
123. Aldborough
124. Ipswich
125. Sudbury
126. Harwich
127. Colchester
128. Coggeshall
129. Royston
130. Bishop's Stortford
131. Hertford
132. St. Albans
133. Aylesbury
134. Winslow
135. Buckingham
136. Woodstock
137. Burford
138. Gloucester
139. Hereford
140. Ross
141. Colford
142. Bristol
143. Melksham
144. Malmesbury
145. Cirencester
146. Swindon
147. Hungerford
148. Kennet
149. Abingdon
150. Oxford
151. Wallingford
152. Thame
153. Windsor
154. Uxbridge
155. Kingston
156. Croydon
157. Greenwich
158. London
159. Chelmsford
160. Maldon
161. Maidstone
162. Canterbury
163. Margate
164. Ramsgate
165. Dover
166. Rye
167. Hastings
168. Seaford
169. Battle
170. East Grinstead
171. Reigate
172. Horsham
173. Brighton
174. Arundel
175. Pulborough
176. Guildford
177. Godalming
178. Petworth
179. Chichester
180. Portsmouth
181. Southampton
182. Whitchurch
183. Andover
184. Salisbury
185. Lymington
186. Poole
187. Shaftesbury
188. Bath
189. Uxbridge
190. Wells
191. Glastonbury
192. Ilchester
193. Taunton
194. Porlock
195. South Barnstaple
196. Bideford
197. Torrington
198. Launceston
199. Bodmin
200. St. Agnes
201. Penzance
202. Falmouth
203. Tregony
204. Tavistock
205. Plymouth
206. Modbury
207. Dartmouth
208. Ashburton
209. Chumleigh
210. Tiverton
211. Exeter
212. Sidmouth
213. Honiton
214. Lyme Regis
215. Dorchester
216. Weymouth.

Rivers.
a Tyne
b Tees
c Derwent
d Swale
e Wharfe
f Aire
g Don
h Trent
i Ouse
j Thames
k Avon
l Severn
m Dee.

WALES.
1. Flint
2. St. Asaph
3. Denbigh
4. Aberconway
5. Bangor
6. Beaumaris
7. Holyhead
8. Caernarvon
9. Llan Haiarn
10. St. Mary's
11. Harlech
12. Bala
13. Corwen
14. Montgomery
15. Dinasmowd
16. Towyn
17. Aberystwith
18. Rhaiader
19. Bualt
20. Tregarron
21. Llanbear
22. Cardigan
23. Newport
24. Fiscard
25. St. David's
26. Pembroke
27. Caermarthen
28. Cwyrgyg
29. Brecon
30. Monmouth
31. Uske
32. Chepstow
33. Newport
34. Cardiff
35. Landaff
36. Llantrissent
37. Swansea.

Rivers.
a Towey
b Tievy
c Dee.

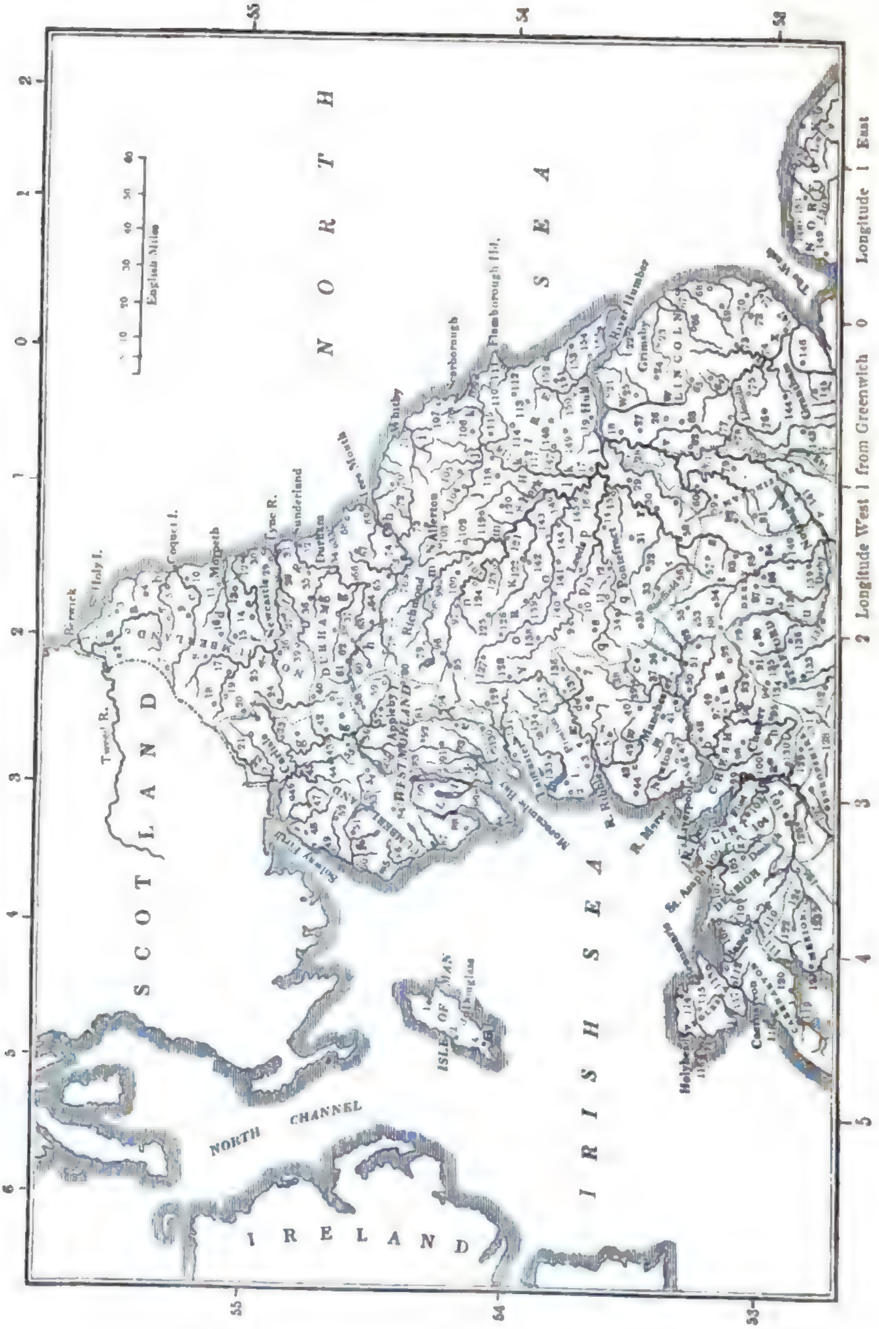
SCOTLAND.
1. Durness
2. Tongue
3. Reay
4. Thurso
5. Wick
6. Dunbeath
7. Helmsdale
8. Dornoch
9. Tain
10. Portinleik
11. Ullapool
12. Poolew
13. Torridon
14. Loch Carron
15. Dingwall
16. Beauly
17. Inverness
18. Grantown
19. Nairn
20. Elgin
21. Inveraven
22. Cullen
23. Banff
24. Huntley
25. Turreff
26. Fraserburgh
27. Peterhead
28. Newburgh
29. Aberdeen
30. Stonehaven
31. Bervie
32. Tulloch
33. Braemar
34. Fort Augustus
35. Glenelg
36. Arasaig
37. Appin
38. Fort William
39. Perth
40. Dunkeld
41. Blair Athol
42. Brechin
43. Montrose
44. Forfar
45. Arbroath
46. Dundee
47. St. Andrews
48. Anstruther
49. Kinross
50. Inverkeithing
51. Clackmannan
52. Muthill
53. Stirling
54. Inverary
55. Oban
56. Dumbarton
57. Greenock
58. Paisley
59. Irvine
60. Hamilton
61. Glasgow
62. Falkirk
63. Linlithgow
64. Whitburn
65. Peebles
66. Edinburgh
67. Haddington
68. North Berwick
69. Dunbar
70. Berwick
71. Kelso
72. Jedburgh
73. Hawick
74. Ashkirk
75. Biggar
76. Moffat
77. Sanquhar
78. Lanark
79. Kilmarnock
80. Ayr
81. Girvan
82. Ballintrae
83. Stranraer
84. Port Patrick
85. Wigton
86. Kircudbright
87. New Galloway
88. Monthive
89. Dumfries
90. Langholm
91. Annan.

Rivers.
a Spey
b Don
c Dee
d Tay
e Clyde
f Ken
g Nith
h Annan
i Tweed.

IRELAND.
1. Belfast
2. Antrim
3. Larne
4. Glenarm
5. Ballycastle
6. Ballymoney
7. Coleraine
8. Tubbermore
9. Strabane
10. Londonderry
11. White Castle
12. Raphoe
13. Lifford
14. Letterkenny
15. Killybegs
16. Donegal
17. Ballybofy
18. Omagh
19. Pomeroy
20. Clogher
21. Dungannon
22. Armagh
23. Lurgan
24. Donaghadee
25. Portaferry
26. Downpatrick
27. Strevoy
28. Newry
29. Dundalk
30. Monaghan
31. Cavan
32. Callahill
33. Enniskillen
34. Churchill
35. Sligo
36. Drumehra
37. Ballymore
38. Coloony
39. Ballina
40. Killala
41. Ballyglass
42. Claggan
43. Newport
44. Westport
45. Kumor
46. Ballinrobe
47. Castle Barr
48. Kilcolman
49. Tuam
50. Elphin
51. Roscommon
52. Leitrim
53. Longford
54. Moynalty
55. Carrickmacross
56. Dunleer
57. Drogheda
58. Balbriggan
59. Dublin
60. Screen
61. Trim
62. Maynooth
63. Naas
64. Tullamore
65. Mullingar
66. Athlone
67. Eyrecourt
68. Ballyforan
69. Newton Bellew
70. Loughrea
71. Oranmore
72. Oughtera
73. Galway
74. Gort
75. Innistymon
76. Kilrush
77. Clare
78. Ennis
79. Limerick
80. Portumna
81. Nenagh
82. Killaloe
83. Thurles
84. Roscrea
85. Durrow
86. Ath
87. Kildare
88. Carlow
89. Tullow
90. Baltinglass
91. Blessington
92. Togher
93. Wicklow
94. Gorey
95. Ballycanoe
96. Enniscorthy
97. Wexford
98. Fethard
99. Waterford
100. Thomas Town
101. Kilkenny
102. Carrick on Suire
103. Clonmel
104. Ballyporeen
105. Tipperary
106. Killmallock
107. Askeyton
108. Ballylongford
109. Tralee
110. Castle Ford
111. Killarney
112. Kenmare
113. Castletown
114. Bantry
115. Castletown
116. Kinsale
117. Cork
118. Killady
119. Tuchgeels
120. Mallow
121. Rathcormuck
122. Kildorery
123. Lismore
124. Youghall
125. Dungarvan
126. Tramore.

Rivers.
a Ban
b Carlingford
c Boyne
d Barrow
e Nore
f Suire
g Blackwater
h Shannon
i Suck

Fig. 105.


English Miles
N O R T H S E A
S C O T L A N D
I R I S H S E A
I R E L A N D
NORTH CHANNEL
ISLE OF MAN
Berwick
Holy I.
Coquet I.
Tweed R.
Morpeth
Tyne R.
Newcastle
Sunderland
Durham
DURHAM
Tees Mouth
Whitby
Scarborough
Flamborough Hd.
River Humber
Grimsby
LINCOLN
Hull
Richmond
Allerton
Appleby
WESTMORLAND
CUMBERLAND
Carlisle
Solway Firth
Morecambe Bay
R. Ribble
R. Mersey
Liverpool
Leeds
Pontefract
The Wash
NORFOLK
Holyhead
Caernarvon
Longitude West 1 from Greenwich
Longitude 1 East
55
54
53

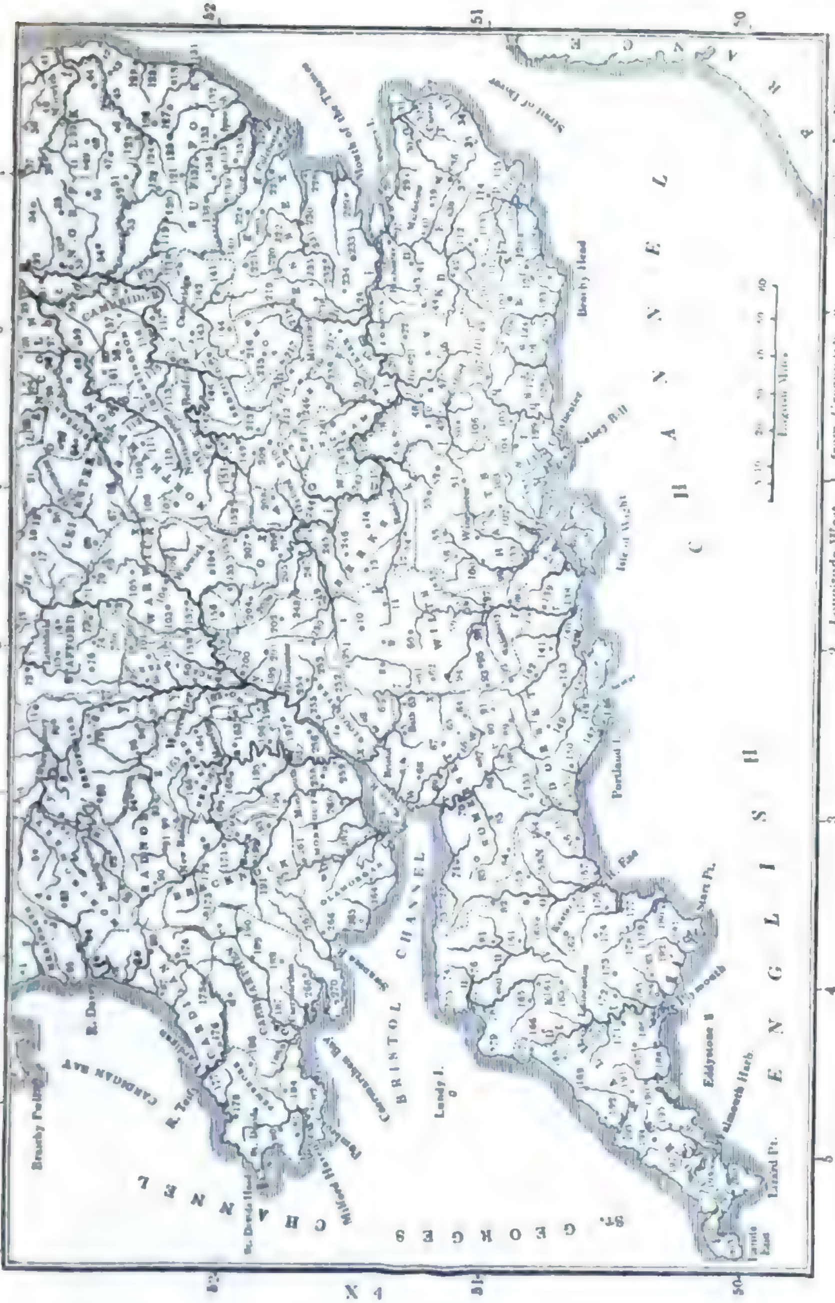


Fig. 106. MAP OF ENGLAND—SOUTH.

almost said to face the unexplored expanse of the Polar Sea. Exclusive of the northern insular appendages, it may be considered as situated between the fiftieth and fifty-ninth degrees of north latitude, and between the second degree of east and the tenth of west longitude. It is geographically divided into two islands of unequal magnitude, Great Britain and Ireland; the latter being inferior to the sister isle in length by more than half, though nearly equal in average breadth. Britain, again, is divided into two unequal parts: England, which, including Wales, contains 57,960 British square miles; and Scotland, which contains 30,500; and the three, though now united into one kingdom, under one legislature, respectively exhibit peculiarities which characterise them as distinct countries. It will, therefore, be requisite to describe each separately, commencing with England, which cannot by the strongest national partialities be denied to be foremost in wealth, population, and power. Being also the seat of empire and legislation, the chapter which treats of England will afford the proper place for many details, particularly of a political nature, which are alike applicable to her with the two sister countries.

SECT. I. *General Outline and Aspect.*

1393. *England is bounded* on the south by the English Channel, interposed between its coast and that of France; on the east by the German Sea, on the north by Scotland, from which it is separated by the Tweed, the Cheviot hills, and the Frith of Solway; on the west by the Irish Sea and St. George's Channel: the promontory of the Land's-End, forming its south-western extremity, faces the vast expanse of the Atlantic.

1394. *The greatest dimension of England* is from south to north, between the Lizard Point, 49° 58′ N., and Berwick on Tweed, 55° 45′ N.; making five degrees and three quarters, or four hundred miles, in length. The points of extreme breadth are the Land's-End (*fig.* 104.), in 5° 41′ W., and Lowestoffe, in 1° 44′ E., forming a space which may be estimated in this latitude at 280 miles. There is no point, however, where a line of this extent can be carried across the island, and the northern part does not on an average exceed one hundred miles in breadth. The area, as already stated, in a late parliamentary report, is computed at 57,960 square miles.

References to the Map of England. — North Part.

NORTH SERIES.
1. Berwick
2. Meldrum
3. Belford
4. N. Charlton
5. Alnwick
Whittingham
7. Uswayford
8. Elsdon
9. Rothbury
10. Warkworth
11. Morpeth
12. Blythe
13. Clifton
14. Stamfordham
15. Kirk Harle
16. Harlington
17. Bellingham
18. Buttershaugh
19. Shillburn
20. Kennel
21. Bewcastle
22. Longtown
23. Brampton
24. Haltwhistle
25. Simonburn
26. Hexham
27. Hickley
28. Newcastle
29. North Shields
30. Tynemouth
31. South Shields
32. Sunderland
33. Shotton
34. Durham
35. Chester-le-Street
36. Lanchester
37. Wolsingham
38. Stanhope
39. Acton
40. Aldstone
41. Crossgill
42. Kirk Oswald
43. Lasonby
44. Hutton
45. Carlisle
46. Orton
47. Wigton
48. Abbeyholme
49. Maryport
50. Workington
51. Cockermouth
52. Ireby
53. Keswick
54. Matterdale
55. Penrith
56. Clifton
57. Appleby
58. Milburn
59. Brough
60. Stackholm
61. Middleton
62. Eggleston
63. Barnard Castle
64. Staindrop
65. West Auckland
66. Bishop Auckland
67. Sedgefield
68. Hartlepool
69. Seaton Carow
70. Guisbrough
71. Whitby
72. Stokesley
73. Raunton
74. Yarm
75. Darlington
76. Croft
77. Rokeby
78. Bowes
79. Reeth
80. Kirkby Stephen
81. Orton
82. Mardale
83. Ambleside
84. Seathwaite
85. Whitehaven
86. Egremont
87. Ravenglass
88. Whitbeck
89. Ulverston
90. Hawkshead
91. Kendal
92. Fawcett
93. Millthorpe
94. Sedbergh
95. Hawes
96. Askrigg
97. Middleham
98. Richmond
99. Catterick
100. Bedale
101. Burneston
102. Thirsk
103. North Allerton
104. Helmsley
105. Kirby Moorside
106. Snainton
107. Cloughton
108. Scarborough
109. Filey
110. Hunmanby
111. Bridlington
112. Kilham
113. Driffield
114. Sledmere
115. Wintringham
116. New Malton
117. Garraby
118 Stillenham
119. Coxwold
120. Easingwold
121. Aldborough
122. Knaresborough
123. Ripon
124. Masham
125. Whernside
126. Grassington
127. Arncliffe
128. Settle
129. Ingleton
130. Kirkby Lonsdale
131. Hornby
132. Lancaster
133. Garstang
134. Slaidburn
135. Clitheroe
136. Colne
137. Paythorne
138. Skipton
139. Thurcross
140. Otley
141. Harewood
142. Ripley
143. Wetherby
144. Tadcaster
145. Cawood
146. York
147. Pocklington
148. Middleton
149. Market Weighton
150. Beverley
151. Brandsburton
152. Hornsea
153. Aldborough
154. Hedon
155. Pattrington.

SOUTH SERIES.
1. Poulton
2. Blackpool
3. Kirkham
4. Preston
5. Chorley
6. Blackburn
7. Burnley
8. Halifax
9. Keighley
10. Bradford
11. Dewsbury
12. Wakefield
13. Leeds
14. Pontefract
15. Snaith
16. Selby
17. Howden
18. Burton
19. South Cove
20. Hull
21. Barton
22. Grimsby
23. Ravendale
24. Caistor
25. Glanford Bridge
26. Kirton
27. Brumby
28. Crowle
29. Thorne
30. Doncaster
31. Budsworth
32. Barnesley
33. Penistone
34. Huddersfield
35. Meltham
36. Ashton-under-Line
37. Manchester
38. Rochdale
39. Bury
40. Bolton
41. Leigh
42. Wigan
43. Ormskirk
44. Formby
45. Liverpool
46. Prescot
47. Newton
48. Warrington
49. Knutsford
50. Altringham
51. Stockport
52. Disley
53. Chapel in the Frith
54. Tideswell
55. Castleton
56. Sheffield
57. Dronfield
58. Rotherham
59. Worksop
60. Blyth
61. Retford
62. Gainsborough
63. Willoughton
64. Wragby
65. Market Rasen
66. Louth
67. Saltfleet
68. Sutton
69. Alford
70. Burgh
71. Wainfleet
72. Spilsby
73. Horncastle
74. Tattershall
75. Dunston
76. Navenby
77. Lincoln
78. Thorney
79. Tuxford
80. Newark
81. Mansfield
82. Bolsover
83. Chesterfield
84. Alfreton
85. Matlock
86. Wirksworth
87. Winster
88. Buxton
89. Lognor
90. Leeke
91. Horton
92. Macclesfield
93. Congleton
94. Talk
95. Nantwich
96. Middlewich
97. Northwich
98. Tarporley
99. Chester
100. Holt
101. Wrexham
102. Mold
103. Flint
104. Ruthin
105. Denbigh
106. St. Asaph
107. Abergeley
108. Aberconway
109. Llanrwst
110. Pentre Voelas
111. Tremadoc
112. Bangor
113. Beaumaris
114. Amlwch
115. Llanerchymedd
116. Holyhead
117. Caernarvon
118. Bwlch Mawr
119. Pwllheli
120. Crickieth
121. Harlech
122. Arrennig
123. Llanuwch-Uwyn
124. Bala
125. Corwen
126. Llangollen
127. Ellesmere
128. Wem
129. Whitchurch
130. Malpas
131. Drayton
132. Eccleshall
133. Stone
134. Newcastle-under-Line
135. Burslem
136. Cheadle
137. Uttoxeter
138. Ashborne
139. Derby
140. Belper
141. Nottingham
142. Bottesford
143. Grantham
144. Sleaford
145. Folkingham
146. Donnington
147. Boston
148. Burnham Market
149. Castle Rising
150. Fakenham
151. New Walsingham
152. Holt
153. Cromer
154. N. Walsham.

ISLE OF MAN.
1. Ramsey
2. Peel
3. Douglas
4. Castletown.

Rivers.
a Till
b Aln
c Coquet
d Wensbeck
e Blyth
f Tyne
g Wear
h Tees
i Esk
j Rye
k Derwent
l Ouse
m Swale
n Ure
o Wharf
p Air
q Calder
r Don
s Rother
t Derwent
u Dove
v Trent
w Ankholm
x Witham
y Conway
z Clwyd
a* Dee
b* Weaver
c* Mersey
d* Ribble
e* Lune
f* Derwent
g* Eden.

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LAND'S-END.

1395. *The surface of England* is of a diversified character; the eastern districts are in general level, and there are several directions in which hundreds of miles may be travelled without seeing a hill. Along the whole western side of the island are large tracts, not only hilly, but sometimes rising even to mountain grandeur. Such are the counties of Cumberland and Westmoreland, the bleak ridge of Ingleborough, extending like a spine through the north of England: of the same character are Derbyshire, the whole principality of Wales, and a great part of the counties of Devon and Cornwall. These tracts exhibit

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References to the Map of England.—South Part.

NORTH SERIES.
1. Tallyhont
2. Dolgelly
3. Dinasmowddy
4. Hendre
5. Llanfyllin
6. Pool
7. Llanfair
8. Shrewsbury
9. Oswestry
10. Wellington
11. Newport
12. Stafford
13. Cannock
14. Lichfield
15. Abbot's Bromley
16. Burton
17. Ashby de la Zouch
18. Kedgworth
19. Loughborough
20. Mount Sorrel
21. Melton Mowbray
22. Oakham
23. Corby
24. Bourn
25. Stamford
26. Market Deeping
27. Crowland
28. Spalding
29. Holbeach
30. Wisbeach
31. Islington
32. Lynn Regis
33. Narborough
34. Litcham
35. Swaffham
36. East Deerham
37. Foulsham
38. Aylsham
39. Norwich
40. Wroxham
41. Yarmouth
42. Lowestoft
43. Beccles
44. Loddon
45. Bungay
46. Harleston
47. New Buckingham
48. Wymondham
49. Hingham
50. Watton
51. East Harling
52. Thetford
53. Brandon
54. Methwold
55. Downham
56. Ely
57. March
58. Ramsey
59. Thorney
60. Peterborough
61. Norman Cross
62. Oundle
63. Rockingham
64. Uppingham
65. Leicester
66. Market Harborough
67. Lutterworth
68. Hinckley
69. Nuneaton
70. Atherstone
71. Tamworth
72. Coleshill
73. Sutton Coldfield
74. Walsall
75. Birmingham
76. Wolverhampton
77. Bridgenorth
78. Broseley
79. Much Wenlock
80. Bishop's Castle
81. Montgomery
82. Newtown
83. Llanfair
84. Machynlleth
85. Towyn
86. Aberystwith
87. Aberllowyn
88. Sputty Ystwith
89. Llanidloes
90. Rhayadergwy
91. Llandegley
92. New Radnor
93. Knighton
94. Clunn
95. Ludlow
96. Cleobury Mortimer
97. Bewdley
98. Kidderminster
99. Stourbridge
100. Harlesowen
101. Bromsgrove
102. Droitwich
103. Henley in Arden
104. Warwick
105. Coventry
106. Leamington
107. Daventry
108. Rugby
109. Rothwell
110. Northampton
111. Kettering
112. Thrapston
113. Kimbolton
114. St. Neot's
115. Huntingdon
116. St. Ives
117. Willingham
118. Newmarket
119. Little Barton
120. Bury St. Edmond's
121. Stow Market
122. Ixworth
123. Diss
124. Eye
125. Debenham
126. Wingfield
127. Framlingham
128. Southwold
129. Dunwich
130. Saxmundham
131. Aldborough
132. Woodbridge
133. Ipswich
134. Hadleigh
135. Whatfield
136. Bildeston
137. Needham
138. Lavenham
139. Sudbury
140. Haverhill
141. Linton
142. Cambridge
143. Caxton
144. Royston
145. Potton
146. Bedford
147. Olney
148. Newport Pagnel
149. Fenny Stratford
150. Towcester
151. Buckingham
152. Brackley
153. Bandbury
154. Kineton
155. Shipston upon Stour
156. Campden
157. Stratford on Avon
158. Alcester
159. Evesham
160. Worcester
161. Pershore
162. Upton
163. Ledbury
164. Bromyard
165. Leominster
166. Weobly
167. Hereford
168. Thruxton
169. Hay
170. Talgarth
171. Llyswen
172. Builth
173. Landulas
174. Tregaron
175. Llampeter
176. New Castle Emlyn
177. Cardigan
178. Newport
179. St. David's
180. Haverford West
181. Milford
182. Pembroke
183. Tenby
184. Narberth
185. St. Clear's
186. Lanvernach
187. Caermarthen
188. Landebie
189. Langadoc
190. Landovery
191. Trecastle
192. Brecon
193. Crickhowell
194. Abergavenny
195. St. Weonard's
196. Ross
197. Mitcheldean
198. Newent
199. Gloucester
200. Tewkesbury
201. Cheltenham
202. Northleach
203. Stow in the Wold
204. Moreton in the Marsh
205. Charbury
206. Woodstock
207. Hedington
208. Bicester
209. Winslow
210. Aylesbury
211. Wendover
212. Ivinghoe
213. Leighton Buzzard
214. Luton
215. Stevenage
216. Baldock
217. Hatfield Bishop
218. Hertford
219. Bishop's Stortford
220. Dunmow
221. Thaxted
222. Braintree
223. Coggeshall
224. Halstead
225. Colchester
226. Harwich
227. St. Osyth
228. Bradwell
229. Rochford
230. Maldon
231. Chelmsford
232. Ingatestone
233. Horndon
234. Romford
235. Chipping Ongar
236. Epping
237. Enfield
238. St. Alban's
239. Watford
240. Berkhampstead
241. Amersham
242. Marlow
243. Wallingford
244. Oxford
245. Abingdon
246. Wantage
247. Whitney
248. Burford
249. Lechlade
250. Cirencester
251. Malmesbury
252. Wotton under Edge
253. Minchinhampton
254. Stroud
255. Berkeley
256. Blackney
257. Monmouth
258. Usk
259. Chepstow
260. Newport
261. Merthyr Tydvil
262. Llantrissent
263. Llandaff
264. Cowbridge
265. Pyle
266. Neath
267. Abernant
268. Pontardylais
269. Kidwelly
270. Penrice.

SOUTH SERIES.
1. Thornbury
2. Chipping Sodbury
3. Bristol
4. Wrington
5. Pensford
6. Marshfield
7. Bradford
8. Chippenham
9. Calne
10. Wotton Basset
11. Marlborough
12. Hungerford
13. Lambourne
14. E. Ilsley
15. Reading
16. Wokingham
17. Maidenhead
18. Windsor
19. Uxbridge
20. Kingston
21. Ewell
22. Croydon
23. London
24. Woolwich
25. Gravesend
26. Rochester
27. Chatham
28. Sheerness
29. Faversham
30. Canterbury
31. Margate
32. Sandwich
33. Deal
34. Dover
35. Hythe
36. Wye
37. Ashford
38. Smarden
39. Lenham
40. Maidstone
41. Wrotham
42. Tunbridge
43. Sevenoaks
44. Westerham
45. E. Grinstead
46. Reigate
47. Dorking
48. Ripley
49. Guildford
50. Godalming
51. Alton
52. Odiham
53. Basingstoke
54. Newbury
55. Whitchurch
56. Andover
57. Ludgershall
58. Amesbury
59. Stonehenge
60. Devizes
61. Trowbridge
62. Westbury
63. Bath
64. Bruton
65. Shepton Mallet
66. Glastonbury
67. Wells
68. Axbridge
69. Blackford
70. Bridgewater
71. Whatchet
72. Minehead
73. Porlock
74. Combe Martin
75. Ilfracombe
76. Barnstaple
77. Appledore
78. Bideford
79. Hartland
80. Torrington
81. South Molton
82. Dulverton
83. Wiveliscombe
84. Wellington
85. Taunton
86. Longport
87. Somerton
88. Ilchester
89. Milborn Port
90. Castle Cary
91. Wincaunton
92. Shaftesbury
93. Mere
94. Warminster
95. Hindon
96. Wilton
97. Salisbury
98. Downton
99. Romsey
100. Stockbridge
101. Winchester
102. Bramdean
103. Petersfield
104. Midhurst
105. Petworth
106. Haslemere
107. Horsham
108. Cuckfield
109. Uckfield
110. Tunbridge Wells
111. Wadhurst
112. Goudhurst
113. Cranbrooke
114. Appledore
115. New Romney
116. Lydd
117. Rye
118. Winchelsea
119. Hastings
120. Battle
121. Hailsham
122. E. Bourne
123. Seaford
124. Lewes
125. Brighton
126. N. Shoreham
127. Steyning
128. Worthing
129. Arundel
130. Chichester
131. Havant
132. Fareham
133. Southampton
134. Newtown
135. Newport
136. Yarmouth
137. Lymington
138. Christchurch
139. Kingwood
140. Poole
141. Wimborn Minster
142. Blandford
143. Beer Regis
144. Wareham
145. Corfe Castle
146. Melcombe Regis
147. Weymouth
148. Dorchester
149. Cerne Abbas
150. Bridport
151. Lyme Regis
152. Axminster
153. Chard
154. Honiton
155. Colyton
156. Sidmouth
157. Exmouth
158. Silverton
159. Collumpton
160. Crediton
161. Chumleigh
162. Crockernwell
163. Oakhampton
164. Hatherleigh
165. Sheepwash
166. Holsworthy
167. Stratton
168. Jacobstow
169. Camelford
170. Launceston
171. Callington
172. Tavistock
173. Stanford Spiney
174. Moreton Hampden
175. Exeter
176. Chudleigh
177. Newton Bushel
178. Ashburton
179. Totness
180. Dartmouth
181. Kingsbridge
182. Modbury
183. Plympton Earl
184. Plymouth
185. Saltash
186. St. Germans
187. Liskeard
188. Looe
189. Fowey
190. Lostwithiel
191. Bodmin
192. St. Minver
193. Padstow
194. St. Michael
195. Grampound
196. Tregony
197. Truro
198. Redruth
199. Penryn
200. Helston
201. Marazion
202. St. Ives
203. Penzance.

Rivers.
a Welland
b Nen
c Old Bedford
d Old Ouse
e Ouse
f Wensum
g Coln
h Lea
i Thames
j Charwell
k Kennet
l Wey
m Mole
n Medway
o Stour
p Rother
q Arun
r Avon
s Exe
t Tamer
u Taw
v Perrot
w Axe
x Avon
y Severn
z Teme
a* Wye
b* Taaf
c* Towey
d* Teifi
e* Ystwith
f* Dovey.

all the varieties of mountain scenery: in Cumberland, encircling little plains filled with beautiful lakes; in Wales, enclosing narrow valleys through which the rapid mountain stream dashes; in Derbyshire, presenting rocky scenery in every picturesque and fantastic shape; while in Devonshire low broad steeps overshadow wide and beautiful vales.

1396. *The rivers of England* cannot be expected to rival in magnitude those mighty streams which roll through continents, and mark the boundaries of empires. As, with one exception, the most important of them traverse the breath of the kingdom, rising among the western hills, and flowing toward the German Ocean, they do not attain that length of course which the extent of its territory in another direction would have admitted. The Thames, the pride of England, would almost be disdained by the Danube as a tributary. Though thus deficient, however, in magnitude, the rivers of England are numerous, commodious, and valuable; flowing through broad vales and wide-spreading plains.

1397. *The Thames,* though not the longest, deserves to be ranked as the first of British rivers. It originates from a number of rivulets on the borders of Wilts and Gloucestershire, which, uniting at Cricklade, form a stream which is about nine feet broad in summer, and is called the Thame. At Lechdale, being joined by the Lech and the Coln, it becomes navigable for barges of ninety tons. Near the classic haunts of Oxford it receives the Charwell and the Isis, assuming on its junction with the latter river the compound name of Tamesis, which has been abbreviated into Thames. After a course almost southward to Reading, it winds northward through the wooded vale of Henley and Maidenhead, and thence by the castellated heights of Windsor. Its onward course to London is by Chertsey, Hampton, Twickenham, and Richmond, among the magnificent woods and palaces of this paradise of England. Near Teddington its current is slightly acted upon by the extreme ebb and flow of the tide, which rises higher in this than in any other river of Europe. Before reaching London, it attains a magnitude corresponding with the capital of the empire, which it divides into two unequal parts, having on its northern bank the cities of London and Westminster, and on its southern the borough of Southwark. Below London bridge it is navigable for vessels of large burthen; its ample channel, and the spacious adjoining docks connected with it, are there constantly filled with forests of masts, and seem to contain, as it were, the wealth of the world. It winds its way to the ocean through a country by no means remarkable for picturesque scenery, and presenting few objects of interest, except the vast naval establishments situated on the south bank of the river. Woolwich claims particular attention, not only on account of the royal dockyard, and the national depôt of artillery, but for its military academy, which ranks as the first in the empire. The great estuary of the Medway opening into the river from Kent affords commodious sites for the naval stations of Chatham and Sheerness. The entire course of the Thames is about 220 miles.

1398. *The Trent,* though superior in length, cannot rival the imperial magnificence of the Thames; yet the national advantages derived from it are of a very high order. Together with its tributary, the northern Ouse, it traverses the whole midland territory of England, and several of its principal manufacturing districts, to which it affords a communication with the eastern, and by canals with the western, ocean. It springs from several sources among the low Staffordshire hills, and does not attain any considerable magnitude till it reaches the thriving town of Burton, where it becomes navigable for vessels of moderate size. For some extent it rolls its silver stream through fertile meadows, receiving the Dove and Derwent; which, after dashing through the dark and rocky recesses of Derbyshire, have already subsided into peaceful streams. As the Trent passes Nottingham, and flows toward Newark, it penetrates a range of bolder scenery, through banks overhung with high swelling knolls and green feathered cliffs. At Gainsborough it becomes navigable for steam-boats, and other vessels of large burthen. After a farther course of about thirty miles, it flows into the Humber, already rendered a broad estuary by the Ouse, which has collected the principal streams of Yorkshire. The Ouse, formed originally by the confluence of the Aire and the Swale from the uplands of the North Riding, is subsequently augmented by the Wharfe. The Aire, with its tributaries the Calder and Don, enable it to communicate with all the great manufacturing towns of the West Riding, and the confluence of the Derwent from the East Riding renders it equal in magnitude to the Thames. The Ouse, with its branches, forms one of the most useful and least beautiful of English rivers. It winds a sluggish course through manufacturing districts and rich arable fields without any diversity of scenery. The Humber, formed by the junction of the Trent and Ouse, resembles an arm of the sea; and its trade contributes mainly to the commercial prosperity of Hull.

1399. *The Severn* is not inferior in magnitude to any of the rivers already named, and is the only great stream which runs from north to south for a considerable part of its course; too far to the westward, however, to attain the length which that direction might have given. Rising in Wales, near the foot of Plinlimmon, it flows first north, and then east through the vales of Montgomery; receives another mountain stream, the Vyrnwy, and, after winding round the ancient town of Shrewsbury, directs its course to the southward, through some of the richest and most beautiful plains of England, passing by the fine and ancient cities of Worcester, Tewkesbury, and Gloucester. In commercial importance it also ranks high, since it flows through Colebrook Dale, and other principal seats of the iron trade; while the tracts on its lower course have for ages been distinguished for the manufacture of fine woollens. Its navigation is not so easy, nor so free from obstruction, as that of the rivers already mentioned; but much has been done to obviate these disadvantages, and to connect the Severn by canals with the other great rivers. In approaching Bristol, it receives the Wye, which, rising in Wales from a source near its own, flows in a contrary direction through scenery which renders it the most picturesque of English rivers. The Severn then expands into the grand estuary of the Bristol Channel, equally important as a geographical feature, and as the haven of a commerce once second only to that of the metropolis, but now surpassed by that of the northern emporium, Liverpool.

1400. *The other rivers of England* are to be regarded as little more than local features. We cannot omit to mention the Eden, the beautiful river of Cumberland, which forms the Solway; the Mersey of Lancashire, which, with its tributary the Irwell, is important, not for its magnitude, but for the mass of commodities which it conveys from the great manufacturing districts to Liverpool, now the second commercial port in the kingdom; the southern Ouse, which, after a considerable course through the counties of Buckingham, Bedford, and Cambridge, combines with the Witham of Lincolnshire in forming that broad, shallow, marshy estuary called the Wash, through which is exported a considerable quantity of grain from the agricultural districts. Nor must we overlook the parallel streams of the Tyne and the Tees in the north of England, which rise in a rude mountain district; but, on reaching the plain, acquire a considerable volume of waters, and become the channels of extensive trade; the Tyne, in particular, which carries down the product of the vast coal mines of Newcastle. A system of canals, the most extensive that exists in any country, connects together all these rivers, and prodigiously augments their utility and value. The description, however, of these artificial means of communication may properly be reserved for another section.

1401. *The lakes of England* occur principally in the north-western counties of Cumberland and Westmoreland, which are specially denominated the country of the lakes. These, of which Windermere, the largest, is only twelve miles long and one broad, may be regarded as objects which have been raised to distinction by the taste of the age for picturesque beauty, rather than as geographical features of the country. Their number, which is considerable, entitles them to notice; and a detailed description of them will accompany that of the districts to which they belong.

Sect. II. *Natural Geography.*

1402. *This subject will be treated* under the heads of Geology, Botany, and Zoology.

Subsect. 1. *Geology of England.*

1403. *England is eminently distinguished* from Scotland in geognostical constitution: while in Scotland the prevailing formations belong to the *primitive* and *transition* classes, in England the deposits that most abound are the *secondary*, *tertiary*, and *alluvial*. Hence, also, it is that Scotland appears lofty and rugged, when contrasted with the hilly, flat, and low land of England.

1404. *Nearly all the accurate information* in regard to the geology of England we owe to the zeal and activity of the members of the Geological Society of London; who, in following out the mode of investigation of the Wernerian school, and not neglecting the views and facts of Hutton, have, in a comparatively short period, brought together a very interesting series of facts. A short view of these will enable our readers to form a general conception of the geognostical structure of England. We shall consider the mineral formations in the following order: — I. *Primitive and Transition.* II. *Secondary.* III. *Tertiary.* IV. *Alluvial.*

1405. I. *Primitive and Transition.* These rocks are principally confined to the more mountainous parts of England, and appear most abundantly, in the north, in Cumberland and some neighbouring counties; in the middle and west, in Wales; and on the south and south-west, in Cornwall and Devon.

1406. (1.) *Cumberland district.* This district is bounded to the west and the south by the Irish Sea and Morecombe Bay; towards the north it descends into the plain of the new red sandstone, within the basin of the Eden; and on the east it is bounded by the central carboniferous chain of the north. Within these limits there are the two sets of rocks, viz. Plutonian and Neptunian; the more central parts being Plutonian, and the others Neptunian. The order in which they occur, according to Otley and Sedgwick, is as follows: —

1. Granite and Syenite. They form the *geognostical axis* of all this region, and extend from the centre of the Skiddaw range to the neighbourhood of Egremont. There is a fine display of the granite in the bed of the Calden, near its source on the north-east side of Skiddaw, where it is intersected by veins of quartz, and contains, besides other minerals, molybdena, tungsten, wolfram, and phosphate of lime.

2. A series of crystalline slaty deposits, forming, for example, the centre of the Skiddaw region, viz. Skiddaw, Saddleback, Grisdale Peak, and Grasmere, with most of the Newlands mountains, and extending across Cromack lake, and by the foot of Ennerdale, as far as Denthill, is composed of gneiss, mica slate, hornblende slate, and chiastolite slate. These seem irregularly grouped: this irregularity is probably only apparent, because, when the primitive and transition rocks have been as well examined as the secondary, they also may be found to exhibit determinate arrangements. In some parts of Skiddaw and Saddleback the curious mineral named *chiastolite* occurs: veins of quartz and galena

occur in Thornthwaite, Newlands, Loweswater, and other places; a copper-mine was formerly worked in Newlands. The *salt springs* of Borrowdale issue from these rocks.

3. Deposit of clay slate.

4. An enormous formation of a green felspathose slate, intimately associated with porphyry, like that of Snowdonia in Wales, and the Needle's Eye in Scotland. The famous graphite or black-lead mine of Borrowdale is situated in the upper end of the valley of that name, where the graphite occurs in irregular veins associated with calc spar, brown spar, and quartz. The graphite is in nests in these veins, and the veins are contained in a Plutonian rock, viz. felspar porphyry, which is in some places amygdaloidal. Some nests of graphite have afforded 3000*l.* worth of that mineral.

5. Greywacke, with subordinate beds of limestone enclosing organic remains. A gryphæa and turritella occur near to Kirby-Lonsdale; a pecten, plagiostoma, trigonia, and patella near to Keswick. The species have not been determined. On the north side of the geognostical axis the Neptunian formations are repeated, with the exception of the greywacke series, which is probably buried under the old red sandstone and mountain limestone; and on this northern side, notwithstanding its less extensive developement, there is a group of mountains, almost entirely composed of *diallage rock*, and other minerals; of which, it is said, no trace occurs in the south. These occupy the place of the green felspar slate and porphyry series of No. 3. of Wales, afterwards to be noticed; and seem to be in the precise place of the serpentine of the Lizard in Cornwall. Further, there is on the west side of Cumberland another formation of granite and syenite, which underlies, traverses, and overlies the clay slate, No. 3., and is considered the great centre of elevation of the region. It never overlies, it is said, the mica slate, chiastolite slate, &c.; but is probably connected with veins of syenite, and other detached masses of crystalline rock, which do not belong to the ordinary rocks of superposition. Professor Sedgwick, in a paper read before the Geological Society, but not yet published, after describing, at great length, a range of transition limestone, which extends from Mellam in Cumberland to the neighbourhood of Wasdale Head in Westmoreland, nearly across the whole region we are now describing, states, that it is finally cut off by a protruding mass of granite, which he regards as newer than the limestone. On the phenomena exhibited in the Cumberland district the following conclusions have been founded: — 1st, Great cracks and fissures were formed at a very ancient period, diverging from the central regions, and intersecting the line of bearing of the strata. All the great valleys in the district are scooped out in the prolongation of these breaks: which were, in all cases, accompanied with internal movements; the present position of the systems of strata on the opposite sides of a transverse valley sometimes indicating a relative lateral movement of more than a mile in extent. These singular changes of position are referred partly to a true lateral shift, and partly to a subsidence. Reasoning from analogy, Professor Sedgwick concludes, that all the great diverging valleys of the Lake mountains took their origin in fissures, probably formed during the period of the protrusion of the central granite and syenite. 2dly, The upper and lower systems of Neptunian strata, the slaty crystalline rocks, and the greywacke, are often violently contorted; while the central system, or clay slate, though traversed by numerous rents, hardly ever exhibits the indications of any flexures. This is explained by the presence of enormous unbending masses of compact felspar porphyry, &c., which are so intimately associated with the middle division of the slate, that the formations cannot be separated. The appearance is explained by referring the felspathic rocks to some modification of sub-marine volcanic action; by supposing that igneous and aqueous causes acted together, and that the operations were many times repeated. 3dly, The mean line of bearing of the different sets of Neptunian strata appears to be N. E. by E., and S. W. by W. This makes them, one after the other, to abut against the carboniferous zone where they meet with it: from which it follows that they must also be unconformable to it. Professor Sedgwick concludes from the whole evidence, that the central Lake mountains were placed in their present position, not by a long continued, but by a sudden movement of elevation, before or during the period of the old red sandstone.

1407. (2.) *Wales, including the Isle of Anglesea.* The Neptunian and Plutonian rocks in this extensive district are arranged as follows: — 1st, *Granite* rising among the clay slate strata in the Isle of Anglesea. 2dly, A group of slaty rocks consisting of mica slate, chlorite slate, and quartz rock. These appear upheaved by the subjacent granite. They occur in the Isle of Anglesea. In this island are the great Mona marble and Paris copper mines, in which the ore is common copper pyrites. The Mona marble, a beautiful compound of marble and serpentine, occurs among these rocks. 3dly, A great group, differing from the ordinary characters of the Welsh mountains, in containing a very large proportion of felspathose rocks and porphyries. Of these the grand district of Snowdonia are probably the lowest portion. Some of the slates of the Snowdon range contain organic remains, principally of shells, some of which appear referrible to the genus *Producta.* 4thly, A vast deposit of clay slate. 5thly, Greywacke, which forms the uppermost or newest member of the great series of deposits. Connected with these series are great beds of limestone. Fossil organic remains are met with in this series, and much more abundantly than in the deeper-seated slates. *Corals* of various kinds, *crinoid* animals, shells, and *crustacea* occur among these rocks, in a fossil state. Of *fish*, the remains of bones, teeth, and the defensive fin-bones named *ichthyodorulites*, are met with. The most curious of these remains, the *Crustacea*, abound in vast numbers in some parts of Wales: as the *Asaphus Debuchii*. In the lists of organic remains of these slates we find extinct genera, and genera that still exist: and, judging from the nature of the remains, we infer that some of the animals were inhabitants of deep, others of shallow, seas. The organic remains in greywacke rocks are rare, and therefore form a very small proportion to the extent of the rock. We do not remember of any fossil plants having been met with in the slates of Wales; although, from their occurrence in similar slates in other countries, it is probable they will also be found there.

1408. (3.) *Cornwall and Devon.* In this district of England the rocks of the primitive class are arranged in the following order: — 1st, *Granite*. There are four great projecting masses of granite rising through the bounding slaty strata: they send arms or veins among the Neptunian strata, and have upraised and variously modified them. The granite is traversed by contemporaneous veins of granite, and also encloses contemporaneous masses and veins of a compound of quartz and schorl, named *schorl-rock*. It is also traversed by veins of porphyry, called *elvan*. 2dly, Resting upon, or adjacent to, the granite there is a vast deposit of clay slate, named, in the county, *killas*. It abounds in ores, hence, is sometimes named *metalliferous slate*. Where in the vicinity of granite, there is interposed gneiss or mica slate, or both: and in many parts it contains subordinate beds of greenstone, felspathose slate, &c. 3dly, Apparently above the preceding slates there occurs, in two places, a formation of *serpentine*, which, in the Lizard, contains *diallage rock*, *talc slate*, *hornblende slate*, and *mica slate*, and appears to occur below the greywacke. 4thly, *Greywacke*. This, which appears to form a great mass, is the uppermost and newest member of the stratified series. It contains considerable beds of limestone, including various organic remains.

1409. *Mines in Cornwall and Devon.* Cornwall and Devonshire present three principal mining districts. 1. The part of Cornwall situated in the vicinity and to the southward of Truro, the neighbourhood of St. Austle, and the neighbourhood of Tavistock. The first of these districts is the most important of the three, from the number and richness of its mines, in which copper, tin, and lead are obtained. The ores of copper, which are principally copper pyrites and grey copper, form regular veins, having a direction nearly from E. to W. in the rock named *killas*; and sometimes in the granite which projects amongst the slaty strata. The tin occurs principally in veins, which, like the preceding, traverse the killas and granite. They have also, very often, a direction nearly from E. to W.; they have a different inclination from that of the copper veins, which intersect and interrupt them, and which are, consequently, newer. The tin also occurs in contemporaneous masses and veins, and disseminated through the granite. Some veins afford, at the same time, copper and tin; but most of them produce only one of these metals in any quantity. There are also in Cornwall *cross veins*, that intersect the veins both of copper and tin; these contain argentiferous galena, native silver, and ores of silver. Near to Tavistock there are veins of copper, tin, and lead. Mines of antimony occur at Huel Boys in Devonshire, and at Saltash in Cornwall. The tin and copper ores of Cornwall are accompanied with arsenical pyrites, which is turned to profit by manufacturing oxide of arsenic from it.

1410. II. *Secondary Rocks.* The rocks of this class form the largest portion of the surface of England, and the districts composed of them are generally flat or hilly; never assuming the mountainous character, unless where the old red sandstone or mountain limestone appears. We shall now describe the different formations in the order in which they occur, beginning with the deeper seated or oldest (the old red sandstone), and finish our view with an account of the newest or chalk.

1411. (1.) *Old red sandstone.* This sandstone, which is distinguished from those newer in the series by its greater hardness and red colour, occurs in greatest abundance in Herefordshire and Brecknockshire. Smaller portions occur in some neighbouring districts, and in the Cumberland district in the north. The Isle of Man and the Isle of Anglesea also afford deposits of this oldest member of the secondary class.

1412. (2.) *Mountain limestone, metalliferous limestone,* or *carboniferous limestone.* This rock in the regular succession, rests upon the old red sandstone. It is generally grey coloured; sometimes, however, it exhibits various tints when it is worked as an inferior kind of marble. Its fracture is compact, lustre glimmering, and opaque or translucent on the edges. Its structure is sometimes *oolitic*, as is the case in the vicinity of Bristol. Veins of calcareous spar frequently traverse it, and occasionally contribute to the beauty of the varieties used as marble. Sometimes remains of the encrinus are so abundant in it, that it is named *encrinal limestone*. Its name *carboniferous* is from its sometimes occurring along with coal, as that of *metalliferous* from its, in some districts, abounding in ores. It abounds in organic remains of various genera of *corals*, *radiaria*, and *shells*; also some genera of *crustacea* and *fishes*. These bear a strong resemblance to the fossils of the transition limestone in the greywacke districts. Derbyshire, Northumberland, and Cumberland afford fine displays of this formation.

1413. *Mines in mountain limestone.* The mountain limestone forms several mountainous districts in England and Wales; in which there are three districts rich in lead mines. The *first* of these comprehends the upper parts of the valleys of the Tyne, the Wear, and the Tees, in the counties of Cumberland, Durham, and York. Its principal mines are situated near to the small town of Aldston Moor in Cumberland. The veins of sulphuret of lead or galena, which form the principal object of the works, traverse alternately beds of limestone and sandstone. They are very remarkable, from the circumstance that they suddenly become thinner and poorer on passing from the limestone into the sandstone; an arrangement probably connected with some electro-magnetic action. The lead obtained is poor in silver, and there is, we believe, only a single furnace in which that metal is extracted by cupellation. It also contains a copper mine some miles to the S. W. of Aldston Moor. The ore is common yellow copper pyrites, which is associated with galena in a vein of great extent, and which does not seem to belong to the same formation as the other veins in this county. The iron mines of Ulverston are in this district. The ore is red hematite, which traverses the limestone in the form of veins; some of which are said to be 30 yards wide. Near Whitehaven great masses of reniform hematite alternate with red beds of mountain limestone. The *second metalliferous district* is situated in the northern part of Derbyshire, and the contiguous parts of the neighbouring counties. The districts called Peak and Kingsfield are the richest in ore. The mines, although numerous, are not of great extent. The galena contains no silver, at least no silver is attempted to be extracted from it. The blende, associated with the lead, is worked as an ore, and zinc is obtained from it. A vein of copper pyrites occurs at Ecton in Staffordshire, on the borders of Derbyshire. The Derbyshire veins have been long famous on account of the beautiful minerals they produce, especially *fluor spars,* and also from the interruption which the metalliferous veins experience on meeting with trap rocks, called *toadstone,* which occurs alternately with the limestone. The *third metalliferous district* is situated in Flintshire and Denbighshire, which form the N. E. part of Wales. It is the most productive next to Aldston Moor. Besides lead, it furnishes also calamine or true ore of zinc. The mines are situated partly in the mountain limestone, partly in various rocks of older formation. To the S. W. of this district there are also lead mines in Shropshire: like the preceding they occur partly in mountain limestone and partly in older rocks. They yield a great annual return of lead. Some mines of galena and of calamine are mentioned as occurring in the Mendip hills to the south of Bristol; but they appear to be now abandoned. Many beautiful and interesting minerals are met with in these mines, as enumerated and described by mineralogists. Of the vein stones, quartz, in Cornwall, is the most abundant; while it is fluor spar and calcareous spar in Derbyshire; in Yorkshire heavy spar or sulphate of barytes; and in Cumberland, heavy spar and fluor spar.

1414. (3.) *Coal formation.* This, which is the most important of the secondary deposits, follows in the regular succession the mountain limestone, on which it therefore rests. The lower beds of this deposit sometimes alternate with the upper strata of the mountain limestone. The rocks of which it is composed are *shale, sandstone, clay ironstone, indurated clay,* and *coal,* alternating in various ways with each other. The shale, sandstones, ironstones, and clays contain numerous fossil remains of extinct species of plants, rarely of animals, the animal remains occurring principally in the limestone. No country of the same size in the world affords so much coal as England, and nowhere has its natural and economical history been so well examined as in this island. Messrs. Conybeare and Phillips arrange the different coal districts in the following manner: —

1. *Coal district north of Trent,* or grand Penine chain. — 1. Northumberland and Durham. 2. North of Yorkshire. 3. South York, Nottingham, and Derby. 4. South of Derby. 5. North Stafford. 6. South Lancashire. 7. North Lancashire. 8. Cumberland and Whitehaven. 9. Foot of Crossfell.

2. *Central coal district.* — 1. Ashby de la Zouch. 2. Warwickshire. 3. South Stafford or Dudley. 4. Indications near the Lickey hill, &c.

3. *Western coal district,* divided into, 1. *North Western* or *North Welsh.* — 1. Isle of Anglesea. 2. Flintshire.

4. *Middle western* or *Shropshire.* — 1. Plain of Shrewsbury. 2. Colebrook-dale. 3. The Clee hills and South Shropshire. 4. Near the Abberley hill.

5. *South Western.* — 1. South Wales. 2. Forest of Dean. 3. South Gloucester and Somerset.

These different districts are accurately described in Conybeare and Phillips's *Geology of England and Wales,* to which valuable work we refer our readers, our limits not allowing us to enter into details.

1415. *Changes of the coal fields from the Bristol Channel to the Tweed.* The great coal fields in England experience a great change of structure in their range from the Bristol Channel to the valley of the Tweed: these changes we shall now enumerate, using the view given by Sedgwick. In the various coal basins on the Bristol Channel, the limestone strata are developed only in the lower, and the coal beds in the upper, part of the series; and the two members are separated by nearly unproductive deposits of millstone-grit and shale. The arrangement in Derbyshire is nearly the same; there, however, the millstone-grit is more varied, and is of very great thickness, and subordinate to the great deposit of shale, and, here and there, very thick masses of a peculiar argillaceous sandstone, disposed in a tabular manner. On the re-appearance of the carboniferous limestone, at the base of the Yorkshire chain, we still find the same general analogies of structure; enormous deposits of limestone form the lowest part, and the coal fields the highest part of the whole series; and, as in the former instances, we also find the millstone-grit occupying an intermediate position. The millstone-grit, however, becomes a very complex deposit, with several subordinate beds of coal; and is separated from the great inferior calcareous group (the *scar* limestone), not merely by the great shale and shale-limestone, as in Derbyshire, but by a still more complex deposit, in some places not less than 1000 feet thick; in which five groups of limestone strata alternate with great masses of sandstone and shale, abound in impressions of coal plants, and three or four thin beds of good coal extensively worked for domestic use.

1416. *In the range of the carboniferous chain* from Stainmoor, through the ridge of Cross-fell to the confines of Northumberland, we have a repetition of the same general phenomena. On its eastern flanks, and superior to all its component groups, is the coal field of Durham. Under the coal field, we have, in a regular descending order, the millstone-grit, the alternations of limestone and coal measures nearly identical with those of the Yorkshire chain, and at the base of all is the great *scar limestone.* The scar limestone begins, however, to be subdivided by thick masses of sandstone and carbonaceous shale, of which we had hardly a trace in Yorkshire; and gradually passes into a complex deposit, not distinguishable from the next superior division of the series. Along with this gradual change is a great developement of the inferior coal beds alternating with the limestone; some of which on the north-eastern skirts of Cumberland, are three or four feet in thickness, and are now worked for domestic use.

1417. *The alternating beds of sandstone and shale* expand more and more as we advance towards the north, at the expense of all the calcareous groups, which gradually thin off and cease to produce any impress on the features of the country. And thus it is, that the lowest portion of the whole carboniferous system, from Bewcastle Forest, along the skirts of the Cheviot Hills, to the valley of the Tweed, has hardly a single feature in common with the inferior part of the Yorkshire chain; but, on the contrary, has almost all the most ordinary external characters of a coal formation. Corresponding to this change, is also a gradual thickening of carbonaceous matter in some of the lower groups. Many coal works have been opened upon this line; and near the right bank of the Tweed (almost on a parallel with the great *scar limestone*) is a coal field, with five or six good seams, some of which are pretty extensively worked. The beds of sandstone, shale, and limestone, forming the base in the carboniferous system in the basin of the Tweed, are often deeply tinged with oxide of iron; and have been compared sometimes with the new, sometimes with the old, red sandstone: to the new red sandstone they have no relations; "and I would rather compare them," says Sedgwick, "especially as the old red sandstone of the north of England, seldom exist but as a conglomerate, and is seen in that form on the flanks of the Cheviot Hills, with the red beds of mountain limestone and sandstone, which, both in Cumberland and Lancashire, sometimes form the base of the whole carboniferous series."

1418. *These coal fields are traversed and variously* deranged by great *vaults*; interesting descriptions of which, particularly those in the northern fields, have been published by Messrs. Phillips and Sedgwick.

1419. *Economical importance of the coal formation.* The coal strata, or *metals* as they are sometimes called, are in some parts of England affected by Plutonian trap rocks, but in a very inferior degree to what takes place in Scotland. The principal trap rock is greenstone, which appears in the form of *overlying* masses, as at Clee Hill and at Dudley; in the form of intersecting tabular masses or *dikes* (veins), as in Northumberland and Durham. Sometimes the trap mass has been forced between the strata, when it has the character of *a bed*, or these bed-like masses may be some of the rocks of the coal formation softened and recrystallised *in situ* by heat from below. The great *whin sill* of Northumberland, and the toadstone beds of Derbyshire, are examples of these *trap beds*. The strata near the trap frequently appear changed, the clays hardened, the limestone rendered crystalline and magnesian, the coal charred, and the sandstone hardened, &c.; and these strata are either moved from their original position, or are unchanged. Although rather foreign to our subject, we may, as an illustration of the importance of the coal formation to England, mention the quantity of iron manufactured, and of coal consumed, in the carboniferous district of Wales.

1420. *The quantity of iron*, according to Mr. Forster, annually manufactured in Wales, has been calculated at 270,000 tons. Of this quantity a proportion of about three-fourths is made into bars, and one-fourth sold as pigs and castings. The quantity of coal required for its manufacture on the average of the whole, including that used by engines, workmen, &c. will be about 5½ tons for each ton of iron; the annual consumption of coal by the ironworks will, therefore, be about 1,500,000 tons. The quantity used in the smelting of copper ore imported into Wales from Cornwall, in the manufacture of tin-plate, forging of iron for various purposes, and for domestic uses, may be calculated at 850,000, which makes altogether the annual consumption in Wales, 1,850,000 tons. The annual quantity of iron manufactured in Great Britain is 690,000 tons. From this statement it will be observed that the quantity of iron smelted in Wales is upwards of one-third of the total quantity made in Great Britain. The manufacture of the Welsh iron is in the hands of a few extensive capitalists, and is carried on with great spirit and attention to improvement.

1421. (4.) *Magnesian limestone formation.* The upper part of the coal formation has sometimes a red colour with an arenaceous and conglomerated character, when it is named by the German miners *todliegendes*. Above or resting upon it we have the magnesian limestone deposit. This deposit extends through Yorkshire and Durham. Its lower part is said to be separated from the coal formation by a deposit of sand and sandstone, with occasional red marl and gypsum. The magnesian limestone itself consists in its lower part of a *bituminous marl slate*, abounding in fossil fishes of the genus *Palæothrissum;* the middle and upper parts being a yellowish small granular or glimmering magnesian limestone. The organic character of this limestone approaches nearly to that of the mountain limestone already described. It contains *Productæ*, which, however, do not occur higher in the series; also *Spiriferæ*, a tribe found as high as the oolite.

1422. (5.) *Variegated or new red sandstone, with the red variegated marl deposit.* As the shell limestone is wanting in England, the variegated sandstone and the red and variegated marls come together, and may here, therefore, be viewed as one formation. They rest immediately upon the magnesian limestone, but of the two sets the marl appears in general to be the uppermost or newest. The sandstone is of a looser texture than that of the old red sandstone deposit, has a red or variegated colour, and the strata are generally horizontal. The marls are red or variegated in colour. In these sandstones and marls, beds and great masses or nodules of gypsum occur, as in Derbyshire, Staffordshire, &c. All the *salt mines* in England are situated in this deposit. At Northwich there is an extensive deposit of solid *rock salt*, forming two beds, together not less than 60 feet in thickness. These beds are supposed to form large insulated masses of this mineral, extending in length about a mile and a half, and in breadth about 1300 yards. The *salt works* at Droitwich in Worcestershire are also in this red marl deposit. Iron-sand and iserine are said to occur in this sandstone on the banks of the Mersey opposite Liverpool; and in other places sulphuret of copper, grey oxide of cobalt, and black oxide of manganese occur in the sandstone or its marls. It forms the surface of vast tracts extending with little interruption from the northern bank of the Tees in Durham to the southern coast of Devonshire. We find a tract in the great plain in the centre of England of about 80 miles in length and sixty in breadth, principally covered with this deposit; *several islands* of the *older rocks*, however, rising, in various places, through it. These are, 1st, the syenite, greenstone, and slate district of Charnwood forest in Leicestershire; 2dly, the coal district surrounding Ashby de la Zouch in the same county; connected with which are several patches of the carboniferous magnesian limestone, and a patch of millstone-grit at Stanton-bridge on the Trent; 3dly, the coalfield of Warwickshire; 4thly, the coalfield in the south of Staffordshire, with the transition limestone on which it rests; 5thly, the lower and northern range of the Lickey hill, near Bromsgrove in Worcestershire, which exhibits strata, probably of transition quartz rock. Some *trap rocks* occur in this formation at Upton Pyne, a village five miles north of Exeter, and at other points near that town.

1423. (6.) *Lias and oolite formation.* This great formation in the regular succession rests upon the new red sandstones and marls. In no country are its various members so beautifully displayed as in England, where it was first accurately described by a *remarkable man*, William Smith, author of the first great geognostical map of England, and who, besides other merits, was, in England, one of the first to direct the attention of observers to fossil organic remains as a means of distinguishing beds of rock. Three great clay or marl deposits divide the series into three natural groups, as already explained at pages 223. and 224. In England it occupies a zone having nearly 30 miles in average breadth, extending across the island from Yorkshire on the north-east, to Devonshire on the south-west. It is eminently remarkable on account of the number and variety of fossil organic remains which it contains, and its wide distribution not only in England, but also in many other parts of the world. It is not likely that this vast limestone deposit was formed from organic remains. Whence then do we derive the calcareous matter? Werner remarked, that new matter appeared from time to time in the waters of the ocean — the calcareous carbonate appears to have been one of these matters, and may have come from the interior of the earth. It is in this formation, at Stonesfield, that the first or earliest remains of mammiferous animals were found. Crocodiles and many vast and strangely organised reptiles occur in this deposit, with a vast variety of shells, many *radiaria*, and also corals. Fishes are also met with in a fossil state, but by no means so frequently as reptiles. Fossil plants of various tribes also occur, and thus add to the organic variety of this remarkable formation: they belong to the *Algæ*, *Equisetaceæ*, *Filices*, *Cycadeæ*, *Coniferæ*, and *Lilia*. Beds of coal, generally of an indifferent quality, occur in different parts of the country in this deposit.

1424. (7.) *Wealden clay and Purbeck stone.* This formation, which lies immediately upon the oolite, consists of limestones, sands, and clays abounding in fossil organic remains, principally of terrestrial and freshwater plants and animals, marine species being rare. In the lower part of this formation, in the neighbourhood of Weymouth, according to Buckland and De la Bèche, there is a bed of black earth, called the *dirt bed*, containing, in a silicified state, long prostrate trunks of coniferous trees, and stems of *Cycadeoideæ*. These trunks lie partly sunk into the deep black earth, like fallen trees on the surface of a peat bog, and partly covered by the incumbent Purbeck limestone. Many trunks of trees also remain erect, with their roots attached to the black soil in which they grew, and their upper part in the limestone; and show that the surface of the subjacent Portland stone was for some time dry land, and covered with a forest; and probably in a climate such as admits the growth of the modern *Zamia* and *Cycas*, remains of these genera being found here. This forest has been submerged: first, beneath the fresh waters of a lake or estuary, in which were deposited the Purbeck beds, and sands and clays of the Wealden formation (amounting together to nearly 1000 feet), and subsequently beneath the salt water of an ocean of sufficient depth to accumulate all the great marine formations of green sand and chalk that rest upon it.

1425. (8.) *Chalk formation with green sand.* This great deposit consists principally of chalk, with less extensive subjacent beds of green sand and tuffaceous chalk. It stretches, with little interruption, from Flamborough Head on the coast of Yorkshire, to near Sidmouth on the coast of Devonshire; forming a range of hills often of some hundred feet high, and of which the most precipitous face is generally on the north-west side. From this long range several ranges shoot toward the east and south-east. In some places the chalk forms hills, rising some hundred feet above the level of the sea; thus, Wilton Beacon, in Yorkshire, is 809 feet high; and Inkpen Beacon, in Wiltshire, the highest chalk hill in England, is 1011 feet above the level of the sea. Chalk does not often bear the character of a level or flat country; but, on the contrary, is subject to perpetual undulation of surface, the hills being remarkable for their smooth rounded outline, and the deep hollows and indentations on their sides. The most level tract of chalk in England is on the north-east and east of England.

1426. *The upper part of this formation*, through a great part of England, is characterised by the presence of common gun flint, arranged in thin beds or in variously-shaped masses, disposed more or less in parallel lines. In the lower part of the formation the flints become less and less abundant, and at length entirely disappear. This arrangement, however, is not always to be observed, for in some places the lower chalk abounds in flints. The lower part of the chalk formation, as already noticed at page 225., has in England received particular names: these are, *upper green sand*, immediately under the chalk; next the *gault* and *lower green sand*. In the chalk formation, the upper and middle parts are of chalk, while the lower and under are of sands, sandstones, and clays. The upper part may be considered an original deposit, the matter derived from the interior of the earth; the lower of a mechanical and alluvial nature. Chalk abounds in fossil remains of animals, and also contains fossilised plants. Corals in great variety, radiated animals, particularly echinites, are in vast numbers; shells of all the grand divisions and in great variety add to the zoological interest of the formation, which is further heightened by the fossil crabs, fishes, and reptiles, occasionally met with in it. The plants are *Confervæ*, *Fuci*, *Zosteræ*, *Cycadeæ*, with dicotyledonous wood perforated by some boring animal. The formation, as it occurs in England, appears to have been variously elevated and depressed at different times by some subterranean actions; but, as far as we know, it does not any where occur in contact with trap or other Plutonian rocks.

1427. III. *Tertiary rocks.* We owe to an intelligent observer, Mr. Webster, the first considerable series of observations on this class of rocks as met with in England. Since the account of the Isle of Wight by that gentleman, other English observers have made the tertiary deposits an object of study. Hitherto, in England, these deposits have been found only in what are called the *London basin* and the *Isle of Wight basin*; two spaces conjectured formerly to have had the basin shape, but now more or less filled with tertiary rocks; an opinion, however, which the late observations of Professor Buckland have shown to be less plausible than has been generally believed. The boundary of the first of these supposed basins may be stated, generally, as a line running from the inner edge of the chalk, south of Flamborough Head, in Yorkshire, nearly south, till it crosses the Wash, then south-west to the upper part of the valley of the river Kennet, near Hungerford, in Wiltshire; and thence trending south-east to the south of the Thames, and the north-west angle of the Isle of Thanet: in all these directions the boundary line is formed by the chalk hills; on the east side, the boundary is the coast of the German Ocean. The boundaries of the Isle of Wight basin may be stated as follows: — on the north, a few miles south of Winchester; on the south, a little north of Carisbrook in the Isle of Wight; on the east, Brighton; and on the west, Dorchester. It is every where circumscribed by chalk hills, excepting where broken in by the channel between the Isle of Wight and the main land. The different members of the tertiary series met with in England, are named *Plastic clay, London clay, Bagshot sands*, the *Freshwater formations* of the Isle of Wight, and the *Crag*. — *Plastic clay.* This deposit consists of a plastic clay with gravel beds, alternating with beds of sand (sometimes in a state of sandstone) and clay. Its organic remains are principally marine shells, with layers of lignite or brown coal. — *London clay.* This is a bluish or blackish clay, sometimes so much impregnated with carbonate of lime as to form a kind of compact marl. Layers or nodules of septaria (a calcareous concretion) frequently occur in it. It is the great clayey deposit on which London is built. It has been bored to a depth of 700 feet; without reaching its bottom. The highest point it attains is the summit of High Beach in Essex, being 759 feet above the sea: Shooter's Hill, in Kent, is 446 feet high; Richmond Hill, and St. Ann's Hill, in Surrey, also consisting of this clay, are less elevated. It abounds in fossil organic remains from the animal as well as from the vegetable kingdom. Crocodiles, turtles, fishes, and crabs have been observed; but these are few in number compared with the host of fossil shells. These shells are often very beautifully preserved, frequently retaining the appearance of recent species. There are very few genera of recent shells which have not some representative in this formation, but the specific character is usually different; on the other hand, but few of the extinct genera, so frequent in the older formations, occur in this. The Isle of Sheppey, formed of London clay, affords a vast variety of fossil fruits and seeds. Mr. Crowe, of Eversham, is said to have collected from this remarkable spot 700 specimens, none of which are duplicates, and very few of which agree with any known seed vessels; many of them are conjectured to belong to tropical plants, some to the cocoa nut and spice tribes. Fragments of wood pierced by a shell animal, resembling the *Teredo navalis*, are met with; a fact which shows that the wood may have floated about in the sea. — *Bagshot sands.* These rest upon the London clay; they consist of sand, with greenish-coloured clay, variously coloured marls, containing grains of green sand, and fossil trochi and pectinites. — *Freshwater formations of the Isle of Wight and Hampshire.* The freshwater strata of the Isle of Wight are divided into two deposits by a rock characterised by the presence of marine remains, and named the *upper marine formation*, from being a supposed equivalent to the sands which intervene between the two freshwater deposits of Paris. The *lower freshwater* deposit of Binstead, near Ryde, consists of a limestone formed of fragments of freshwater shells, white shell marl, siliceous limestone, and sand. One tooth of an *Anaplotherium* and two teeth of a *Palæotherium* have been found in the lower marly beds of the quarries at Binstead. In the same quarries several rolled fragments of pachydermatous animals, and the jaw of an animal allied to the musk-deer tribe. In Colwell Bay the upper part of this deposit contains a mixture of freshwater and marine shells. The *upper marine formation.* — This deposit of calcareous beds abounds with freshwater shells in the lower part, but in the upper part we find marine shells; hence it is conjectured to have been formed in an estuary. *Upper freshwater formation.* — This consists principally of yellowish white marls. The organic remains are either freshwater or land. The geological history of the tertiary deposits in England has not yet been placed in direct connection with that of similar deposits on the continent of Europe. No trap or granite rocks have hitherto been met with in England any how connected with the tertiary strata.

1428. IV. *Alluvial rocks.* Nearly the whole of England is more or less covered with alluvium, or debris of previously existing rocks: thus it occurs on mountain ridges, and on the sides and bottoms of valleys; it is spread over plains, fills up, wholly or partially, fissures in rocks, and caves, and caverns, and forms beaches and other accumulations of greater or lesser extent on the sea coast. It varies in age, from the oldest, called *diluvium*, which stands in immediate connection with the *crag* or upper tertiary deposit, to the newest, those forming at present through the agency of the atmosphere, springs, lakes, rivers, and the waves and currents of the ocean. It encloses numerous remains of plants and animals, either more or less mineralised, or simply bleached: those of the oldest deposits appear to be of animals, and sometimes of plants, which are apparently extinct; while the newer enclose remains only of living animal and vegetable species. Although our limits do not allow us to enter into details on this very important and curious department of geology, we may remark, that the characters and modes of distribution of these alluvia are, in many instances, intimately connected with risings and depressions of the land; and consequently with apparent sinking and rising of the waters of the ocean, and the violent agitations sometimes induced in the great mass of the ocean, and also in lakes, by changes in the level of the solid parts of the globe.

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Subsect. 2. *Botany.*

1429. *The botany* of the different parts of the British empire is so similar, that it is proposed to treat under one head that of England, Scotland, Ireland, and their adjacent islands.

1430. *The British Islands*, as regards their vegetable productions, are possessed of considerable interest, partly on account of their situation, their variety of soil and exposure, their great extent of coast, the height of many of the mountains; which, though of small elevation, as compared with those of the continent of Europe, yet, from their northern latitude, almost attain the elevation at which perpetual snow is found; and, above all, on account of the careful manner in which their botany has been explored. Were certain tribes of the Cryptogamia, especially the Fungi and the Algæ, more satisfactorily studied and described, we should possess, in the works of Sir James Smith, the most correct flora, of any country in the world. Yet, with all these advantages, few countries have been less known in respect to the distribution or peculiar localities of these plants. Turner and Dillwyn, in their work called the *Botanist's Guide*, have, indeed, done much towards making known the particular stations, especially of the rare plants of England and Wales. M. Boué, in his inaugural thesis, printed at Edinburgh in 1817, on the botany of Scotland, has been the first to offer any remarks on a geographical arrangement, however partial, of the vegetables of that portion of the kingdom; and this was followed by the very useful Essay of Mr. Winch, on the geographical distribution of plants throughout the counties of Northumberland, Cumberland, and Durham; and by Mr. Atkinson on that of Yorkshire, published in the *Transactions of the Wernerian Society*. Aided by these, and some valuable communications that have been made to us by our friends, and by our personal observations, made during various excursions in different parts of the British dominions, we shall endeavour to throw together such remarks as may, at some future time, lay the foundation for a geographical distribution of our vegetables, upon a more extended scale.

1431. *The principal of these islands* in question, Great Britain, although its breadth from E. to W. scarcely averages 8°, yet extends from lat. 50° in the S. to 58° 40′, or, if the extreme northern point, where it is broken into a number of smaller islands, be taken into consideration, to N. lat. 61°: it thus, necessarily, even in its plains, includes a considerable variety of climate, but every where, more or less, tempered by the surrounding ocean; so as, in no part of the island, except on the mountains, or high table-lands, can the temperature be compared, in point of climate, to similar latitudes upon the European, much less upon the American continents. Yet, from the proximity of the whole group to the former, the vegetation is, with a very few exceptions, hereafter to be mentioned, altogether similar to that of the adjacent districts of Europe. In one point of view, indeed, our insular situation affects vegetation in a way which could hardly be expected in so high a latitude; and if, on the one hand, in consequence of our unfavourable summers, the frequent obscurity of the sun, our damp and foggy atmosphere, we are not permitted, without artificial heat and protection, to bring many of the fruits of more favoured climates to perfection; yet the mildness of our winter enables us to introduce and to naturalise plants of much more southern latitudes: so that our gardens, our parks, our shrubberies, and even our forests, are adorned with a vegetation the most varied that can be imagined, or producing the most beautiful flowers, or the most valued of the timbers.

1432. *If there be a spot in our island* which may be designated "a land of the cypress and myrtle, the cedar and vine," it is on the *extreme southern coast of England and Ireland*, yet not assuredly "where the trees ever blossom, the beams ever shine;" but in a spot, certainly, where the native vegetables of the warmer temperate zone are successfully grown in the open air, and where they come to considerable perfection. We have ourselves seen, in the south of Devonshire, the orange and lemon trees loaded with fruit of the finest kind; trained, indeed, to a wall, but without protection, and only provided with it during a very short portion of the winter months; the Lemon-scented Vervain (*Lippia citriodora*, formerly called *Verbena triphylla*) becomes quite a tree, without any artificial protection; the American Agave, the Creeping Cereus, the Prickly Pear, the former having twice flowered in the grounds of the same gentleman, Mr. Yates of Woodville, near Salcombe. The account of the latter of these is recorded in the *Transactions of the Horticultural Society of London*, for 1822; and the plant itself is of that extraordinary character and the circumstance of its blossoming at such an early age is so characteristic of the climate, that we shall here record some of the most important particulars respecting it. It was planted in the open ground, in 1804, when only three years old, and about 6 inches high, within a few yards of the sea-shore, at an elevation of about 40 or 50 feet above the level of the sea; and it was never, in any way, artificially sheltered, nor aided by manure or any cultivation. In eight years from that period, it had attained the height of 5 feet, and during the summer of 1812, it grew nearly ¼ of an inch daily. In 1820, it was 11 feet high, and covered a space, the diameter of which was 16 feet; the leaves, close to the stem, being nearly 9 inches thick. During that year it threw up its flowering stem, at first resembling a great head of asparagus, which, for six weeks, rose at the rate of 3 inches a day. By the end of September the flower-stalk attained the height of 27 feet, sending out side branches, and blossoming throughout the whole of the months of September and October. The number of flowering branches was 40, the lowest projecting 2 feet in horizontal length from the stem, gradually diminishing upwards to about a foot or 9 inches at the top; each of them had between 300 and 400 flowers; and in all, there were above 16,000 blossoms. The base of the flowering stalk was 20 inches in circumference.[*]

1433. *Myrtles*, from the south of Europe, the Tea, Camellias and other Chinese and Japanese plants, thrive well in the open air, as well as the Magnolias, and many other trees, from the southern states of North America, whose native latitudes lie many degrees nearer to the tropics than the highly favoured line of coast in question.

1434. *A beautiful picture of the exotic vegetation* of the island of Guernsey is given by Dr. Macculloch, in the *Memoirs of the Caledonian Horticultural Society*. He justly states, that the Guernsey Lily (*Amaryllis sarniensis*) is not a native of that island, but, as it is supposed, was introduced by accident or design from Japan, and cultivated there to a vast extent to supply the London market. The climate seems to be peculiarly favourable to its growth and increase, as it is for those of other species of the same genus; the Amaryllis vittata, Belladonna undulata and formosissima natives of the Cape or South America. The Magnolia grandiflora is as certain to flower yearly, as it is remarkable for the luxuriance of its growth. The Garden Hydrangea (*H. hortensis*), the Scarlet Fuchsia (*F. coccinea*), the Horseshoe Geranium (*G. zonale, G. inquinans, G. radula,* and *G. glutinosum,*) emulate in summer the luxuriance which they display in their native climates. Every rustic cottage is covered with Geraniums, and adorned with numerous kinds of Pinks, such as are rarely seen in the rest of Britain, except among careful florists. The Lemon-scented Vervain here, too, flourishes perfectly exposed, and grows to 20 feet high and upwards, spreading in a circle of which the diameter equals its height, with its long branches reaching down to the ground on all sides. Its growth, indeed, is so luxuriant, that it is necessary to keep it from becoming troublesome, by perpetually cutting it about the root, from which fresh shoots, 14 feet long, resembling those of the Osier Willow, are annually produced. The Celtis micrantha, a stove plant, flourishes, with little care, out of doors; the double and single Camellias, some species of Olive, as well as many Proteas, several kinds of Cistus, particulary C. crispifolius and formosus, Yuccas, the Azorian Jessamine (*Jasminum azoricum*), the Oleander (*Nerium Oleander*), the Daphne odora, Clethra arborea, Corræa alba, Melaleuca hypericifolia, Galardia rigens, with numerous Ixias and Heaths, all equally requiring the protection of the green-house during the severer winters of our own island, and many of them liable to perish, in spite of our greatest care, — all these, as well as the Myrtle, brave the utmost rigour of a Guernsey climate, and flourish in the greatest luxuriance.

1435. *The Indian Shot* (*Canna indica*) has become thoroughly habituated to the climate of Guernsey, and scatters its seeds, every year, so as to prove a weed in the gardens where it has been introduced. The effect of this delightful climate is visible, too, on fruits of various kinds. Both the Seville and the Sweet Oranges, standing under the shelter of a wall, and only protected by a mat in winter, produce fruit in abundance every year.

1436. *What we have been stating* of the climate of the extreme south of Britain is, however, a remarkable exception to that of the rest of this kingdom; and even in that part such productions are only witnessed upon the very verge, as it were, of the ocean. A few miles inland, and the climate, rather than the natural vegetation, undergoes a considerable change. The lines which constitute the northern boundaries in Europe of the Maize and the Vine (the former especially), are considerably to the south of England; nor is there a chance of these two valuable products ever being cultivated with success in such high latitudes as the British isles; and especially when the fickle character of the summer is taken into account. It is only by art that the fruits of southern climes can, generally speaking, be brought to perfection with us; and such are the skill and assiduity of our gardeners, and such the encouragement given to them by public institutions, and by the nobility and men of large fortune, that in no part of the world is better fruit to be met with, either with regard to size or to flavour.

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[*] In Spain, especially near the shores of the Mediterranean, the flowering stems of the Agave americana grow to 30 feet in height, in a period of ten days, as we are assured by a friend who has recently returned from that country; and they have all the appearance of a forest of ships' masts. In South America, they are applied to many valuable purposes; cut into slices, they are employed in various parts of the country as razor strops, and are sold at Rio Janeiro for that purpose. Like many other monocotyledonous plants, these stems probably abound in silex, which acts upon the blade of the knife or razor. The young stalks are so hard that they cannot be cut with a large and strong knife; and the fibres of the leaves are manufactured, at Perpignan, into ropes and cordage. In Catalonia, the Agave americana flowers in its ninth or tenth year; in the south of France so much more rarely, that it is there called "the plant that flowers as seldom as an Englishman smiles." In our country it is outvied, we hope, by the smiles of the natives; for, as we have before stated, it blossomed, in Devonshire, in its twenty-first year; whereas, in the rest of England, in the green-house, or even stove, it flowers so unfrequently, that is called "the plant that flowers once in a hundred years."

1437. *Before, however, we speak further of* the exotic productions, which are affected by the different latitudes or by the different elevations in Great Britain, we must be permitted to offer a few remarks on its native vegetation; which (exclusive of cryptogamia) has been so admirably described by Sir James E. Smith, in his *English Flora*, the last, and, we may add, too, the best, of the many excellent works of that learned botanist.

1438. *The general nature of the vegetation of the British isles* will be best seen by a table of the different natural families, accompanied by columns, referring to the number of species in each of these groups; and the proportion which each of these latter bears to the whole.

1439. *So widely different as is our flora,* and, indeed, that of the greater part of Europe, from that of America, in the same latitude, the comparison of the vegetable productions of the two countries would be attended with no interesting results; nor do we think that, to institute a comparison between that of Britain and of any country on the continent of Europe, either to the north or south of our own islands, would repay the labour of the investigation; but, did our space allow us, we should gladly have scrutinised the relation between the vegetation of our own islands, and that of an equal space of territory, as far as it would be possible, in the same degrees of latitude; in Germany and Denmark, and a part of Sweden, for example. But this would, doubtless, be attended with great labour. Many floras would have to be consulted, and only such plants selected as belong to the given space of country. Nor would the comparison be exactly fair, unless the two districts contained, and in nearly the same parallels of latitude, similar mountains and similar plains. A great obstacle, too, to the obtaining of correct results would arise from the very different opinions which different botanists entertain as to what are species, and what varieties; and what are aboriginal natives, and what imported from other countries; so that no two naturalists, even publishing at the same time the flora of the same region, would at all approximate in what concerns the number of native species in that region, more especially if each uses his own eyes, and is unbiassed by the opinion of his fellow-labourer in the same studies. Nees von Esenbeck and Hornschuch's *Bryologia Germanica*, contains, in the first volume, but few genera, and comprises 68 species: the same group of genera in Mohr's *Flora Germanica* has only half that number. In our own country, Smith reckons 17 saxifrages of Scotland, 59 willows, and 14 roses; Hooker, in his *Flora Scotica*, enumerates but 13 saxifrages, 10 roses, and 43 willows; and the same holds good with many other genera in different writers. At present, we can only guess, from a tolerable acquaintance with the vegetable productions, at the relative proportions; and whatever may be our partiality to our native land, we must, nevertheless, express our opinion that the result of such an investigation would be greatly in favour of the Continent. The soil, we apprehend, is more varied, the quantity of uncultivated ground is greater, and the very circumstance of its continuity of land, extending north and south and eastward, would naturally aid the migration of plants from great distances, which must materially increase the number of species. Thus it is, that, on landing on the shores of France or Holland, we find many plants which have reached their limits in those directions, simply in consequence of the barrier afforded by the sea; whereas the same individual species passes on to Germany, Holland, and even to Denmark and Sweden, to enrich those more northern floras.

1440. *The only two floras of Great Britain,* which are so complete as to demand our particular attention, are Smith's work, above alluded to the (*English Flora*), and Gray's *Arrangement of British Plants;* the former classed according to the Linnæan system, extending, however, only to the end of the class Polygamia, and the first order of the class Cryptogamia Filices. Gray's *Flora* includes the whole of the British vegetables, arranged according to the natural method, and is the only one that approaches, however deficient it may still be, to any thing like a catalogue of our present state of knowledge of the Cryptogamia. Among the Phænogamous plants, however, Mr. Gray has included a great number that are only known in a state of cultivation, as has been done by De Candolle, in his *Flore Française*, and many other continental botanists. We have, therefore, deemed it convenient thus to give a list of the plants, according to each of these authors; and the increased number in the columns of species, according to Mr. Gray, will be thus easily accounted for.

Comparative Table.

A List of the Number of Species of British Plants, arranged according to the Classes and principal Families to which they belong; exhibiting the relative proportion which these latter bear to the whole of the respective Classes.[*]

Names of the Natural Families.	Species in Smith's *English Flora.*			Proportion of Natural Orders to Phænogamous, per Smith.	Species in Gray's *Arrangement of British Plants.*			Proportion of Natural Orders to Phænogamous, per Gray.	Average Proportion of Natural Orders to Phænogamous Plants.
Fungi - - -	- -	- -	- -	- -	- -	800	- -	1 to 2	1 to 2
Algæ - - -	- -	- -	- -	- -	- -	400	- -	4	4
Lichenes - -	- -	- -	- -	- -	- -	400	- -	4	4
Hepaticæ, by Hooker -	- -	90	- -	$16\frac{7}{10}$	- -	97	- -	$16\frac{7}{8}$	$16\frac{7}{9}$
Musci, by Hooker -	- -	290	- -	$5\frac{1}{5}$	- -	290	- -	$5\frac{6}{10}$	$5\frac{4}{10}$
Filices - -	- -	58	- -	26	- -	58	- -	$28\frac{1}{5}$	$27\frac{1}{10}$
ACOTYLEDONES - -	- -	- -	- -	- -	- -	- -	2045	$\frac{4}{5}$	$\frac{4}{5}$
Gramineæ - -	121	- -	- -	$12\frac{1}{2}$	170	- -	- -	[illegible]	11
Cyperaceæ - -	92	- -	- -	17	91	- -	- -	18	$17\frac{1}{2}$
Junceæ and Restiaceæ -	32	- -	- -	47	33	- -	- -	$49\frac{1}{2}$	$48\frac{1}{4}$
Glumaceæ - -	- -	245	- -	$6\frac{1}{8}$	- -	294	- -	$5\frac{1}{2}$	$5\frac{3}{4}$
Orchideæ - -	- -	37	- -	$40\frac{2}{3}$	- -	33	- -	$49\frac{1}{2}$	45
Monocotyledones cæteræ	- -	73	- -	- -	- -	89	- -	- -	
MONOCOTYLEDONES -	- -	- -	355	$4\frac{1}{4}$	- -	- -	416	$3\frac{9}{10}$	4
Coniferæ - -	- -	4	- -	376	- -	7	- -	234	305
Amentaceæ - -	- -	78	- -	$19\frac{1}{4}$	- -	72	- -	$22\frac{3}{4}$	21
Euphorbiaceæ - -	- -	16	- -	94	- -	16	- -	$102\frac{1}{4}$	98
Scrophul. and Orobancheæ	- -	52	- -	$28\frac{1}{2}$	- -	55	- -	$29\frac{3}{4}$	$29\frac{1}{3}$
Labiatæ and Verbenæ -	- -	56	- -	$26\frac{1}{3}$	- -	69	- -	$23\frac{3}{4}$	$25\frac{1}{4}$
Boragineæ - -	- -	23	- -	1 to $65\frac{1}{3}$	- -	23	- -	1 to $71\frac{1}{9}$	1 to $68\frac{1}{5}$
Ericineæ and Pyroleæ -	- -	22	- -	67	- -	22	- -	$74\frac{1}{3}$	$70\frac{2}{3}$
Campanulaceæ -	- -	14	- -	$107\frac{1}{3}$	- -	15	- -	109	$108\frac{1}{6}$
Compositæ - -	- -	137	- -	11	- -	144	- -	$11\frac{1}{3}$	$11\frac{1}{6}$
Rubiaceæ - -	- -	21	- -	$71\frac{1}{2}$	- -	19	- -	86	$78\frac{3}{4}$
Umbelliferæ - -	- -	64	- -	$23\frac{1}{2}$	- -	69	- -	$23\frac{3}{4}$	$23\frac{5}{8}$
Rosaceæ - -	- -	81	- -	$18\frac{1}{2}$	- -	81	- -	$20\frac{1}{5}$	$19\frac{1}{3}$
Leguminosæ - -	- -	66	- -	$22\frac{3}{4}$	- -	69	- -	$23\frac{3}{4}$	$23\frac{1}{4}$
Malvaceæ - -	- -	6	- -	$250\frac{1}{2}$	- -	6	- -	$272\frac{2}{3}$	$261\frac{1}{2}$
Caryophylleæ - -	- -	59	- -	$25\frac{1}{2}$	- -	60	- -	$27\frac{3}{10}$	$26\frac{4}{10}$
Cruciferæ - -	- -	71	- -	$21\frac{1}{6}$	- -	73	- -	$22\frac{2}{5}$	$21\frac{7}{10}$
Ranunculaceæ - -	- -	36	- -	$41\frac{3}{4}$	- -	42	- -	39	$40\frac{3}{8}$
Dicotyledones cæteræ -	- -	342	- -	- -	- -	378	- -	- -	
DICOTYLEDONES -	- -	- -	1148	$1\frac{1}{3}$	- -	- -	1220	$1\frac{1}{3}$	$1\frac{1}{3}$

1441. *Scotland*, comprising the northern extremity of the island, commencing in latitude 55°, and its flora having been tolerably satisfactorily investigated, we here subjoin a similar list, drawn up by Mr. Arnott. The Phænogamous plants are taken from the *Flora Scotica* of Dr. Hooker; the Cryptogamia from the *Flora Scotica*, the *Flora Edinensis*, and *Cryptogamic Flora* of Dr. Greville, and from the late Captain Carmichael's manuscripts.[†] It will be observed that the Musci, Filices, Lichenes, and Hepaticæ have of late years received comparatively few additions; while the Algæ and Fungi have increased so enormously, that more are now reckoned for each order than Gray has stated as natives of the whole island.

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[*] Kindly drawn up for this work by G. A. W. Arnott, Esq. of Edinburgh.

[†] The proportions in the Cryptogamia will be found probably much more correct for Scotland than those given in the British table are for the whole of Britain; and this owing to the very accurate researches which have been made in that tribe by Dr. Greville, and by the late Captain Dugald Carmichael; particularly by the latter in the Fungi and Algæ; so that the discoveries of that gentleman alone in those two groups, in one small district (Appin) in the west highlands of Scotland, amount to more species than were previously described as inhabiting the whole of the British dominions.

Names of the Natural Families.	Species.			Proportion of Natural Orders to Phænogamous Plants.	Names of the Natural Families.	Species.			Proportion of Natural Orders to Phænogamous Plants.
Fungi	-	974	-	1 to 1⅑	Scrophularinæ	-	37	-	1 to 29¼
Algæ	-	465	-	2⅓	Labiatæ	-	39	-	28⅕
Lichenes	-	260	-	4⅙	Borragineæ	-	18		
Hepaticæ	-	73	-	14⅘	Ericineæ	-	18		
Musci	-	264	-	4⅒	Campanulaceæ	-	9		
Filices	-	48	-	22½	Compositæ	-	105	-	10⅓
ACOTYLEDONES	-	-	2084	½	Rubiaceæ	-	16		
Gramineæ	94				Umbelliferæ	-	44	-	24⅗
Cyperaceæ	66				Rosaceæ	-	52	-	20⅘
Junceæ	28				Leguminosæ	-	43	-	25
Glumaceæ	-	188	-	$5\frac{7}{9}$	Malvaceæ	-	5		
Orchideæ	-	19			Caryophylleæ	-	45	-	24
Monocotyl. cæteræ	-	53			Cruciferæ	-	56	-	19⅓
MONOCOTYLED.	-	-	260	4⅙	Ranunculaceæ	-	25		
Coniferæ	-	3			Dicotyled. cæter.	-	245		
Amentaceæ	-	56			DICOTYLEDONES	-	-	823	$1\frac{3}{10}$
Euphorbiaceæ	-	7							

1442. *It must be remarked*, that in *Cyperaceæ*, *Junceæ*, *Salix*, *Saxifraga*, *Rosa*, *Rubus*, and some others, the *species* are not formed on the same rules as in Smith's *English Flora*; and therefore, before drawing a parallel between these orders in Scotland, and in the whole of Britain, a considerable number of species ought to be added. To make this comparison, then, about twenty species may be added to the *Monocotyledones*, and about fifty (say forty-seven), to the *Dicotyledonous* plants, making these two, 280 and 870; whence the Monocotyledones of Scotland are to the whole of those in the British dominions as one to one and a quarter, or as four to five; and the Dicotyledones as eight to eleven.

1443. *Ireland* possesses a flora which partakes of the nature of those of England and Scotland. A list of the phænogamous plants has been recently published by Mr. J. T. Mackay, of the Dublin College Botanic Garden. It exhibits a much poorer vegetation than its sister island, including only 934 species; of which there are,

41 Filices. 211 Monocotyledones, and 682 Dicotyledones.

So that the proportion of Filices to Phænogamous plants is as - 1 : 21¾
Monocotyledones to Phænogamous plants 1 : 4¼
Dicotyledones to Phænogamous plants - 1 : 1⅓

1444. *The proportion* of Irish Monocotyledones to British Monocotyledones (according to the species of Smith) is as - - 1 to 1⅔, or as 3 to 5.
Of Irish Dicotyledones - 1 to 1⅔, or as 3 to 5.

1445. *If we take into consideration* the plants of the northern part of England, according to the species in Mr. Winch's list of the plants of Northumberland, Cumberland, and Durham, we shall find that there are 47 *Filices*; other *Cryptogamia*, 1206; *Monocotyledones*, 249; and *Dicotyledones*, 788; so that the total Cryptogamous to Phænogamous plants are as - - 1 to ⅚
Filices to ditto - - - - 1 to 22
Monocotyledones to ditto - - - 1 to 4⅙
Dicotyledones to ditto - - - 1 to 1⅓
Or, if compared with the whole of the British empire: —
Monocotyledones to British Monocotyledones (by Smith's *Flora*) as 1 to 1⅖, or as 5 to 7.
Dicotyledones to British Dicotyledones (by Smith's *Flora*) as 1 to 1½, or as 2 to 3 nearly.

1446. *Proportion* of the Classes of Plants to the Phænogamous: —

Names of the Natural Families.	Great Britain and Ireland. (Smith.	Scotland. (Hooker, &c.)	Ireland. (Mackay.)	N. of England. (Winch.)
Dicotyledones	1 to 1⅓	1 to $1\frac{3}{10}$; or nearly 1 to 1⅓	1 to 1⅓	1 to 1⅓
Monocotyledones	1 to 4¼	1 to 4⅙	1 to 4¼	1 to 4⅙
Acotyledones (including Filices)	1 to ⅔	1 to ½	unknown.	1 to ⅚
Filices	1 to 26	1 to 22½	1 to 21¾	1 to 22

1447. *Relative proportion* of species in —

Names of the Natural Families.	Great Britain and Ireland. (Smith.)	Scotland. (Hooker.)	Ireland. (Mackay.)	N. of England. (Winch.)
Dicotyledones	28	20	17	19
Monocotyledones	36	26	21	25

1448. *Few, indeed, of the* 3300 (taking them in round numbers) species of plants now enumerated as natives of England, Scotland, and Ireland, and the adjacent islets, can be considered as exclusively belonging to these countries. For though there are many which are not referred to as species in the works of other authors, yet they are, for the most part, among such families as are not well understood, and about which there will always exist a difference of opinion; as among the Grasses, Willows, Brambles, &c. The Scottish and Cornish Lovages (*Ligusticum scoticum* and *cornubiense* Sm.) were long considered to be peculiar to the British dominions; the one in the extreme south, the other in the north; but the former is now well known to be an inhabitant of maritime places in all the arctic and subarctic regions, so that it has only in Scotland and the north of England found its southern limits; whilst the latter, which we have received from Italy, and which grows also in Greece and Portugal, has, in Cornwall, reached its extreme northern boundary. The place of the Bird's-eye Primrose (*Primula farinosa*), so abundant in pastures in the north and west of England, is supplied by the Primula scotica in the northern districts of Scotland, and in the Orkney Islands: it is unquestionably a distinct species; but we are confident, from the excellent representation of it in the *Svensk Botanik*, that it is also a native of Sweden, though there confounded with P. farinosa. These instances will suffice to show with what great caution we ought to look upon any plant which may have been considered to belong exclusively to the British dominions.

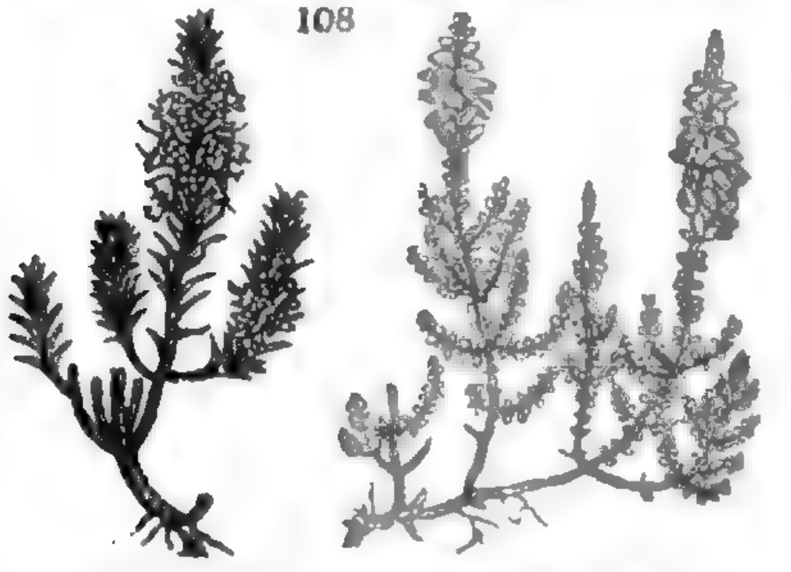
1449. *Many plants* have indeed reached their northern limits in the south of England and Ireland. We must particularly mention the Strawberry Tree (*Arbutus Unedo, fig.* 107.), which forms so charming a feature in that most beautiful of all scenery, the Lake of Killarney. Some have, indeed, supposed that it was introduced into Ireland by the monks of Mucruss Abbey, at some very remote period. Its appearance is, however, altogether that of an aboriginal native, coming to a great size*, perfecting its bright scarlet berries, which are disseminated over the rocks and islands in every direction. The *Erica vagans*, or Cornish Heath (*fig.* 108. *a*), is found no where in Britain except Cornwall; and the same may be said of the newly-discovered *E. ciliaris* (*b*), and the following, of great beauty or rarity: *Lobelia Dortmanna*, *Phyteuma orbicularis* and *P. spicata*, *Sibthorpia europæa* and *Isnardia palustris*, are quite southern plants in the British dominions.

107

STRAWBERRY TREE.

1450. *The Water-Soldier* (*Stratiotes aloides*); the Water Violet (*Hottonia palustris*); the small Maidenhair Grass (*Briza minor*); the Sweet Violet (*Viola odorata*); several Mulleins, the Primrose-peerless (*Narcissus poeticus* and *biflorus*); the common Snake's Head (*Fritillaria meleagris*); the Agrostis setacea, the Star of Bethlehem (*Ornithogalum pyrenaicum*); the two species of Squill (*Scilla autumnalis* and *bifolia*); the Mountain Spiderwort (*Anthericum serotinum*); the Solomon's Seal (*Convallaria polygonatum*); and Sweet Sedge (*Acorus Calamus*); the Yellow-wort (*Chlora perfoliata*); the Mezereum (*Daphne Mezereum*); the Flowering Rush (*Butomus umbellatus*); the Yellow Marsh Saxifrage (*Saxifraga Hirculus*); though on the Continent a very arctic plant, the Clove Pink (*Dianthus caryophyllus*); and D. prolifer, several Catchflys (*Silene*); Euphorbias, Cistuses, Anemones, the Traveller's Joy (*Clematis Vitalba*); the Ground Pine (*Ajuga Chamæpitys*); the Wood-Sage (*Teucrium Scorodonia*); the crested and field Cow-wheat (*Melampyrum cristatum* and *arvense*); some Orobanches, the Vella annua, Draba aizoides, and Iberis amara, some Fumitories (*Fumaria solida*, *lutea*, and *parviflora*); the yellow and crimson Vetchlings (*Lathyrus Aphaca* and *Nissolia*); the Vicia hybrida, lævigata, and bithynica, Hippocrepis comosa; Orchis Morio†, pyramidalis, ustulata, fusca, militaris, tephrosanthos, hircina; Aceras anthropophora, Herminium monorchis; all the species of Ophrys, Epipactis rubra, Malaxis Loeselii; the beautiful and rare Lady's Slipper (*Cypripedium Calceolus*); the Birthwort (*Aristolochia Clematitis*); the Roman Nettle (*Urtica pilulifera*); the Xanthium strumarium and Amaranthus Blitum; the Spanish Chestnut Tree (*Fagus castanea*); and Misseltoe (*Viscum album*); the Sea Buckthorn (*Hippophae rhamnoides*); and White Poplar (*Populus canescens*): these are some among the most striking of the British plants, which do not reach the middle of the kingdom, and fail below the south of Scotland.

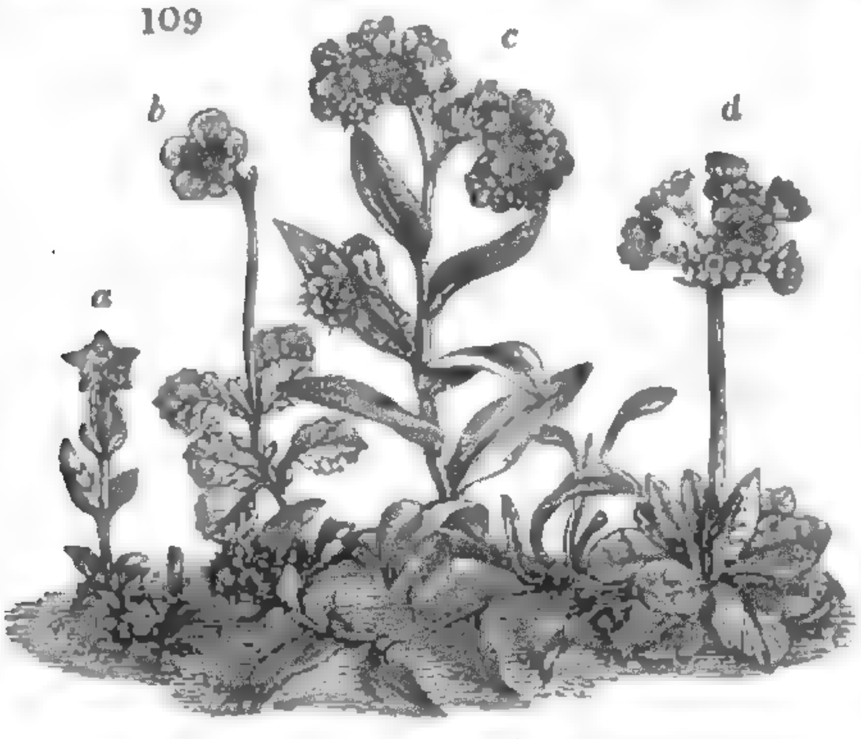
108



CORNISH HEATH. CILIATED HEATH.

1451. *The most interesting of the Scottish plants* are, principally, such whose types are found on the continent of Europe, in high northern latitudes, or in the extreme arctic regions of both Asia and America; such as Veronica fruticulosa, saxatilis, and alpina, several alpine grasses, and other glumaceous plants; such as Phleum alpinum and Alopecurus alpinus, Eriophorum alpinum; Juncus castaneus, arcticus, and biglumis; and Luzula arctica, Primula scotica (*fig.* 109. *a*), the Myosotis alpestris (*d*), Azalea procumbens, Gentiana nivalis (*c*), Sibbaldia procumbens, Convallaria verticillata, Epilobium alpinum, Arbutus alpina, Pyrola uniflora (*b*), Saxifraga nivalis and rivularis, Stellaria scapigera (the latter is exclusively British), Arenaria rubella and fastigiata, the Cherleria sedoides, Lychnis Viscaria and alpina, Spergula saginoides, Potentilla opaca, Nupbar Kalmiana, Ranunculus alpestris, Ajuga pyramidalis, Cardamine bellidiflora, Orobus niger, Astragalus tralensis and campestris, Erigeron alpinum, Corallorhiza innata, Achillæa tomentosa, Goodyera repens; the most alpine Carices and Salices, and the Dwarf Birch (*Betula nana*).

109



a, SCOTTISH PRIMROSE. *b*, ROCK SCORPION GRASS.
c, SINGLE-FLOWERED WATER-GREEN. *d*, SMALL ALPINE GENTIAN.

1452. *There are two plants* which deserve particular notice, as natives of Great Britain, and found nowhere else in Europe; but these are again met with in North America; the one is Potentilla tridentata (*fig.* 110. *a*) abundant in arctic America and upon the Rocky and White

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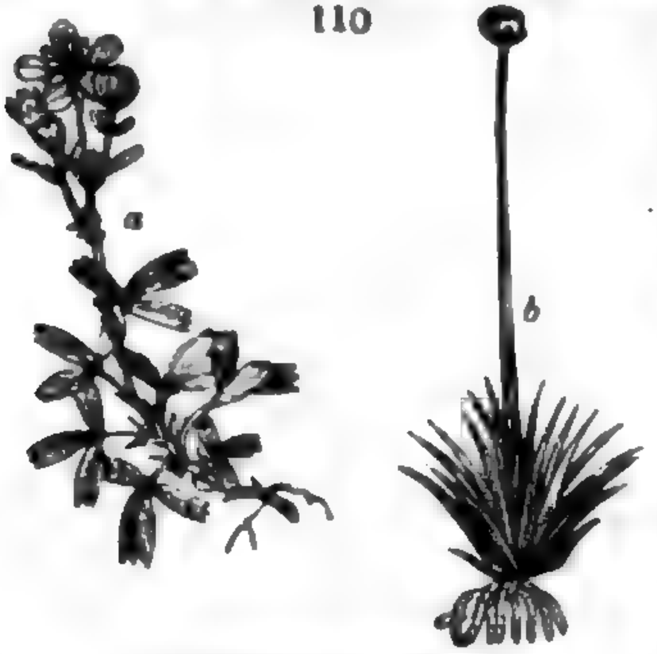
* Mr. Mackay measured a trunk of this fine evergreen tree on Rough Island, nearly opposite O'Sullivan's Cascade, which, in 1805, was 9½ feet in girth, at a foot from the ground.

† On the authority of Lightfoot, indeed, this plant, so abundantly found in England, is given as a native of Scotland; but no living botanist, that I am aware of, has ever seen it there.

Mountains, the other the Eriocaulon septangulare (*fig.* 110. *b*). This latter genus is mostly tropical, or a native of the warm temperate zones in America, the East Indies, and Australia. The only exceptions to this rule are the Eriocaulon pellucidum of Michaux, and the plant in question; the former being found in North America as high as Canada; and, upon examination, the two species prove identical. In these instances, the Eriocaulon and the Potentilla seem to have overcome many obstacles in their migration, and to have reached their eastern boundary. The Eriocaulon is confined to a few lakes in the Hebrides, where we have been surprised in the month of September at the high temperature of the water, which probably never freezes; and in some spots in the south and west of Ireland: the Potentilla is only found on one hill in Anguesshire.

110

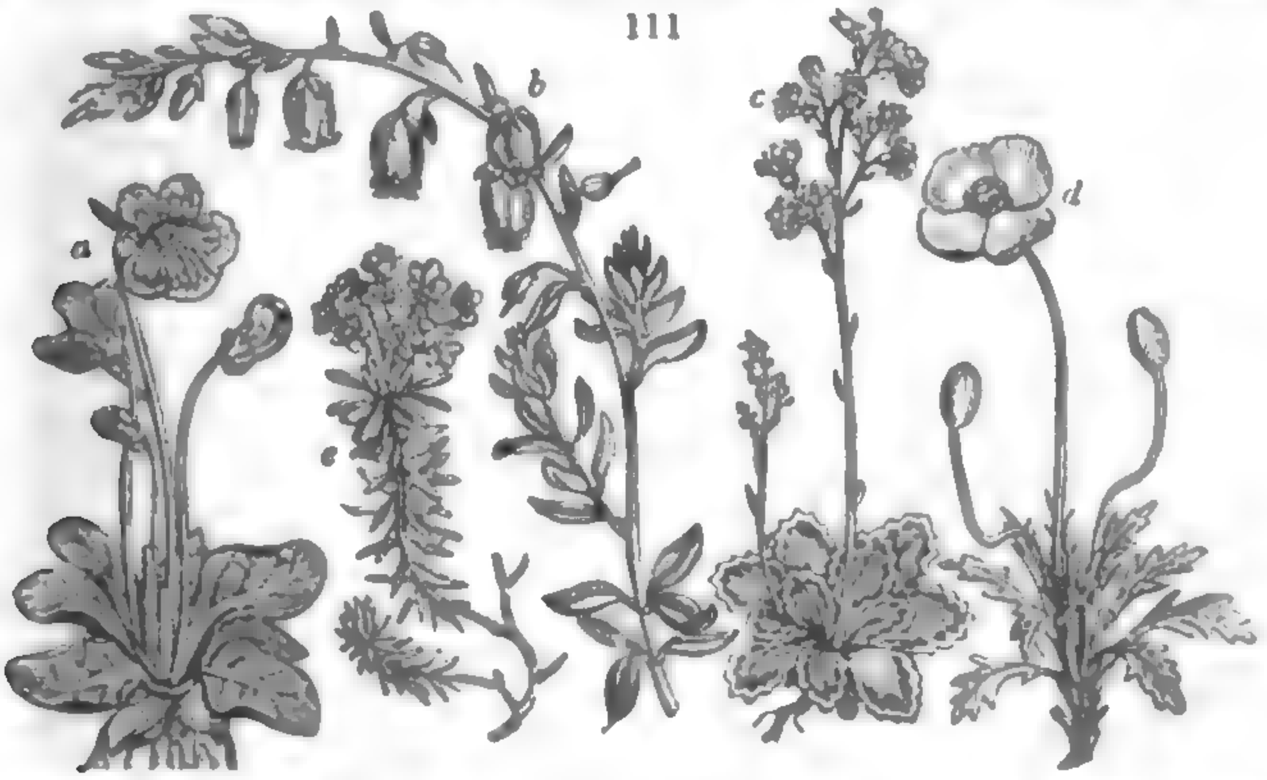


a, TRIFID-LEAVED CINQUEFOIL.
b, JOINTED PIPEWORT.

1453. *It is worthy of remark*, that the genus Pedicularis, which is so numerous in species, in the eastern and southern parts of Europe, almost wholly disappears in Britain; for, notwithstanding the vast numbers of it which are found in Siberia, the south of Russia, Switzerland, extending even to the Pyrenees, and Germany, our country possesses but two, which are equally abundant upon the Continent; and although almost wholly an alpine genus, yet our mountains possess not one really alpine species. It would appear that the climate is peculiarly unsuited to their nurture; for in North America, in the same and especially in still higher northern latitudes, they again become abundant.

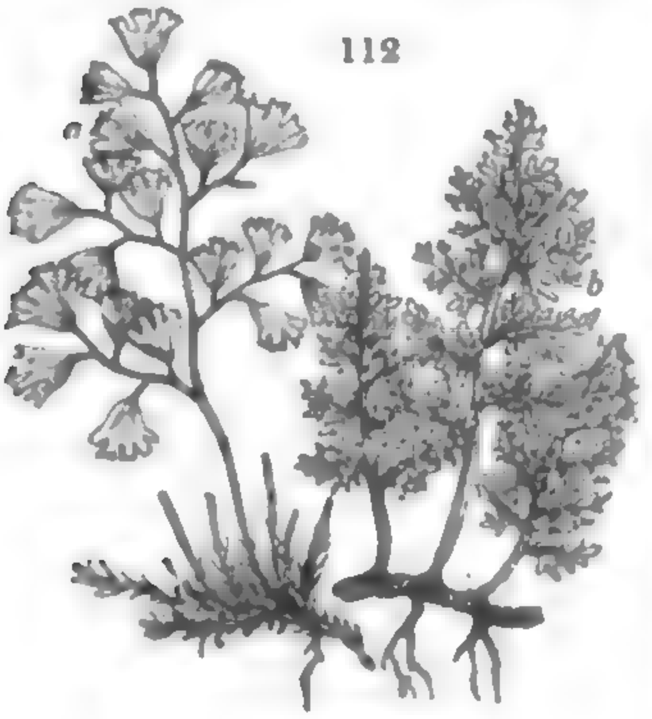
1454. *Ireland*, again, exhibits a few striking peculiarities in some of its vegetable productions. Besides the Strawberry tree (*Arbutus unedo*) already mentioned, it can boast of Pinguicula grandiflora (*fig.* 111. *a*), a beautiful flower, native of France and the Pyrenees; Menziesia polifolia (*b*), a species belonging to the latter country and to Spain, and found in a wild state in no other parts of the world; it is, too, a most lovely one: also St. Patrick's Cabbage (*Saxifraga umbrosa*) and the London Pride (*S. Geum*, *c*) and their varieties, which are scarcely known to exist but in Switzerland and the Pyrenees; Arenaria ciliata, a native of the mountains on the continent of Europe; and to these rarities have lately been added, by Professor Giesecké, the Yellow Poppy (*Papaver nudicaule*, *d*), and the Ledum palustre (*e*,) both of them peculiarly arctic productions, and plentiful on the northern extremity of America and Greenland; and with these we must be permitted to number, though Cryptogamic plants, the Trichomanes brevisetum (*fig.* 112. *b*), which scarcely grows any where else in the world but in Madeira and in Yorkshire (if it be not now extinct in the latter habitat), the Adiantum Capillus Veneris (*a*), whose only locality in the British dominions is the west of Ireland, and one spot in Wales, but which is frequent in the south of Europe, and even in the tropical parts of America; and two mosses, Hookeria laetevirens, and Daltonia splachnoides, entirely peculiar to Ireland.

111



a, LARGE-FLOWERED BUTTERWORT. *b*, IRISH MENZIESIA. *c*, KIDNEY-LEAVED SAXIFRAGE.
d, NAKED-STALKED YELLOW POPPY. *e*, MARSH LEDUM.

112



a, TRUE MAIDEN-HAIR.
b, SHORT-STYLED BRISTLE-FERN.

1455. *Hibernia*, again, possesses three remarkable vegetable productions, which are now, we believe, pretty generally distributed in our gardens and shrubberies throughout the kingdom, and are universally known by the names of the Irish Broom, Irish Furze, and Irish Yew. The former, we believe to be the Sparticum patens of Linnæus, a Spanish species, with very hairy pods; and it is, probably, not wild in that country. The Irish Furze has an appearance very different from that of the European or Dwarf Furzes (*Ulex europæus* and *nanus*), having very erect short branches, and closely placed spines; so that the whole plant has a remarkably dense and compact habit, appearing almost as it it were kept close clipped with shears. It blossoms rarely, but we have seen both flowers and seed-vessels, which do not differ in any material point from those of Ulex nanus. In some gardens it is called U. europæus var. strictus; but Mr. Mackay, perhaps with justice, considers it to be quite a distinct species, and he has called it, in his "Catalogue of the Indigenous Plants of Ireland," Ulex strictus. Still, the only stations for this plant are in the Marquess of Londonderry's park and shrubberies, at Mount Stewart, county of Down, where there are some very large bushes; but whence it came, no one can tell. This would, however, be a very valuable plant to the agriculturist; for, according to Mr. Stewart Murray, it has been planted (for it increases readily by cuttings) in dry hilly pastures in the north of Scotland, and in the early spring throws up an abundant crop of succulent shoots, which are greedily eaten by the sheep, when there is little or no grass to support them.

113

IRISH YEW.

1456. *The third Irish botanical curiosity* is the Irish Yew (*fig.* 113), or Florence-Court Yew, as it is called in that country, from its being first discovered at Florence Court, the seat of Lord Enniskillen. Mr. Mackay does not consider it to be wild; but Mr. Hervey, in the *Agricultural Magazine* for October, 1828, says, that it is an undoubted native, and plentiful in the neighbourhood of Antrim, where there are trees at least a century old. It is distinguished by its upright branches, which give the whole plant somewhat the habit of a Cypress; by the leaves growing, not in a distichous manner, but from all sides of the stem: the drupe or berry, too, Mr. Mackay says, is of a different form from that of the common Yew.

1457. *If we had room here for its insertion*, we would gladly have drawn up a full list of those plants which are exclusively peculiar to the east or to the west sides of this kingdom, or which have, at least, their maximum in either one, and are very rare or altogether wanting on the opposite side. We are sure it would be productive of highly interesting results. The hasty catalogue which follows, though made without the accurate care which the subject would require, if it received the scrupulous attention which it merits, will, nevertheless, suffice to show that the plants of the east coast, generally, have the character of those which are natives of dryer and warmer climates; whereas those of the west are, in most instances, types of the subalpine plants of more southern latitudes, or exhibit a vegetation analogous to that of the more southern coasts of France and the Mediterranean. It must be observed, however, that it is extremely difficult to define the limits of the verge of the plants on the east or west coast, for want of more full stations than we are yet possessed of, and more ample local floras; and it must be clearly understood that the annexed list must be considered only as an approximation to the truth, even upon its own limited scale.

1458. *Plants* which are either wholly confined to the *east* side of England, or have their maximum there, rarely extending to the centre of the kingdom: —

Veronica triphylla
——— verna
Dactylis stricta
Polypogon monspeliensis
——— littoralis
Alopecurus bulbosus
Panicum sanguinale
Agrostis Spica venti
Dipsacus pilosus
Holosteum umbellatum
Gentiana verna
Tillæa muscosa
Bupleurum tenuissimum
——— rotundifolium
Menyanthes nymphæoides
Pimpinella magna
Myosurus minimus
Verbasca
Campanula patula
——— Rapunculus
Thesium linophyllum
Salsola fruticosa
Statice reticulata (differs from the plant so called of Scotland and Wales)
Tofieldia palustris
Acorus Calamus
Luzula Forsteri
Fritillaria meleagris
Tulipa sylvestris
Ornithogalum nutans
——— umbellatum
——— luteum
Trientalis europæa
Dianthus caryophyllus
Sedum album
Silene quinquevulnera
——— conica
——— anglica
——— noctiflora
Lythrum hyssopifolium
Adonis autumnalis
Anemone Pulsatilla
Glaucium violaceum
Stratiotes aloides
Ajuga alpina?
——— Chamæpitys
Melampyrum cristatum
——— arvense
——— sylvaticum
Orobanche minor
——— ramosa
Turritis glabra?
Orchis fusca
——— militaris
——— taphrosanthos
——— ustulata
——— hircina
Ophrys muscifera
——— apifera
——— arachnites
——— aranifera
Aristolochia clematitis
Hippophae rhamnoides
Urtica pilulifera
Atriplex pedunculata.

1459. *Plants* which are either wholly confined to the *western* side of England, or to Wales, or which have their maximum there, rarely extending beyond the centre of the kingdom: —

Pinguicula lusitanica
Polycarpon tetraphyllum
Knappia agrostidea
Scirpus Holoschænus
Rubia peregrina
Lysimachia thyrsiflora (Yorkshire and Scotland)
Campanula hederacea
Lobelia Dortmanna
——— urens (but not so in Scotland)
Pulmonaria maritima, (found as far south as Devonshire*; not confined to either coast of Scotland)
Primula farinosa (most abundant in Cumberland; in Scotland confined to the east, and rare)
Impatiens noli tangere
Gentiana campestris
Corrigiola littoralis
Exacum filiforme
Eryngium campestre
Sium verticillatum
Sibthorpia europæa
Bupleurum Odontites
Illecebrum verticillatum
Anthericum serotinum
Scilla verna
——— autumnalis
Rumex digynus
Juncus filiformis
Saxifraga nivalis (Wales and Yorkshire)
Cotyledon Umbilicus
Oxalis corniculata
Andromeda polifolia
Arenaria tenuifolia
Cotoneaster vulgaris
Papaver cambricum
Cistus polifolius
——— guttatus
——— marifolius
Actæa spicata
Melittis melissophyllum
——— grandiflorum
Bartsia viscosa
Brassica oleracea
——— monensis
Draba aizoides
Cheiranthus sinuatus (Anglesea)
Arabis hispida
Erodium moschatum
Vicia bithynica
Lotus diffusus
Chrysocoma aure
Euphorbia Peplis
Asplenium septentrionale (Denbighshire; in Scotland, east?)
Adiantum Capillus Veneris.

1460. *In general, with regard to such of the plants* above mentioned as are found in Scotland, the same rule, as to locality, holds good in that country also. There are, however, some differences, and a few unexpected peculiarities, which we shall shortly notice; and Scotland being of so much smaller extent, and perhaps more thoroughly investigated, than England, we can speak with more certainty as to the range of these vegetables.

1461. *Plants* found on the *west* side of Scotland almost exclusively: —

Pinguicula lusitanica
Lysimachia Nummularia
Convolvulus Sepium
Campanula hederacea
Jasione montana
Selinum palustre
Sison verticillatum
Œnanthe pimpinelloides
Statice Limonium
Drosera longifolia
Epilobium tetragonum
Dianthus deltoideus
Cotyledon Umbilicus
Lythrum Salicaria
Glaucium luteum
Thalictrum flavum
Bartsia viscosa
Brassica monensis
Ervum tetraspermum
Hypericum Androsæmum
——— elodes
Picris hieracioid
Inula crithmoides
Epipactis latifolia
Gymnadenia conopsea (very rare on the east coast).

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* According to Turner and Dillwyn's *Botanist's Guide*.

1462. *Plants* found on the *east* side of Scotland almost exclusively: —

Phleum arenarium
Festuca loliacea
Echium vulgare (doubtfully wild on the west)
Primula veris
——— elatior
Convolvulus arvensis
Gentiana amarella
Saxifraga tridactylites
Silene noctiflora
Euphorbia Esula
——— exigua
Arenaria verna
Potentilla verna
——— argentea
Spiræa Filipendula
Marrubium vulgare
Lavatera arborea
Astragalus glycyphyllus
——— hypoglottis
Trifolium fragiferum
——— ornithopodioides
——— scabrum
Vicia lutea
Cnicus Eriophorus
Onopordon Acanthium
Artemisia maritima
Epipactis palustris
Asplenium septentrionale.

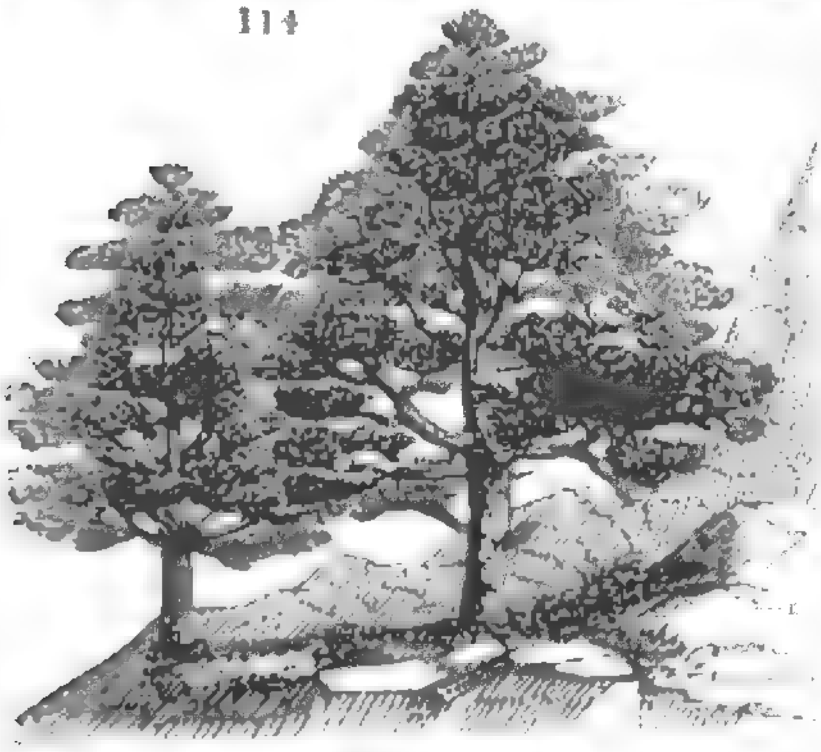
1463. *The trees that are aboriginal natives of Britain* are the Oak (two species); the Elm (five species); the Beech, the Ash, the Maple, Sycamore, Hornbeam, Lime (three species, according to Smith); the Spanish Chestnut (?); the Alder, Birch, Poplar, (four species); and the Scotch Fir: to which may be added the Mountain Ash, which in some parts of Scotland attains to a great size. Of these, then, the Oak, the Beech, Birch, and Scotch Fir live in society, —

> " In grouping beauty rise the loftiest trees,
> Secure in friendship from the blighting breeze;" —

forming vast forests, almost to the exclusion of other trees. The finest forests of Oak and Beech are unquestionably to be seen in the southern parts of England; the latter flourishing, to an extraordinary degree, in the chalk and deep clay soils of Sussex and some of the neighbouring counties. In Scotland, the oak, though there may be some exceptions, generally forms copse woods, and is mostly confined to the valleys. Its northern limit is scarcely within the British dominions. It extends to lat. 60° on the continent in Russia, and 64° in Norway; and if in Scotland oaks are not found in the extreme north, it is rather owing to want of shelter and of suitable soil, than to any other circumstance.

1464. *The Pine* (*Pinus sylvestris, fig.* 114.) constitutes noble forests among the mountainous districts of North Britain, filling the valleys, and ascending, probably, to the height of 2500 feet upon the hills, among the northern Grampians, especially in the districts of Braemar, Glenmore, and Rothiemurcus; and exhibiting individual specimens of such size and beauty as no one can form an idea of, who has not seen this tree in its native situations. About 20 years ago, the greater part of the noble forest of Glenmore, belonging to his Grace the Duke of Gordon, was cut down, and floated to the sea at Speymouth; where several ships were built of the excellent timber which it afforded. One individual was then felled, which afforded a plank, which we have seen at Fochabers: it is 5¼ feet in diameter, and free from every kind of imperfection.

114



SCOTCH FIR.

1465. *Of the fruit trees* which are successfully cultivated in the open air, the number is limited. In the south, exclusively, or, perhaps, as far as the centre of the kingdom, under favourable circumstances, the Vine, the Fig, the Quince, the Mulberry, Chestnut, Walnut, and Medlar may be advantageously planted. The Apple, Pear, the Plum of various kinds, the Peach, Nectarine, and Apricot; all, according to soil, exposure, and other local circumstances, ripen their fruit in the open air, if afforded the protection of a wall, as high north as Inverness, and some of the most hardy ones much higher: but the want of sun must ever be a hinderance to the thorough perfecting of good fruit in the north of Scotland.

1466. *Of the various kinds of Corn,* which are used as food for man or cattle, Wheat, Barley, Bere, Bigg, Oats, and Rye are the universal crops; and these all succeed in situations not too much elevated above the level of the sea, as far to the northward as Inverness, beyond which the wheat becomes a very uncertain crop; and even considerably south of Inverness, to the north of the Forth and Clyde, in lat. 56°, the cultivation of wheat is almost wholly confined to the eastern side of the country, the west being the district for pasture.

1467. *In regard to the height* at which certain plants will grow above the level of the sea, the southern and midland parts of Great Britain do not contain mountains upon a sufficiently lofty scale to render their investigation particularly interesting. The northern parts of England possess mountains of considerable elevation, upwards of 3000 feet; and it has fortunately happened that Mr. Winch's " Essay on the Geographical Distribution of Plants throughout the Counties of Northumberland, Cumberland, and Durham," of which the lat. 55° may be considered the medium, embraces a very great proportion of this very country, which, from its situation, may, in point of climate, be considered as intermediate between the more northern and southern floras of Great Britain; and though we cannot devote the room that would be necessary to introducing the whole of his remarks upon the humble and less known vegetables, yet we gladly select from the writings of so accurate an observer what concerns the more valuable and more striking vegetable productions.

1468. *The Oak,* in lat. 55°, attains a large size in the valleys; it ascends the hills, but gradually becomes of stunted growth in Weardale and Teesdale, to the elevation of 1600 and 1700 feet.

1469. *The Common Elm* (*Ulmus campestris*) is not indigenous north of the Tees;

its place being taken by the Wych Elm (*U. montana*), which skirts the mountains at a height of 2000 feet.

1470. *The Beech and Aspen* are truly natives, flourishing beautifully in the low sheltered spots, but not climbing the hills to equal heights with the oak. The White and Black Poplars (*Populus alba* and *nigra*) are doubtful natives of the north of England, as of Scotland; though the White Poplar is remarkable for withstanding the north-easterly winds, which are so destructive to vegetation in the counties of Northumberland and Durham. The Lime (*Tilia europæa*), the Chestnut (*Castanea vesca*), and the Hornbeam (*Carpinus Betulus*), stand in the same predicament.

1471. *Holly trees* are among the chief ornaments of the woods in Durham, Northumberland, and Cumberland, as is the Yew (*Taxus baccata*). The Birch (*Betula alba*) equals in size the birches of Norway and Sweden; but is not found on the mountains at a greater elevation than the Sycamore (*Acer Pseudo-platanus*), which in the subalpine regions seems to be as vigorous, and to attain as great a size as it does near the sea-coast. The Mountain Ash (*Pyrus aucuparia*) is found on the hills; the White Beam (*Pyrus Aria*) may be traced from the High-Force of the river Tees to the coast; the Alder (*Alnus glutinosa*) and the Guelder Rose (*Viburnum Opulus*) accompany our streams; and the Hazel, Black Cherry (*Prunus Cerasus*), Bird Cherry (*Prunus Padus*), the Spindle-tree (*Euonymus europæus*), the Raspberry (*Rubus idæus*), and the common Elder (*Sambucus nigra*), are found in all the woods from the sea-shore to those situated on an elevation of 1600 feet: but the common Maple (*Acer campestris*) occurs only in the hedges, in some parts of the flat country.

1472. *The Ash tree* (*Fraxinus excelsior*), the White Thorn (*Mespilus Oxyacantha*), the Crab tree, or Wild Apple (*Pyrus Malus*), and Black Thorn (*Prunus spinosa*), abound throughout the district in question. The Bullare (*Prunus insititia*) is rare; and the Plumtree (*Prunus domestica*), Pear (*Pyrus communis*), Red Currant (*Ribes rubrum*), the Berberry (*Berberis vulgaris*), and Gooseberry (*Ribes Grossularia*), though of frequent occurrence, appear not to be original natives of the soil. But the Rock Currant (*Ribes petræum*), the Acid Mountain Currant (*Ribes spicatum*), Alpine Currant (*Ribes alpinum*), Black Currant (*Ribes nigrum*), and Privet (*Ligustrum vulgare*), are indigenous, and not unfrequent.

1473. *On the elevated moors*, and even on the mountain of Crossfell, at an elevation of nearly 3000 feet, the roots and trunks of very large Pines (*Pinus sylvestris*) are seen protruding from the black peat moss: but the tree is no longer indigenous to the country; nor does the same tree now attain the size of the ancient Pine, though planted in similar moorland situations, though the young trees be protected, and even the plantations situated at a lower level.

1474. *The Furze* (*Ulex europæus*) attains to an elevation of 2000 feet in sequestered spots, accompanied by the Bramble. Juniper may be traced from the coast to the height of 1500 feet. The Cloudberry (*Rubus Chamæmorus*), the Bearberry (*Arbutus Uva ursi*), and Sand Willow (*Salix arenaria*), attain the same elevation; while the Dwarf Willow (*Salix herbacea*), but without its usual attendant the Reticulated Willow (*S. reticulata*), reaches to the tops of the loftiest mountains, upwards of 3000 feet above the level of the sea.

1475. *Coarse Grasses, Sedges, and Rushes* too often cover the wet moors with a scanty and almost useless vegetation. To the agriculturist the different Heaths are scarcely more acceptable; but they are unquestionably among the most beautiful of our native plants, and their abundance and the vast extent of ground which they clothe, give a peculiar character to very many parts of Great Britain, especially in the North. In the districts in question, the common Heather (*Calluna vulgaris*), the Fir-leaved Heath (*Erica cinerea*), and the Cross-leaved Heath (*Erica Tetralix*), the latter, however, less fragrant, and preferring moist situations; these flourish in various situations, from 1000 to 3000 feet above the level of the sea, but never in calcareous soil; which circumstance, Mr. Winch observes, occasions the striking difference between the heaths of Durham and Northumberland, and the Yorkshire Wolds as they are called, where the substratum is chalk.

1476. *The most considerable elevation* to which the cultivation of wheat extends in the north of England does not exceed 1000 feet above the level of the sea. Oats grow at nearly double that height; but in unfavourable years the sheaves may often be seen standing among the snow, which not uncommonly covers the tops of the mountains in October, and is never later in falling than the middle of November. The limits of Barley and Rye are between those of wheat and oats; but Bigg, a more hardy kind of grain than either of the former, is no longer cultivated. Turnips, though of small size, and Potatoes, grow at the same height as Oats. On the soil of the moors being ploughed for the first time, and lime applied, White Clover (*Trifolium repens*) comes up in abundance; and the same circumstance is noticed by Mr. Pursh to occur in North America when the woods are cleared away, and the ground first broken up.

1477. *Observations, similar to those we have now exhibited*, in a suitable part of Scotland were still a desideratum; and we have been fortunate enough, through the medium of Dr. Alexander Murray of Aberdeen, to obtain them from the Rev. James Farquharson, minister of Alford, Aberdeenshire; a gentleman, as his remarks will show, of much scientific knowledge, and great and patient research. It is to be hoped he may be induced to continue his investigations on these interesting subjects: and this may encourage others possessed of similar acquirements, and equal facilities, in different parts of Scotland, to collect a series of observations, which would be of the greatest service in forming a complete system of the *Vegetable Geography* of these islands. With this communication of Mr. Farquharson, which we shall give in his own words, we shall close our remarks, already perhaps too much extended for the nature of this work, on *British Botany*.

1478. " *The district*," Mr. Farquharson writes, " to which the following observations chiefly refer, is near the middle of Aberdeenshire, about lat. 57° 15′; and may be termed a table land, elevated 400 to 600 feet above the sea, studded with many irregular ridges and groups of mountains, of different elevations, up to 1800 feet from the level of the sea. The substratum is every where what is named primitive rock, granite, gneiss, and micaceous slate; the soil generally a friable, dark, vegetable mould, passing in some places into a lighter-coloured and more tenacious clay, and all containing many fragments of the primitive rock. A debris of clay and broken stones sometimes intervenes between the rock and the soil; but the many operations of road-making, draining, enclosing, and quarrying, which have of late years been performed within the district, show that this debris is not very extensive nor very deep, excepting at the edges of some of the more precipitous elevations. A valley in this district, about eight miles long and seven broad, nearly rectangular, and surrounded by ridges of the mountains, has furnished most of the phenomena here stated. The mean temperature of the air has not been determined; but two fine perennial springs, at an elevation of 500 feet above the level of the sea, on the 20th of November, 1828, gave 47° of Fahrenheit.

1479. *List of plants*, stating in feet the elevation above the sea which they reach, in the district of Alford, Aberdeenshire; and beyond which they do not grow, or cannot be cultivated successfully. Latitude 57° 15′; 25 miles inland: —

" 1. 400 feet. Wheat. This grain has been repeatedly cultivated in the valley, from this height up to 600 or 650 feet, within the last thirty years, by persons from the south country, well acquainted with its mode of culture, and on a large scale; but the result, owing to its frequently failing to ripen well, has not justified the extension, or even the continuance, of its growth here; and it is now rarely attempted. When it did ripen, in favourable seasons, the crop was abundant. It succeeds tolerably well nearer to the coast, about 150 feet lower.

" 2. 400 feet. Barley (*Hordeum distichum*). This has often been attempted, in place of the Bigg (*Hordeum hexastichum*).* It proved late, and frequently failed.

" An early variety, named Corsican Barley, succeeded admirably in situations as elevated as the Bigg, over which it had the great advantage of not being liable to lodge; but its culture has been discontinued, owing to the impolitic regulations of the Excise, which prohibit the malting of Bigg and Barley on the same premises; and as the maltsters generally use Bigg, our common grain, they could not, owing to this regulation, purchase Barley.

" 3. 950 feet. Bigg succeeds quite well up to this height, and often ripens in the more inland districts about 100 feet higher, where oats frequently fail.

" 4. 950 feet. Oats fail so frequently to perfect their grain higher than this, as to render their cultivation inexpedient at a greater elevation; and as they form the most important crop of our known rotations of cropping, no other kind is attempted at more elevated districts.

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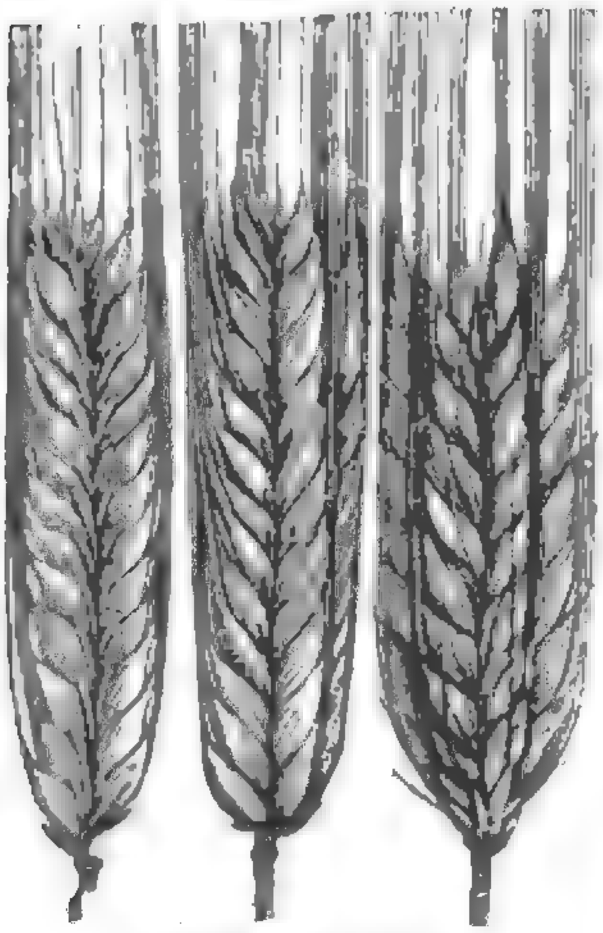

a, TWO-RANKED BARLEY.
b, FOUR-RANKED BARLEY.
c, SIX-RANKED BARLEY.

" 5. 950 feet. Avena strigosa follows the cultivation of both Bigg and Oats to this height; and as its increase is greater in proportion than theirs, it might probably succeed a good deal higher.

" N.B. The introduction of comparatively early varieties, as the Early Angus and Hardy Red Oats, which has already greatly benefited the farmer in this valley, will, perhaps, enable him to push his cultivation a little higher; where, at many points, there is yet good soil untouched.

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* I am not even sure that our Bigg is the Hordeum hexastichum. We have another kind of barley, called Packman-rich, which is as early as the Bigg, and more evidently distinctly six-rowed in the ear; the grains being also more closely packed in the rachis. It is seldom sown, being not quite so productive as the common Bigg. I suspect it may be the true Hordeum hexastichum. The former is doubtless the Hordeum vulgare of Linnæus, or four-ranked barley (*fig.* 115. *b*), the latter the Hordeum hexastichum *Linn.*, or six-ranked barley (*c*). In both there are six rows or ranks of seeds; but in the Hordeum vulgare (*Hordeum hexastichum* of Gray's *British Flora*), two opposite pairs of rows have the seeds more erect, imbricated, and compressed, appearing to constitute but two single rows; the other two or lateral rows of seeds are much more prominent. In Hordeum hexastichum the seeds arrange themselves in six distinct and prominent rows. These are the two most hardy kinds, and such as are generally cultivated in the northern and mountainous regions. In the south of Scotland, and in England generally, the Hordeum distichum of Linnæus, common or two-ranked barley (*a*), is cultivated. In this kind the two opposite double rows are abortive, and nothing but small empty husbels appear instead of seeds. The name of Bigg, or Bere, or Bear, is usually given to the four-sided barley, and that of six-sided Bigg or Bere, and Barley Bigg, to six-sided; but in common language they have often no distinguishing appellation. — *Ed.*

" 6. 950 feet. White Norfolk Pea. I introduced these in the lower part of the valley, about seven years ago, where they have always done well; and two years since I gave some for sowing in some of the highest cultivated lands of the district, where they have been equally successful, ripening before the Bigg. Grey Peas so often fail to ripen here, that they are seldom sown.

" 7. 600 feet. English Winter Tares (*Vicia sativa*). I began to plant these eight years ago, as a spring crop, and they have answered admirably in damp land. I have always been enabled from a portion of the crop to secure seed for a succeeding one. When sown in May they are heaviest to be cut from September to November.

" 8. 950 feet. Potatoes succeed with the oats here; but often fail to come to perfection in the Highland glens, even a very little more elevated than this.

" 9. 950 feet. Turnips become a valuable crop. The Red and White varieties are only for autumn use, as they often perish in winter; but we have a hardy Yellow variety, which I have never seen materially injured by cold, except in the unusually severe frosts of 1813 and 1814. Rutabaga is not planted; and as its produce is of much less weight, and as we have this valuable yellow sort, we do not require any which is more hardy.

" 10. 950 feet. Rye Grass (*Lolium perenne*).

" 11. 950 feet. Red Clover (*Trifolium pratense*).

" 12. 950 feet. White Clover (*Trifolium repens*).

" These three plants form our usual sown-grass fields for hay and pasture, and they answer well at this height. The last is a native, even higher. Thus we see that, to the most elevated points where oats, the principal crop, ripen, the cultivator gets up along with them all the plants necessary for a judicious rotation of crops: Turnips, Bigg, Rye-grass, and the Red and White Clovers.

" 13. 450 feet. Sainfoin (*Hedysarum Onobrychis*). I made an experiment on a small scale, three years ago, to introduce this on a piece of very dry, sandy, but rich and well-limed land, at this altitude: the plants came up freely, and many of them were remaining on the second year, but in the third year they had almost entirely disappeared, none having ever flowered.

" 14. 400 feet. Field Bean (*Vicia Faba*) does not ripen: a broad Spanish bean comes to perfection in gardens often.

" 15. 450 feet. Jerusalem Artichoke (*Helianthus tuberosus*) never flowers, but is propagated by tubers.

" 16. 450 feet. The Squash, recently introduced, named Vegetable Marrow (*Cucurbita Succado*, in Loudon's *Encyclopædia of Gardening*), perfects its seeds when sown under a hand-glass, till the second leaf expands, and then it may bear transplantation into the open ground.

" 17. 670 feet. Nasturtium (*Tropæolum majus*) has sometimes perfect seeds.

" 18. 950 feet. Flax (*Linum usitatissimum*) grows as high up as the Bigg.

" 19. 650 feet. Carraway-seed (*Carum Carui*) propagates itself by seed on a piece of enclosed grass.

" N. B. Many plants, as Papaverum somniferum, Verbascum Thapsus, Dipsacus fullonum, Cheiranthus Cheiri, Dianthus barbatus, not being natives of this part of the kingdom, yet propagate themselves by seed, without any attention being paid to sowing them, on the cultivated ground of a garden at 450 feet from the level of the sea: and at New, in Strathdow, about 800 feet high, a great variety of kitchen-garden herbs come to perfection in the open air, such as Strawberries, Beet, Carrot, Onions, Chives, Leeks, Parsley, Cresses, Lettuces, Radish, &c. The Cabbages and Greens are good at all the highest points to which cultivation is extended.

Trees and Shrubs.

" 20. 700 feet. Oak (*Quercus Robur*).* Half-rotten trunks of this tree, of only moderate dimensions, occasionally dug out of the ground (of which I have seen several), prove this tree to have been, recently, a native of this district; and a tradition, which may be relied on, points out the spots which furnished the timber of the old church at Forbes, situated within the valley, the only building constructed of oak in the neighbourhood. The native Oaks have all disappeared; unless a solitary small tree, remote from any others of equal age, and growing amidst an unprotected Hazel copse, within a mile of the above-mentioned spot, and on similar ground, may be considered as such. There are a great many planted Oaks in the valley, some of them at the above elevation, but their autumnal shoots (this tree sending out two shoots in a season) are generally killed in the succeeding winter.

" 21. 750 feet. Beech (*Fagus sylvatica*) becomes a very fine tree in the lower part of the valley, but a few reaching this elevation are miserably stunted.

" 22. 500 feet. Hazel (*Corylus Avellana*), is wild here, and ripens its nuts well: this cannot be considered as the farthest limit of its growth; but the progress of cultivation has probably exterminated it in higher spots.

" 23. 950 feet. Alder (*Alnus glutinosa*), in a natural state, skirts every where the streams in the low grounds: a few very small dwarf bushes of it are found in one place at this height.

" 24. 1050 feet. Scotch Fir (*Pinus sylvestris*) ceases to be of any value at a greater height, though it struggles a little farther still, in stunted mis-shapen bushes.

" 25. 1100 feet. White Birch (*Betula alba*) advances but a little farther than the Scotch Fir, as appears at one spot, where they were planted and have grown together.

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* Probably Quercus sessiliflora *Smith*.

"26. 1200 feet. Larch (*Pinus Larix*). This native of the Alps is now extensively planted, in all parts of the valley, with the greatest success; and at this height some extensive shrubberies, of eight or ten years' standing, mingled with Scotch Firs, appear in a prosperous state. One plantation has been carried as high as 1450 feet; but the Larches for 250 feet downwards are dwarf and sickly; and it appears likely that but few will exist long, beyond 1200 feet of altitude. The Larch was introduced here about sixty years ago; but being then deemed a delicate tree, none were tried on very high ground. The growth of the Larch is much more vigorous than that of the Scotch Fir; and being from the primitive regions of the Alps, the soil of Aberdeenshire proves very congenial to it, being chiefly primitive rock. The timber which it affords is strong and very durable. Sixteen years ago I had two gates made of Larch only forty years old; and although these have been constantly exposed ever since, the timber shows very little appearance of decay.

"27. 400 feet. Silver Fir (*Pinus Picea*). One plant of this native of the Pyrenees, the only one of any considerable age in the valley, has attained a large size, being 75 feet high, and containing 230 cubical feet of very healthy and growing timber.

"28. 800 feet. Hawthorn (*Mespilus Oxyacantha*) has, at New, at Strathdow, formed fine hedges at this elevation. In the valley, there are two fine solitary trees of it, at an altitude of 650 feet; a few good hedges are also seen in the lower grounds.

"29. 900 feet. Ash (*Fraxinus excelsior*) grows tolerably well at this height.

"30. 900 feet. Sycamore (*Acer Pseudo-platanus*).

"31. 500 feet. Elm (*Ulmus montana*) becomes here a fine tree: it has not been tried higher.

"N.B. Tilia europæa, Populus alba and tremula, Salix alba, Æsculus Hippocastanum, Sambucus nigra, Carpinus Betulus, Cytisus Laburnum, Pyrus Aucuparia, all thrive well in the lower districts of the valley, but have not here been planted nearly so high as the extreme limits of their growth. The Populus balsamifera, at 450 feet, appears sickly, and would not probably succeed any farther up.

"32. 800 feet. Cherries produced very fine and abundant crops, at New, in Strathdow.

"33. 800 feet. Apples are here a very uncertain crop; but at Castle Forbes, 500 feet high, they do not often fail. Auchintoul, the Ribston Pippin generally ripens well.

"34. 800 feet. Pears, the Jargonelle ripens here; but at 450 feet, the Auchen Pear seldoms comes to perfection.

"35. 900 feet. Gooseberries. This valley is the region of most delicious gooseberries; and when our best kinds, especially the Red Walnut, are in season, we need not envy the fruits of the most favoured regions. I have heard, from good authority, that Bishop Forbes of Aberdeen, who died in 1635, had remarked, that gooseberries became more delicious as they approached the upper limit of their cultivation, and that the Scots, in his day, possessed the finest varieties of this fruit; and that at his own castle of Carse, about 750 feet high, he had them of a higher flavour than he knew them to have any where else. Gooseberry bushes cease to become productive near the limits of our highest cultivation.

"36. 800 feet Raspberry (*Rubus Idæus*) is indigenous in the woods, at 650 feet.

"37. 1000 feet. Broom (*Spartium scoparium*) is found here in a stunted state, but bearing flowers.

"38. 850 feet. Whin or Furze (*Ulex europæus*). Several patches, at this elevation, seem to have no tendency to grow any higher up, although they spread laterally.

"39. 700 feet. Honeysuckle (*Lonicera Periclymenum*) will flower, if nailed to a wall.

"40. 600 feet. Evergreen Thorn (*Mespylus Pyracantha*), when attached to a wall, flowers in June, and ripens its dense branches of fine scarlet berries in October, which continue till it is again in blossom. It is one of our most ornamental shrubs.

"41. 600 feet. The Lilac (*Syringa vulgaris*) flowers here, but the inflorescence is always abortive.

"42. 450 feet. Evergreen oak (*Quercus Ilex*). Some years ago I obtained a few plants of this: they died down to the ground in winter; sending up new shoots from the root in spring, for two or three years, and then perished.

"43. 450 feet. Common osier (*Salix viminalis*) was given to me several years ago; but it does not thrive, dying very frequently in winter, especially the preceding year's shoots, and often indeed the whole plant.

"44. 450 feet. Berberry (*Berberis vulgaris*) ripens its fruit.

"45. 450 feet. Daphne Mezereum ripens its berries.

"46. 450 feet. The Hop (*Humulus Lupulus*) rarely produces any catkins.

"N. B. Ligustrum vulgare, Cornus sanguinea, and Lonicera Xylosteum blossom at 450 feet; but I have not seen them produce berries, except in the favourable season of 1827, succeeding the still warmer one of 1826. The Ligustrum and Cornus bore many berries on that year, and even the Lonicera had a few, all of which appeared to be fully ripe. Artemisia Abrotanum never flowers."

To some further queries which we addressed to Mr. Farquharson, respecting the influence of soil and situation, he obligingly communicated to us the following replies: —

"It is quite evident, from many indications, that the richness or poverty of the soil possesses considerable influence in extending or limiting the upper boundaries of the growth of all vegetables. In regard to the Herbaceous Plants and Gramineæ, the power of these circumstances becomes quite apparent in any field where a portion has been put into better order than the rest, by recent manuring, &c. In the manured part, the crops are much more luxuriant, and always somewhat earlier. This advantage would be again counteracted by a slightly increased elevation. Another condition of soil, its wetness or dryness, has much more effect in checking or extending the boundaries of these vegetables. It is only on dry lands that the different grains ripen at their respective highest elevations; and the retarding influence of a wet soil is so great as to make the crops in some of the lowest districts of the valley perhaps equally late with those in the highest. In regard to trees, it is apparent at many points in this country, that poverty of soil has prevented them from attaining their usual limit of altitude. The effect of a wet or dry soil varies upon trees, according to the habits of the different kinds, and cannot be defined.

"As to exposure, I have never been able to ascertain that this modifies the attainable elevation of any of the herbaceous or annual tribes.[*] Almost every variety of situation, both of aspect and shelter, occurs within this valley at all elevations; and it does not appear that in sheltered grounds the crops are earlier than on those which are open, or the contrary; or that the produce of fields having a northerly aspect is earlier or later than that of ground lying to the south. The circumstance of elevation, with respect to these plants, quite counterbalances the conditions both of aspect and shelter. It is true, indeed, that in the spring the vegetation is often much earlier in fields lying open to the south, than those which face the north; and pastures which have the former exposure are valuable on account of their early herbage. But for the final maturing of the ordinary crops, the disadvantages attendant on a north-lying field is compensated when the sun reaches the northern tropic; and these situations then enjoy all the benefit of his morning and especially his evening rays, which is generally considerable. In exact conformity with this view, it does not appear that farther inland, where the glens are narrower, and more protected by high mountains, the grain ripens at higher elevations than here. Certainly cultivated spots are found somewhat higher than any in Alford: but then the culture is not conducted solely with a view to the grain, but chiefly for the winter fodder necessary to support numerous herds of small cattle, which feed on the extensive mountain pastures in summer; and it is a common saying among persons possessed of these lofty spots, that if their grain ripens once in three years, it is all that they expect.

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[*] "As the position, that exposure does not modify the attainable elevation of the herbaceous and annual tribes, may appear rather startling; it seems necessary, in support of it, to refer to several localities, where the most satisfactory proofs of it occur. And first, in respect of aspect. In the lower part of the valley, the three points where the earliest crops uniformly occur almost every season are, Tulloch, in the parish of Keig; Montgarry, in the parish of Tullynessle; and some north fields in the Gallowhill, in the parish of Alford. The first of these has a direct west aspect; the second, a direct south one; and the last has an aspect within one point of the north, on a steep descent. The earliness is owing to the dryness of the soil. Next in order to these, in point of earliness, are some fields on Upper Auchintoul, having an aspect a little to the south of east. In the higher cultivated lands, the south-lying fields of Upper Balfour, in the parish of Forbes; the east-lying fields of Tiverchindy; and the west-lying fields, on the opposite side of the dingle at the same place, in the parish of Alford; and the fields near the top of the hill at Campfield, parish of Lum-

"On Trees and Shrubs, however, which are of loftier growth than the annual and herbaceous plants, and have to endure the severity of winter storms, the exposure has a most powerful influence. The numerous and extensive plantations in this valley furnish the most decisive evidence on this point. Many stations occur where the Scotch Fir, for instance, is dwarfish, and even killed, much below its natural limit; owing evidently to an unfavourable exposure, and not to any deficiency or unfitness of the soil; for in some of these places, corn crops of good growth are mingled with the plantations, or pass along the sides of them, and the trees have succeeded quite well in spots that are incidentally sheltered. It is, indeed, from its circumstances of shelter, and not of aspect, that exposure exercises such a powerful influence; for if the trees, planted in ground having a westerly or north-westerly aspect generally suffer most, and are most limited in their elevations, it is because our severest storms come from the west and north-west, and the trees so situated are exposed to their full violence. It may be concluded, therefore, that if we could command more shelter, trees, at least our native ones, would succeed at higher points than they here reach; and accordingly, I have been given to understand that at Braemar, in the upper part of this country, which is sheltered by the loftiest and most extensive masses of mountains in all Scotland, attaining a height of 3000 and 4000 feet and upwards, the Scotch Fir and White Birch grow at a much higher elevation than any I have named. Of this, however, I cannot give the exact particulars, but I believe the general fact.

"I can say nothing, from personal knowledge, of the different circumstances attending the extension of plants on the east and west coasts of Scotland; and I would not, therefore, have referred to the subject, except to bring forward a remark made in a work, not professedly scientific, and therefore, perhaps, liable to be overlooked: it is in Dr. Macculloch's interesting *Letters from the Highlands and Western Islands of Scotland*. He states the fact, that grain ripens better in the outer Hebrides than in the islands nearer the mainland, or on the west coast of the mainland itself; and the cause which he assigns for this striking circumstance is, that in these outer islands there is not sufficient elevation or continuity of land to lift up the atmosphere, and thus arrest and condense the vapours with which our prevailing westerly winds come loaded from the Atlantic. These islands, therefore, often, in summer, enjoy clear weather, when the inner islands and mountains are deluged with rain, or obscured by a heavy cloud."

SUBSECT. 3. *Zoology of Great Britain.*

1480. *The history of our native animals* is naturally more interesting, to the generality of readers, than of such as do not come under their own immediate observation; while to be ignorant of the names and properties of beings which every where surround us, is neither a proof of wisdom nor of a well-informed mind. Those who take an interest in the works of nature begin by examining objects immediately within their reach; and as few can extend their enquiries beyond such limits, the productions of every country will be best known, in proportion to the taste for such enquiries among its inhabitants.

1481. *The zoology of Britain* was first investigated by Ray, the great father of natural history, since the revival of learning after the darkness of the middle ages. This wonderful man must be also considered the true founder of natural history in Britain; and by his instruction and assistance, the name of his friend and

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phanan, having every variety of aspect; all these, at least the dry parts of them, ripen their crops at the same time, at upwards of 900 feet above the level of the sea. Secondly, in respect of shelter. The finely sheltered fields about Haughton, in the parish of Alford, appear to have no advantage, in point of earliness, over the entirely open grounds of the farm of Muckleindovie, in the same parish; although many of them are equally dry with the latter; these are in the lower part of the valley: and about 300 feet higher, the well-sheltered and dry fields of Craigievan, in the parish of Leochhill, are no earlier than many quite open fields, at the same elevation, in the immediate neighbourhood. In the spring months, however, the pastures of the sheltered, and especially the south-lying fields, possess the superiority mentioned in the text."

patron Sir Francis Willoughby shares a portion of the same immortal fame. But our native zoology, even at that period, engaged the attention of another labourer. The name of Lister must therefore be honoured, in conjunction with that of Ray, as having been the first who undertook to investigate the extensive order of molluscous animals: these he arranged with such an admirable perception of natural affinities, considering the period in which he wrote, that we know not which to admire most, the acuteness of his views, or the magnitude of his undertaking. It would have been well for the fame of Linnæus, had he paid more consideration to the writings of these philosophic observers, one of whom has justly been called his master; while the other was no less his superior in a correct knowledge of the testaceous animals. To these we must add the name of Ellis, whose work on Corallines, printed in 1755, has continued until the present day to be the most elaborate and valuable publication on this class of animals that has yet appeared: a long interval then succeeded, during which naturalists employed themselves merely in describing species, and in illustrating the Linnæan nomenclature. The only writer, of this period, whose works are now of importance, was George Edwards, whose *Natural History of Birds*, pretending to nothing more than plain and accurate descriptions, free from all scientific arrangement, has become, from that very cause, of great and general service. A return to a more accurate observation of natural groups first appeared in the *Lepidoptera Britannica* of Haworth, and in the elaborate work upon our native bees by Mr. Kirby; from these we may date the revival of natural history in Britain, from a vocabulary of words, to an intellectual science. Although not absolutely connected with our more immediate purpose, we deem this rapid glance over the history of the science in Britain will not be an unwelcome preface to the following remarks.

1482. *The zoology of the United Empire* might be treated of under the three kingdoms of which it is composed; were our materials sufficiently ample to mark the peculiarities of each. But it unfortunately happens, that although every year witnesses an accession of new species enrolled in the annals of our native fauna, no attempt has yet been made to generalise these discoveries, with reference to the geographic range of groups or species. Local catalogues of the animals found in a few counties have, indeed, been drawn up; but these, however valuable in themselves, are too scanty to allow of more than a partial insight into the general subject. The zoology of Ireland has been sadly neglected, and we are still without a Fauna Scotica. Thus embarrassed, we must consider the natural history of Britain in the aggregate; noticing such species as more particularly belong to the northern and the southern extremities.

1483. *Of Quadrupeds*, the most recent catalogue contains sixty living species, including the whale tribe; besides those which progressive civilisation, and the effects of the chase, have now extirpated from our islands. Nine species of Bats have been detected, four of which have as yet been found only in the southern and western counties: two belong to the division of horse-shoe bats, so named, from their nostrils being furnished with a complicated membrane, like a horse-shoe; an appendage which is probably intended to act as a sucker to assist the animal in retaining its prey. Another, the Vespertilio murinus, or common bat, as we are informed by White, has been so far tamed as to take flies out of its master's hand, carefully throwing aside the wings. Our woods and heaths still shelter the Hedgehog (*fig.* 116.), a harmless and a most useful animal in destroying snails, slugs, and worms; but persecuted by the vulgar for a long list of imaginary and nonsensical properties. These prejudices have been extended to the Mole, whose little hillocks form the best top-dressing, as a sensible farmer once assured us, to poor lands, that can possibly be given: their soft fur has long been mixed with that of the Beaver, in the making of hats. Allied to the Mole, in general conformation, are the Shrew Mice, of which two species are natives, the common and the Water Shrew (*Sorex araneus* and *fodiens*): both these appear to be widely distributed. Of true Mice we possess three distinct sorts: the Common or House Mouse, the Field Mouse, and the Harvest Mouse; the latter being as destructive to the farmer as the first is to the housewife. The Brown and the Black Rat infest our dwellings, and are equally injurious: the latter is known by the tail being longer than the body; whereas, in the Brown Rat, both these parts are equal. The pretty little Dormouse (*Myoxus avellanarius*) is a general favourite, and, like the Squirrel and Jerboa, eats its food in an erect attitude, sitting on its haunches, and using its forefeet as hands. The Water Rat and Short-tailed Mouse of Pennant (now placed in the genus *Arvicola*) occur in England: but the former is stated not to have been found in the northern islands; the latter is a most destructive little animal in gardens, where it grubs up seeds, particularly peas, just after they have began to germinate. A few years back, the short-tailed mouse suddenly appeared in immense numbers in the New Forest, and notwithstanding every artifice employed to stop their ravages, they destroyed many thousands of young trees, and devastated whole acres of young plantations.

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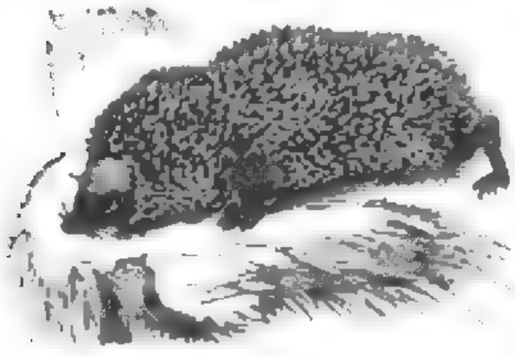

HEDGEHOG.

1484. *The Badger* was formerly a much more common animal in Britain than at present. It is a nocturnal feeder, sleeping in its hole during the day, yet, when attacked, is remarkably quick in its motions, and successful in its defence. If undisturbed, it is harmless and inoffensive, chiefly subsisting upon vegetables, although it will likewise devour frogs and slugs. It is stated to inhabit Sweden, although it does not appear to be known in the north of Scotland. The *Otter* has likewise become much less frequent of late years; it was formerly considered as a beast of chase, as our old game books mention otter hounds as particularly trained for hunting this animal. It feeds entirely upon fish, which it dives after with great celerity; and, unless pressed by extreme hunger, invariably leaves the tail extremity untouched. The legs are very short; and the toes being connected together by a membrane, gives to the animal the power of swimming very rapidly.

1485. *Our rapacious or carnivorous quadrupeds* are very few, and from their small size too insignificant to inflict much personal injury upon man. The *Bear* and the *Wolf* have long been extinct in Britain, and the Fox might possibly have shared the same fate, had it not been preserved as a beast of the chace since the extirpation of more formidable game. Pennant mentions three varieties of this animal found in Wales and other mountainous parts of Britain: —1. The *Milgri*, or Greyhound Fox, is the largest, tallest, and boldest, and is distinguished by a white tag or tip to the tail. 2. The Mastiff Fox, which is less, but more strongly built. 3. The *Curgi*, or Cur Fox, of a still smaller size, and having the tip of the tail black. (*Brit. Zool.* i. 87.) The varieties do not appear, however, to have fallen under the actual observation of subsequent naturalists, either British or continental.

1486. *The Ferret tribe* comprehends the Polecat, Weasel, Stoat or Ermine, the Common Marten, and the Pine Marten.

1487. The Polecat (*Putorius vulgaris* Cuv.), called also the Fitchet, Fitchew, or Foumart, measures, with the tail, about twenty-three inches. Its fetid smell is proverbial. Although included in the list of British quadrupeds, it appears, according to Strabo, to have been imported from the north of Africa. Like all its congeners, its habits are sanguinary; for it will destroy and suck the blood of many victims, before it attempts to carry off their bodies. The well-known Ferret is considered only a variety of this species. The Weasel is much smaller, and although repulsive from its odour, is yet an elegant-shaped animal. It feeds on mice and small birds, but will occasionally attack animals of a much larger size. Few persons suspect that the skins they see nailed against farm out-houses frequently belong to an animal whose fur, in another state, forms a most elegant and expensive ornament to female dress. This animal, despised in one state, and valued in another, is the Stoat (*fig.* 117.), the pest of the farmer, and the destroyer of his poultry. In the temperate and southern parts of Europe, its fur is yellowish-brown above, and pale yellow beneath; yet so soon as its geographic range enters on the more northern countries, as Russia, Norway, and Siberia, these colours vanish, leaving the fur of a pure white in every part but the tail, which is tipped with deep black; and in this state the skin is called ermine. In Scotland the animal, during winter, is frequently found in an intermediate stage of summer and winter clothing. Although small, it will attack large rats, and has been known to pursue a young hare by the scent.

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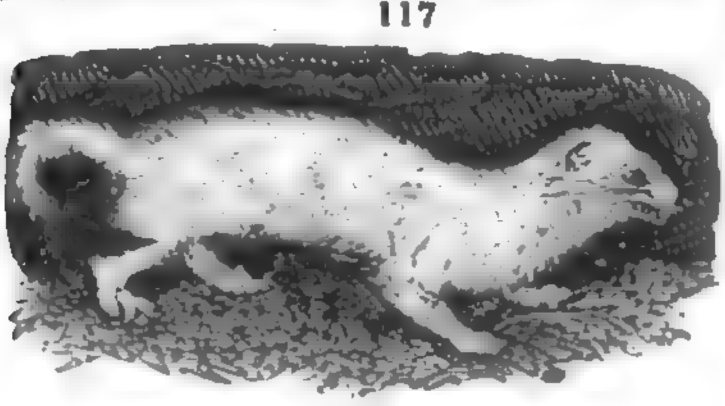

STOAT.

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PINE MARTEN.

1488. The Common Beech or Marten (*M. Fagorum* Ray) seems to prefer dwelling near habitations, choosing the shelter of out-houses and farm-buildings, as convenient retreats for carrying on its depredations among poultry, of which it is a great devourer; it also breeds occasionally in the hollows of trees.

1489. The Pine Marten (*M. Abietum* Ray, *fig.* 118.) is rather larger, and is further distinguished from the last in having the throat and breast yellow, instead of white. It is wild and solitary; shunning mankind; and only dwells in thick woods and forests, principally those composed of pines. It climbs with great facility; preys upon birds and their eggs, and also upon squirrels; the female generally making use of the nest of one of her victims for the rearing of her own young. The skin of this is much more prized than that of the common Marten, and appears to have been formerly, at least in Scotland, a lucrative article of commerce.

1490. *The Wild Cat* closes our list of these small but ferocious indigenous animals. Its manners are similar to those of the lynx, and Mr. Pennant justly calls it the British tiger. In its savage state it appears to be much larger than the ordinary domestic cat; and the teeth and claws, for the size of the animal, are tremendous. It is still found, although rarely, in the mountainous and woody parts of Great Britain, and some few years ago we saw a very fine skin of one that had been killed among the mountains of Westmoreland, near Windermere. Formerly they appear to have been much more numerous, and to have been considered a beast of chace. The best authorities agree in considering this species, common to the forests of Europe, as the origin of our domestic breed, the usual varieties of which are well known. Another, which seems more peculiar to Cornwall, has been noticed by Dr. Leach: it is without any visible tail, and is stated to be an hereditary variety. (*Cuv.* ii. 489.)

1491. *To enumerate the varieties of the Dog* now domesticated in Britain would be tedious, particularly after the luminous manner in which this subject has been treated by Pennant (*Brit. Zool.* i. 70.). Britain has been famous for her dogs from remote antiquity. Our mastiffs were held in such estimation by the Romans, that their emperors appointed an officer in this island, with the name of *Procurator Cynegii*, whose sole business was to breed and transmit from hence such as would prove equal to the ferocious combats of the amphitheatre. Strabo also mentions that the mastiffs of Britain were in great repute, being trained for war, and used by the Gauls in their battles.

1492. *The Bloodhound*, during the troubled periods of English history, was in high estimation, and much used to track the footsteps of robbers and marauders; but the breed is now extinct. A remarkable variety of the Greyhound, more peculiar to Ireland (hence called the Irish Greyhound or Wolf Dog), is nearly lost, a few couples alone having been preserved in one of the parks in that island. The Terrier is the best house guard; while the Shepherd, the Water, and the Newfoundland dogs are probably the most sagacious.

1493. *Of ruminating animals* now existing with us in a state of nature, there are but three; the Stag or Red Deer, the Fallow Deer, and the Roebuck. It would appear, however, that the first two are not indigenous to our islands. Mr. Pennant writes — "We have two varieties of fallow deer, which are said to be of foreign origin: these were introduced by King James I. out of Norway, which he visited for his intended bride, Anne of Denmark. He first brought some into Scotland, and from thence transported them to his chaces of

Enfield and Epping, to be near his palace of Theobald's." The only memorial of this palace is probably preserved in the name of Theobald's Road. M. Cuvier, indeed, expresses a doubt whether the stag was originally European; but Major Hamilton Smith, with much better reason, considers the Fallow Deer (*Cervus Dama*) as indigenous to Europe; adding, that it is still found wild from Sweden to Gibraltar, and from Ireland to Constantinople. The Stag (*Cervus Elaphus*) seems to be unquestioned as an indigenous species; and although the wild breed is yearly diminishing in numbers, it is still found in Gloucestershire, the north-west part of Devon, and in some of the remote districts of Scotland. Pennant, by some unaccountable mistake, has placed the Stag and the Fallow Deer as varieties of one species.

1494. The Roebuck (*Cervus capreolus* Ham. Smith) is much less than the two preceding, and is, indeed, the smallest of European deer. It is remarkably graceful and active, habitually preferring the sides of elevated woods or forests. As he leaves a strong scent, nature has given him peculiar sagacity to perplex his pursuers: he begins, after a forward dash, by doubling over his track, to mislead the hounds, and then by some great bounds he springs forward to a cover, where he lies down to let the chase pass. The roebuck is now become very scarce in Britain, and was equally so in Scotland, but we are told it has reappeared of late years in Fifeshire, in consequence of the increased plantations. (*Brit. An.* p. 26.)

1495. *The Ox* is the only remaining animal of this order which claims a place among our indigenous quadrupeds. We have before observed, that in remote ages, a gigantic race of oxen was numerous throughout Europe; and that, although now extinct, there is reason to believe that the colossal species mentioned by Cæsar, as existing in his time, was of this race, now only known by its fossil bones. These remains lay scattered through the whole of temperate Europe, in the same strata with the lost species of Elephant; but that the race was preserved to a much later period is proved by similar bones occurring in more recent formations, as in peat mosses, drained lakes, marshes, and beds of sand. The wild races, of inferior size, belonging to this species, may probably, as Major Smith observes, even now exist in Asia. However this may be, it appears certain that the real Urus was found wild in the Vosges mountains, and in the forests of Ardennes and Germany; while its existence in England is incontestably proved by Fitz-Stephen, who speaks of the *Uri silvestres*, which in his time (that is, about 1150) infested the great forests — round London!

1496. *The only existing breed* of wild oxen now known, is the white Urus, or *Urus scoticus* of Ham. Smith. Its skull agrees with the fossil breed in being "square from the orbits to the occipital crest, somewhat hollow at the forehead, and the horns showing a peculiar rise from their root, at the side of the above crest, upwards, and then bending outwards, then forward and inward: no domestic race shows this turn." The true *Urus* was further distinguished by a mane, which is still observed about two inches long, in old bulls of the Scottish race (*fig.* 119.). When this breed was exterminated from the open forests is not known; but it was confined to parks long before the Reformation. The colour is entirely white, with the muzzle wholly black. Their manners are singular: upon perceiving a stranger, they gallop wildly in a circle round him, stop and gaze, toss their heads, and show signs of defiance; this is repeated several times, each circle being made smaller, till they approach sufficiently near to make an effective charge. The cows conceal their young eight or ten days; and when one of the herd is wounded or enfeebled, the others gore it to death. The breed is still preserved at Chillingham Castle, near Berwick-upon-Tweed, Wollaston in Nottingham, Gisburne in Craven, Limehall in Cheshire, and at Chartley in Staffordshire.

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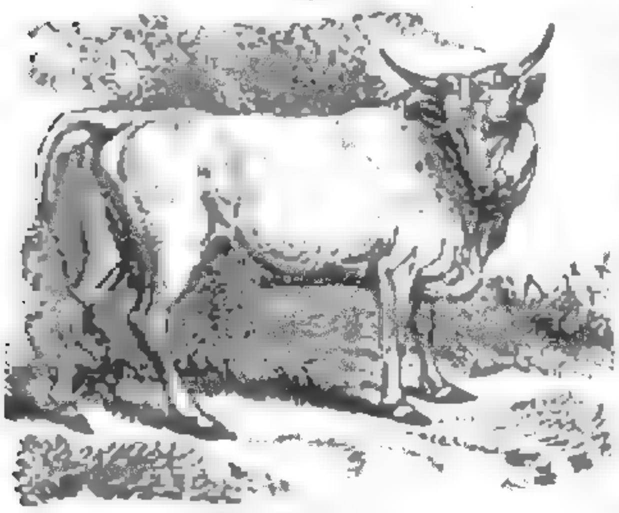

WILD SCOTTISH OX.

1497. *The domestic Ox* (Bos Taurus), considered by some as a variety, and by others as a distinct species from the last, is supposed by Hamilton Smith to have been first domesticated by the Caucasian nations of western Asia. It is stated to have fourteen ribs, whereas those of the *B. Urus* are but twelve; a distinction sufficiently important to sanction the belief of a specific difference. Whether or not this parent of our domestic races ever existed in these islands in a state of nature, is very doubtful. The various breeds for which Britain has long been justly celebrated will be noticed under the head of domestic animals.

1498. *The marine and cetaceous mammalia* are few, and are not very generally dispersed. Two species of Seal have been noticed by Pennant. The *Manatus borealis*, or Sea Cow, has only once been found on the northern coasts of Scotland; and the Walrus, at remote intervals, has been recorded as a visiter to our seas. The Piked Whales (*Balænoptera musculus* and *boops*), the Razor-back Whale, and several others of the great northern cetacea, wander near the Hebrides and Orkney islands, and occasionally visit the shores of Northumberland and Yorkshire. The Porpoise and the Grampus have a wider range, and large shoals roam unmolested near all our coasts. There can be no doubt that whales, of several species, were much more common in the northern seas of Britain formerly, than they are at present; but the persecution they have suffered, from the establishment of our fisheries, has long since driven them to the polar regions.

1499. *Exterminated native animals.* In every country the increase of civilisation and agriculture is marked by the progressive diminution and final extirpation of the larger quadrupeds, particularly of such as are injurious to man. Among those which history clearly informs us were once living in Britain, the most remarkable are the Bear, the Wolf, the Beaver, and the wild Boar. To the writings of Pennant and Hamilton Smith we are indebted for the following notes on these lost inhabitants of our forests.

1500. *It appears that Bears, in the time of Plutarch*, were transported from Britain to Rome, where they were much admired. Ancient Welsh manuscripts attest their existence in that country as beasts of chace; a fact further corroborated, says Pennant, by the frequent name of Pennarth given to places in the principality: they appear to have been extinct in Britain long before Queen Elizabeth's time; but there is proof of the bear infesting Scotland in 1057.

1501. *Wolves.* It seems to have been a vulgar error that the wolf was extirpated in Britain by the salutary edicts of King Edgar, who accepted their tongues and heads as tribute, or as a commutation for certain crimes: for in the reign of Edward I. these animals had again increased to such a degree, that officers were appointed to promote their destruction, and lands were held by hunting and destroying them. Wolves infested Ireland many centuries after their extinction in England; some having been killed so late as 1710. In Scotland, the last on record was destroyed in 1680.

1502. *The Beaver* was still an inhabitant of the Welsh rivers in 1188, as is attested, according to Pennant, by Giraldus Cambrensis: but even at that remote period they must have considerably diminished, as the historian only mentions their being found on the river Teivi. Local names of other waters in the principality attest their existence in other places. Fossil remains of this species are stated to have been found in beds of marl, under peat moss, in Berkshire; and similar bones have occurred in Perthshire and Berwickshire.

1503. *The Wild Boar*, to which we are indebted for our domestic breeds of swine, must be reckoned among indigenous quadrupeds, although now extinct in Britain. Pennant quotes the laws of Howeldda, who permitted his grand huntsman during part of November and December to chase that animal. William the Conqueror punished, with barbaric cruelty, those who killed the Wild Boar, the Stag, and the Roebuck, by the loss of their eyes. Fitz-Stephen affirms that the vast forest, which in his time stood on the north side of London, was the retreat of Stags, Fallow Deer, Wild Boars, and Bulls. At a more recent period, Charles the First turned out Wild Boars in the New Forest; but they were destroyed during the civil wars.

1504. *Fossil quadrupeds.* The splendid discoveries that have resulted from the investigations of Dr. Buckland, Mantell, Conybeare, and other eminent geologists of our own country, have opened a native field of research, which, in Britain, had long been overlooked or neglected. Without entering into the question whether these fossil remains belong to animals which did or did not at some period inhabit the spots wherein their bones have been found, it is sufficient to confine ourselves to simple facts. The remains of the cave bear of Dr. Buckland occur in several of our caverns, and are sufficient to prove the living animal must have equalled a horse in size. The Kirkdale and Plymouth caves abound with the bones of an extinct hyæna, somewhat resembling in its osteology that now existing in South Africa; with these have been found the bones of a tiger, which must have been as large as the Bengal species. The tusks, teeth, and other fragments of an extinct species of elephant, totally different from those now in existence, have been detected in marl clay, &c. joined with those of two other gigantic quadrupeds, a rhinoceros and a hippopotamus; while the jaw of a marsupial animal, unknown among the existing race of beings, has been found in the Stonesfield slate quarries (*fig.* 120.).

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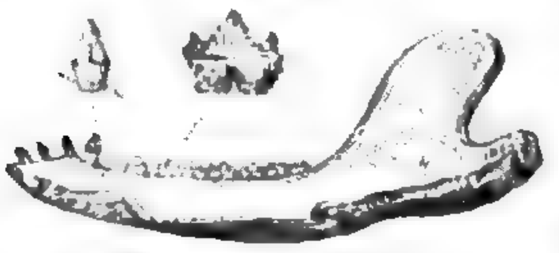

JAW OF MARSUPIAL ANIMAL.

1505. *Domestic quadrupeds.* No nation, perhaps, has been more solicitous to improve their originally poor breeds of domesticated quadrupeds than the British; and hence their present superiority over most of those on the Continent. Under this head we commence with the ruminating animals, as the ox, the sheep, and the goat, so essential in supplying food and clothing to man; while the horse, the ass, and the dog assist him in his labour, or protect his property.

1506. *The principal breeds of oxen* more peculiar to Great Britain have been arranged by Major Hamilton Smith under nine divisions. Of these, three belong to England, three to Scotland, two to Wales, and one to Guernsey.

1507. *The long-horned or Lancaster breed* (*fig.* [illegible]1.), as the name implies, is remarkable for long horns; they have firm thick hides, long close hair, large hoofs, and give in proportion less milk, but more cream. They are of various colours, but are in general finched, that is, with a white streak above the spine, and a white spot inside the houghs. The improved Leicester is a slight variety, originally bred near Coventry.

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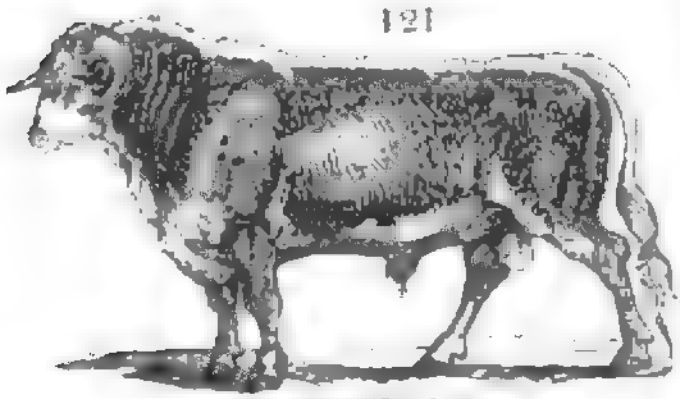

THE LONG-HORNED OX.

1508. *The short-horned breed* includes those that are named the Holderness, Teeswater, Yorkshire, Durham, and Northumberland. This has been the most improved, producing usually twenty-four quarts of milk per day, and three firkins of butter per season. Their colour varies, but is generally red and white mixed; called by the graziers flecked.

1509. *The middle-horned* includes the Devon, Hereford, and Sussex breeds: they are active, hardy, and much esteemed for draught; but although they fatten early, do not milk so well as the last. The pure Devons are of a high red colour, without spots, a light dun ring round the eye, fine in bone, clear neck, thin faced, and the tail set on high: the north Devon is most esteemed for eating. The Sussex and Hereford are larger, the ox weighing from 60 to 100 stone.

1510. *The Scottish breeds* may be arranged under the Polled, the Highland, and the Fifeshire.

1511. *The Polled Galloway is the most esteemed:* it is straight in the back, the hair soft, the colour black or dark brindled, and the size not large. They travel well, and reach the London markets without deterior-

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ation. The Suffolk Dun is a variety of this race. The Highland race includes several varieties, the most valuable being the West Highland, Argyle, or Skye, and the Kyloe from the Hebrides. The Norlands is another variety, with coarse hides, long legs, and of a narrow make. The Orkney or Zetland are very diminutive: an ox weighing about 60 lbs. a quarter, and a cow 40 lbs. Their colours are various, and their shapes bad; but they give an abundance of excellent milk, and fatten rapidly. The Fifeshire appears an improved breed of the Highlands, crossed with the Cambridgeshire; they are black, spotted with grey; the horns small, white, and very erect: a variety occurs in Aberdeenshire.

1512. *The Welsh have two breeds*: the first is large, dark brown, with some white; the legs long and slender; the horns white, and turned upwards: these, next to the Devon, are the best in yoke, and are a cross of the long-horned; the second is lower, well formed, black with little white, and are good milkers. The Alderney or Guernsey race is proverbially small: their colour is mostly yellow or light red; marked with white about the face and limbs, and with crumpled horns. The true breed is known by being yellow within the ears, and at the root of the tail and its tuft.

1513. *Respecting draught Oxen*, we cannot refrain from here inserting an excellent and judicious remark of Pennant. "It is now," observes this sensible writer, "generally allowed, that, in many cases, oxen are more profitable in the draught than horses: their food, harness, and shoes being cheaper; and should they be lamed or grow old, an old working beast will be as good meat, and fatten as well, as a young one." (*Brit. Zool.* i. 28.)

1514. *The Sheep* is scarcely inferior in utility to the ox: and the breeds now cultivated in Britain, taking all their qualities into consideration, are perhaps the most valuable in the world. It is a curious but little known fact, corroborated by history, that the famed Merino sheep of Spain originated from the English breed, sent to that country by Edward IV. as a present to King John of Arragon. (*Bak. Chron.* p. 206.) Major H. Smith estimates the present annual value of wool (1826) shorn in England, and no longer exported, at five millions sterling; which, together with about 600,000*l.* of Spanish wool and some Saxon imported, is worth about twenty millions sterling per annum.

1515. *The British Sheep*, according to Mr. Culley, may be arranged under fourteen different breeds, and some others might also be enumerated. These may be classed under two principal divisions; those derived from the ancient race being furnished with horns, while the others in general have none.

1516. *Of the horned breeds*, the most ancient is the black-faced (*fig.* 122.), still met with in some heathy parts of Yorkshire, and the adjacent northern counties: the wool is coarse and shaggy. The Norfolk and Suffolk sheep, also, have the horns large and spiral, with the face black, but the wool is short and fine: they have a voracious appetite, and a restless disposition. In the Dorset the face is no longer black, but both sexes are usually horned. This breed is remarkable for producing lambs at almost every season, and is therefore highly valuable for supplying the London markets with house lamb. The Wiltshire is a much larger variety, having no wool on the belly. The Hertfordshire is a fine productive variety, with short tails. The Exmoor comes from Devonshire: it is small, the wool long, and the face and legs white. Scotland furnishes three breeds of horned sheep; the Dun-faced, the Zetland, and the Hebridean.

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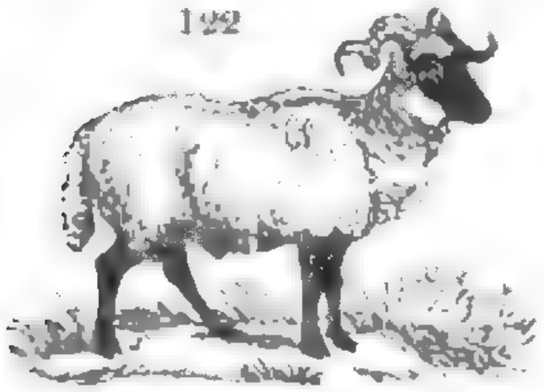

THE BLACK-FACED SHEEP.

1517. *The hornless race* may be divided into nine other breeds. The Lincoln has long wool and a white face: in the Teeswater the wool is shorter and lighter, and the legs longer. The Dishley, or new Leicester, is distinguished by a clean head, and the excellency of its flesh. The Devonshire Nots, like the three preceding, are long-woolled; they have white faces and legs, thick necks, short legs, and large bones. The short-woolled hornless breeds are the following: — The Hereford (*fig.* 123.) have very fine wool, which grows close to their eyes, the legs and face being white: the store sheep of this county are called Collings or Rylands. The South Down, principally cultivated on the chalky downs of Sussex, have the face and legs grey, and are highly esteemed for the table. The Cheviot have the head bare and clean, and are sometimes spotted with grey or dun; the fleece is very short and fine. The Hardwicke is peculiar to the rocky districts of Cumberland, and is speckled on the face and legs.

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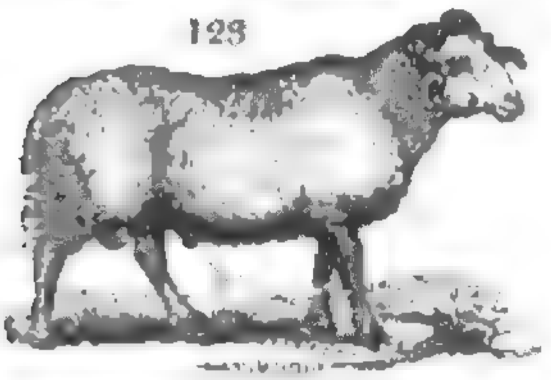

THE HEREFORD SHEEP.

1518. *The Goat*, which in some parts of Italy supplies the only milk and butter known to the inhabitants, is of little utility in a country abounding in sheep and oxen. But to the Welsh mountaineers it is a valuable animal: the suet will make excellent candles; the meat is little inferior to venison, and those who, like us, have habitually feasted upon mountain kid, know how superior its flavour is to lamb.

1519. *The Horses of Britain*, improved as they have been by the most sedulous care, next to the Arabian are the finest in the world. Our breeds originally but ill adapted for the saddle, have progressively improved; and the crossing of our indigenous kind with those of other countries has produced four principal classes of horses, — the Racer, the Hunter, the Roadster, and the Dray Horse; to these may be added the Poney, one of our original breeds: but the best informed zoologists agree in thinking it is now impossible to trace the native regions of the original wild stock from which all these have descended. Horses were so numerous among us in the reign of King Stephen, that London, as Fitz-Stephen relates, could furnish 20,000 cavalry; but in Queen Elizabeth's reign they seem to have greatly diminished, as the whole kingdom could not supply 2000 horses for that purpose.

1520. *The Ass* is little used, and still less esteemed, in Britain; but in Spain, Italy, and other mountainous parts of Europe, its qualities are highly valued, and much care is taken to preserve the best breeds. The Dog we have already mentioned.

1521. *The Ornithology of Great Britain*, after the general observations already made on that of Europe, will be here but briefly dwelt upon. Our native birds may be arranged under three natural divisions: — 1. the rapacious; 2. the perching; and 3. the walking, running, and swimming orders.

1522. *The rapacious birds*, as in all other countries, are the smallest in number, but the most formidable in strength. Among these the Golden Eagle (*Aquila chrysaëtos*, *fig.* 124.) stands foremost, as being the largest known in our islands: this noble bird weighs twelve pounds, and is still found among the highest of our Welsh and Cumberland mountains; it is said also to breed in Orkney. The Erne or Sea Eagle is somewhat smaller, and is principally confined to the maritime rocks of Wales and North Britain. The Falcon tribe is more numerous in species; but the destruction to which they are doomed by game preservers has long been diminishing their numbers: some species are almost extirpated, and nearly all are now become rare. The Osprey (*Pandion Haliætus*), or Fishing Eagle, is now seldom met with. Our two species of Henharrie (*Circus cyaneus* and *cinerascens*) were first discriminated by that excellent ornithologist Colonel Montagu. The Owls are similar to those of the Continent, but the great Snowy Owl has only of late years been detected in the north of Scotland as a native bird. The Eagle or great horned Owl is of the same size; the former hunting by day, the latter by night. The Barn or White Owl is known to every farmer, and appears to be distributed over the whole habitable globe.

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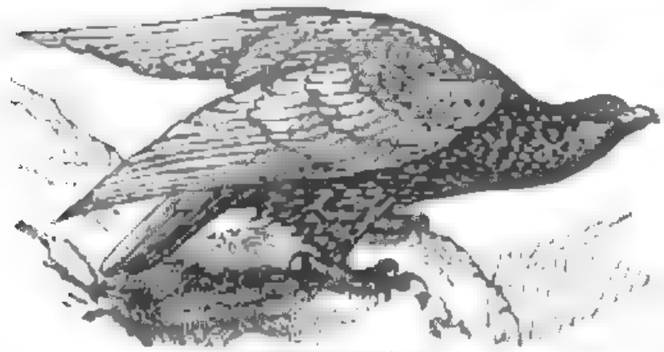

GOLDEN EAGLE.

1523. *The toothed-bill or perching birds* (*Dentirostres* Sw.) are those furnished with a notch to their bill, by which their food is held firm before it is swallowed. Some are formed to climb, others to hop on the ground, and a few catch their food (like the swallows) upon the wing. They are united to the rapacious order by the shrikes or butcher-birds, so called from their singular custom of impaling insects and small birds upon the thorns round their nests. Three species of these birds are known in Britain. The melody of the Blackbird and Song-thrush need not be eulogised; and during spring and summer our woods and hedges are enlivened by numbers of warblers, or small insectivorous birds, which visit us in the breeding season: among which the Nightingale is most conspicuous. Large flocks of Finches, and similar hard-billed birds, feast, in winter, upon the red berries of the black and white thorn; while Crows, Starlings, and Fieldfares devour prodigious quantities of slugs, worms, and other animals noxious to the farmer. The Woodpeckers, Creepers, and Titmice prey only upon those insects prejudicial to trees; while the Swallows, during summer, join with the warblers in keeping within due bounds the myriads of insects, which would otherwise increase to an alarming extent.

1524. *The entire-billed birds* (*Curtipedes* Sw.) are those which have no notch at the end of their bill, and never seek their food among trees: they are united to the former by the Pigeons, and comprise the gallinaceous, wading, and swimming tribes. Among the first we possess the Partridge, Grouse, and Quail, but more particularly the Great Bustard, the largest of the European gallinacea: from its size, and the delicacy of its flesh, this noble bird has been much persecuted by sportsmen, and is gradually disappearing from its ancient haunts: it is now, we believe, only preserved on some estates in Norfolk: its weight is about 25 lbs., and its flesh excellent. To enumerate the wading and swimming birds would far exceed our limits: they visit us principally in winter, and depart in spring. If the cold is very severe, immense numbers come to our shores from the polar regions, and afford an additional supply to the London markets.

1525. *The exterminated birds* are very few; for although some, as the Egret (*fig.* 125.) and the Crane, are no longer common in Britain, yet individuals are sometimes met with, showing that man and not nature has scared them from their hereditary range. To class such birds as not belonging to the British fauna implies a misconception of the fundamental principles of geographic zoology. Perhaps the only extirpated species is the cock of the wood, or capercaillie grouse (*Tetrao Urogallus* L.), a noble bird of game, weighing near thirteen pounds; once common in the fir forests of Scotland, but which has not been seen, it is said, since 1760.

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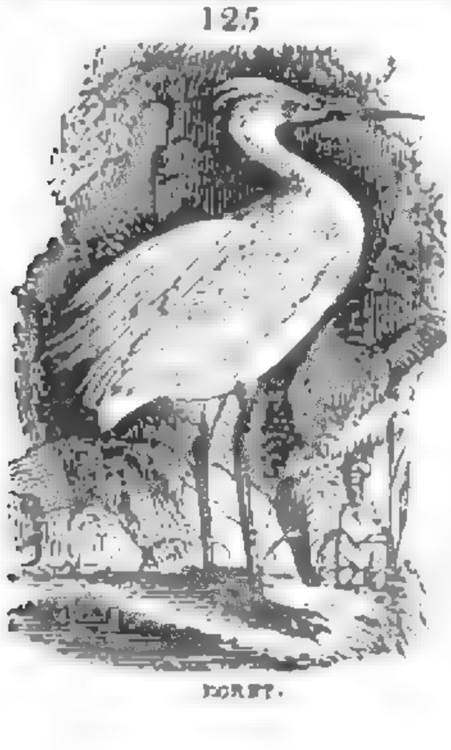

EGRET.

1526. *Our domesticated birds* are well known. The Pheasant originally came from Asia Minor; the Guinea Hen from Africa; the Peacock and Fowl from India; and the Turkey from America.

1527. *The fishes*, both marine and freshwater, are numerous: most are edible, and many highly esteemed. The Whale and other cetacea, as before remarked, are mostly confined to the northern shores: but those of the west are famous for the herring and pilchard fisheries. The John Doree is as remarkable for its grotesque form as for its exquisite flavour. The Turbot, Cod, Sole, &c. are well known. Our chief river fish are the Salmon, Trout, and Char; and these are principally furnished by the northern counties. The salmon fisheries are highly important, and have long engaged the attention of the legislature: the eggs of one fish will often exceed 15,000. The Char is confined to the lakes of Cumberland and Westmoreland; those of Windermere are the best, and when *potted* become a great delicacy. The Herring and Sprat supply the poor, during winter, with a wholesome dish; while the citizens of London consider another species, called the White Bait, as possessing a peculiarly fine flavour. The Anchovy is not unknown in some of our estuaries; and even the Flying-fish has occasionally wandered to the Welsh coast.

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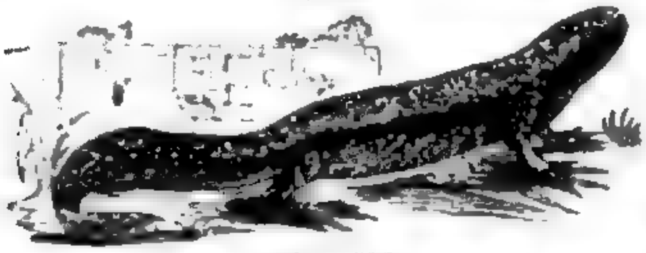

WARTY EFT.

1528. *The reptiles of Britain,* known in a living state, are very few. The Hawks-bill Turtle is a rare visitant. Besides the Warty Eft (*Lacerta palustris* Lin., *fig.* 126.), we have two other water lizards, and probably as many species inhabiting the land. Of the Frog and Toad two sorts of each occur. The snakes and the blind-worm are harmless; the Common Viper (*fig.* 127.) being the only venomous reptile: yet this species varies so much in its colours, that naturalists have described it under several names. The Great or Gigantic Frog of Pennant is no other than a variety of the common toad. Dr. Leach ascertained this fact by examining 600 specimens, collected by himself and a friend, near Loch Ranza.

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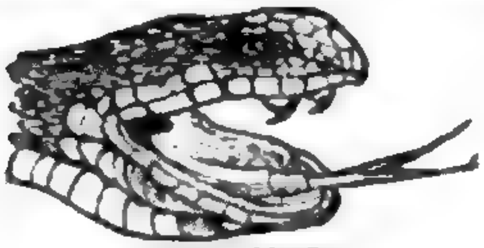

COMMON VIPER.

1529. *Extinct reptiles.* The researches of geologists have brought to light the remains of such gigantic and extraordinary reptiles that, but for such indubitable proofs, their existence might be thought fabulous. At the head of these we may place the *Megalosaurus,* resembling both a lizard and a crocodile, whose probable length was near 40 feet! The *Ichthyosaurus,* uniting the characters of a lizard with the snout of a dolphin, the teeth of a crocodile, the fins of a turtle, and the vertebræ of a fish, is scarcely less wonderful. The *Plesiosaurus* is still more extraordinary; for with the fins of a turtle, it had the head of a lizard, and a long neck, formed like the body of a serpent. Lastly, the remains of several distinct species of crocodiles have been discovered in similar strata. All these attest the existence, at some unknown period, of a stupendous race of aquatic monsters, which have long been swept away from the existing animal creation.

1530. *The other marine animals* of our seas are more numerous than might be expected in latitudes so far north. And although their strange and often grotesque forms awaken not the attention of the illiterate fisherman, the observer of nature will be struck by the singularity of their construction, and the brilliancy of their colouring. Among the radiated animals, vast shoals of transparent *Medusa* wander about the coast during summer, and are frequently by a sudden change of wind cast up on the beach in great numbers. But the deep recesses of the ocean frequently give to the nets of the fisherman animals still more singular. The Black Line Worm, or Sea Long Worm (*Linnæus longissimus* Sow., *fig.* 128.), whose mouth is hardly a quarter of an inch wide, is said, by the fishermen of Newhaven, frequently to measure twelve fathoms in length: it is soft, and so fragile, that the entire animal seems not yet to have been procured. Mr. Symmonds, by whom it was first particularly described, measured a detached piece, which was twelve feet long. The warm shores of the Cornish and Devonshire coast furnished the celebrated Montagu with constant employment, in the investigation of those new or little known marine animals, which daily rewarded his assiduous research.

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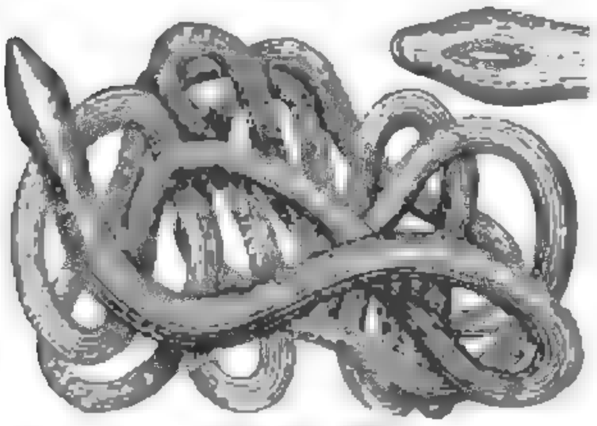

BLACK LINE WORM.

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MAY-BLOSSOM CORAL.

1531. *Nor are our corals and corallines* devoid of interest or beauty. With the invaluable work of Ellis upon these animals, and a common microscope, what an excitement is held out to the frequenters of watering-places, for exercise in collecting, and curiosity in examining, these wonderful little creatures! They would exhibit congregations, or societies, united together, as if conspiring to form their habitations into the beautiful representations of leaves or mosses. Our celebrated countryman Ellis was the first to make known the true nature of those plant-like productions generally termed corallines. Of Corals, we have few native species; the largest and most elegant is the May-blossom coral (*Caryophyllia ramea*), (*fig.* 129.), common in the Mediterranean, and occasionally found upon the Cornish coast: it is cinnamon-coloured; and retains, for many years, a slight scent, like that of hawthorn.

1532. *The conchology of Britain*, in the number and interest of its species, compensates for its deficiency in large or richly coloured objects. The beautiful varieties of *Pecten opercularis* are, nevertheless, an exception; for they are frequently variegated with the most lovely tints of yellow, orange, pink, and deep red, that the painter can produce: this shell, common in the west of England, also affords a nutritious food to the lower classes. The most celebrated of our edible shell-fish is the oyster, well known and highly prized by the luxurious Romans; and every one is acquainted with the superior excellency of those from Colchester and Milton. Fluviatile shells, in a country so humid and watered as Britain, are more abundant than towards the south of Europe. Most of our rivers produce Unio pictorum (*fig.* 130. *a*), and Unio ovatus (*b*): Cyclas cornea (*d*) is generally found in the same situations. Our ponds and stagnant waters are frequently covered with Lymneus palustris (*e*), ovatus (*g*), and Planorbis corneus (*l*); while the large Duck-mussel (*Anodon anatinus*) (*c*) burrows in the muddy bottom. A little fragile shell, Succinea amphibia (*f*), crawls upon rushes and aquatic plants; and Physa fontinalis (*h*), Ancylus lacustris (*i*), and Planorbis vortex (*k*) prefer clear shady streams and ditches overhung with wood.

1533. *Our native pearls*, although but little known, even by name, in modern days, were reckoned by the Romans among those productions for which Britain was celebrated. They are the produce of a fluviatile bivalve shell, the Unio margaritifera, (*fig.* 131.), still common in many of our northern counties. But it was on the banks of the Welsh rivers that this British pearl fishery of our ancestors was chiefly carried on; and pearls of a small size might no doubt be still procured in such places as afford an abundance of the shell.

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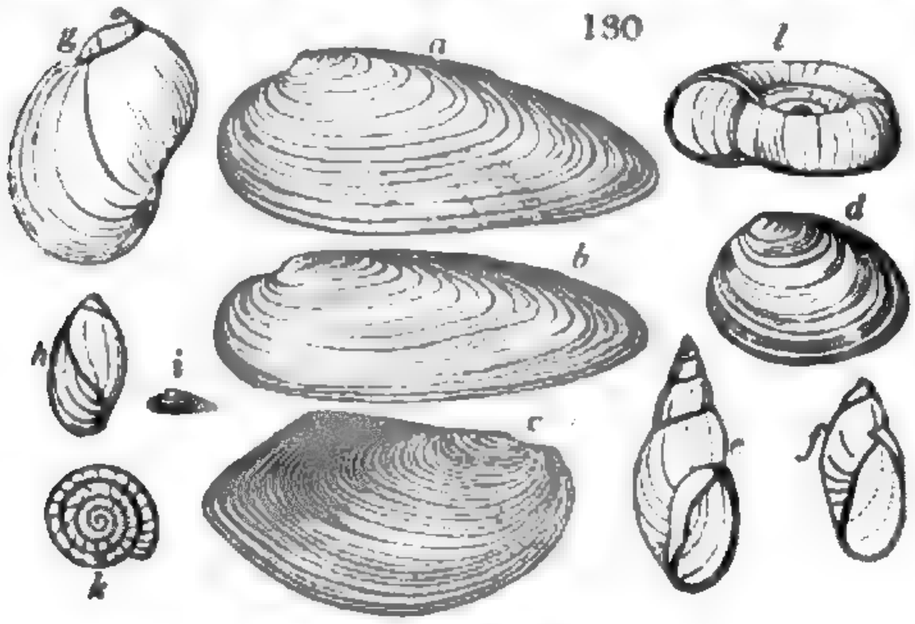
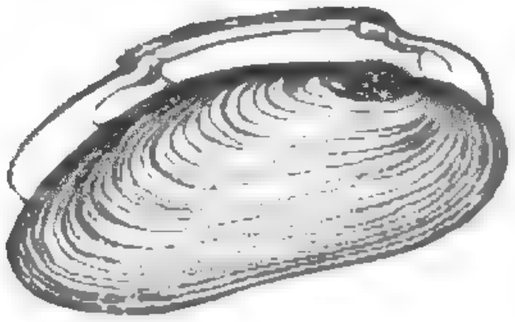


FLUVIATILE SHELLS.

131



UNIO MARGARITIFERA.

1534. *Insects.* Considering the nature of our climate, so unfavourable to the rapid propagation of these beings, it may excite surprise, that more than 10,000 different species have actually been found to inhabit Britain, and possibly some hundreds still remain undiscovered. Yet the bee may be reckoned the only insect whose services are immediately and obviously beneficial to man. Among the butterflies, we have many of great beauty; while Eurymus Europome, or the Clouded Sulphur (*fig.* 132.), is considered one of the rarest British insects. From the statements which have been published, it seems not unreasonable to hope, that the efforts now making in Devonshire and Ireland for introducing the silk-worm may eventually be successful.

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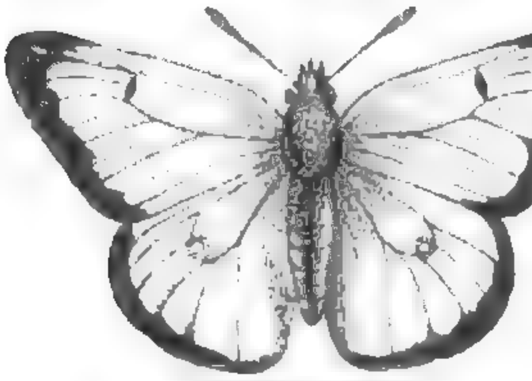

CLOUDED SULPHUR.

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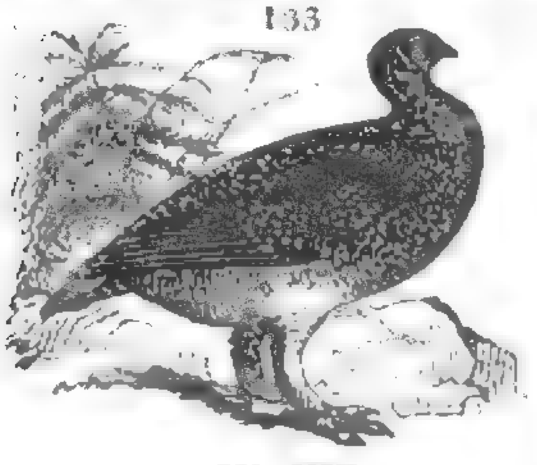

RED GROUSE.

1535. *Scotland. The zoology of Scotland* exhibits many of the arctic animals as common inhabitants, which are only known as rare visitants, to the western shores of England; in other respects it does not materially differ from that of South Britain. The northern islands are peculiarly interesting to the naturalist, as giving shelter to innumerable wild fowl, and to many peculiar land birds, as the Ptarmigan and the Golden Eagle. These seas, moreover, are occasionally visited by many of the large whales, whose usual resort is in the polar regions. The great horned or Eagle Owl, one of our rarest birds, is found to breed in Orkney. The Highlands are famous for an abundance of Grouse, the red species (*Lagopus scoticus, fig.* 133.) being the only bird peculiar to Great Britain. The Wolf appears to have been extirpated in 1680; but the Roebuck is still found wild in Fifeshire. The shores and rivers abound with excellent fish; and large quantities of Salmon are sent to the English market.

1536. *The domestic animals*, particularly the oxen and sheep, as might be expected from the temperature [illegible] the climate, and the diminished luxuriance of pasture, are all of a small size; in other respects they are highly valuable. The polled or hornless cattle, with the Highland and the Fifeshire, have already been particularly noticed. The *Kyloe* breed are so named, because in their progress to the south from the Hebrides, they cross the kyloes or ferries in the mainland and Western Islands. (*Ham. Smith.*) The same writer considers that the sheep of this kingdom spring from three principal breeds: the first is generally named dun-faced sheep; they are a small, horned race, said to have been originally imported from Denmark or Norway, and are still found, with slight variations, in the north of Scotland and the isles. In Kincardineshire, this breed is known by its yellow face and legs, and by the dishevelled texture of its fleece, which is in part coarse, and in part remarkably fine wool; its flesh also [illegible] delicate and highly flavoured. The Zetland breed carry a very fine wool, in three different successions yearly, two of which resemble long hair more than wool, and are called Fors and Scudda. The wool is of various colours. The Hebridian sheep is the smallest animal of its kind; its horns are usually short and straight, the face and legs white, the tail very short, and the wool of different colours. This breed, like the two preceding, from being intermixed and crossed with others, will probably be soon extinct.

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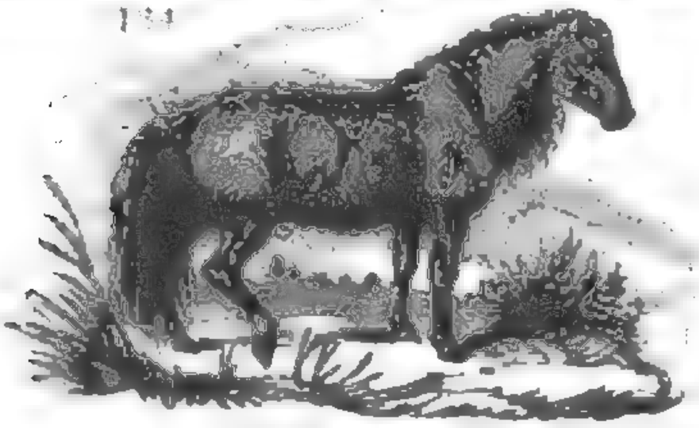

HIGHLAND PONY.

1537. *The Highland Ponies* and Shetland Ponies (*fig.* 134.), notwithstanding their diminutive size, are greatly esteemed for their activity and strength.

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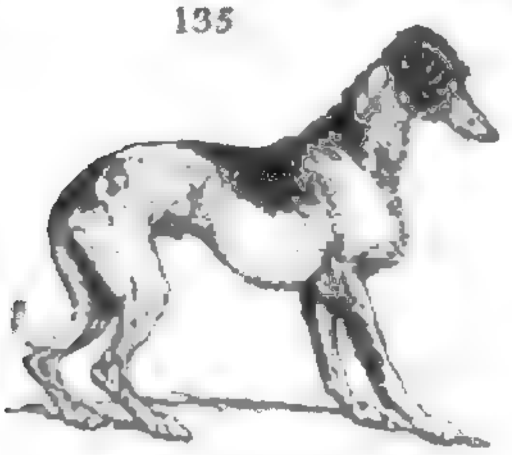

SCOTTISH GREYHOUND.

1538. *Among the numerous breeds of dogs*, there appears to be three more particularly found in Scotland: the first is the true Shepherd's Dog, or Colly, which is still preserved, unmixed, in many of the sheep districts. The second is the Zetland Hound, which approaches in character to the Greenland Dog; while the Scottish Greyhound (*fig.* 135.), common in the Highlands, is possessed of great sagacity, strength, and swiftness. (*Flem. Brit. An.* p. 11.)

1539. *Ireland. The zoology* seems to have shared in the general neglect with which this fine island has, until lately, been treated; nor are we prepared to show if any, and what, peculiarities belong to its natural history. Even local lists, which constitute the most valuable materials of a fauna, are altogether wanting. The Irish Wolf Dog, called also the Irish Greyhound, has generally been thought peculiar to this island; but others consider it the same breed as the French mâtin (*Canis laniarius* L.) It is a noble animal, standing near four feet in height, and seems to have been mainly instrumental in clearing the country of the numerous wolves which once over-ran it. Its particular services being no longer in request, the breed has been neglected, and probably, will be soon extinct. The Horses seem to be of a small and unimproved breed; and where agriculture has been so little attended to, we may presume the cattle and sheep are much inferior to those of Britain. Yet Ireland exports vast quantities of salted provisions, besides the supplies furnished to our navy and shipping interest. The Fossil Elk of this country (*fig.* 136.) has long excited the attention of naturalists; and its remains are of frequent occurrence in beds of shell marl, beneath peat. Its antlers are enormous, measuring, from the extreme tip of each, no less than ten feet ten inches, and from the tip of the right horn to its root, five feet two inches. Remains of the same animal have been also found in England, and a very perfect specimen in the Isle of Man. It deserves notice, that several well-known shells of the West Indies, with tropical seeds and nuts, are occasionally found on the Irish shores; these localities also furnish the conchologist with several native shells, seldom seen on the British coasts, particularly the Isocardia cor, or Heart Cockle (*fig.* 137.), not unfrequently fished up in the Bay of Dublin.

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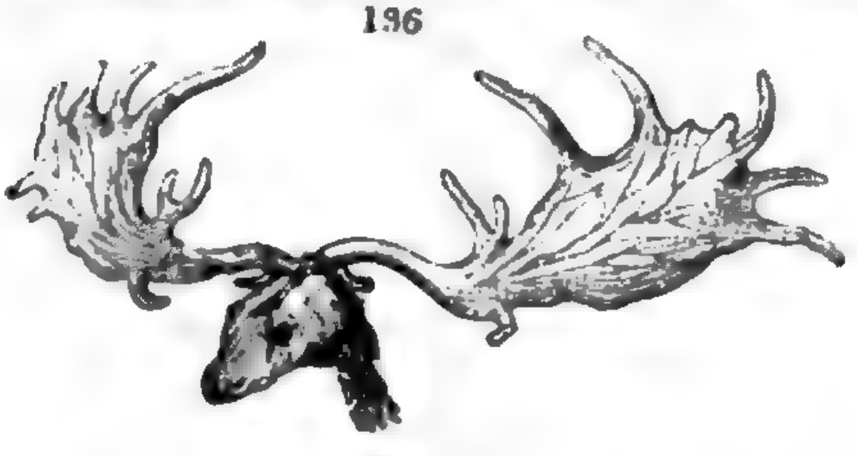

FOSSIL ELK.

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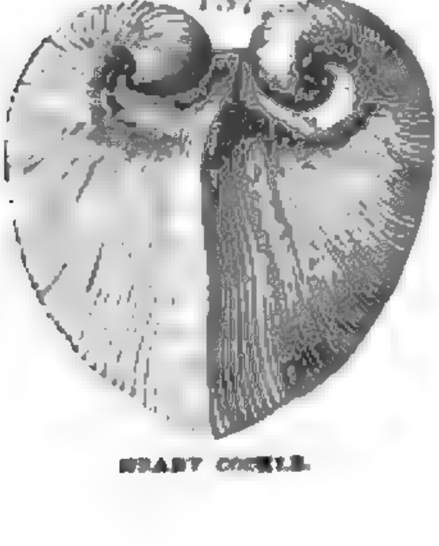

HEART COCKLE.

SECT. III. *Historical Geography.*

1540. *Britain*, according to the concurrent testimony of all ancient writers, *was originally peopled from Gaul*, and its earliest inhabitants belonged to the same Celtic race who occupied that country and Spain. It was one of the parts of the world last known to the Greeks and Romans. For a long time it appears to have been noticed only as a country supplying tin; a rare and useful metal, not then found in any other part of Europe, or in Western Asia. The Cassiterides, or islands of tin, of which mention is made by Herodotus, included, in Major Rennell's apprehension, a vague idea of the whole group of the British islands; though the appellation might originally be restricted to the Scilly Islands, and to the south-western promontory of England, from the Lizard Point to the Land's-end, where alone tin was to be found. To obtain this valuable mineral, the coasts of Britain were at an early period sought by the ships of various mercantile states, especially the Carthaginians; and the *tin* of Tarshish, mentioned by Ezekiel, was doubtless brought from the mines of Cornwall. Voyages were made thither by Himilco, and by Pytheas, who even penetrated to the northern extremity of Scotland; but of the observations made by these navigators, few notices are found in the works of ancient writers.

1541. *Britain was invaded by the Romans*, about fifty-five years before the Christian era. Of the thirty tribes of barbarians among whom the country was then divided, the most considerable were the Belgæ in the west, the Brigantes in the north, the Silures in South Wales, the Iceni in Norfolk and Suffolk, and the Cantii, who occupied Kent and part of Middlesex. The latter had made some progress in agriculture and the arts of civilised life; but the other inhabitants derived their subsistence from flocks and herds, clothed themselves in skins, and painted their bodies; they had another custom similar to that of the natives of Otaheite, by which a number of their chiefs held their wives in common. To these rulers a people turbulent by disposition, and warlike by habit, would be little disposed to pay uniform obedience; but their precarious authority derived effective support from the influence exercised by the Druids, in one of the most terrible forms of superstition that ever enslaved the human mind. This influence might at times be beneficially employed in appeasing the animosities that arose between one state and another, and in diffusing among them that spirit of concord which was soon to be awakened by a sense of common danger. When that crisis arrived, the Britons were by no means unprepared; besides all the ordinary implements of war, they had armed chariots, which they managed with surprising dexterity; and they were all united in a species of political confederacy, of which Cassivelaunus was the head. With all these advantages, however, they could not prevent the landing of Julius Cæsar, or keep the field against him: but that powerful conqueror encountered a fierce resistance from foes whom he had expected to overawe by the terror of his name, and was prevented by more urgent affairs from prosecuting an enterprise of which the difficulties were not likely to be compensated by its glory. Under the first emperors the Britons were held in a state of subjection rather nominal than real. It was in the otherwise inactive reign of Claudius that an expedition on a great scale was first attempted. The hardihood of Caractacus, and the heroic desperation of Boadicea, failed of exciting an effectual resistance to the disciplined legions of Rome, whose victorious progress was continued during the reign of Nero. In that of Domitian, the most timid of all the emperors, their dominion was extended by the wisdom and valour of Agricola, who defeated the Caledonians under Galgacus, at the foot of the Grampians; and the only part of the island which remained unsubdued was the region which lies north of that natural rampart.

1542. *The Britons now subjected to the Roman empire* were compelled to cultivate the habits and arts of peace: but this change, which might have been beneficial, proved injurious, when that empire, weakened, distracted, and verging to its decline was compelled to withdraw its protection from its distant provinces. The Scots and Picts, emerging from their mountain fastnesses, then broke in, and committed dreadful devastations among their unwarlike neighbours. The Romans, for the protection of their suffering vassals, had recourse to the feeble expedient of frontier walls; first, one between the Forth and Clyde, called the Wall of Antonine, and afterwards a similar rampart between the Tyne and Solway, called the Wall of Severus. These bulwarks proving inefficient against such daring invaders, the degenerate Britons made the most earnest and piteous appeals to Rome for protection. This was occasionally afforded; but the exigencies of the empire became continually more urgent; and about the middle of the fifth century, the Roman forces stationed in the island were entirely withdrawn, and the Britons were warned that they must thenceforward depend entirely on their own resources.

1543. *The Saxons were called in as allies, about forty years after the dissolution of the Roman government.* These hardy adventurers, originating from the north of Germany, and occupying the line of coast from the mouth of the Rhine to Jutland, were equally formidable as warriors and as mariners, and had long infested by their piracies the neighbouring parts of Britain and Gaul. They eagerly accepted an invitation to a country which they knew to be in all respects superior to their own. In the year 450 they sent 1600 men under their chiefs Hengist and Horsa; who having with this small force obtained an easy victory over the Scots and Picts, determined to dispossess the Britons of a territory which they could not defend against so contemptible a foe. The successes that attended the enterprise of the two brothers attracted numerous bands of their countrymen; and in the course of a century, colonies arrived from the mouths of the Elbe, the Weser, and the Rhine, chiefly composed of three valiant tribes, the *Jutes*, the *Old Saxons*, and the *Angles*. The *Old Saxons* claimed precedency as leaders of the enterprise, and in after-times as founders of the monarchy; the *Jutes* claimed the merit of erecting in Kent the first independent kingdom; and the Angles, distinguished for their numbers and success, had the honour of bestowing a permanent name on the country. After a long and sanguinary struggle of one hundred and fifty years, they compelled the Britons to retire into Wales and Cornwall, and so absolute was the change, that not a trace of the Celtic name and language has been left in the fairest portion of the island.

1544. *Thus was established the Heptarchy, or Seven Saxon kingdoms,* in Britain: viz. 1. Kent; 2. Sussex, including Surrey; 3. East Anglia, including Norfolk, Suffolk, the Isle of Ely, and Cambridgeshire; 4. Wessex, including all the southern counties from Berkshire to Cornwall; 5. Northumberland, including all the northern counties of England, and the southern counties of Scotland to the Frith of Forth; 6. Essex, including Essex, Middlesex, and part of Hertfordshire; 7. Mercryc, or Mercia, the largest division, including the midland districts of England to the confines of Wales.

1545. *About the year* 800 *these small states were united into one kingdom, under the name of England,* by Egbert king of Wessex, a descendant of the first Saxon invaders. On assuming the sovereignty, he endeavoured to introduce the improvements which he had learned to appreciate during his residence at the court of Charlemagne. The Anglo-Saxon dynasty derived its chief lustre from Alfred, justly revered as the founder of the English constitution, and one of the wisest and most virtuous monarchs that have appeared in any age or country. The judicious division of the kingdom into shires, hundreds, tithings, and decennaries; the establishment of a general system of mutual responsibility among his subjects, by which life and property were rendered secure, without any restraint on liberty; the institution of courts for the administration of justice; and the formation of a code for their guidance, embodying the laws derived by the Saxons from their German progenitors, and still recognised as the basis of the *common law* of England; — these and other measures of polity might have required, and would have illustrated, a reign of uninterrupted tranquillity. But Alfred shone as a warrior no less than as a legislator: he delivered his country from the cruel and overwhelming thraldom of the Danes; and in creating a navy to encounter those pirates on their own element, he may be said to have laid the foundation of the maritime supremacy of Great Britain. In the course of the ensuing century, however, the Danes regained the ascendency; and in 1017, Canute king of Denmark and Norway, the most powerful monarch of his time, added England to his dominions. It was held successively by two of his sons, Harold and Hardicanute; but on the death of the latter, it was restored to the Saxon dynasty, and Edward, called the Confessor, ascended the throne.

1546. *The conquest by William of Normandy, in* 1066, overthrew for a time the liberties of the people of England. Claiming the crown by virtue of a pretended grant from Edward the Confessor, and acquiring it by victory over Harold II., himself an usurper, to the prejudice of Edgar Atheling the rightful heir, he maintained by tyranny a dominion gained by fraud and violence. He punished all persons who had taken up arms against him by the forfeiture of their estates, which he conferred on his Norman vassals; and he compelled all those who were not found in arms against him to take out patents to hold their lands of himself. Having ordered a general survey of all the lands in the kingdom, he changed the nature of the tenure from *allodial* to *feudal*, to be holden of him by knight's service; thus enthralling the people by a military despotism. He endeavoured to supplant the English language by that of the Normans, which was employed at court, in council, and in all public proceedings; and it was a fixed maxim of his reign, that no native of the island should ever be advanced to any dignity, civil, religious, or military. The natural antipathy of the English to their oppressors was strengthened by this partiality, and many ages elapsed ere the two nations were thoroughly incorporated. One of the consequences of the acquisition of the English crown by William was to convey to the kings his successors certain claims on the French territory, which led to long, expensive, and sanguinary wars. The second of those successors, his son Henry the First, by his marriage with Matilda, daughter of Malcolm king of Scotland, and niece of Edgar Atheling, conciliated a people zealous for the rights of their native princes, and anxious for their re-establishment.

1547. *The Saxon line was restored in the person of Henry the Second,* surnamed Plantagenet, son of Geoffry of Anjou, who married Matilda, daughter of Henry I. This prince, in the right of his father, was master of Anjou and Touraine; in that of his mother, of Normandy and Maine; in that of his wife, of Guienne, Poitou, Xaintonge, Auvergne, Perigord, Angoumois, and the Limousin. To these states he afterwards annexed that of Bretagne. The possession of provinces composing above one third of the French monarchy, and superior in opulence to the rest of the territory, rendered this vassal more powerful than his liege lord, and contributed, with other causes, to provoke that rivalry which for ages existed between England and France. The princes of the house of Plantagenet exhibited an energy of spirit, some in good, and others in evil, which strongly affected the character and interests of the nation. The valour or the policy of Henry the Second acquired for him the sovereignty of Ireland; the prowess of his son Richard, however misdirected, kindled and kept alive the military spirit of the people; the proud determination and inflexible constancy of Edward the First annexed to Wales to his dominions, and for a time subjugated Scotland; while his wisdom as a legislator gained for him the appellation of the English Justinian. The victories of Edward the Third in France shone among the most splendid achievements of a chivalrous age; and the entire conquest of that kingdom by Henry the Fifth might have led to important changes, had it not been prevented by the premature death of that accomplished prince. The consequent loss of the French provinces was a reverse of which the remembrance was soon effaced by the contending claims of the houses of York and Lancaster for the crown of England, which, after a civil war of nearly sixty years, were adjusted by the marriage of Henry the Seventh with Elizabeth, daughter of Edward the Fourth. Among the memorable events that occurred under the Plantagenets, may be noticed the signature of Magna Charta, extorted by the barons from King John; the rise of the House of Commons in the reign of Henry the Third, and the reformation of the church, commenced by John Wickliffe in 1369.

1548. *The reign of Henry the Seventh was signalised by the overthrow of the feudal sway,* and by the introduction of the modern system of polity. Other innovations, deeply affecting the character of the English people, ensued under the successive sovereigns of the line of Tudor, until the death of Elizabeth. The period was in all respects one of the most interesting in the history of England, of Europe, and of the world. The invention of printing, the navigation to India, the discovery of America, the reformation in Germany, the balance of power among European states, the changes in the mode of warfare caused by the introduction of fire-arms, co-operated to produce a progressive and permanent change in the social and political condition of mankind. England participated most largely in all the advantages resulting from the new order of things; and though the emancipation of the kingdom from papal tyranny was effected by the sovereign in rather an irregular manner, without much deference to the inclinations of the people, it accorded too well with their independent spirit not to gain their hearty support and concurrence. In the reign of Elizabeth, various causes contributed to accelerate the revolution of public opinion; and after the destruction of the Spanish armada, which the Roman pontiff had presumed to call *invincible,* the thunders of the Vatican lost all their terrors. The most strenuous exertions were made to strengthen the maritime power of England, as well as to employ it in liberating other states from the oppressions under which they had long groaned, and in extending her commercial intercourse with them. The result of these measures was to raise the nation to a very prosperous and flourishing condition, and to overturn the lawless domination of the nobles, substituting for it, however, an authority almost absolute on the part of the sovereign.

1549. *The union of the two crowns* on the accession of James the Sixth of Scotland to the throne of England, terminated those dissensions and animosities, which had proved alike injurious to both countries. The reign of James was peaceful; but that of his successor was marked by troubles which a sort of fatality seems to have allotted to the house of Stuart. The impolitic and despotic conduct of Charles the First, coming into collision with the rising spirit of freedom, led to a struggle in which he lost both his crown and his life. In the interregnum which ensued under the Commonwealth, the vigilant, energetic, and decisive policy of Oliver Cromwell exercised a commanding influence over every cabinet in Europe. Restored by the predilections of the people for a monarchical government, Charles the Second suffered England to lose the ascendency which she had attained; but the apathy of this luxurious, unprincipled, and venal prince was at least favourable to the growth of popular influence, and to the establishment of important securities for the liberty of the subject. The infatuated conduct of James the Second, under the insidious direction of priests and jesuits, led to the revolution of 1688, from which glorious epoch may be dated that happy equilibrium of the different powers, and that admirable system of public right, which have rendered the British constitution the envy and admiration of the civilised world.

1550. *From the revolution of* 1688 to the present time, Great Britain has had frequent occasions to rejoice in the stability of her constitution amidst the convulsions which have agitated all Europe. During this period, her industry, commerce, and wealth rapidly rose to a height unparalleled in any other nation ancient or modern; but her political power sustained various fluctuations. She acquired in the East and in the West two empires, each far more extensive than her own territory, and the one far more populous. That in the East she retains, and is continually extending; that in the West, having become independent by the aid of France and Spain, is her rival in commerce, and manifests a disposition to dispute, at no distant period, her maritime supremacy. Among the memorable transactions and events of this period may be ranked the union with Scotland in 1707; that with Ireland in 1801, the Scottish rebellions in 1715 and 1745; the Irish rebellion in 1798; and a series of wars with France, occurring at intervals rarely exceeding eight or ten years. Of these wars the issue has generally been glorious; the last contest, arising from the revolution of France, was distinguished by the most brilliant naval achievements, and afterwards by successes which raised the military glory of England to a level with her maritime renown, rendering her power and influence paramount among the states of Europe.

Sect. IV. *Political Geography.*

1551. *The constitution of Great Britain* centres in the laws by which the country is governed, and in the union of powers by which the laws are made and the government is administered. The *legislative* power is vested in the Parliament, consisting of the King, an hereditary sovereign; the Lords, an hereditary aristocracy; and the House of Commons, consisting of members chosen by the people from among themselves, and therefore said to represent the commons of the realm. The *executive* power is entrusted to the king.

1552. *Of the three estates of the realm thus composing the legislature, the King is the highest:* he is the head or chief of the parliament; and except in extreme cases, a parliament cannot be held unless convoked by him, nor can it except by him be dissolved or prorogued. His *assent* is requisite to give the force of law to any measure proposed by either of the two houses, and agreed upon by them; and he has the indubitable right, although it has not been exercised for more than an hundred years, of withholding the *royal assent* from any proposed enactment. These are, in general, the limits of his legislative functions. Propositions of laws, or *bills* as they are technically called, may be brought forward in either house; all money bills *must* take their origin in the House of Commons; but only in one instance can the king initiate an act of parliament, and that is, an act of grace, for the pardon of persons after a rebellion, or for the release of insolvent debtors. Such an act properly emanates from the throne as the fountain of mercy. It is introduced, with the royal assent under the sign-manual, in the House of Peers, where it is immediately read a first, a second, and a third time, and sent to the House of Commons, where it is passed through all its stages with the same promptitude.

1553. *The King is not supposed to hold his throne by divine right,* or in virtue of any indefeasible hereditary claim. The nation, by its supreme council, has dictated certain rules of exclusion with regard to the succession, of which the most important is, that the sovereign shall maintain the protestant reformed religion, and, either at his coronation or on the first day of the first parliament, shall repeat and subscribe the declaration against popery. Marriage of the sovereign with a subject is held to be null, and the issue incapable of succeeding. But the crown is with these limitations hereditary, and on the death or demise of the king, his heir becomes instantly invested with the kingly office and regal power. Even at the Revolution, when a decided change of dynasty took place, a convenient fiction was employed; the flight of the king was construed into a voluntary abdication, the throne was pronounced to be vacant, and William and Mary, prince and princess of Orange, were declared to be king and queen.

1554. *The royal prerogative is in most particulars as ancient as the law itself;* and it is a great error to infer from the terms legislative and executive, that the king is a mere magistrate or officer empowered to *execute* the ordinances of parliament. He is "the universal occupant;" and, by a constitutional fiction accordant with the feudal policy, all lands are held mediately or immediately from the crown. Thus he is entitled to all lands left by the subsiding of the sea; and estates may revert to him by escheat from the commission of crime by their possessors. He is sovereign in all seas and great rivers; he alone has a prerogative to erect beacons and lighthouses; he is entitled to all royal mines of gold and silver, and is entrusted with the coinage. All persons born in any part of his dominions and within his protection are his subjects, and owe to him an allegiance which they can neither renounce nor transfer to any foreign prince. He is supreme head of the church within his dominions; and as patron paramount of all the benefices in England, he has a right to present to all dignities and benefices of the advowson of archbishoprics and bishoprics during the vacancy of their respective sees. He is the fountain of justice, and has an undoubted prerogative in creating officers of state, ministers, judges, and other functionaries. To him, as *parens patriæ*, belongs the care of all who are unable to take care of themselves; he has an original right to superintend the disposal of charities; and in all such cases the application is to the Court of Chancery. He has, in certain cases, the high prerogative of pardoning, and likewise that of issuing special proclamations for the prevention of offences. The power of making war or peace is lodged singly in the king. In virtue of his prerogative, the administration and rules of law differ between him and a private person; he is held to be incapable of doing wrong, and if an unlawful act be done, the minister instrumental in that act is alone obnoxious to punishment. By virtue of his prerogative the king may make grants and letters patent, conferring various rights and privileges. Lastly, the king cannot be attainted, and is never a minor; though when the crown has devolved to a very young heir, it has been thought prudent to appoint a regent, or council of regency. The same expedient has been adopted when, by reason of grievous illness, the exercise of the royal functions has been interrupted.

1555. *The revenues of the crown* are, in a legal sense, very extensive; for all supplies granted by parliament are given to the king. But of these much the largest proportion belongs to the public or its creditors; that which pertains to the king in his distinct capacity, and which is called the *Civil List*, amounts to but a moderate provision (out of a revenue of fifty or sixty millions) for the support of the honour and dignity of the crown. In 1813–14, when a detailed report was made on the subject, the entire allowance, which in the beginning of the reign was 800,000*l.*, had been raised to 1,000,000*l.* Besides this, the debts of the civil list had been paid at different periods during the fifty-four years of the reign of George III., to the amount of 3,113,000*l.* His majesty during that period had also drawn 172,000*l.* from the 4½ per cent. West India, and sums from the droits of the admiralty, augmenting it to 1,653,000*l.*; raising the whole to 4,866,000*l.*, and forming an annual addition of about 90,000*l.* The civil list comprised not only the provision for the personal expenses of the royal family, but that which was allotted for various branches of the public service. From it were paid the salaries of the judges, amounting to 33,000*l.*; those of ministers at foreign courts, 90,000*l.*, with equipage, presents, &c.; extraordinary disbursements, 153,000*l.*; pensions, 151,000*l.*; small salaries and offices of the treasury department, 60,000*l.*; secret service money, 100,000*l.* All these deductions being made, the sum remaining applicable to the private expenditure of the royal family was little more than half a million. Of this only 60,000*l.*, the allowance for the privy purse, was at the immediate disposal of his majesty. The rest, including all the branches of state and expenditure, was paid by the steward, the chamberlain, the master of the horse, and other officers specially appointed for the purpose, and accountable to parliament.

1556. *On the commencement of the reign of William IV.*, the civil list was entirely new-modelled. It was now limited to the personal expenses of the sovereign, and the maintenance of his state; while the branches of administration hitherto defrayed out of it were charged upon the Consolidated Fund. The sum of 510,000*l.* was granted, under the following heads: —

Privy purse, King's,	£60,000
Queen's	50,000
Maintenance of royal establishment	171,000
Salaries in the department of	
Chamberlain	64,450
Steward	86,500
Master of the horse	28,500
Master of the robes	850
Salaries in the department of	
Royal bounty	£9,500
Churches	3,200
Poor of London	1,000
Home secret service	10,000
Pensions	75,000
	£510,000

1557. *Thus the royal prerogative, which would otherwise preponderate, is counterbalanced by the control which the representatives of the people in parliament exercise over the public purse.* The king, without a grant from his people, has scarcely any revenue. He has the prerogative of commanding armies and equipping fleets; but without the concurrence of his parliament he cannot maintain them. He can confer appointments to offices; but without his parliament he cannot pay the salaries. He can declare war; but without the aid of parliament he cannot carry it on. He has the exclusive right of assembling parliaments; but by law he must assemble a parliament every three years, if necessity obliged him not to convoke it much oftener. Though head of the church, he cannot alter the established religion, or call individuals to account for their religious opinions. He cannot create any new office inconsistent with the constitution or prejudicial to the subject. He has the privilege of coining money; but he cannot alter the standard. He has the power of pardoning offenders; but he cannot exempt them from making compensation to the injured parties. Even with the military power he is not absolute, since it is declared in the Bill of Rights that a standing army without the consent of parliament is illegal. The king himself cannot be arraigned; but if any abuse of power be committed, those who were either the advisers or the instruments of the measure may be impeached and tried before the House of Lords; in which case it is of no avail to plead the king's command, or to produce his pardon. A dissolution of parliament does not abate an impeachment, neither can the royal authority interpose to stay or suspend its course. Other restraints on the prerogative exist in the uncontrolled freedom of speech in parliament, secured by the Bill of Rights, and in the important provisions by which, during the reign of George III., the independence of the judges was established.

1558. *The House of Lords* is composed of the lords spiritual and temporal of England; sixteen temporal peers of Scotland; one archbishop, three bishops, and twenty-eight temporal peers of Ireland. The roll of the lords spiritual and temporal forming the House of Peers, in the session of 1833, exhibits 426 lords, including the catholic peers of England. They are thus distinguished: —

Royal dukes	4	Bishops	27
Archbishops	3	Barons	181
Dukes with English titles	21	Peers of Scotland	16
Marquesses	19	of Ireland	28
Earls	109		
Viscounts	18	Total	426

1559. *The Lords Spiritual* are, for England, two archbishops and twenty-four bishops; and for Ireland, one archbishop and three bishops; the English hold their seats for life, the Irish by rotation. The archbishops rank above all dukes except the princes of the blood; the bishops next below viscounts.

1560. *The Lords Temporal* are not limited in number, it being the prerogative of the king to raise to the peerage any of his subjects whom he thinks deserving. The creation is either by writ or patent, the former mode being the most ancient, and the latter the most secure and honourable. The temporal peers consist of dukes, marquesses, earls, viscounts, and barons. The title of *duke* did not exist in England until the reign of Edward the Third; that of *marquess* was introduced in the reign of Richard the Second; that of *earl* is of very ancient origin, corresponding in dignity with the French title of *count*. Viscounts were created in the time of Henry the Sixth. In former times the title of *baron* was general among the nobility, and every peer of superior rank held also a barony; but in the course of a few generations the two titles might be divided, the one continuing to the male descendants, the other passing to the heirs-general: in later times, earls and viscounts have been created without annexing a barony to their higher honours; wherefore all peers are not barons. Although the right of adding indefinitely to the number of peers forms part of the royal prerogative, it has been very sparingly and cautiously exercised.

1561. *The sixteen Peers of Scotland* are, by the articles of union, elected by the peers of that country from among themselves; and in case of a vacancy by death or legal incapacity, recourse is had to election for supplying the place vacated. The election of the sixteen peers is renewed for every parliament.

1562. *With respect to the Peers of Ireland*, it was established by the act of union that four lords spiritual by rotation of sessions, and twenty-eight lords temporal elected for life by the peers of Ireland, shall be the number to sit and vote on the part of Ireland in the House of Lords of the parliament of the United Kingdom.

1563. *As a supreme court of judicature*, the House of Lords exercises jurisdiction in civil causes upon appeals or writs of error from the inferior courts; and in criminal questions, when brought before them, by presentment of the House of Commons, in the form of an impeachment.

1564. *All members of parliament have the privilege for themselves and their menial servants of being freed from arrests or imprisonment* for debt or trespass; but not from arrests for treason, felony, or breach of the peace. The peers have other privileges peculiar to themselves. In all cases of treason, felony, or misprision, of felony, a nobleman is tried by his peers; but in misdemeanours, as libels, riots, perjury, and conspiracy, he is tried like a commoner by a jury. In judicial proceedings, a peer gives his verdict not upon oath, but upon his honour; he answers also to bills in chancery upon his honour, and not upon his oath; but when examined as a witness in the inferior courts or in the high court of parliament, either in civil or criminal cases, he must be sworn. Slander against a peer subjects the offender to very heavy punishment, being branded by the law with the term *scandalum magnatum*. Every Peer, by licence from the king, may make a proxy to vote for him in his absence, a privilege which cannot be held by a member of the lower house. He has also a right, by leave of the house, when a vote passes contrary to his opinion, to enter his dissent, with the reasons for it, on the journals of the house: this is usually called his *protest*. The privilege of franking letters is enjoyed by members of both houses, with restrictions as to number and weight, and by certain officers of state and other functionaries to an unlimited extent. As private individuals, the peers enjoy none of those injurious and oppressive rights which in other countries are possessed by the aristocracy, and which press so heavily on the people in general. They have no means of turning aside the course of justice, or of sheltering themselves from its decisions; and they defray their share of the public burdens in common with the humblest individuals. In respect to their legislative capacity, it is however to be observed, that all bills which may in their consequences in any way affect the rights of the peerage, are, by the custom of parliament, to originate in the House of Peers, and to suffer no changes or amendments in the lower house.

1565. *The House of Commons*, as a distinct branch of the legislature, is the peculiar boast of the British constitution. Through this representative assembly, while all the other great kingdoms of Europe were subject to the arbitrary rule of a monarch, or to the vexatious domination of an oligarchy, the people acquired their due share in the national councils, and established, among other rights, that of regulating the collection and distribution of the public money; causing it to be recognised as a principle, that they shall not be taxed but by their own consent. The period when the commons of England began to take a share in legislation is too remote to be exactly ascertained. In the earliest times of which any record exists in English history, there appear to have been assemblies of the nation, convoked to deliberate on occasions of great emergency. These, however, were less frequent after the Norman conquest, and it was not until the 49th of Henry III. (A. D. 1266), after the overthrow of Simon Montfort, earl of Leicester, that the people were regularly summoned by the king to send representatives to the great council of the nation. The crown, little apprehensive of the formidable character which the House of Commons was afterwards to assume, favoured all the steps of its early progress, hoping by those means to counterpoise the overbearing sway of the great barons, and at the same time to obtain supplies of money from the growing wealth of the people. The decline of the feudal system had for some time favoured such a system of policy. Baronies escheated by forfeiture or for want of issue had been subdivided; hence arose a class of men called minor barons, holding by knight's service; and these being too numerous and too poor to be all called to parliament, and to rank with the greater barons, were allowed to sit by representatives. Of these *knights*, each *shire* was summoned to send two; writs to that effect being addressed to the sheriffs of the several counties. The Cinque Ports probably about the same period sent their *barons*, and the cities and boroughs their *burgesses*. In early times these representatives appear to have considered attendance in parliament as a hardship rather than an advantage. It was expensive, and, from the imperfect police then established, often insecure; and the summons, being always the prelude to a demand for money, was by no means welcome. With the granting of supplies, however, was necessarily combined the right of petition, of stating grievances, and demanding guarantees; and these could not, by a sovereign pressed by various exigencies, be always denied. Thus the House of Commons continued to gain importance commensurate with that acquired by the body of the nation whom they represented; and at length, in a violent collision, they overthrew for a time both the sovereignty and the peerage. Since the re-establishment of the constitution, the third branch of the legislature has sustained no loss of the weight and influence which it then acquired.

1566. *The election of the Commons never rested on any principle of universal or even general suffrage*, excepting perhaps that of knights for each shire, who were certainly chosen by the general voice of the freeholders. As the kings, however, could only attain their objects by assembling the most powerful and influential of the people, they endeavoured to make an equal distribution of the right of election, so far, at least, as related to property and influence, at the time when such a measure was adapted to countervail the preponderance of the barons. In after-times, when seats in parliament came to be appreciated as conferring a desirable privilege, and as constituting a powerful check on the prerogative of the monarch, it would have been obviously irregular to have allowed to the king an arbitrary selection; and all parties adhered tenaciously to the rights conferred on them by early gift or long usage. This permanence of the elective franchise, amidst the local changes that ensued in the course of ages, gave rise to some very striking anomalies. Manchester, Leeds, and several other towns, which within the last century have become the commercial capitals of the kingdom, did not send a single representative; while places once important, but now dwindled into insignificance, returned each two members. Cornwall, at a period when the rest of the kingdom was poor and rude, enjoyed an abundant source of opulence in its tin mines, and retained a number of chartered boroughs, beyond all proportion greater than those of any other county. The places holding the right of election were in many instances so small, that what is called the patronage of them was easily acquired; and that patronage of course involved the advantage of nominating one or both candidates for the representation. These were called close boroughs, or, more reproachfully, rotten boroughs. Another anomaly consisted in a number of what were called treasury boroughs, the nomination of which rested with the administration. With the view of remedying these defects, the Reform Bill was passed, in 1832, after long discussion and opposition. By this bill fifty-six of the smallest boroughs were entirely disfranchised, and thirty were reduced from two members to one, while Weymouth and Melcombe Regis were reduced from four to two; a reduction was thus made of 144 members. In the room of these, twenty-two large places, — Manchester, Birmingham, Leeds, Sheffield, Greenwich, Sunderland, Devonport, Wolverhampton, Bolton, Blackburn, Bradford, Brighton, Halifax, Macclesfield, Oldham, Stockport, Stoke-upon-Trent, Stroud, and four districts of the metropolis, viz. Marylebone, Finsbury, Tower Hamlets, and Lambeth, — received each the right of electing two members; while twenty smaller towns, — Ashton-under-Line, Bury, Chatham, Cheltenham, Dudley, Frome, Gateshead, Huddersfield, Kidderminster, Kendal, Rochdale, Salford, South Shields, Tynemouth, Wakefield, Walsall, Warrington, Whitby, Whitehaven, and Merthyr Tydvil, — acquired the right of nominating one member each. At the same time twenty-seven counties acquired the power of sending each two additional members, and seven that of sending one additional member.

1567. *The representation* of Great Britain now stands as follows:—

English	members for counties - -	- 143	
	universities -	- 4	
	cities and boroughs -	- 324	
			471
Welsh	members for counties - -	- 15	
	cities and boroughs -	- 14	
			29
Scotch	members for counties - -	- 30	
	cities and boroughs -	- 23	
			53
Irish	members for counties - -	- 64	
	university - -	- 2	
	cities and boroughs -	- 39	
			105
	Making in all -		658

1568. *The qualifications requisite for a member of the House of Commons*, in respect to property, are these: — A person to be eligible as member for a county must have a freehold or copyhold, or must have been mortgagee in possession at least seven years, of a clear estate of the value of 600*l.* per annum; and to be eligible for a city, borough, or other place, except the universities, of the value of 300*l.* per annum. The person so qualified is also to be of mature age, and must take the oaths imposed as indispensable to a member of the legislature. The disqualifications are very numerous, since among the persons who cannot sit in the House of Commons are judges, clergymen, persons holding certain offices under the crown, and persons having pensions under the crown during pleasure or for any term of years. Sheriffs of counties, and mayors, and bailiffs of boroughs, are ineligible in their respective jurisdictions; but a sheriff of one county is eligible as knight for another.

1569. *The qualifications required in electors* differ, as they relate to counties or to boroughs. In the election of county members every voter must have a freehold of the clear yearly value of forty shillings, over and above all rents and charges payable out of and in respect of the same, and must have been in the actual possession of it for twelve calendar months, unless it came to him within that time by descent, marriage settlement, devise, or promotion to a benefice in the church, or to an office. To these freeholders the new bill has added all persons holding property to the amount of ten pounds on copyhold, or on lease of not less than sixty years; and also those occupying lands or tenements for any period, at a rent of not less than 50*l.* per annum.

1570. *The qualifications of electors for cities and boroughs* were, previous to the present act, extremely various. The right of voting in different places resided variously in the freeholders, the corporations, the burgage tenants, and sometimes in the whole body of resident householders. The new act, however, admits only the simple qualification of occupying a house rated at not less than 10*l.* per annum. Those, however, who were freemen under the former system are still entitled to vote, although not possessed of the 10*l.* qualification, provided they reside within the borough.

1571. *The mode of proceeding to an election for a county and for a borough is nearly the same.* On a dissolution of parliament, writs, pursuant to a warrant from the king, are issued under the great seal, addressed to the sheriffs of counties, directing them to summon the people to elect two knights for each county, and one or two burgesses for each borough. To supply a vacancy while parliament is sitting, the warrant for the writ proceeds from the House of Commons. A certain day after, the date or *teste* of the writ is fixed for the election to commence; and on that day the candidate or candidates are put in nomination, at the place appointed, in the presence of the returning officer. In a county election, the sheriff or the under-sheriff is the returning officer; in a city or borough, the mayor or bailiff. If there be rival candidates put in nomination, the returning officer calls on the voters for a decision by a show of hands, after which the friend of any candidate, if dissatisfied, may demand a poll. The poll was formerly taken only at one place, and might last for fifteen days; but under the new act, the cities and counties are divided into districts, with separate booths, or polling-places, appropriated to each. The poll is allowed to continue only for two days, which must be successive, and it must close at four o'clock in the afternoon of the second day. Poll clerks attend, to record the names of the voters, and their accuracy is watched by inspectors nominated on each side. The returning officer who presides must, if required, oblige the candidates to swear to their qualifications. At the close of the election, or on the following day, the returning officer declares the names of the persons who have the majority of votes; and, unless a scrutiny be demanded, he forthwith makes his return.

1572. *The person thus elected and returned becomes the representative of the Commons of the united kingdom of Great Britain and Ireland, and not the delegate or agent of the particular place for which he takes his seat. Petitions, complaining of undue elections*, may be presented to the House of Commons; and rules for deciding upon them have been laid down in certain specific statutes. Against bribery, either by means of money, of entertainments, or of promises of places or favours, the strictest laws have been enacted; and, from recent examples, there is reason to believe that they will henceforward be rigorously enforced.

1573. *The duration of a Parliament* has, for more than a century, been extended to the term of seven years, from that of three, to which it was formerly limited. The king, however, has the power of dissolving parliament at any time, and he usually does dissolve it a year or two before the expiration of its term. He can also prorogue it at any time and for any period; and, as such prorogation concludes the session, it puts an end to all bills or other proceedings depending in either house, which must in the next session be again instituted, as if they had never been begun. Either house, or both houses, may adjourn of their own accord, and, at their meeting again, may take up the bills and other proceedings in the state of advancement in which they were left. A session of parliament usually commences in January or February, and continues until June or July. If it commence before Christmas, an adjournment takes place for the holidays; the houses adjourn also at Easter for about fourteen days, and for shorter periods on any extraordinary occasion.

1574. *The attendance of members* is in general by no means full, and some of the ordinary though very important business of the nation is transacted in very thin houses. In fact, no means of enforcing attendance are adopted except a *call of the house*, which always precedes the discussion of very important questions, and is also required by act of parliament before taking into consideration any petition relative to a controverted election. Parties neglecting to attend on such call are liable to be taken into custody of the serjeant at arms, and to incur payment of the consequent fees, which amount to no inconsiderable fine. If forty members be not present at four o'clock in the afternoon, the speaker immediately adjourns the house to the day following, or to any other day which had been previously fixed for the next sitting. Every transaction in the house is the subject of a motion, of which previous notice is usually given by a member, and entered on a paper called the *order of the day*. Various motions, however, arising specially out of the business of the house, or from questions of privilege, may be made without notice. In the debates that occasionally ensue, much political knowledge is called forth, and sometimes much parliamentary eloquence displayed; yet the speeches, especially those of members in opposition, seem intended for the public rather than for the members, and of course call forth a corresponding tone in those of the speakers on the side of administration. The publication of debates, however, is so far from being authorised, that a standing order exists for the exclusion of strangers, which may at any moment be enforced by a simple intimation from any member to the speaker, that there are strangers in the house. The speaker proclaims that *strangers must withdraw*, and the gallery is instantly cleared. It is also cleared on every division, that the votes of the several members may not incur the imputation of being influenced by public opinion; yet lists of majorities and minorities are easily procured, and the part which any member has taken on any great public question becomes universally known.

1575. *The general business of Parliament* during a session consists in passing various public and private acts, and in making that provision for the service of the year, which the interests of the nation require. Proceedings of general or particular legislation may originate in either house, but the House of Commons hold the sole and exclusive right of granting aids and supplies to the crown. At the commencement of every session committees of the whole house are appointed; one called the *Committee of Supply*, to consider the amount required by the crown for the service of the army, navy, ordnance, and other departments; and the other the *Committee of Ways and Means*, to devise modes of raising, by taxes or loans, the sums which the house, on resolutions reported from the committee of supply, and agreed to, have granted to his majesty. In this committee of ways and means, the chancellor of the exchequer, in an exposition technically called the *Budget*, demonstrates to the house in detail that the sums voted are sufficient to justify the committee in imposing such taxes, or sanctioning such loans, as are then recommended. When the two committees are closed, the House of Commons pass a bill in which the several grants made in the committee of ways and means, by land-tax, malt-tax, loan, sinking fund, and other resources, are recapitulated, and directed to be applied to the services voted in that session in the committee of supply, specifying the particular sums granted for each service. The sums on account of the army, ordnance, militia, and foreign subsidies are in the bills of appropriation specifically applied to those services; but the sums voted for the navy are not appropriated specifically but generally, in consideration of circumstances arising out of the peculiar nature of that service.

1576. *Parliament have the sole right of making, altering, and amending all the laws of the kingdom*, and by their authority alone can taxes be imposed or levied. An annual vote of the House of Commons is requisite to maintain the land and sea forces at the degree of strength which is every year fixed and determined upon. By these and other privileges, the annual meeting of parliament is secured without any express stipulation to that effect. By withholding these annual votes they may testify their disapprobation of the measures of government, and even compel it to change its ministers; indeed, the principle has now become indisputable, that the minister who cannot rely on a majority of votes in parliament is disabled from conducting the affairs of the nation. Privileges so extensive seem at first sight to threaten with annihilation the royal prerogative, and establish the absolute dominion of the two estates in parliament. In fact, however, the case is otherwise. The power possessed by the king of appointing to all offices civil and military, secures to him immense influence. If the members of parliament have nothing to fear, they have so much to hope, that a great proportion of them are thoroughly disposed to support the measures of the crown. Many of the peers, and of their relatives and connections who hold seats in the other house, consider the interests of the sovereign as in some measure identified with their own: and their votes, with those on which the Treasury can always calculate, generally contributes to maintain the equipoise of parties, or rather to secure the preponderance of that which is entrusted with the conduct of affairs. Some politicians, indeed, entertain great deference for the warning of a late eminent statesman, that the influence of the crown has increased, is increasing, and ought to be diminished; yet, on examination, it will probably be found that this influence affords no great cause of alarm, and that the odium of increased taxation, the publicity of debate, the liberty of the press, and the independence of the tribunals, constitute substantial guaranties, which ought to relieve the nation from every reasonable apprehension for the loss of its liberties.

1577. *The Privy Council* holds a primary influence in directing the civil government of the kingdom. It is composed of eminent persons, appointed by the king, without restriction as to number, who are bound by oath to advise their sovereign to the best of their judgment with all the fidelity and secrecy which their station prescribes. The king may declare to, or conceal from, his privy council, whatever he thinks fit; and by constitutional usage he has a select council out of their number, commonly called the Cabinet Council, with whom his majesty determines such matters as are most important, and require the utmost secrecy. The king with the advice of his privy council publishes proclamations binding on the subject; but they are to be consonant to, and in execution of, the laws of the land. The power of the council is, to enquire into all offences against the government, and to commit the offenders to safe custody for trial in some of the courts of law; but persons so committed are entitled to their *habeas corpus* as much as if they had been committed by an ordinary justice of the peace. The privy council is a court of appeal in plantation and admiralty causes, which arise out of the jurisdiction of the kingdom, as also in cases of idiotcy and lunacy. When questions arise between two colonies respecting the extent of their charter, "*the king in council*" exercises original jurisdiction in them, on the principles of feodal sovereignty; he also determines, on the same principles, the validity of claims to an island or province founded upon grant from the king or his ancestors. But from all the dominions of the crown excepting Great Britain and Ireland, an *appellate* jurisdiction, in the last resort, is vested in the *privy council*. The judicial authority is exercised in a committee of the whole privy council, who hear allegations and proofs, and make their report to *his majesty* in council, by whom judgment is finally given. The dissolution of the privy council depends on the pleasure of the king, who may at his own discretion discharge any member, or the whole of them, and appoint another council. By the common law it is dissolved *ipso facto* on the demise of the crown, but by the statute 6 Anne, c. 7. it is to continue six months after the demise, unless sooner determined by the successor. Any natural-born subject of England is capable of being a member of the privy council, taking the proper oaths for security of the government and test for the security of the church. A privy counsellor, if he be only a private gentleman, is styled *right honourable*, and takes precedence of all knights, baronets, and the younger sons of all barons and viscounts.

1578. *A cabinet council is not, strictly speaking, recognised by the constitution, but by usage it is regarded as a body selected by the sovereign to conduct the business of the state; and the members composing it are held to be the responsible advisers of the crown.* This responsibility must rest on their honour: for it is by no means evident that any advice could be legally traced to them as confidential servants of the crown; and they are not liable to impeachment in their simple capacity as privy counsellors, which they generally share with others who are opposed to them in opinion on matters of policy. The responsibility, however, is imposed by the constitutional maxim that "the king can do no wrong;" and it is virtually acknowledged by the act of resignation generally adopted by the members of a cabinet, when the course of policy recommended by them is not approved by the king. The cabinet council usually consists of those ministers of state who exercise the most important and arduous functions of the executive authority; their number and selection depend only on the king's pleasure; and each member receives a summons for every attendance. Though this body, as constituting what is essentially *the government*, be composed principally of officers of state; yet a privy counsellor selected by the king as a member of his cabinet council, may hold his seat as such, without accepting any particular office. The officers of state are those enumerated in the following lists: —

1579. *Officers of State forming the Cabinet.*

First Lord of the Treasury.
Lord Chancellor.
Lord Privy Seal.
President of the Council.
Secretary of State for the Home Department.
Secretary of State for the Foreign Department.
Secretary of State for Colonies and War.
Chancellor of the Exchequer.
First Lord of the Admiralty.
Master-general of the Ordnance.
President of the Board of Control.
Chancellor of the Duchy of Lancaster.

Officers of State not of the Cabinet.

Lord Chamberlain.
Lord Steward.
Master of the Horse.
Secretary at War.
Treasurer of the Navy.
President of the Board of Trade.
Paymaster of the Forces.
Vice-President of the Board of Trade.
Postmaster General.
Lieutenant-General of the Ordnance.
First Commissioner of the Land Revenue.
Attorney-General.
Solicitor-General.

1580. *Ireland.*

Lord Lieutenant of Ireland.
Lord Chancellor.
Commander of the Forces.
Chief Secretary.
Vice-Treasurer.
Attorney-General.
Solicitor-General.

1581. *That officer of state who holds the appointment of First Lord of the Treasury, is by eminence the minister.* In the event of a change of ministry, the person who is directed by the king to form another, receives, in such royal command, an implied offer of that high office, and is generally placed at the head of the administration. The first lord of the treasury, that is, the first of the five lords commissioners for executing the office of lord high treasurer, possesses most of the powers formerly held by the lord high treasurer, and is sometimes, though not invariably, chancellor and under treasurer of the exchequer. That the chief direction of the government should be vested in the minister to whom the revenue is confided, appears perfectly consistent with the interests of a country in whose financial affairs all the civilised world is concerned, and whose domestic and foreign policy must chiefly depend for success on the ability and prudence with which those affairs are conducted.

1582. *The finances* of the United Kingdom constitute a subject too extensive to be exhibited in all its details within the limits prescribed by the general plan of this work. We shall, therefore, confine ourselves to a concise summary, in reference to which it may be expedient to offer a few introductory observations. The revenue applicable to the general purposes of the state is, with a very trifling exception, derived entirely from taxes. In the course of the last century it increased to an amount unparalleled in the history of any other country; but in consequence of the wars in which Great Britain was engaged with little intermission until the year 1815, it did not keep pace with the expenditure, and an enormous debt was gradually contracted, the interest on which occasioned a correspondent increase of taxation.

1583. We are indebted to Mr. M'Culloch (*Commercial Dictionary*, art. Funds) for the following account of the progress of the *national debt*, from the Revolution to the present time: —

	Principal.	Interest.
	£	£
Debt at the Revolution in 1689 - - - -	664,263	39,855
Excess of debt contracted during the reign of William III. above debt paid off - - - - - - -	15,730,439	1,271,087
Debt at the accession of Queen Anne in 1702 - - - -	16,394,702	1,310,942
Debt contracted during Queen Anne's reign - - - - -	37,750,661	2,040,416
Debt at the accession of George I. in 1714 - - -	54,145,363	3,351,358
Debt paid off during the reign of George I. above debt contracted -	2,053,125	1,133,807
Debt at the accession of George II. in 1727 - - - -	52,092,238	2,217,551
Debt contracted from the accession of George II. till the peace of Paris in 1763, 3 years after the accession of George III. - -	86,773,192	2,634,500
Debt in 1763 - - - - - - -	138,865,430	4,852,051
Paid during peace - - - - -	10,281,795	380,480
Debt at the commencement of the American war in 1775 - -	128,583,635	4,471,571
Debt contracted during the American war - - -	121,267,993	4,980,201
Debt at the conclusion of the American war in 1784 - - -	249,851,628	9,451,772
Paid during peace, from 1784 to 1793 - - -	10,501,380	243,277
Debt at the commencement of the French war in 1793 - -	239,350,148	9,208,495
Debt contracted during the French war - - -	608,932,329	24,645,971
Total funded and unfunded debt, 5th of January, 1817, when the English and Irish Exchequers were consolidated - - -	848,282,477	33,854,466

1584. Since 1817, *a deduction* has been made of about *sixty* millions from the principal of the debt, and about *five* millions from the annual charge on its account. This diminution has been principally effected by taking advantage of the fall in the rate of interest since the peace, and offering to pay off the holders of different stocks, unless they consented to accept a reduced payment.

158 *The system of funding*, by which the debt has been rendered national, rests on the principle of assigning for the amount of a loan, an equivalent amount of nominal capital, bearing interest charged on the national revenue in half-yearly payments called dividends, or of terminable annuities also payable half-yearly. Annuities granted for an indefinite period are called *redeemable debt*, being redeemable at the option of government when at par; those granted for a limited period are called *irredeemable* debt; they exist only for a certain number of years, and a portion of the capital is annually absorbed in the interest. The funds are respectively designated according to the rate per cent. they bear; and the share which a public creditor holds in any of them, being transferable by sale under the name of *stock*, they constitute a kind of circulating capital. The prices of stock vary according to the fluctuations of public opinion relative to political affairs, and are liable to be influenced by other causes, so that their rise and fall afford a constant subject of commercial speculation.

1586. *The rate of interest* granted on certain portions of the national debt, though nominally lower than that of five per cent. allowed by law, has been rendered advantageous to the lender by being charged on a larger amount of nominal capital than the sum borrowed. Loans have been made in funds at four and five per cent., but the greater part has been made in a fund bearing three per cent. interest on the nominal capital, and commonly called the *three per cent. consolidated annuities.* The prices of these and other annuities constituting the *redeemable* debt are rated according to the money value of one hundred pounds on such stock; terminable annuities according to the number of years' purchase which they are supposed to be worth. Thus, on a particular day the market price of three per cent. consols may be eighty-four and three quarters, the value of 100*l.* in that kind of stock being [illegible]*l.* 15*s.* And bank long annuities may be rated at nineteen and one eighth; that being the number of years' purchase at which they are then valued.

1587. *Particular taxes* were, at an early period of the funding system, appropriated to defray the interest of different descriptions of debt; but in the year 1786, the whole were collected into one fund, called the *Con-*

solidated Fund. The particular branches of revenue included in it were the *customs* (with the exception of a certain amount applicable to other public services), the *excise*, the *stamps*, the *land* and *assessed taxes*, and the *post-office*. To this fund are applicable various minor imposts, and monies arising from other resources, specified in the annual accounts.

1588. *A sinking fund* for the gradual reduction of the debt had been formed by Sir Robert Walpole in 1716, but had been so frequently encroached upon, that in the course of half a century, it had not extinguished above fifteen millions. Its revival formed part of the financial arrangements of Mr. Pitt in 1786. Out of the aggregate of the taxes applicable to the consolidated fund, government then pledged itself, whatever might be the proportion of revenue to expenditure, that one million annually should be paid to the new commissioners for the reduction of the national debt. To this annual million were added the amount of government annuities as they successively expired, and the interest of such stock as was annually redeemed. The sinking fund, thus constituted, excited great hopes among the people, which were strengthened in 1792, when Mr. Pitt obtained an act of parliament, declaring, that besides a provision for the interest of any loan that might be thenceforward contracted, taxes should be imposed for a sinking fund of one per cent. on the capital stock created by it, which should be exclusively employed in the liquidation of such particular loan; and that no relief should be afforded to the public from the taxes which constituted the one per cent. sinking fund, until a sum of capital stock, equal in amount to that created by the loan, had been purchased by it. That being accomplished, both the interest and the sinking fund were to be applicable to the public service. It was calculated that, under the most unfavourable circumstances, each loan would be redeemed in forty-five years from the period when it was contracted. The provisions in this act, and in the former act of 1786, were altered by subsequent enactments; but, by an act passed in 1813, those alterations were rescinded; and it was provided first, that, as a sum equal to the debt of 1786, and bearing an interest nearly equal to the interest of that debt, was then vested in the hands of the commissioners, the debt of 1786 should be declared discharged as soon as the interest of the debt redeemed should become fully equal to that debt; the sums appropriated to its interest and sinking fund applied to the charge of future loans, and no new taxes imposed for interest and sinking fund of those loans, till the same should amount to a sum equal to the interest of that considered as released. Secondly, that, instead of applying the one per cent. sinking fund on each loan to the separate discharge of that loan, the whole funds of that kind united should be applied to the discharge of the first contracted loan, and successively to the redemption of all the loans contracted since 1792; the whole sinking fund created in 1786, or subsequently, being continued for the redemption of all debts then existing or to be created. The system established by this act continued until March, 1823, when an act of parliament was passed, directing that on the 5th of April of that year, all payments out of the consolidated fund to the commissioners for the reduction of the national debt should cease, all stock in their names be cancelled, and that in future the annual sum of five millions shall be payable quarterly to the commissioners, and set apart for the reduction of the debt, not to be infringed upon until the accumulation of this sum shall amount to one hundredth part of the debt then existing: at present, however, the sinking fund is declared to be the excess of income over expenditure, whatever that may be. In 1830 it amounted to 2,792,707*l.* 14*s.* 0½*d.*

1589. *On the consolidated fund* are likewise charged the annuities for forty-five years, created in the year 1822, for the purpose of apportioning the burden occasioned by the military and naval pensions and civil superannuations (collectively called the *Dead Weight*), amounting to 5,000,000*l.*, into equal annual payments. The original intention was to contract with parties who might be willing to engage to pay into the exchequer within forty-five years the sum wanted, for a fixed amount of annuity for forty-five years; but no capitalists being found to accept these terms, it was agreed, instead of assigning the fixed annuities to any corporate body, or to private individuals, that they should be vested, namely, 2,800,000*l.* terminable at the end of forty-five years, and charged upon the consolidated fund, in trustees appointed by parliament; payable at the exchequer half yearly (viz. October 10. and April 5.), and to cease in April, 1867. In March, 1823, a portion was sold to the Bank of England by the trustees, on condition that the bank should undertake the payments to be made in pursuance of the act, from the 5th of January, 1823, to the 5th of January, 1868, upon the transfer to the bank of an annuity of 585,740*l.*, to commence from the 5th of April, and to continue for the term of forty-five years. The total amount of payments undertaken to be made by the bank in consideration of the said annuity is 13,089,419*l.*

1590. Besides the funded debt, there is generally *a considerable amount in exchequer bills, navy bills, and ordnance bills, denominated the unfunded or floating debt.* Exchequer bills are issued in consequence of acts of parliament, for obtaining part of the money required for public service. They are sometimes granted on the credit of supplies for the current year, and the produce of the annual taxes is in this way often anticipated. Sometimes they are charged on the supplies of the following year; and in time of war, a large sum to be thus raised is generally authorised by a vote of credit previous to the rising of parliament. New exchequer bills are often issued in discharge of former ones; and it has frequently been found necessary to *fund* them, by granting capital in some of the stocks on certain terms, to such holders as are willing to accept them. Exchequer bills are issued for 100*l.*, 500*l.*, 1000*l.*, and upwards, but none for less than 100*l.*; and they bear interest at two-pence a day for every 100*l.* After being in circulation they are received in payment of taxes or other debts due to government, and sometimes they are paid off pursuant to previous notice by advertisement. The daily transactions between the bank and the exchequer are chiefly carried on by bills of 1000*l.* each, which are deposited by the bank in the exchequer, to the amount of the sums received by them on account of government; they remain in the exchequer as pledges or securities, of course bearing interest until the advances on which the bank first received them are paid off.

1591. *The expedient of temporary war-taxes* for the purpose of raising a large proportion of the supplies within the year, has been lately adopted to a great extent. The most considerable impost of this kind during the late war was the property tax, which produced during the last two years of that war more than fifteen millions per annum. Of the total sum of eleven hundred millions expended during twenty-three years from the beginning of 1793 to 1816, the amount added to our permanent debt was 460,000,000*l.*, so that the aggregate of the supplies raised within the year amounted, for the whole war, to 640,000,000*l.*; "a surprising sum," observes Mr. Lowe, in his valuable work on the State of England, to be obtained by a mode of taxation almost unknown in foreign countries, and carried in former wars to a very limited extent among ourselves. During each of the last two years of the war, viz. 1814 and 1815, the taxes raised from Great Britain alone, exclusive of Ireland, exceeded seventy millions, and a loan of forty millions with the aid of exchequer bills and other expedients made up the unprecedented amount of one hundred and twenty millions of annual outlay. Since the restoration of peace a very considerable reduction of taxation has been effected. The whole of the property tax, part of the assessed taxes, the duties on salt, beer, leather, coals, candles, and printed goods have been taken off. In 1831 the net produce of all the branches of revenue had been reduced to 54,644,703*l.*, a sum still without parallel in the finances of any other country.

1592. The following *Parliamentary Paper* (No. 725. Sess. 1832) gives, in a brief compass, the clearest and most satisfactory details that can be desired of the public income and expenditure of the United Kingdom, during each of the three years ending with the 5th of January, 1832: —

1593. PUBLIC INCOME AND EXPENDITU

Heads of Income.	Income.					
	1830.		1831.		1832.	
Customs and Excise.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L.
Spirits { Foreign	1,519,572 8 7	- - -	1,480,507 5 2	- -	1,432,179 8 0	
Spirits { Rum	1,434,782 13 1	- -	1,599,445 6 11	- -	1,619,881 9 5	
Spirits { British	4,783,951 2 1	- - -	5,185,574 4 [illegible]	- - -	5,195,125 5 [illegible]	
Malt	3,814,305 1 5½	- - -	5,436,272 14 2	- - -	4,359,333 [illegible] [illegible]	
Beer *	3,055,433 15 11½	- - -	2,345,122 10 2½	- -	6,288 [illegible] 1	
Hops	242,658 0 10½	- - -	118,912 5 3¼	- - -	143,594 19 [illegible]	
Wine	1,473,607 11 4	- - -	1,584,177 18 3	- - -	1,557,484 2 4	
Sugar and Molasses	5,089,315 [illegible] 5	- - -	4,927,025 7 6	- -	4,807,472 5 6½	
Tea	3,321,722 9 6	- - -	3,387,097 18 9½	- -	3,344,918 12 [illegible]	
Coffee	498,931 8 1	- - -	579,563 10 7	- - -	583,751 6 6	
Tobacco and Snuff	2,849,706 7 8	18,084,025 11 10½	2,934,264 13 11	27,307,763 14 1	2,960,325 7 4	26,006,9
Butter	147,839 3 4	- - -	102,752 3 8	- - -	121,256 4 11	
Cheese	87,122 14 4	- -	54,870 19 5	- - -	63,256 15 0	
Currants and Raisins	388,102 2 6	- - -	420,217 0 3	- - -	505,440 9 1	
Corn	896,795 15 2	- - -	790,109 17 8	- - -	544,792 4 3	
Cotton Wool* and Sheep's imported	317,074 10 5	- - -	462,274 11 11	- - -	476,682 17 7	
Silks	206,615 9 0	- -	209,047 7 3	- - -	213,847 14 5	
Printed Goods *	582,270 12 [illegible]	- -	570,330 15 0½	- - -	58,968 4 [illegible]	
Hides and Skins *	432,768 15 7	- - -	256,278 3 10	- - -	52,134 17 0½	
Paper	684,563 10 11½	- -	690,610 1 [illegible]	- - -	680,140 5 4½	
Soap †	1,152,245 11 1½	- - -	1,251,021 12 11½	- - -	1,139,318 3 5½	
Candles and Tallow *	652,971 16 11½	-	662,944 18 8¼	- - -	615,554 [illegible] 5	
Coals, Sea-borne *	983,919 9 2½	- - -	1,021,862 5 11	- - -	125,745 13 11½	
Glass	670,494 [illegible] [illegible]	- -	567,638 18 11	- - -	648,850 5 6½	
Bricks, Tiles *, and Slates *	596,145 14 3½	- - -	383,985 5 7½	-	366,418 11 6½	
Timber	1,394,407 19 11½	- -	1,319,253 9 11	- - -	1,278,995 14 10½	
Auctions	251,562 [illegible] [illegible]	- -	234,354 2 11	- -	218,085 4 [illegible]	
Excise Licences	845,390 [illegible] 3½	- -	848,469 14 11½	- -	919,175 4 9½	
Miscellaneous Duties of Customs and Excise	1,892,668 2 4	- - - 11,975,957 [illegible] 6½	1,971,223 5 3½	- - 11,836,718 18 7	1,743,795 6 1½	9,674,6
Total of Customs and Excise	- - - -	40,059,983 10 5	- - -	39,344,482 [illegible] 8	- - -	35,[illegible]
Stamps.						
Deeds and other Instruments	1,663,145 14 6½	- -	1,621,427 1 [illegible]	- - -	1,612,107 3 1½	
Probates and Legacies	2,035,719 0 4	- -	2,084,432 16 3	- -	2,001,951 4 [illegible]	
Insurance { Marine †	226,897 6 [illegible]	- - -	219,565 6 1	- - -	248,156 11 [illegible]	
Insurance { Fire	764,939 0 11½	- -	760,931 3 11½	- - -	764,755 11 11	
Bills of Exchange, Bankers' Notes, &c.	568,485 1 1½	- -	548,546 1 8½	- - -	666,704 14 [illegible]	
Newspapers and Advertisements †	433,385 5 10½	- - -	613,848 2 2½	- -	655,726 10 3	
Stage Coaches	426,472 1 [illegible]	- - -	418,598 5 9½	- - -	421,480 14 [illegible]	
Post Horses	252,772 2 8	- - -	220,357 12 10	- - -	231,365 3 4	
Receipts	225,996 2 6	- -	223,060 6 [illegible]	- - -	218,347 6 10½	
Other Stamp Duties	663,164 5 9½	- - - 7,285,976 1 7½	516,716 18 [illegible]	- - - 7,348,083 14 6	416,066 15 [illegible]	7,1[illegible]
Assessed and Land Taxes.						
Land Taxes	1,200,159 10 11½	- - -	1,184,790 12 [illegible]	- -	1,161,312 7 1½	
Houses	1,324,327 [illegible] [illegible]	- - -	1,361,625 0 [illegible]	- -	1,357,041 18 11½	
Windows	1,163,760 17 8	- - -	1,185,283 7 10½	- - -	1,178,344 2 3½	
Servants	286,552 7 [illegible]	- - -	295,087 5 6	- - -	295,111 [illegible] 6	
Horses	405,678 1 9	- - -	425,125 17 0	- - -	417,841 2 0	
Carriages	374,677 14 0	- -	397,613 10 [illegible]	- -	392,947 4 0	
Dogs	183,060 3 4	- - -	186,102 2 [illegible]	- - -	181,002 1 0	
Other Assessed Taxes	268,175 2 9	- - - 5,206,392 1 3	250,942 11 7	- - - 5,294,870 6 10½	230,117 [illegible] 3	5,222,71
Post Office	- - -	2,184,667 2 4	- - -	2,212,306 5 6½	- - -	2,227,36
Crown Lands	- - -	465,481 4 [illegible]	- -	383,742 0 4	- - -	373,7
Other Ordinary Revenues and other Resources	- - -	622,302 [illegible] 0½	- - -	376,806 0 6	- -	347,2
Grand Total	- - - L.	55,824,302 0 [illegible]	- - -	54,840,190 9 4½	- -	50,990,3

N. B. — The duties marked * are now repealed; those marked † are reduced.

FOR THE YEARS ENDED 5th JANUARY 1830, 1831, AND 1832.

Heads of Expenditure.	Expenditure.					
	1830.		1831.		1832.	
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.
Revenue Charges of Collection.						
Customs: Civil Departments	1,100,050 8 10½		1,027,870 17 1½		1,000,351 6 9½	
Customs: Preventive Service	265,478 10 3½		260,043 1 4½		315,574 13 7½	
Total	1,365,528 19 2¼		1,287,913 18 6		1,315,926 0 5	
Excise	1,210,948 12 0		1,266,429 10 9½		1,144,150 8 1½	
Stamps	193,279 12 9		190,139 7 1¼		186,169 19 1½	
Assessed and Land Taxes	287,163 2 2		251,959 12 1		251,504 2 4	
Other Ordinary Revenues (except the Post Office)	28,162 10 6½		28,782 2 10		29,355 15 2½	
Total Revenue		3,118,102 17 8		3,014,274 11 4½		2,935,646 3 5½
Public Debt.						
Interest of Permanent Debt	25,315,866 10 7½		24,091,750 7 10		24,037,666 2 6½	
Annual Payment for Terminable Annuities *	1,554,695 8 4		1,543,106 11 7		1,844,498 4 1	
Annual Payment for Life Annuities and Annuities for Terms of Years *	826,402 13 10		1,753,269 2 5		1,501,091 5 6	
Interest of Exchequer Bills	875,494 1 5½		813,300 15 5		635,329 11 3	
Management	275,143 7 1¼		275,179 3 4		273,296 8 9½	
Total Debt		29,153,602 1 3		28,476,606 1 7		28,302,731 12 2
Civil Government.						
Civil List: Privy Purse; Tradesmen's Bills; Salaries of the Household	400,700 0 0		401,628 16 10½		411,800 0 0	
The Allowances to the Junior Branches of the Royal Family, and to H. R. H. Leopold George Frederick Prince of Coburg	247,974 4 6½		245,923 1 6½		212,373 0 0	
The Lord Lieutenant of Ireland's Establishment	67,935 1 8		52,749 9 3½		16,379 14 1	
The Salaries and other Expenses of the Houses of Parliament (including Printing)	141,699 14 5		144,374 6 5		238,037 19 11	
Civil Departments in Great Britain, exclusive of those in the Army, Navy, and Ordnance Estimates	325,706 0 1¼		320,045 1 8½		339,376 9 8¼	
Pensions on the Consolidated Fund and Gross Revenue	204,870 7 9		264,247 3 2½		548,279 2 5½	
Ditto on Civil List	196,114 4 11		170,000 0 0		75,000 0 0	
Total Civil Government		1,396,899 17 4½		1,578,967 19 6½		1,841,244 6 0
Justice.						
Courts of Justice in England, Scotland, and Ireland	426,828 16 2		407,801 9 9½		415,955 7 6½	
Police, and Criminal Prosecutions	203,639 11 3		222,450 9 4		210,525 4 11	
Correction: Convicts at Home and Abroad	146,925 15 3		140,305 16 1		129,587 5 1	
Correction: Convicts, New S. Wales	167,500 0 0		167,500 0 0		167,500 0 0	
Correction: Other Expenses	60,704 12 8		55,920 6 11½		63,184 0 0	
Total Justice		1,004,598 15 4		993,978 2 2½		986,747 17 6½
Diplomatic.						
Salaries and Retired Allowances of Foreign Ministers	224,930 0 0		210,930 15 0½		141,437 15 3	
Ditto ditto Consuls	112,479 0 0		117,575 0 0		112,190 0 0	
And Contingencies, Diplomatic	50,118 5 2		37,037 7 1		45,193 5 8	
Total Diplomatic		403,553 5 2		375,623 2 10½		298,825 15 11
Forces.						
Army: Effective: Number of Men	(85,721.)		(84,172.)		(74,408.)	
Army: Effective: Charge	4,829,282 12 4½		4,492,588 5 7½		4,808,562 16 2	
Army: Non-Effective: Number of Men	(96,999.)		(96,081.)		(91,724.)	
Army: Non-Effective: Charge	2,939,896 0 0		2,930,506 9 6		2,921,401 17 4	
Total Army	7,769,178 12 4½		7,423,094 15 1½		7,732,907 13 6	
Ordnance: Effective: Number of Men	(8,879.)		(8,878.)		(12,791.)	
Ordnance: Effective: Charge	1,363,257 0 0		1,332,351 0 0		1,062,913 0 0	
Ordnance: Non-Effective: Number of Men	(12,491.)		(12,364.)		(13,052.)	
Ordnance: Non-Effective: Charge	365,686 0 0		357,030 0 0		355,904 0 0	
Total Ordnance	1,728,908 0 0		1,689,144 0 0		1,418,817 0 0	
Navy: Effective: Number of Men	(32,458.)		(31,444.)		(33,794.)	
Navy: Effective: Charge	4,299,645 11 11		4,063,308 7 8½		4,243,846 7 3	
Navy: Non-Effective: Number of Men	(30,467.)		(29,932.)		(32,021.)	
Navy: Non-Effective: Charge	1,579,149 0 0		1,531,610 17 11½		1,626,704 14 5	
Total Navy	5,878,794 11 11		5,594,906 5 8		5,870,551 1 8	
Total Forces		15,376,881 4 3½		14,716,694 0 9½		15,022,335 15 2
Bounties for promoting Fisheries, Linen Manufactures, &c., paid out of the Gross Revenue		236,898 3 0½		207,066 10 1½		173,055 18 9½
Public Works		606,396 8 4		471,212 0 1		825,710 8 5
Payments out of the Revenue of Crown Lands, for Improvements and various Public Services		427,015 2 5½		252,601 5 7½		234,455 11 9½
Post-Office Charges of Collection and other Payments		696,801 16 11½		718,559 8 6½		673,317 5 3½
Quarantine and Warehousing Establishments		191,852 18 2½		214,037 14 6½		203,734 0 6½
Spanish Claims, as granted by Parliament		200,000 0 0				
Miscellaneous Services, not classed under the aforegoing Heads, consisting of Grants of Parliament, Payments out of the Consolidated Fund and of Civil List		1,536,297 16 7		1,988,530 7 8½		1,936,875 18 5
Grand Total	L.	51,318,875 9 8½		53,011,333 4 5½		52,575,308 16 3½
* Terminable and Life Annuities paid as above		2,381,098 2 2		3,296,375 14 0		3,346,489 9 7
Corresponding Perpetuities, as estimated by Mr. Finlaison		1,511,529 15 9		2,143,686 13 6		2,104,507 18 2
Difference	L.	869,568 6 5		1,152,689 0 6		1,241,981 11 5

1594. An Account of the Public Funded and Unfunded Debt of Great Britain and Ireland, and the Charge thereon, on the 5th of January, 1831.
(*Parl. Paper*, No. 285. Sess. 1831.)

DEBT.

	Capital of Unredeemed Debt. £	s.	d.
Great Britain.			
Debt due to the South Sea Company, at 3 per cent.	3,662,784	8	6¼
Old South Sea Annuities —	3,501,870	2	7
New South Sea Annuities —	2,489,830	2	10
South Sea Annuities, 1751 —	527,100	0	0
Debt due to the Bank of England —	14,686,800	0	0
Bank Annuities created in 1726 —	876,049	19	0
Consolidated Annuities —	348,828,660	15	6½
Reduced Annuities —	123,771,890	19	2
Total bearing Interest at 3 per cent.	498,344,986	7	7¾
Annuities at 3½ per cent., anno 1818	12,804,559	2	2
Reduced Annuities, do.	64,250,381	1	11
New 3½ per cent. Annuities	138,680,967	5	3
4 per cent. Annuities, created 1826	10,806,966	0	0
New 5 per cent. Annuities	467,712	19	11¾
Great Britain	725,355,572	16	11½
Ireland.			
Irish Consolidated Annuities, at 3 per cent.	2,455,317	13	6
Irish Reduced Annuities, do.	150,228	17	10
3½ per cent. Debentures and Stock	14,173,495	7	1
Reduced 3½ per cent. Annuities	1,289,703	17	10
New 3½ per cent. Annuities	11,425,247	18	8
Debt due to the Bank of Ireland, at 4 per cent.	1,615,384	12	4
New 5 per cent. Annuities	6,661	1	0
Debt due to the Bank of Ireland, at 5 per cent.	1,015,384	12	4
Ireland	32,131,424	0	7
Total United Kingdom	757,486,996	17	6½
Exchequer Bills outstanding	32,079,483	6	5½
Total Funded and Unfunded Debt	£789,566,480	4	0

CHARGE.

		In Great Britain. £	s.	d.	In Ireland. £	s.	d.	Total Annual Charge. £	s.	d.
Due to the Public Creditor.	Annual Interest on Unredeemed Capital	22,956,770	13	4¾	1,134,979	14	5¼			
	Long Annuities, expire 1860	1,193,089	9	7	—					
	Annuities per 4 Geo. 4. c. 22., do. 1867	585,740	0	0	—					
	Annuities per 10 Geo. 4. c. 24., expire at various periods	775,914	5	0	—					
	Annuities to the Trustees of the Waterloo Subscription Fund, per 59 Geo. 3. c. 34., expire 5 July, 1831	7,300	0	0	—					
	Life Annuities, per 48 Geo. 3. c. 142. and 10 Geo. 4. c. 24.	669,361	9	0	—					
	Life Annuities payable at the Exchequer. English	23,455	8	2¾	—					
	Life Annuities payable at the Exchequer. Irish	35,476	18	7	7,038	0	9			
Interest of Funded Debt		£26,247,108	3	9½	1,142,017	15	2¼	27,389,125	18	11¾
Management of Debt		-	-	-	-	-	-	275,179	3	4
Annual Charge on Account of Public Funded Debt		-	-	-	-	-	-	27,664,305	2	3¾
Interest on Exchequer Bills		-	-	-	-	-	-	793,031	1	8
Total Charge on Account of Funded and Unfunded Debt		-	-	-	-	-	-	£28,457,336	3	11¾

1595. *Number of persons deriving incomes from the funds.* It appears from the subjoined account, that in 1830 (and the number has not sensibly varied since), 274,823 dividend warrants were issued to persons deriving incomes from the funds. In point of fact, however, the number of persons dependent upon the funds for support is much greater than appears upon the face of this account: for the dividends upon the funded property belonging to the Equitable and other insurance companies, the various banking companies, and other public establishments, are all paid upon single warrants, as if they were due to so many private individuals, whereas they are really paid to these individuals only because they act as factors or trustees for a vast number more.

1596. Account of the Total Number of Persons to whom a Half Year's Dividend on Three per Cent. Consols became due on 5th January last; specifying the Number respectively of those whose Dividend for the Half Year did not exceed 5*l.*, 10*l.*, 50*l.*, 100*l.*, 200*l.*, 300*l.*, 500*l.*, 1000*l.*, 2000*l.*, and the Number of those whose Dividend exceeded 2000*l.*; a like Account of Dividends on Three per Cent. Reduced, payable on the 10th of October last; a like Account of the Dividends on Three and a Half per Cents., payable on the 10th of October last; a like Account of Dividends on Four per Cents., payable on the 10th of October last; a like Account of the Dividends on Long Annuities, payable on the 10th of October last; a like Account of the Dividends on New Four per Cents., payable on the 5th of January last; and a like Account of the Dividends on Three per Cent. Annuities, anno 1726, payable on the 5th of January last; with a Total of the Number of Persons under each Head. (*Parl. Paper*, No. 41. Sess. 1830.)

	Dividends payable.	Not exceeding									Exceeding 2000*l.*	Total.
		5*l.*	10*l.*	50*l.*	100*l.*	200*l.*	300*l.*	500*l.*	1000*l.*	2000*l.*		
3*l.* per cent. Consolidated Annuities	Jan. 5. 1830	26,596	12,779	30,651	9,326	6,163	2,192	1,421	820	239	82	90,269
3*l.* per cent. Reduced Annuities	Oct. 10. 1829	10,078	4,653	11,460	3,491	2,110	775	455	222	85	32	33,361
3*l.* 10*s.* per cent. Reduced Annuities	ditto	6,933	4,381	10,365	2,978	1,613	428	291	124	39	15	27,167
3*l.* 10*s.* per cent. Annuities, 1818 - -	ditto	222	186	489	192	155	53	40	32	7	7	1,383
4*l.* per cent. Annuities, 1826 - -	ditto	1,269	735	1,486	430	266	80	71	29	8	5	4,379
Long Annuities -	ditto	9,077	4,008	9,210	1,985	1,017	339	209	95	20	2	25,962
New 4*l.* per cent. Annuities - -	Jan. 5. 1830	29,307	15,403	33,451	7,874	3,857	1,037	589	233	52	18	91,821
3*l.* per cent. Annuities, 1726 - -	ditto	127	82	195	40	28	8	1	Nil.	Nil.	Nil.	481
Totals - -		83,609	42,227	97,307	26,316	15,209	4,912	3,077	1,555	450	161	274,823

1597 *Portion of revenue contributed by each division of the empire.* There are no means by which it is possible to assign to each portion of the empire what may be considered its proper share of the total expenditure. But the following Table shows how much each contributes to the revenue: —

Return of the Revenue collected in 1831, in England, Wales, Scotland, and Ireland, respectively; distinguishing the Customs, Excise, Stamps, and Assessed Taxes.

Places.	Customs.			Excise.			Stamps.			Land and Assessed Taxes.			Post Office.			Total.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
England	16,515,911	0	0	14,147,252	6	5	6,410,573	6	10	4,804,829	5	4	1,031,715	0	0	42,910,280	18	7
Wales -	26,139	0	0	176,046	4	6	* -	-	-	105,530	0	0	40,995	0	0	348,710	4	6
Scotland	1,478,231	0	0	2,576,965	4	1	534,985	15	[illegible]	318,578	0	7	204,593	6	9	5,113,353	6	8
Ireland	1,463,624	0	0	2,193,079	4	7	482,040	19	8	-	-		253,356	16	5	4,392,101	[illegible]	8
Total £	19,483,905	0	0	19,093,342	19	7	7,427,600	1	6	5,228,937	5	11	1,530,660	3	2	52,764,445	10	9

1598. *The customs and excise* form the two main branches in the collection of the revenue; the former relating to goods imported, the latter to those produced and manufactured within the country. This division was essentially modified by Mr. Pitt, who, finding the excise survey the most effective and economical, transferred to it wine, tea, spirits, and tobacco, the most productive branches of imported goods. Under a late parliamentary commission, however, those branches have been again transferred to the customs, and the original distinction of the two branches has been completely re-established; it being considered that the new regulations introduced into the Board of Customs will obviate former objections. Under the same commission great exertions have been made to regulate and economise all the revenue departments. Those of the three kingdoms have been incorporated together, and each department ruled by one general board resident in London. Among the most important accommodations to trade, established by Mr. Pitt, is the *bonding system*, by which the goods of merchants are warehoused under the joint custody of the proprietor and of government; payment of duty not being demanded until a sale is effected. This has been also extended to British spirits.

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* The accounts of the Stamp Department do not afford the means of distinguishing the amount of revenue received in Wales.

1599. *The navy* is the force on which Great Britain mainly relies for maintaining her own independence and her ascendency over foreign nations. By it she has acquired the sovereignty of the seas, and the advantages, which that sovereignty confers, of securing her possessions in the most distant quarters of the globe, of protecting her commerce, and sustaining the exertions of her armies during war. The achievements by which she has won this arduous and well merited ascendency are alike honourable to the heroes who commanded her fleets, and to the brave men who fought under them; especially in the late war, when she triumphed over the navies of Europe, united under the direction of France. The matchless valour of British seamen, displayed on that and on other occasions, is the more to be admired, since a large proportion of them are procured by means which only extreme necessity can justify; we allude to impressment, the only mode of conscription practised in this country, if conscription that can be called, which is attended with circumstances so violent and irregular. It appears, however, to have been discontinued, except in urgent cases, when a sudden augmentation of the naval force is required. During the most active period of the last maritime war, the number of seamen in employment amounted to 140,000; and there were in commission 160 sail of the line and 150 frigates, with 30,000 marines. Before the termination of the contest, however, such was the humbled condition of the foreign navies opposed to us, that our superiority was maintained with a much smaller force. The vote for the sea service of 1815 was limited to 55,000 seamen and 15,000 marines. After the ratification of peace, the establishment was rapidly reduced; in 1817 it amounted to no more than 13,000 seamen and 6000 marines. This number, however, was considered too small to maintain the proper authority of Great Britain, in the then disturbed state of affairs on the Continent. The estimate for 1831 comprehended 22,000 seamen and 10,000 marines. The pay of these men, at 2*l.* 12*s.* a month, amounts to 1,081,000*l.*; their subsistence, at 1*l.* 9*s.* a month, to 603,000*l.*; which, with the cost of stores, and allowance for wear and tear, raised the regular current expense to nearly 2,000,000*l.* The building and repair of vessels, the charges of the dock-yards, pay of officers connected with the navy, pilotage, packets, medical establishments, and a variety of other items, amounted to about an equal sum. The amount of 1,457,000*l.* in half pay, pensions, and superannuations, was entailed by the enormous establishment of the late war, and was in a gradual state of diminution. These charges, with about 231,000*l.* for freights and other extraordinaries, made up the sum of 4,657,000*l.* as the entire navy estimate for the year 1831.

1600. *The British army* always fought with glory, and maintained a reputation for valour rarely equalled and never surpassed by that of any other nation. Early in the last century, under Marlborough, it took the lead in the great European confederacy, and was mainly instrumental in humbling the overgrown alarming power of Louis XIV. In subsequent wars on the Continent, Great Britain fought as an auxiliary, and often against unequal numbers. Her troops never lost their reputation; but the cause in which they were engaged, however meritorious, was often unfortunate. This ill success particularly marked their efforts in the outset of the French revolutionary war, when the levies *en masse*, called forth by the republican government, constituted a force too numerous, active, impetuous, and enthusiastic to be resisted by the regular armies of Europe. So distressing were the reverses of the British arms at that period, and so mortifying when contrasted with our naval glories under Howe, Duncan, Jervis, and Nelson, as to create a very general opinion that Great Britain ought to relinquish further exertions on the Continent, and reserve her resources exclusively for maritime warfare. The campaign in Egypt rekindled the hopes of military glory; but a considerable period elapsed ere they could be strengthened by opportunities of more extended warfare. At length the patriotic and inflexible resistance of the Spanish nation to the foulest usurpation on record, opened as fair a field as could be desired for an army comparatively little inured to active warfare;—a peninsula, where the land forces of a power holding the supremacy of the sea could rely on the co-operation and support of their fleets, and where an invading enemy might be harassed in small engagements, until the developement of his tactics rendered it less difficult to defeat him in greater battles. The campaigns in the peninsula, and the unexpectedly rapid success of the northern alliance, gradually drew on Great Britain to the full *production* of her military energies on the Continent; and they terminated the war by a victory at Waterloo, under the Duke of Wellington, which may rank among the most brilliant and memorable achievements of the British arms. The military force of the nation, at this time, amounted to 200,000 regular troops, exclusive of about 100,000 embodied militia, a large amount of local militia and volunteers, to which might also be added a number of regiments employed in the territories of the East India Company, and in its pay. As the militia, however, did not leave the kingdom, and a great part of the regular troops was dispersed in colonies and garrisons; the force in Flanders, at the outset of this memorable campaign, scarcely amounted to 50,000 men; forming, indeed, a central host, round which rallied an equally numerous force composed of Germans, Dutch, and Flemings. After the abdication and exile of the enemy of Europe, which were the consequences of that decisive victory, a rapid reduction of our military establishment was effected. The militia were disembodied; the regular force was reduced, in 1817, to 92,000 men, and in 1819 to 69,000. Circumstances which afterwards arose in Europe and in our own colonies led to successive augmentations; and in 1831 the estimates were for 88,000 men; of whom 74,000 were infantry of the line, 5700 foot guards, 1300 dragoon guards, 7000 dragoons. This was independent of 18,000 men employed in India, and paid by the Company. The charge for these forces was 6,381,000*l.*; but of this sum 3,240,000*l.* consisted of half-pay, retired allowances, pensions, and other charges consequent on the former immense establishment. Of the vast host of volunteers called forth by the menaced invasion during the war, some corps of yeomanry cavalry were all that remained, and most of these have been recently disbanded, their services being no longer deemed requisite to maintain domestic tranquillity. We now proceed to trace the internal regulations on which the preservation of that tranquillity chiefly depends.

1601. *The laws of England, established during ten centuries of legislation, constitute the most extensive, if not the most perfect system of jurisprudence which human wisdom has ever constructed.* The municipal law, justly estimated as the most valuable inheritance of the people, is divided into two kinds, the *unwritten* or common law; and the *written* or statute law. The common law derives its force from long and immemorial usage; and its evidences exist in the records of the several courts of justice, as well as in books of reports and judicial decisions. It includes not only the system by which the ordinary courts of justice are guided and directed; but certain portions of the ancient civil and canon laws which are used in the ecclesiastical courts, the military courts, the court of admiralty, and the courts of the two universities. The written laws are those made by the king, lords, and commons, in parliament assembled; they are judicially called *Statutes*, and are either *declaratory* of the common law, or *remedial* of some of its defects. The statutes are also distinguished as either general or special, public or private.

1602. *The high court of parliament, independently of its legislative functions, is the supreme court of judicature in the kingdom.* The House of Lords exercise jurisdiction in civil causes, upon appeals or writs of error from the inferior courts, and in criminal questions, when brought before them by presentment of the House of Commons, in the form of an impeachment.

1603. *The high Court of Chancery derives its name from the judge who presides in it, and who is called the Lord High Chancellor.* It has two distinct tribunals: the one ordinary, being a court of common law; the other extraordinary, being a court of equity. From the ordinary or legal court issue all original writs that pass the great seal, all commissions of charitable uses; as also of bankruptcy, idiotcy, and lunacy; for such writs it is always open to the subject, who may there demand and have them, *ex debito justitiæ*. In the extraordinary court, or court of equity, the chancellor exercises a most extensive jurisdiction, determining causes beyond the reach of the ordinary tribunals, and others in which reason and justice require that the rigorous application of the rules of common law should be mitigated. These decisions emanate from the judgment of the lord chancellor alone. The affairs of this court, however, having been found too extensive for one man to execute, an assistant judge has been appointed, pursuant to an act passed in the 53 Geo. III. He is called Vice-chancellor of England, and has power to hear and determine all causes depending in the court; all his decrees are valid and effectual, subject, however, to *reversal* by the lord chancellor, and not to be enrolled until signed by him; nor are they to discharge, reverse, or alter any decree of the lord chancellor or of the Master of the Rolls. The vice-chancellor holds his office during good behaviour. The Master of the Rolls, who ranks next to him in dignity, and holds his office for life, acts in a judicial capacity as assistant to the lord chancellor, and also hears and determines causes on certain appointed days; but his orders and decrees cannot be enrolled until signed by the lord chancellor, who has the power to discharge or alter them. The masters in chancery are twelve in number, including the Master of the Rolls, who is their chief, and also including the Accountant-General. They are assistants and associates of the lord chancellor and the master of the rolls, and sit with them in court by turns, two at a time. To the masters in chancery are directed references touching accounts, and matters of practice, upon which they make their reports. They also administer oaths to those who swear to answer; and take affidavits and acknowledgments of deeds and recognisances. The increase of business in this court has of late years been astonishing. In 1756, the property of suitors in chancery amounted to only 2,264,000*l.*; in 1776, to 6,602,000*l.*; in 1796, to 14,550,000*l.*; in 1816, to 31,950,000*l.*; and in 1826, to more than 40,000,000*l.* Formerly each master in chancery kept in his hands all monies paid into court in the causes referred to him; but, to remedy certain inconveniences thence arising to suitors, an act of parliament was passed appointing an accountant-general. On the passing of this act, the masters made up their accounts with him, and thenceforward have paid into the Bank of England all monies remaining in their hands, to be placed to his account, and have also transferred to him all securities which they held in trust for suitors. The accountant-general cannot, however, meddle with the actual receipt and custody of the suitors' money and effects, but only keep the account with the bank. The governor and company of the Bank of England are answerable for such monies, and not the accountant-general.

1604. *The Court of King's Bench is the supreme court of common law in the kingdom.* It takes cognisance both of criminal and civil causes; the former in what is called the crown side or crown office; the latter in the plea side of the court, where, by a fiction of law, actions are brought which may render a defendant answerable to the King as well as to the injured party. The Court of King's Bench is also a court of appeal, into which may be removed, by writ of error, determinations of all the courts of record in England. The court consists of a chief justice, and three *puisné* judges, who are, by their office, sovereign conservators of the peace and supreme coroners of the land.

1605. *The Court of Common Pleas takes cognisance of all civil actions depending between subject and subject.* Many questions, however, may, by legal contrivances, be brought into this or into the Court of King's Bench at the option of the parties; and the emulation thus excited is considered to be one chief cause of the eminence to which these courts have attained. The Court of Common Pleas consists of a chief justice, and three *puisné* judges.

1606. *The Court of Exchequer has jurisdiction both in law and equity.* In it are tried all questions relating to the revenue, and, by fictions of law, various civil actions and personal suits. The judges are four; a chief baron and three *puisné* barons.

1607. *Trial by jury*, an institution coeval with the origin of the constitution, and justly valued by the people as the bulwark of their liberties, is employed in all cases between the crown and the subject, in all criminal cases, and in all those for which damages are awarded. The jury in England consists of twelve persons, whose verdict must be delivered by their foreman as unanimous, or, in the technical phrase, as *agreed upon*.

1608. *Courts of Assize and Nisi Prius are ordained as auxiliaries to the superior courts at Westminster for the trial of causes in every county in England, twice a year in most counties, once a year in others.* The counties are comprised in six circuits: 1st, the Home Circuit; 2d, the Midland; 3d, the Norfolk; 4th, the Oxford; 5th, the Northern; and 6th, the Western Circuit. These circuits are supplied by the twelve judges, two being appointed to each. They sit by virtue of five several authorities: the commission of the peace; a commission of *oyer* and *terminer*; a commission of general gaol delivery; a commission of assize to take the verdict of a peculiar jury summoned for the trial of landed disputes; and a commission of *nisi prius*. This last is a consequence of the commission of assize, the judges being, by statute 13 Edw. I. c. 30., empowered to try questions of fact at Westminster by a jury returned from the county wherein the action arises, *nisi prius*, *unless before* the day fixed, the judges of assize come into that county, which they are sure to do in the vacation preceding each Easter and Michaelmas term. In these courts, the senior or superior judge generally sits on the crown side for the trial of criminals, and the junior or inferior judge on the *nisi prius* side, for the decision of cases of property.

1609. *A Court of General Quarter Sessions of the Peace, held in every county once in every quarter of a year is the most important of the minor tribunals.* Its jurisdiction extends to all felonies and trespasses; but murders and other capital felonies are usually remitted for more solemn trial at the assizes. It also takes cognisance of offences relating to game, and of other misdemeanors. The records of the sessions are delivered for preservation to the *custos rotulorum* of the county. The sheriff's tourn is also a court of record, held twice a year at some place within the county. The court leet or view of frank-pledge is a court of record held once a year, and not oftener, within a particular hundred, lordship, or manor, before the steward of the leet, a Saxon term synonymous with the German *leute*, the people. It is the King's court granted by charter to the lords of those hundreds or manors. Its original intent was the view of the frank-pledge, or freemen within the liberty, who, according to the institution of Alfred, were all mutually pledges for the good behaviour of each other. The common objects of this court and of the sheriff's tourn are, the preservation of the peace, and the chastisement of various minute offences against the public welfare. In aid of these, and other institutions tending to the maintenance of order and tranquillity throughout the country, subordinate magistrates are appointed in each county, under the name of justices of the peace. They hold special commissions from the king, and are empowered to suppress riots and affrays, to take securities for the peace, and to commit felons and inferior criminals. Their jurisdiction is enforced by constables and other subordinate officers. The person who presides over them is the *custos rotulorum*, who is generally the lord lieutenant of the county, nominated by the king's sign manual. Thus the sovereign authority extends through just gradations to every part of the political fabric, and perpetuates the characters impressed upon it by the wisdom and virtue of its immortal founder.

Sect. V. *Productive Industry.*

1610. *The productive industry of England*, at this moment, far surpasses that of any other country, either ancient or modern. Her fabrics clothe the most distant nations; her vessels traverse alike the polar and equatorial seas. This pre-eminence has been attained too without any sacrifice of national spirit and energy; and the issue of the late war fully refuted the aspersion thrown on the British, as a mere nation of shopkeepers.

1611. *During the early periods of her history*, England could not be said to have attained to a state of prosperity. The nation, indeed, was always brave, but poor; the ground was rudely cultivated by serfs dependent on their feudal lords; its wool was purchased by the Flemings, and returned in a manufactured state for the clothing of the indolent natives. The downfall of the feudal power; the civil and social advantages which the people acquired under the last Henries; and, above all, the spirit of enterprise diffused among them under Elizabeth, gave a great impulse to commerce and industry. It was not, however, till the era of the Revolution, that the nation entered upon that grand career of prosperity, in which she has ever since proceeded with accelerated activity.

1612. *Agriculture*, as the greatest and most essential source of human wealth and comfort, must always claim pre-eminence over the other branches of human industry. For two or three centuries the English tenantry have been an independent and substantial race. Such had been the progress of agriculture, that, even in the middle of the last century, England had become a regular grain-exporting country. Still, fifty years ago, the practice of this important art was comparatively cumbrous, costly, and unproductive. It had not become an object of enquiry to men of liberal minds; it was left to be carried on by the common farmer, in a mechanical manner, according to the unimproved routine of his forefathers. The number of labouring cattle, both horses and oxen, employed in a farm, was superabundant in the extreme; manure was very carelessly collected; the green crops were not generally hoed, and artificial grasses were little known. The management of cattle was generally so bad, that Mr. Young conceived "that two pounds were lost upon every cow; while sheep might have generally yielded a greater profit by three fourths; and the management of swine was perfectly execrable." In the general economy of the country, a neglect of enclosure prevailed; a large extent consisted of commons, covered with miserable herds, which the neighbourhood turned out to pasture; and a great part of the eastern coast, consisting of fens and marshes, was unhealthy and unfit for cultivation. Since that time, a complete change has taken place in all these respects. The greatest nobles and statesmen have vied with each other in their zeal for the promotion of agriculture. Prizes, exhibitions, and other institutions calculated to excite a spirit of improvement, have been established on a great scale. Even royal patronage was extended to this most useful of arts, and a board was formed under public auspices for its promotion. An extraordinary impulse was also given by the scarcity at the close of the eighteenth century; when the continental ports were closed, and grain rose to an unprecedented price, from which it has since been reduced, indeed, but not to its former rate. The old routine system was, after that crisis, broken up, and every exertion made to augment the products of the soil. Commons were enclosed, marshes drained, grasses of the most useful species cultivated, and every process that multiplied experiments had proved to be advantageous, introduced. Particular attention was bestowed in improving the breed of cattle and sheep; and for the accomplishment of this purpose, the best species were imported from abroad. At the same time, economical farming was greatly studied; the disproportionate number of horses and oxen was reduced; and machinery, particularly the threshing-machine, came into general use. Thus a great augmentation took place in the produce of the soil; still greater in the profit of the farmers, and much the greatest in the rent of the landlord, which, in many instances, was more than tripled. The reduced prices, however, which have ultimately been the result of this augmented production, have, at last, rendered it difficult to support the great advance in this last particular.

1613. *The natural fertility of England* is not equal to that of the countries in the south of Europe. Her wheat is not so fine, and she produces no wine. Her pastures, however, are richer; and her soil is capable of yielding all the valuable kinds of grain in abundance, and of good, if not superior quality. These natural advantages, improved by her extraordinary industry, raise the agricultural products of England to a much greater amount than those of any other country in Europe.

1614. *The surface of England* has been stated by official authority at thirty-seven millions of acres. About half a million is occupied by roads; and if we also make allowance for waters, natural and artificial, &c., we may probably have to deduct two millions from the part which forms the proper subject of agriculture. Of this, Mr. Young observes, "Half is under the plough, and half devoted to pasturage." He and Mr. Comber agree in supposing upwards of three millions to be in wheat. In barley, Mr. Young supposes nearly three millions; Mr. Comber, only one million; the latter estimate manifestly too small — the first probably too large. Both suppose about three millions in oats and beans.

1615. Attempts have been made to estimate *the value of the grain and cattle* reared in Great Britain; but these rest on such vague data, that they cannot be brought forward with any confidence.

1616. *Of minor articles of consumption we shall first mention hops.* By a report presented to parliament, the number of acres under cultivation for hops, in 1831, was 43,500, by far the greater proportion in Kent and Sussex, the rest in Worcestershire and Herefordshire. The average duty paid in 1829 and 1830 was 280,182*l.*, which, at 2*d.* per pound, showed an amount of 300,000 cwt., making, at 7*d.*, 7,100,000*l.* *Cider.* — The duty on cider in 1830 was 49,000*l.*, which, at 2½*d.* per gallon, makes 4,384,000 gallons, which, at 2*s.* each, amount to 438,000*l.*

1617. *Rape seed*, for the purpose of being converted into rape oil, which is much used in the coarser forms of the woollen manufacture. The quantity, raised chiefly in the counties of Cambridge, Essex, and Norfolk, was stated to parliament at 200,000 quarters, and the price at from 30*l.* to 40*l.* per last, making a value of about 700,000*l.*

1618. *The manufactures of Britain*, still more than even the immense products of her agriculture, have astonished the world, and raised her to a decided superiority over all other nations. This distinction she has attained, not so much by their extreme fineness; for, as to this particular, France excels not only in silks and cambrics, but even in woollens; and British porcelain does not equal that of Dresden. But she stands unrivalled in the immensity of useful and valuable products, calculated for the consumption of the great body of mankind; and above all in the stupendous exertions made in contriving and constructing the machinery by which they are produced.

1619. *The woollen manufacture* claims our first attention, as the old staple of the country. As soon as England began to exercise any kind of industry, her first aim was to manufacture her own wools, instead of leaving this operation in the hands of the Flemings. The fabric began in Kent and Sussex; but soon spread, and fixed itself in the interior districts; that of coarse woollens in the West Riding of Yorkshire, and that of the finer cloths in Gloucestershire and Wiltshire. In the end of the seventeenth century, its computed value was 8,000,000*l.* of which 3,000,000*l.* were exported. In 1800, from an enquiry instituted by parliament, the total value appeared to be 20,000,000*l.*, of which not much less than half was exported. In the course of the century, it has continued progressively increasing though not with the same rapidity as some other fabrics. The introduction and remarkable extension of the manufacture of cotton has doubtless tended to check its growth. Though the quantity produced for internal use has greatly increased with the advance of population and wealth, the quantity exported has not been augmented in proportion. In the six years ending with 1789, the average had risen only to 3,500,000*l.* In 1802, it exceeded 7,000,000*l.*; but in 1831 and 1832 has been only 5,240,000*l.* This manufacture, however, depending chiefly upon home consumption, is less liable to vicissitude than those which have their principal market in foreign countries.

1620. *The wool*, which forms the material of this great manufacture, is partly produced in Britain, partly drawn from abroad. English wool is divided into long and short. The former being peculiar to this country, and long considered as exclusively adapted to worsted stuffs, bore a high value; but the recent improvements in machinery have enabled the manufacturer to produce these stuffs almost equally well from shorter wool. The short wool is fitted for cloth and hats; but all that is produced in England is of secondary fineness. Efforts were made about the close of the last century, especially by George III., to introduce the merino breed from Spain, and not without success; but the flesh, which in this country is the most valuable part, being in this species bad, and incapable of improvement, the farmers gave it up, and, devoting themselves to the improvement of the carcase, have allowed the wool even to degenerate, though the increased quantity is supposed to indemnify them. The best short wool is that of Sussex (Southdown) and Norfolk; the best long wool that of Lincoln. According to Messrs. Luccock and Hubbard, the number of short-woolled sheep throughout England, in 1828, amounted to about 14,850,000, that of long-woolled to 4,150,000; and the produce was 264,000 packs of long, and 120,000 packs of short wool; to which might be added 69,000 packs of lamb's wool, and 9000 for Wales; making in all 463,000. Wool, before it is used, must be *sorted*, or divided into parts of different quality. The best English wool is sorted into ten parts, of varying fineness. That formed into cloth is first carded, and after being spun and woven is subjected to the fulling mill, which gives it the proper consistence. The long wool, to be formed into worsted or stuff, is acted upon by red-hot iron combs, which bestow its peculiar texture. The defect of English wool renders it necessary to import a large quantity from abroad, which, after being discouraged for some time by a high duty, is now allowed at the rate of 2*d.* to 1*d.* per lb. The fleece chiefly valued is that of the merino, long confined to Spain: and Spanish wool, in the early part of this century, was introduced to the extent of 6,000,000 lbs. annually, but in 1827 it fell short of 4,000,000 lbs., and in 1832 did not exceed 2,626,000 lbs. It has been supplanted by the wool of Saxony, and other parts of northern Germany, where the merino breed has been introduced and propagated with the greatest success. The importation from Germany, which in 1810 was only 778,000 lbs., was in 1830 so high as 26,073,000 lbs., though in 1832 only 19,832,000 lbs.: New Holland and Van Diemen's Land in that year furnished 2,377,000 lbs. of very fine wool; and the supply is increasing. The entire import amounted in 1830 and 1831 to about 32,000,000 lbs.; in 1832 to only 28,140,000 lbs.

1621. *The entire produce of the woollen manufacture*, and the number of hands employed, has been variously and sometimes extravagantly estimated; but, by the judicious calculations of Stevenson and M'Culloch, their annual value appears to be 18,000,000*l.* or 20,000,000*l.* sterling, and the persons employed between 400,000 and 500,000. British woollens are exported to every quarter of the world, chiefly to Germany, to the value in 1832 of 816,000*l.*; Netherlands, 390,000*l.*; Russia, 144,000*l.*; Portugal, 96,000*l.*; Spain, 62,000*l.*; Gibraltar, 33,000*l.*; Italy, 194,000*l.*; France, 43,000*l.*; East Indies and China, 696,000*l.*; British America, 362,000*l.*; British West Indies, 93,000*l.*; Foreign ditto, 66,000*l.*; United States, 1,420,000*l.*; Brazil, 210,000*l.*; Mexico and States of South America, 437,000*l.* It was exported in the forms of 396,661 pieces cloth; 23,453 pieces napped coatings, duffels, &c.; 40,984 pieces kerseymeres; 34,874 pieces baize; 1,800,714 stuffs or worsted; 2,304,750 yards flannels; 1,681,840 yards blanketing; 690,042 yards carpeting; 133,072 yards woollen and cotton mixed; 152,810 dozens stockings. There were exported also 4,199,000 lbs. of British wool, and 2,204,000 lbs. woollen yarn.

1622. *The cotton manufacture* is of much more recent introduction. Although early mention is made of fustians, it appears proved that these were originally woollen imitations of the cotton stuff bearing that name. In 1641, however, a decided mention is made of cotton imported from the Levant through London, and not unfrequently sent abroad in a manufactured state. For a long period the progress of this branch of industry was slow. In 1705, the import was only 1,170,000 lbs.; about an hundredth part of the present amount. Even in 1760, Dr. Percival estimated the value of the fabric at only 200,000*l.* Soon after, an extraordinary excitement was raised in the minds of the persons connected with this manufacture, and machines of the most wonderful power were invented by common workmen. Cotton could not be spun in quantity sufficient to supply the looms. In 1767, James Hargreaves, a common Lancashire weaver, invented the spinning jenny, by which at first 8, and finally 120 spindles were moved by a single spinner. Hargreaves became exposed to the blind persecution of the working people employed in this operation; was obliged to flee to Nottingham; and, to the disgrace of the nation, died in poverty. Richard Arkwright, a barber of Nottingham, invented the water-twist, or "perpetual twist," spinning frame, in which the whole process was performed by the machine, and the workman had only to supply the material and watch its progress. Arkwright struggled with accumulated obstacles in his own ignorance of mechanism, the difficulty of procuring advances for the purposes of experiment, and the persecution of the mob; but at length he triumphed over all, and raised a large fortune by his invention. This frame, however, was not fitted for the finer manufactures. Mr. Samuel Crompton, in 1775, produced the machine called the *mule*, a combination of the two preceding, which soon superseded both in the finer and more valuable articles. Mr. Crompton did not take out a patent; but near the close of his life, more than thirty years after his invention had been carried into full effect, he applied to parliament for remuneration, when it was stated, that his machine set at work 4,000,000 spindles, employed 70,000 spinners, and 150,000 weavers; worked up 40,000,000 lbs. of cotton; and that the building and machinery connected with it had cost between 3,000,000*l.* and 4,000,000*l.*, He received the miserable pittance of 5000*l.*

1623. *That machinery should weave as well as spin*, was necessary to consummate the triumph of art. This was accomplished by the Rev. Mr. Cartwright, a clergyman of Kent, who, seeing a machine play chess, saw no reason why one might not also weave cloth. He accordingly invented one by which cloth was woven; but the first trial made at Doncaster was unsuccessful as to profit. The scheme was revived at Glasgow; and notwithstanding some abortive attempts, it made progress: but its introduction into Lancashire was slow and gradual. Two thousand power-looms, which existed in 1818, were reduced to one thousand in the following year; and an impression prevailed that cottons could be woven cheaper by the hand. Within the last few years, however, the system of power-loom weaving has been adopted to an immense extent; Mr. R. H. Greg estimates that there are in Britain 80,000, absorbing 10,000,000*l.* of fixed and 5,000,000*l.* of floating capital, employing 160,000 operatives, and working up 124,800,000 lbs. of cotton.

1624. *The steam-engine*, the moving power, the greatest of all these discoveries, remains to be mentioned. Machines moved by horses and water, originally employed in manufacturing and other processes, were cumbrous, expensive, and often unmanageable. The steam-engine, brought to perfection by Watt, became at once the moving power of all this machinery, and the principal cause to which its vast results may be attributed.

1625. *The cotton wool imported into Britain*, which in 1781 little exceeded 5,000,000 lbs., rose in 1792 to 35,000,000; in 1809, to 93,000,000; in 1817, to 126,000,000; in 1831, to 280,000,000; and in 1832, to 289,000,000. The finest is that called Sea Island, a name given to what is grown on the coast of Georgia and Carolina. The bowed Georgia, produced in the interior, is not of equal value. Next to the Sea Island rank the West India and Brazil. The common sort from the East Indies is the worst, and only used for coarse fabrics, and for mixing with other wool. Cotton of a peculiar quality, adapted for cambrics, is brought from the Isle of Bourbon and some parts of India. Mohammed Ali, pacha of Egypt, has of late years succeeded in raising a large quantity of excellent cotton. Of the quantity imported in 1831, there came from the United States, 219,333,000 lbs.; from Brazil, 31,695,000; from the East Indies, 25,805,000; from the West Indies, 2,401,000; and from Egypt, 7,714,000 lbs. The duty on printed cottons is now taken off; but it is supposed that their consumption has diminished in this country, silk being preferred as an ornamental dress, and the use of cotton, printed or dyed previously to weaving, having become prevalent. The demand abroad, however, is still extensive, so that the amount of pieces printed is about 4,500,000, giving employment to 100,000 persons.

1626. *The produce of the cotton manufacture* is estimated by Mr. M'Culloch, in the second edition of his *Dictionary of Commerce*, at 34,000,000*l.* annually. Of this he calculates that 18,000,000*l.* is paid in wages to 800,000 persons employed in its different branches; and that, allowing for those who are dependent upon them, and for the subsidiary employments, it will afford subsistence to not much fewer than 1,400,000 people. The value of cotton manufactures exported in 1831 was 13,282,000*l.*; of twist and yarn, 3,975,000*l.* Of these were exported to Russia, 1,960,634 yards; Sweden, 18,280; Norway, 434,744; Denmark, 312,461; Prussia, 1456; Germany, 41,520,616; the Netherlands, 13,285,524; France, 946,680; Portugal Proper, 23,377,245; Azores, 780,099; Madeira, 569,794; Spain and the Balearic Islands, 4,756,652; Canaries, 631,079; Gibraltar, 9,909,009; Italy and the Italian islands, 38,164,564; Malta, 1,967,953; Ionian Islands, 216,159; Turkey and Continental Greece, 24,565,580; Morea and Greek islands, 344,893; Egypt (ports on the Mediterranean), 2,354,628; Tripoli, Barbary, and Morocco, 7810; western coast of Africa, 2,584,000; Cape of Good Hope, 2,904,106; St. Helena, 73,371; Mauritius, 2,432,894; East India Company's territories, Ceylon, and China, 43,385,852; Sumatra, Java, and other islands of the Indian Seas, 5,915,068; Philippine Islands, 1,132,583; New South Wales, Van Diemen's Land, and Swan River, 1,905,428; New Zealand and South Sea Islands, 5014; British Northern colonies, 15,618,106; British West Indies, 21,975,459; Hayti, 6,828,576; Cuba and other Foreign West Indies, 11,569,441; United States of America, 68,587,893; States of Central and Southern America: viz. Mexico, 12,150,426; Columbia, 5,757,562; Brazil, 26,271,527; States of the Rio de la Plata, 6,242,134; Chili, 12,793,220; Peru, 6,312,931; Isles of Guernsey, Jersey, Alderney, Man, &c., 1,013,852. They were chiefly of the following descriptions: — Calicoes, cambric muslins, dimities, &c., 299,597,000 yards; lace, gauze net and crape, 48,164,000 yards; cotton and linen, mixed, 1,668,000 yards; velvets and velveteens, 404,000 yards; counterpanes and quilts, number, 23,000; hosiery, shawls, handkerchiefs, &c., 536,000 dozen; tapes, bobbins, &c., 99,000 dozen; thread, 1,105,000 lbs.; twist and yarn, 48,098,000 lbs.

1627. *The working in metals* is also one of the branches in which England has attained to a most decided pre-eminence. About the middle of the sixteenth century it rose to the rank of a staple; and within the last half century it has greatly increased in importance. Although it cannot rival the cotton manufacture either in its progress or its actual state, it has been marked by exertions of ingenuity scarcely less honourable to the persons employed. While the former branch of industry has displayed the wonderful power of machinery, the manufacture of hardware, dealing with more refractory materials, manifests especially the vast benefits resulting from the division of labour. In illustration of this principle, Smith had long ago remarked the multitude of persons employed in making a pin, and the marvellous dexterity thus acquired by each in this minute department. The manufacture of nails occupies nearly an equal number, and Mr. Warner mentions a species of knives, which, after passing through sixty different hands, were sold for twopence halfpenny apiece. Sheffield, perhaps the original seat of the trade in England, is still distinguished for the most solid and useful articles, knives, grates, and their appendages, agricultural implements, &c.; while Birmingham adds to these utensils a variety of small articles, ornaments, and toys, which, though minute in detail, amount to a vast value in the aggregate. Each of these two great cities forms, as it were, the centre of a large circle of population all employed in the same manner. That round Birmingham is particularly extensive; and Wolverhampton, Walsall, Dudley, and Kidderminster would be considered large manufacturing towns, were they not eclipsed by the proximity of so great a rival. The number of persons employed in the product and manufacture of metals is estimated at 350,000, and the entire produce at 17,000,000*l.* The export of hardware and cutlery in 1831 amounted to 16,799 tons, value 1,620,000*l.*; in 1832, it was 15,294 tons; value, 1,433,000*l.* Of this, 7874 tons went to the United States; 1549, British America; 1032, Asia; 1227, West Indies; 616, Mexico, &c.; 497, Brazil; 586, Germany; 229, Russia.

1628. *Other fabrics*, though on an inferior scale to those now considered as forming a chief source of the prosperity of Great Britain, and the basis of her foreign trade, contribute essentially to the welfare of her numerous population. The silk manufacture was of late origin in England; but it was considerably improved by the revocation of the edict of Nantes, which drove a number of French weavers into this country. It is established in a particular quarter of the metropolis, called Spitalfields, where it employs about 25,000 men: at Macclesfield, Manchester, Coventry, and in other parts of the country, the number occupied in it may amount to 40,000. Silks, after having been superseded to a great extent by cottons, came again into use among the rich, for whom cotton has become too cheap to serve the purpose of displaying wealth. The entire value of the manufacture was estimated some years ago at 4,000,000*l.*; and may now, probably, be between 5,000,000*l.* and 6,000,000*l.* Notwithstanding the removal of the prohibitory duties on the importation of foreign silks, the British manufacture has maintained its ground, and gone on increasing. While the average importation of raw and thrown silk in the five years ending 1818 was only 1,286,000 lbs., in 1832 it was 4,224,000 lbs.: of which 1,814,000 lbs. were from the East Indies and China; 1,006,000 lbs. from France; 564,000 lbs. from Italy; and 458,000 lbs. from Turkey. The exports amounted in 1832 to 525,000*l.* They were to all parts of the world, but chiefly North America and the West Indies.

1629. *In the manufacture of earthenware and porcelain*, England has of late made vast advances, and brought its various products to a high degree of beauty and elegance. Burslem in Staffordshire had, for centuries, been noted for its fabrication of a coarse kind of ware, which, in the last 200 years, was gradually extended; but it was reserved for Mr. Wedgwood to carry this art to perfection by a full combination of elegance and cheapness. Fine white clay from the south-western counties, and ground flint, are the chief materials of this celebrated ware, which bears the name of its inventor. Burslem, with Mr. Wedgwood's seat of Etruria, has now become the centre of a long range of villages, spread over a district which bears the name of the Potteries. The white ware of Derby and the porcelain of Worcester, though on a smaller scale, are still finer productions. The latter is composed of a mixture of 13 different materials, and each cup passes through 23 hands. Earthenware pays no duty, so that its amount cannot be officially ascertained; the export, however, has diminished from nearly 700,000*l.* in 1815–16, to only 490,000*l.* in 1832.

1630. *Although hides and leather* have never been ranked among the national staples, their amount must, notwithstanding, be very extensive. Hides are imported from all quarters of the world; the entire quantity in 1824 was 300,000 cwt., value 700,000*l.* Of these about one half were from Buenos Ayres and Monte Video; 24,000 cwt. from Brazil; 12,000 cwt. from Chili; 11,000 cwt. from the East Indies; 24,000 cwt. from Germany, and the same from Holland. In 1830 only 225,000 cwt. were imported. In that year the hides tanned or otherwise manufactured amounted to 46,800,000 lbs., which, at 1*s.* 8*d.* per lb., would be 3,900,000*l.*; and as the value of the finished article is supposed to be at least three times that of the material, this value will amount to nearly 12,000,000*l.* The shoes made in England are moderately estimated at 6,800,000*l.*, and Mr. M'Culloch supposes that the whole manufacture employs at least 250,000 persons.

1631. *Beer, glass, soap, and candles* are branches of production which, though scarcely honoured with the title of manufactures, yet employ a large capital and numerous workmen, and yield a yearly amount of great value. In London the quantity of malt liquor annually brewed is 1,700,000 barrels, of which 38,000 are exported. This is chiefly *porter*, a liquor peculiarly appropriate to London, and for which she is famous throughout the world. All over England, there were brewed, in 1829, about 7,400,000 barrels. As the barrel of 32 gallons cannot be rated at less than 3*l.*, the produce of this great branch of industry must be upwards of 22,000,000*l.*; and this estimate does not include 1,500,000 barrels of table beer. *Candles.* — In 1829, the manufacture amounted to 110,000,000 lbs., which, at 7*d.* per pound, would make a value of 3,208,000*l.* *Soap.* — The manufacture, in 1829, was 100,000,000 lbs., which, at 7½*d.*, would be 3,175,000*l.*

1632. *The linen manufacture* is that in which England is most deficient; for though she is supposed to produce the value of 1,000,000*l.* a year, this does not supersede the necessity of large imports from Scotland and Ireland. Of late, the elegant *manufacture of lace* has been carried to great perfection by means of bobbin net frames, invented in 1799, perfected by Mr. Heathcoat in 1809, and brought into general operation about 1820. By this manufacture a value of 160,000*l.* in silk and Sea Island cotton is wrought into lace, estimated, according to Mr. M'Culloch, at 1,890,000*l.* and employing 208,000 persons. *Distilled liquors or spirits*, too, though they produce a revenue of 2,000,000*l.*, are neither equal in quality nor amount to those of the sister countries of Scotland and Ireland, whose produce, if it had not been excluded by national jealousy, would probably by this time have driven that of England out of the market. The quantity distilled in the two years 1831 and 1832 averaged 7,350,000 gallons.

1633. *Mines* form one of the most copious sources of the wealth of England. Those brilliant substances, indeed, which have been identified with wealth itself — gold, silver, diamonds, pearls — can be obtained only in exchange for the produce of her industry. But the substantially useful metals and minerals, those which afford the instruments of manufacture and are subservient to the daily purposes of life, are now drawn from the earth more copiously here than in any other country. Her most valuable metals are iron, copper, and tin; her principal minerals are coal and salt.

1634. *Iron*, the material of so important a class of manufacture, abounds in England, particularly in Wales, Staffordshire, and Derbyshire. While it was supposed, however, that the blast furnaces could be composed only of charcoal, the limited and always diminishing supply of wood depressed the produce, and even threatened to annihilate it. In the middle of the last century, the iron made in England from fifty new furnaces did not exceed 17,000 tons. It was then found, however, that, principally by the operation of the steam-engine, furnaces filled with coke might be heated to the same degree as those of charcoal, and the inexhaustible supply of coal might be employed in bringing the iron mines into value. Hence, in 1788, they yielded above 68,000 tons, of which three fourths were smelted in coke furnaces. The increased production has been astonishingly rapid. In 1796, it amounted to 125,000 tons; in 1806, to 250,000 tons; in 1820, to 690,000 tons. In 1830, it was still 680,000 tons; though the temporary depression of prices seemed to indicate that there had been some over-production. Pig iron, which, in 1824, brought from 12*l.* to 14*l.* a ton, had fallen, in 1831, to 4*l.* 10*s.* or 5*l.*; but it has now risen to 7*l.* 10*s.*; at which rate 680,000 tons will be worth 5,100,000*l.*; and which the additional labour of forming it into bar iron may raise to 6,300,000*l.* The export amounted in 1832 to about 150,000 tons, which, at the above rate, will be worth 1,120,000*l.* It is exported chiefly in the forms of bar iron, to the amount of 74,024 tons; bolt and rod iron, 6938; pig iron, 17,566; cast iron, 12,495; iron wire, 666; anchors and grapnels, 1606; hoops, 9417; nails, 4347; other kinds, 18,595; unwrought steel, 1112.

1635. *Copper*, also, has risen to importance in the course of the last half century. It is found chiefly in Cornwall, to the amount, in 1832, of 11,947 tons, and is carried thence to Swansea, to be smelted with the coal of North Wales, which itself produced 1320 tons of copper. That of Devon was 247 tons; Anglesey, 783; Staffordshire, 152; in all, 14,449 tons, which, at 90*l.* per ton, will be 1,300,410*l.*

The export, in 1832, was 77,497 cwt. unwrought, 79,944 cwt. in sheets, nails, &c., 37,170 cwt. in other states. It is sent chiefly to Asia, France, and the United States.

1636. *Tin*, a rare and peculiar metal, is found only in Cornwall and part of Devon. So early was it known, that we find the British Islands first recognized by its name, and it is enumerated among the articles with which the Carthaginians supplied the markets of Tyre. As Cornwall, with the exception of the Indian island of Banca, is the only tract known to produce tin in large quantities, there is a considerable export to most countries of Europe, particularly France and Italy. The produce of the mines in 1830 amounted to 83,044 cwt.; in 1831, to 81,622 cwt. The export in 1830 was 30,425 cwt., but in 1831 fell to 21,762 cwt. In 1827 it had been so high as 49,474 cwt. The cwt. may be valued at 3*l.* 16*s.*, which in the first year made the total value about 115,000*l.*; in the second year, 82,520*l.* The year 1830, however, may be most properly taken as a general average.

1637. *Lead* is found in Cumberland, Derbyshire, and Northumberland, to the supposed amount of about 16,000 tons annually; which, at 20*l.* per ton, will be worth 320,000*l.* In the year ending the 5th of January, 1833, the British lead exported was 13,898 tons, value 277,960*l.* There had been imported 1386 tons, of which 978 were re-exported.

1638. *Coal* is the most valuable of all the mineral substances from which Britain derives her prosperity. This precious product, which exists in almost inexhaustible quantities in the counties of Northumberland, Derby, and Stafford, and in that of Glamorgan in South Wales, may be regarded as the main support of the whole system of British production. It fuses the metals, produces the steam which sets the machinery in motion, and is, indeed, instrumental in bringing almost every substance into a useful and merchantable form. By superseding also the necessity of extensive plantations for fuel, it enables a much greater proportion of the soil to be devoted to cultivation. The Northumberland and Durham field has been estimated at 732 square miles, the South Wales field at 1200; which, allowing for the average depth, will, it is calculated, be sufficient to supply all England for 1700 or 2000 years. At all events, it seems certain that she is secure for many centuries against any deficiency. The quantity shipped from Durham and Northumberland is stated by Mr. Taylor at 3,300,000 tons; and he estimates the whole employed as fuel, and in the manufactories and mines throughout England (adding 700,000 exported to Ireland), at not less than 15,500,000 tons. The mines on the Tyne employ 8491 persons underground, and 3463 above; those on the Wear, about three fourths of this number: the conveyance of these coastwise employs 1400 vessels and 15,000 men; while, in London, 7500 whippers, lightermen, factors, agents, &c. are engaged in landing and distributing it. Adding these together, and taking into view the whole of Great Britain, Mr. M'Culloch considers that the coal trade will give occupation to not less than 160,000 persons. The oppressive and unequal tax on coal imported into London has now been removed. In 1829, the total quantity shipped was 6,224,125 tons; of which, 5,014,132 were sent coastwise; 840,246, to Ireland; 128,893, to the British colonies; 356,419, to foreign countries. The export is chiefly to the Netherlands, Germany, Denmark, British America, and the United States. The imports into London, in 1832, amounted to 2,149,820 tons, brought by 7528 vessels.

1639. *Of salt*, an indispensable necessary of life, and an article of essential use in the fisheries, Britain fortunately possesses an immense supply. Her stores of coal would enable her to procure it to any extent from sea-water; but the finest and most valuable kind is the rock salt found at Northwich and Middlewich, in the county of Chester. It is drawn from mines and from brine springs, both of which were discovered only a hundred and forty years ago, on the estate of Mr. Marbury. As these were worked, new veins were always traced, till the abundance proved such, as to remove all alarm of exhaustion. The salt, at first coarse, and of the colour of sugar-candy, is refined by being boiled along with the brine of the springs, and is then called white salt. Till of late, rock salt was burdened with the enormous duty of 15*s.* a bushel; and though it was allowed duty free for the fisheries, yet the restrictions attending the exemption greatly fettered this branch of industry. The repeal of the duty was, very judiciously, one of the first measures of economy after the peace. While the tax was in operation, the produce of the Cheshire salt mines was found to be about 10,000,000 bushels, of which upwards of 8,000,000 were exported to foreign parts, 1,000,000 was allowed duty free for the fisheries, and less than 1,000,000 paid duty. Mr. M'Culloch estimates the present produce at 15,000,000 bushels, of which about 10,000,000 are exported, chiefly to North America, the Netherlands, and Russia.

1640. *Good stone for building* is not to be found in many parts of England. The Portland and the Bath stone are the finest. Almost all her cities are built of brick; and the duty of 466,000*l.* paid for bricks in the year 1834, shows the extent and value of this material.

1641. *The commerce of Britain*, like her manufacturing industry, is now completely without a rival. Tyre and Carthage, in their greatest glory, when commerce gave them a power equal to that of kingdoms, possessed, probably, but a small proportion of that which circulates through England both within and without. Her exports and her imports, and her internal trade, are all on a scale of equal magnitude.

1642. *The exports of Britain* consist almost wholly of her manufactured produce; for grain and other parts of the produce of land have been prevented only by prohibition from being largely introduced from abroad; and, even when the home price was complained of as not sufficient to remunerate the grower, it was still better than any that could be obtained on the Continent. As to manufactures, so far as foreign demand is concerned, those of cotton have more and more taken the precedence of all others. In 1830, the quantity exported, including twist and yarn, was valued at above 15,000,000*l.* sterling; being two fifths of the whole exportation. They are sent to every country, but most especially to those from which the raw material is imported. The United States take an immense quantity; the West Indies and Brazil import largely; and the market in the independent states of South America is daily enlarging. In 1824, cotton goods, exceeding 3,000,000*l.* in value, were sent thither from Liverpool alone; and they make their way in increasing quantities even into the East Indies. In Europe, Portugal and Italy are extensive markets; and though studiously excluded from Spain, large consignments are sent to Gibraltar, evidently with a view to clandestine introduction. Germany takes a great quantity both of manufactured goods, and of yarn and twist for her own manufactories. The fabric is not suited to the north of Europe; and from France it is in a great measure excluded by dint of prohibition. The woollen manufacture has a different and less extensive range. The United States, still the greatest market, take three eighths of the whole; after which rank the East Indies, Russia, Portugal, and Germany. The wrought metals find a great variety of markets. Of bar iron, 7000 tons, and copper 50,000 tons, go to the East Indies. Ireland takes 7000 tons of bar, 700 of cast, and 2300 of wrought iron. The West Indies take largely both iron and copper.

1643. *The following Table* exhibits the amount of the leading articles of *exports*, according to their declared or *real* value, during the three years ending 5th January —

Articles.	1829.	1830.	1831.
	£	£	£
Apparel - - - - - - -	423,000	390,000	387,000
Arms and Ammunition - - - -	335,000	279,000	241,000
Beef and Pork - - - - - -	142,000	208,000	195,000
Beer and Ale - - - - - - -	245,000	249,000	212,000
Books printed - - - - - -	102,000	109,000	94,000
Brass and Copper Manufactures - - -	678,000	810,000	864,000
Butter and Cheese - - - - -	352,000	293,000	263,000
Coals - - - - - - -	145,000	147,000	184,000
Cotton Manufactures - - - - -	13,649,000	13,558,000	15,294,000
Cotton Yarn - - - - - -	3,595,000	3,976,000	4,133,000
Earthenware - - - - - - -	502,000	463,000	441,000
Fish - - - - - - -	242,000	186,000	246,000
Glass - - - - - - - -	501,000	475,000	401,000
Haberdashery, &c. - - - - -	486,000	395,000	385,000
Hardware and Cutlery - - - - -	1,387,000	1,390,000	1,412,000
Hats - - - - - - - -	220,000	205,000	225,000
Iron and Steel wrought and unwrought - - -	1,229,000	1,157,000	1,078,000
Lead and Shot - - - - - -	177,000	114,000	106,000
Leather, Saddlery, &c. - - - -	363,000	351,000	335,000
Linen Manufactures - - - - - -	2,180,000	1,888,000	2,061,000
Machinery - - - - - - -	262,000	250,000	208,000
Painters' Colours - - - - -	138,000	131,000	100,000
Plate and Jewellery - - - - - -	181,000	177,000	190,000
Salt - - - - - - - -	154,000	174,000	183,000
Silk Manufactures - - - - -	255,000	267,000	521,000
Soap and Candles - - - - - - -	268,000	227,000	246,000
Stationery - - - - - - - -	207,000	190,000	171,000
Sugar, refined - - - - - -	1,038,000	964,000	1,288,000
Tin - - - - - - - -	147,000	120,000	106,000
Tin and Pewter Wares, &c. - - - - - -	266,000	235,000	249,000
Whalebone - - - - - - - -	63,000	40,000	41,000
Woollen Manufactures - - - - - -	5,125,000	4,661,000	4,850,000

1644. *Among our imports*, a large proportion consists of raw materials, brought in vast quantities to be manufactured, in many instances for the use of the regions from which they come. Under the head of manufactures, we have enumerated the principal of these articles, and the countries from whence imported. They are chiefly cotton, wool, silk, and hides; to which may be added, bark, ashes, and barilla; cochineal, indigo, madder, and other dyeing stuffs. Although grain and provisions are now produced in sufficient quantity for internal consumption, there is much want of the raw produce of uncultivated land. Under this head a prominent rank may be assigned to timber and naval stores; on which, however, Britain has adopted the rather unaccountable policy of laying a heavy duty (made much heavier on those brought from the Baltic, which are by far the best), with the injudicious view of giving a monopoly to our North American colonies. A liberal commercial spirit, however, has lately made great progress towards an equalisation of these duties. Fir and oak timber, and staves, are brought chiefly from North America; masts, deals, and deal ends, from Norway and Russia; oak plank from Prussia.

1645. *The import trade* of consumption is, after all, the most extensive: it consists chiefly in obtaining from southern regions, and those warmed by tropical suns, the accommodations and luxuries which cannot be matured under our less genial sky. Wine, the most delicate and wholesome of fermented liquors, would have been introduced to a very great extent, had not its exclusion been made a prime object of fiscal regulation. This, however, has been so potently applied, that the use of wine has not increased in any proportion to the general wealth of the nation; and it has been forced from the nearest and best wines of France, to the less palatable produce of Spain and Portugal. The following is a view of the wine trade since 1700 (in tuns): —

Date.	Portugal.	Madeira.	Spanish.	French.	Rhenish.	Total.
1700	7,757		13,649	664	1,450	23,520
1750	9,050		5,714	418	272	15,454
1790	21,431	1,464	5,008	1,101	122	29,146
1810	27,360	2,350	11,732	4,117	133	45,692
1814	15,498	2,018	7,674	3,905	126	29,221
1830	11,638	905	8,543	1,338	283	22,707

To the last year however, must be added 2130 tuns of Cape wine, 429 Canary and Fayal, 1030 Sicilian: in all 26,296 tuns.

1646. *The value of wine* imported in the last year is stated at 791,739*l*., producing, however, a revenue of 1,524,177*l*. Brandy, also, still accounted the finest of spirituous liquors, forces itself to a certain extent, into the circle of our imports. But the saccharine and aromatic products of the tropical plains are those for which our climates can yield no substitute. They form the basis of an immense commerce, which even the adherents of the mercantile system cherish, under the idea that much of it is carried on with our own colonies. The leading articles are sugar, tea, coffee, tobacco, and spices. Notwithstanding the immense cotton manufacture of Britain, the piece goods of India, by their peculiar excellence, still found their way in that year to the extent of 410,000*l*. Cinnamon, 133,000*l*.; pepper, 47,000*l*.; cloves, 39,500*l*.; nutmegs, 49,500*l*.; mace, 9,800*l*.

1647. *The following Table* exhibits the amount of the leading articles of *import* in the three years ending 5th January —

Imports.	1829.	1830.	1831.	Re-exported 1831.
	£	£	£	£
Almonds	40,000	19,000	30,000	
Ashes	203,000	212,000	306,000	10,500
Barilla	167,000	128,000	212,000	2,800
Bark	178,000	217,000	216,000	
Brimstone	153,000	160,000	130,000	
Butter	278,000	203,000	149,000	
Cheese	314,000	244,000	157,000	
Cinnamon	67,000	108,000	92,000	133,000
Cloves	121,000	9,000	39,000	14,800
Cochineal	207,000	231,000	255,000	113,000
Coffee	2,534,000	2,395,000	2,559,000	1,255,000
Cork	52,000	49,000	37,000	
Corn	1,673,000	3,510,000	3,279,000	136,000
Cotton Manufactures of India	344,000	505,000	410,000	590,000
Cotton Wool	7,550,000	7,343,000	8,785,000	718,000
Currants	172,000	125,000	19,000	10,000
Elephants' Teeth	21,000	25,000	32,000	
Cod-fish	113,000	122,000	82,000	42,000
Flax and Tow	1,781,000	1,875,000	1,911,000	7,000
Furs	175,000	184,000	156,000	
Gums	105,000	108,000	91,000	
Hemp	424,000	302,000	394,000	12,000
Hides	660,000	846,000	992,000	162,000
Indigo	1,849,000	876,000	1,121,000	898,000
Iron, in bars	153,000	156,000	152,000	38,000
Lemons and Oranges	64,000	62,000	63,000	
Linens	68,000	63,000	67,000	35,000
Mace	26,000	4,000	9,000	13,000
Madder	665,000	422,000	380,000	
Molasses	346,000	270,000	169,000	
Nutmegs	11,000	7,000	49,000	53,000
Oil, Castor	21,000	49,000	49,000	
of Olives	313,000	154,000	372,000	45,000
Palm	126,000	179,000	213,000	
Train	428,000	431,000	370,000	11,000
Pepper	83,000	33,000	46,000	80,000
Pimento	59,000	95,000	91,000	66,000
Quicksilver	53,000	127,000	401,000	
Rags	36,000	39,000		
Raisins	141,000	101,000	84,000	24,000
Rhubarb	66,000	91,000	100,000	
Rice	184,000	215,000	132,000	51,000
Saltpetre	126,000	109,000	88,000	33,000
Seeds	314,000	369,000	429,000	
Silk, raw and thrown	2,750,000	1,802,000	2,145,000	51,000
Skins, not Furs	236,000	208,000	187,000	62,000
Spelter	225,000	211,000	221,000	159,000
Spirits, Brandy	342,000	270,000	225,000	130,000
Geneva	27,000	12,000	14,000	56,000
Rum	544,000	601,000	596,000	490,000
Sugar	6,821,000	6,808,000	6,857,000	778,000
Tallow	1,152,000	1,289,000	1,172,000	
Tar	126,000	60,000	126,000	
Tea	3,267,000	3,054,000	3,189,000	36,000
Timber	828,000	897,000	777,000	
Tobacco	243,000	225,000	283,000	186,000
Turpentine	154,000	132,000	120,000	
Wax, Bees'	43,000	55,000	35,000	
Whale-fins	134,000	103,000	33,000	
Wines	1,121,000	893,000	791,000	200,000
Woods, (Logwood, Mahogany, &c.)	453,000	471,000	448,000	92,000
Wool, Sheep's	913,000	678,000	882,000	45,000
Yarn, Linen	195,000	193,000	119,000	

1648. *The following Table* exhibits a progressive view of the British *exports* and *imports* since 1800:—

Years ending 5th January.	Exports.		Imports.
	British Produce.	Foreign Produce.	
	£	£	£
1800	35,993,850	7,271,696	24,066,700
1805	37,135,746	8,938,741	26,454,281
1810	46,049,777	12,750,358	30,170,292
1815	43,447,373	19,157,818	32,620,771
1820	34,252,251	9,879,236	29,681,640
1821	35,569,077	10,525,026	31,515,222
1822	35,823,127	10,602,090	29,769,122
1823	36,176,897	9,211,928	29,432,376
1824	34,589,410	8,588,996	34,591,264
1825	37,600,021	10,188,596	36,056,551
1826	38,077,330	9,155,305	42,660,954
1827	30,847,528	10,066,503	36,174,350
1828	36,394,817	9,806,343	43,489,346
1829	36,150,379	9,928,055	43,536,187
1830	35,212,873	10,606,441	42,311,649
1831	38,251,502	8,550,437	44,245,241
1832	37,163,647	10,745,071	49,713,889
1833	36,444,524	11,044,869	44,586,241

1649. *The relative foreign commerce of the principal ports of England during the year* 1824, *is exhibited in the following Table:* we have added the ships and tonnage belonging to each, and the customs paid in each, during the year 1829: —

Ports.	Entered in 1824.						Year to 5th January, 1830.		
	British.			Foreign.			Belonging.		Paid.
	Ships.	Tons.	Men.	Ships.	Ton .	Men.	Ships.	Tonnage.	Customs.
									£
London	3,031	611,451	32,606	865	181,795	6,906	2,663	572,835	10,211,000
Aberystwyth	-	-	-	-	-	-	120	6,423	
Beaumaris	10	989	56	1	189	6	389	22,076	1,800
Berwick	11	2,789	174	13	857	71	57	4,784	8,000
Boston	14	2,956	139	2	167	8	152	8,059	21,600
Bristol	305	57,186	2,936	39	7,121	386	316	49,535	1,181,000
Cardiff	14	1,764	97	31	2,206	189	38	2,742	6,300
Cardigan	-	-	-	-	-	-	281	14,643	2,000
Chester	23	3,238	208	-	-	-	74	4,816	24,800
Colchester	50	3,292	321	7	730	39	235	6,745	23,000
Dartmouth	61	5,201	381	5	577	38	349	24,114	9,000
Dover	657	38,161	5,331	317	12,742	2,408	120	5,525	69,300
Exeter	67	8,152	474	5	686	43	196	17,166	67,600
Falmouth	20	1,959	122	12	2,582	134	78	6,614	20,400
Faversham	113	5,550	540	15	1,290	72	217	7,392	12,400
Gloucester	-	-	-	-	-	-	247	13,026	57,300
Grimsby	38	4,688	264	50	6,598	388	39	1,300	23,000
Harwich	163	10,324	1,267	1	70	3	96	5,513	7,900
Hull	779	154,058	17,194	205	26,355	1,398	579	72,248	740,800
Ipswich	-	-	-	-	-	-	138	8,532	43,800
Lancaster	30	3,790	210	-	-	-	107	9,410	58,800
Liverpool	1,459	296,719	15,996	798	199,866	9,351	805	161,780	3,308,000
Lynn	46	8,876	425	14	1,445	87	118	14,659	58,700
Newcastle	269	43,717	2,242	121	9,566	652	987	202,379	373,000
Plymouth	212	21,504	1,456	21	3,959	212	302	24,838	140,100
Portsmouth	82	9,420	551	165	6,048	713	184	8,485	74,100
Rochester	120	10,969	788	349	10,479	2,991	255	10,816	58,100
Rye	50	1,656	229	6	268	36	68	3,704	14,100
Sandwich	45	2,687	289	26	1,986	178			
Scarborough	8	1,227	64	2	50	22	169	28,070	4,500
Shoreham	128	11,416	1,012	74	2,925	377	42	4,272	28,100
Southampton	288	24,813	1,733	32	3,160	243	170	8,120	32,500
Stockton	40	7,282	368	33	3,076	197	74	7,296	38,400
Sunderland	133	22,630	1,058	31	3,383	216	624	107,628	58,300
Swansea	-	-	-	-	-	-	122	7,772	4,700
Truro	6	1,263	57	37	7,879	378			
Weymouth	104	4,269	447	4	555	34	85	7,195	16,500
Whitby	19	4,589	466	2	37	13	258	41,576	3,700
Whitehaven	651	34,258	2,949	-	-	-	496	72,967	96,300
Wisbeach	6	1,086	52	9	1,072	69	43	2,487	13,900
Yarmouth	50	8,126	403	23	1,975	152	585	44,134	91,200

1650. *The shipping* by which so extensive a trade is carried on, must necessarily be very extensive. The number of vessels belonging to the different ports in England was returned, on the 31st December 1825, 1826, and 1827, at the average of 22,363; their tonnage, at 2,421,224 tons. An immense progress, however, is exhibited since 1663, when it was only 95,000 tons. It rose in 1701 to 273,000; in 1751, to 609,000; in 1774, to 901,000; in 1792, to 1,186,000. The number of ships built in these last years is not inconsiderable: in 1822, 442 ships, 43,212 tons; in 1824, 625 ships, 76,428 tons; in 1827, 650 ships, 72,065 tons; in 1832, 708 ships, 88,271 tons. The vessels belonging to the British empire at the end of 1832 were 24,485, of 2,618,068 tons, and navigated by 161,634 men. The entries and clearances for the coasting trade, amounted each to 8,500,000 tons. Besides these, in the same year, 4546 foreign vessels, comprising 639,979 tons, and navigated by 35,399 men, entered the ports of Great Britain.

1651. *The following* is the amount of the *tonnage* employed in the trade with the different countries of the globe, in the year 1832: —

Countries.	Inwards.		Outwards.	
	British.	Foreign.	British.	Foreign.
Russia - - - - - - -	277,527	32,132	202,610	24,978
Sweden - - - - - - - -	8,835	25,755	9,600	13,403
Norway - - - - - -	3,798	82,155	3,411	86,540
Denmark - - - - - - - -	7,268	55,772	65,658	70,413
Prussia - - - - - - -	62,079	84,187	41,027	70,252
Germany - - - - - -	130,443	31,087	121,872	37,247
Netherlands - - - - - -	195,473	90,492	176,741	88,059
France - - - - - - - -	110,793	63,500	116,688	50,161
Portugal, &c. - - - - - - -	53,400	4 571	53,702	10,940
Spain, &c. - - - - - - -	42,814	4,505	2,654	6,917
Italy, Malta - - - - - - -	43,718	3,481	67,542	4,534
Turkey, Greece, &c. - - - - - -	27,454	210	21,476	- -
Egypt, Barbary - - - - - -	8,568	- -	10,949	505
Western Africa - - - - - - -	30,896	100	34,447	351
Cape - - - - - - - - -	6,148	- -	10,167	- -
Mauritius - - - - - - - -	17,387	- -	16,246	- -
East Indies - - - - - - -	72,895	- -	85,260	- -
China and islands - - - - - -	27,379	- -	28,961	- -
New South Wales, &c. - - -	12,251	- -	2,015	- -
British North America - - - - -	504,211	- -	489,233	- -
British West Indies - - - - - -	239,177	4,590	228,105	- -
Foreign West Indies - - - - - -	12,404	167,559	25,021	- -
United States - - - - - - -	95,293	- -	147,902	176,771
South America - - - - - - -	47,003	1,313	67,631	2,799
Whale Fisheries - - - - - -	34,900	- -	38,240	- -
Jersey, &c. - - - - - - -	125,136	2,619	104,154	- -

1652. *The fisheries* do not seem to have been so much cultivated in Britain, as the hardy enterprise of the nation might have led us to expect. The Dutch were allowed for a long period to carry off the produce of the rich banks surrounding the British Islands. Of late, the attention of the nation has been more and more directed to this object. The whale fishery has been pursued to a great extent; and it was considered so valuable, both for its products, and as a nursery for seamen, that, till 1824, a bounty was granted in proportion to the tonnage of the vessels employed. They have found their way to the antarctic polar sea, in search of an oil which, though not superior for burning, is better adapted to the purposes of manufacture, than that drawn from the arctic regions. This fishery, within the last twelve years, has considerably diminished both in amount and in the value of its products, partly owing to the use of gas, the greater cheapness of rape-oil for manufacture, also to a larger part of the trade being engrossed by Scotland. In several years, ending with 1818, there were employed, on an average, 92 vessels, that, with 40 from Scotland, brought in 13,788 tuns of oil, and 684 tons of whalebone; which, valuing the former at 36*l.* 10*s.* and the latter at 90*l.*, produced an annual value of 566,722*l.* In 1829 and 1830, there sailed from England only 41 vessels, of 13,766 tons burden; which, in 1829, brought in 420 whales, yielding 4912 tuns of oil, and 289 tons of whalebone. The oil could be then valued only at 25*l.*, but the bone had risen to 180*l.*; consequently, the entire produce might be estimated at 174,820*l.* The following year was still more deficient, owing to the disasters encountered by the vessels engaged in the fishery. The building of each of these vessels costs about 8000*l.*, the annual outfit is 3000*l.*; while the warehouses and machinery may be worth 100,000*l.*; making in all a capital of 551,000*l.* invested in the trade. The produce of the southern fishery in 1829 appears to have exceeded 50,000*l.*

1653. *Of the fisheries in the British seas*, that of Herrings, the most important, belongs almost entirely to Scotland. Next to this ranks that of Pilchards, on the coast of Cornwall and part of Devon. The fish is found there in such immense shoals, that it forms the chief food of the people during the greater part of the year, and is also largely salted for exportation. The value annually taken is reckoned at 50,000*l.* or 60,000*l.* Considerable activity is used in these counties in taking pilchards for immediate consumption. Similar exertions are not made elsewhere in England, unless at the mouth of the Thames, and on the coast of Suffolk, where a considerable number of vessels, fitted with wells and other apparatus, convey to the capital a great quantity of excellent fish in perfect preservation; but the price is too high to bring it within reach of the great body of the citizens. Essex has likewise a valuable *oyster fishery*, producing 14,000 or 15,000 bushels. In 1812, an association was formed for the improvement of the fisheries, from whose exertions considerable hopes are entertained for this hitherto neglected branch of British industry.

1654. *The interior navigation of England* is justly regarded as one of the prime sources of her prosperity. Smith had long ago remarked, that, important as were the advantages of foreign commerce, they were not equal to that carried on by the different parts of a great country within itself; and that all the countries distinguished by wealth and civilisation had been remarkable for the extent of their inland means of conveyance, either bestowed by nature or formed by art. China, Holland, and Lombardy had afforded striking instances of *canal* navigation and its advantages; but in those countries, vast flat plains, of soft materials, and already traversed by numerous rivers, invited to this operation, which could be effected by mere mechanical section. The territory of England, on the contrary, is diversified by many rugged tracts; and its eastern and western rivers and their tributaries, which it was the main object to unite, were separated by a chain of considerable and somewhat rugged hills. Till the middle of last century, the making of canals did not enter into the system of English economy. In 1755 was formed the Sankey canal, a line of twelve miles, to supply Liverpool with coal from the pits at St. Helen's. The grand example then set by the Duke of Bridgewater gave a general impulse to the nation. Since that time, upwards of 30,000,000*l.* sterling have been expended in this object. Twenty-one canals have been carried across the central chain of hills, by processes in which no cost has been spared; all the resources of art and genius have been employed; and there has arisen a professional body of civil engineers, whose sole occupation is to plan these great public works, and contrive the means of their accomplishment. Every obstacle, however formidable, which nature could present, has been vanquished. By locks, and by inclined planes, the vessels are conveyed up and down the most rugged steeps; they are even carried across navigable rivers by bridges. When other means fail, the engineer has not hesitated to cut through the heart of rocks and hills a subterraneous passage. Of these tunnels, as they are called, there are said to be forty-eight, the entire length of which is at least forty miles.

1655. *The operations of the Duke of Bridgewater* gave the great impulse to the system of inland navigation. That nobleman formed the plan of opening a communication between Manchester and his extensive coal mines, at Worsley. The obstacles were so great, both from nature and art, that the attempt must have proved abortive, had he not been seconded by the genius of Brindley, who, from a common millwright, raised himself to be the first engineer of the age. Every resource of art was here called forth. The canal was carried through vast excavations, made partly in the interior of the mine itself; it was led by aqueducts over a succession of public roads, and over the river Irwell by a magnificent bridge, of that kind which left space for vessels with their sails spread to pass beneath. By deep cuttings, and by artificial mounds, in some places supported upon piles, a level of upwards of fifty miles was completed. The Duke expended, in this grand undertaking, his whole fortune, amounting to 350,000*l.*; and its failure would have left him destitute: but, as it immediately enabled him to reduce the price of coal in Manchester to one half, the trade in a short time yielded twenty per cent. upon his outlay, and rapidly produced an immense income. Brindley demonstrated on this occasion the superiority of canals over rivers, avoiding their circuitous line, their various obstructions, and their opposing currents, so that it became often eligible to lead a canal parallel to a river, and between the same points. So strongly did he urge this doctrine, that, in the House of Commons, when a member asked "for what purpose, then, nature had intended rivers?" he at once replied "To feed canals."

1656. *The Grand Trunk Canal*, an undertaking on a still greater scale, formed under the patronage of the Marquess of Stafford, by a course of ninety miles through Staffordshire, connects the Trent with the Mersey, Liverpool with Hull, and the eastern with the western coasts. It gave animation to the trade of all the districts through which it passed, particularly that of the Potteries, and served as a basis for various canals and railways branching from it. From a point near the commencement of the Grand Trunk, the Ellesmere canal has branched far into Wales, and conveys to Liverpool the mineral and agricultural produce of that principality. From its eastern termination, large branches have been extended to Derby, to Nottingham, to Grantham, and other considerable towns.

1657. *The Leeds and Liverpool Canal*, by a more northerly line of one hundred and twenty miles, connects the Mersey with the Aire, a tributary of the Ouse, and thus enables Liverpool and Hull to communicate by another line across the great cloth-manufacturing districts. An important branch of this canal is carried to Lancaster, and on to Kendal.

1658. *Meantime canals in the south* were no less actively prosecuted. From the vicinity of London the Grand Junction, at an expense of two millions, was carried by a line of ninety miles to the neighbourhood of Coventry. Near Daventry, the Grand Union strikes off, and joins the Grand Trunk, thus securing for London an inland communication with Liverpool, and with all the great manufacturing cities of the West. A great system of canals was formed round Birmingham, of which one result was to connect the Grand Trunk with the Severn, and thus to form a connection between all the four great rivers of England, and all its commercial and manufacturing cities. That from Birmingham to Wolverhampton has, within these few years, been remarkably improved by Mr. Telford. A canal had already been formed from Coventry to Oxford. That of the Thames and Severn joined these two main rivers at the highest navigable point of the former. The Gloucester and Berkeley is a lateral canal to the Severn, newly completed, by means of which Gloucester is connected with the Bristol Channel by a direct line, avoiding the sinuosity and obstructions of the river. The canals to the south of the Thames are not so important, nor is the commercial intercourse upon them so extensive. The principal are the Kennet and Avon canal, and the Berks and Wilts canal, through which a communication is formed from the Thames near Abingdon to the cities of Bath and Bristol. The total length of canals in Great Britain, excluding those under five miles, was 2581 miles.

1659. *Railways* form another contrivance, by which the conveyance of goods is wonderfully facilitated. By causing the wheels to roll over a smooth surface, first of wood, but now most commonly of iron, a single horse could draw a long file of loaded waggons, weighing from ten to twelve tons. The vehicles both for goods and passengers are now chiefly drawn by locomotive steam-engines. Railways were at first used only on a small scale, chiefly in the coal mines round Newcastle, for conveying the mineral from the interior to the surface, and thence to the place of shipping; and it is reckoned that round that city there is an extent of about three hundred miles of these railways. They were gradually employed on a greater scale, particularly in Wales, where the county of Glamorgan has one twenty-five miles long, and in all two hundred miles of railway. But the most important work of this nature, and that most connected with the general interests of commerce, is the railway between Manchester and Liverpool, opened on the 15th September, 1830. It extends thirty-one miles, and is carried over sixty-three bridges, thirty of which pass over the turnpike road, and a spacious and handsome one over the river Irwell. The entire cost is about 820,000*l.*; but the intercourse has been so extensive as to promise an ample remuneration. The vehicles are drawn by locomotive steam-engines; those for the conveyance of passengers perform the journey in one hour and forty minutes. The Cromford and High Peak railway has also been a most useful work, being carried over the high mountainous district of Derbyshire, and connecting the two canals which bear these names. Its length is thirty-three miles, carried over fifty bridges, and rising to a level of 992 feet above the Cromford canal. The entire expense has not exceeded 180,000*l.* Other most extensive works of this nature are now projected, with a view to connect the leading points throughout the kingdom.

1660. On the Manchester and Liverpool railway the charge for conveyance of goods is limited by act of parliament; the charge for passengers is not limited. Great part of the profits arise from passengers, who go for curiosity from all parts of the kingdom. In the last half year (1833) the revenue amounted to 97,000*l.*, but the expenses were 56,000*l.*; leaving a profit of 41,000*l.*, on which a dividend of 4½ per cent. was declared.

1661. *The common high roads* of the kingdom are also an object of high importance to trade and general intercourse. Half a century ago, most of them appear to have been in a miserable state. Mr. Young was then of opinion that for a great part of the year, the whole north of England should be considered as sea, and that a man should as soon think of driving into the German Ocean. He avers, "that in one of the most frequented roads of Lancashire, he had seen ruts four feet deep; and three carts overturned in the course of eighteen miles." The roads of England are now, perhaps, the best in the world, chiefly through the application of the turnpike system, under which they are made and repaired by tolls levied upon the travellers, and administered by county trustees. This system, which the populace at first blindly endeavoured to oppose, even by demolishing the turnpikes, has been found much more efficacious than that by which governments undertake to repair the roads from the public revenue, or by the exaction of personal service from the subjects. There are a few cases, however, where roads are to be carried through poor provinces, or form grand lines of national communication, in which government judges it expedient to assist, or even to undertake the entire construction of them. The principal instance in England was that of the high road from London to Holyhead, whence the packets sail for Dublin, a great part of which passed through the most barren and rugged districts of Wales. For the improvement of this road, parliament granted a large sum, by the judicious application of which, it has been rendered one of the finest in the world. In 1823, the turnpike roads extended in all to 24,531 miles in length. The amount of tolls was 1,214,000*l.*, burdened with a debt of 5,200,000*l.* There are 90,000 miles of by-roads, and others not turnpike, the maintenance of which by county rates and personal service costs about 1,500,000*l.* It would be unjust to withhold from Mr. Macadam due praise for that judicious method of structure by which the high-roads of England have been brought to a state of improvement in an eminent degree conducive to rapidity and safety of travelling, and to that frequency of communication which is invaluable in a commercial country. The praise of generally introducing that method of structure is undoubtedly his; and no competitor has hitherto appeared who can even *repair* a Macadamised road so effectually as Mr. Macadam himself.

1662. *Bridges*, in a country intersected by numerous and often broad rivers, necessarily attracted a great share of attention; and the ingenuity and wealth of England have been employed in making extensive improvements in this branch of architecture. The very situation of the metropolis, divided into two parts by a river a quarter of a mile broad, demanded that every resource for this purpose should be employed. From London Bridge, built in the twelfth century, with narrow and unequal arches placed upon huge masses, which left only a difficult and dangerous passage for the waters beneath, a successive improvement may be traced to the bridges of Westminster, Blackfriars, to that of Waterloo or the Strand, and finally to the new London Bridge, in which all the principles of construction seem to have been carried to the highest perfection. Southwark Bridge is the most complete of any yet formed of iron. This species of bridge has the advantage of being lighter, and of requiring much fewer arches, than those of stone. The first example in this country was that of Colebrook Dale, over the Severn; next, that of Sunderland, on a much greater scale, but each consisting of a single arch. That of Vauxhall far exceeded both, but has been itself much surpassed by Southwark bridge, in which height and strength have been united in a degree hitherto unexampled. A still more daring form has been given to this material by bridges of suspension, formed by iron chains stretched across, and supported by fixed points on each side. It is remarkable that this construction, on a certain scale, has existed in China from the earliest ages. The Americans were the first to adopt it of any modern nation. Captain Brown, in 1819 and 1820, constructed over the Tweed, near Kelso, a flying bridge, by which loaded wagons can pass in perfect security, and with only the feeling of a slight oscillation. The same able engineer afterwards constructed bridges of embarkation at Newhaven and at Brighton. But the greatest undertaking of this kind yet executed is the Menai Bridge (*fig.* 138.), over the strait which separates Wales from Anglesey. After building arches of masonry on each side, Mr. Telford united them, though separated by the distance of five hundred and sixty feet, by a bridge of suspension, composed of iron chains. These bridges recommend themselves by their economy, and by their occasioning no interruption to the navigation of the rivers beneath.

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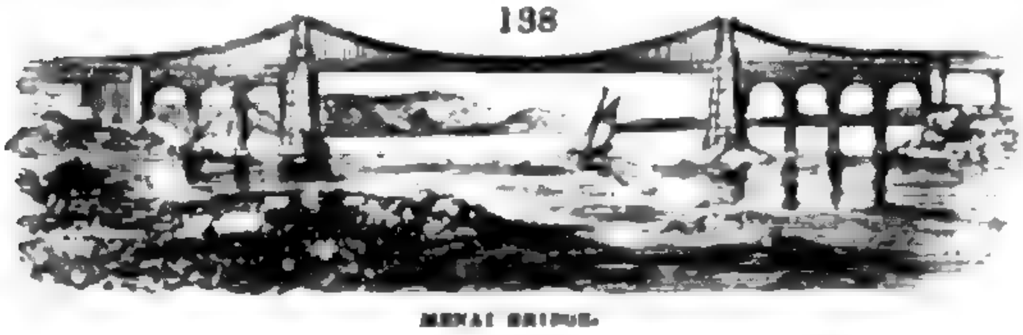

MENAI BRIDGE.

Sect. VI. *Civil and Social State.*

1663. *The population of England* in former times was imperfectly known, being calculated only from very vague surveys and estimates. In 1377 the results of a poll-tax were given as 2,300,000; but from the many evasions to which such a census would give rise, that number was probably below the truth. In the reign of Elizabeth, during the alarm of a menaced Spanish invasion in 1575, a pretty careful survey was made, the result of which gave 4,500,000. At the time of the Revolution, the increase appeared to be about a million. From the commencement of the present century decennial enumerations have been made, of which the following are the results: —

	Population, 1801.	Increase per cent.	Population, 1811.	Increase per cent.	Population, 1821.	Increase per cent.	Population, 1831.
England - -	8,331,434	14⅗	9,551,888	17⅞	11,261,437	16	13,098,338
Wales - - -	541,546	13	611,788	17	717,438	12	805,236
Army, Navy, &c. -	470,598	- -	640,500	- -	319,300	- -	277,017
Total -	9,343,578	27⅓	10,804,176	34⅞	12,298,175	23	14,180,591

Proportion of deaths, marriages, &c. to the population. — Among the facts that attest the improved condition of the people of England since 1770, the extraordinary diminution in the rate of mortality is one of the least equivocal. In 1780, the deaths in England and Wales amounted to about 1 in 40 of the population. In 1790, the rate of mortality was reduced to about 1 in 45; in 1811, it was 1 in 52; and at an average of the five years ending with 1830, it was 1 in 54! The improvement has been particularly conspicuous in London, Manchester, and other great towns; and is, no doubt, to be ascribed to the more comfortable situation of all classes, the greater attention paid to cleanliness, &c. The proportion of marriages to the population has recently declined. In 1760, there was 1 marriage for every 116 individuals. In 1780, the proportion had declined to 1 in 118. During the five years ending with 1810, it was as 1 to 122; and during the five years ending with 1830, it was as 1 to 129. But this decrease is to be ascribed wholly to the greater prevalence of moral restraint, the proportion of illegitimate births not having increased. The number of births to a marriage in England is estimated at about 4. Consumption is the most fatal disease, and next to it are fevers, apoplexies, &c. The small-pox has been almost wholly exterminated; but the measles are said, we know not with what truth, to have latterly become more destructive than formerly.

1664. *The national character of the English* exhibits some very bold and marked features. Of these the most conspicuous is that love of liberty, which is both a cause and an effect of their free constitution, and which pervades all classes. The liberty for which the English have successfully contended, includes the right of thinking, saying, writing, and doing most things which opinion may dictate and inclination prompt. The knowledge that the highest offices and dignities in the state are accessible to all, redoubles their activity, and encourages them to perseverance. It is but little more than a century since they began to be distinguished as a manufacturing and commercial people, yet they have already outstripped every other nation in mechanical ingenuity, in industry, and in mercantile enterprise. The enormous increase of capital, and the substitution of machinery for human labour in most of their manufactures, seem likely at no distant period to produce a total change in the condition of British society. Much of its tone is given by the landed gentry; a numerous body, whose estates, though generally considerable, are not enormous: while, on the Continent, landed property is usually in one or other of two extremes; either divided into minute portions, or partitioned into a few princely domains. The English gentry, unlike their continental neighbours, reside during the greater part of the year at their country seats; appearing in London and at court only for a few months in the spring. In this class, and indeed among the English in general, an uncontrolled temper, elevated by the feeling of independence, often impels individuals into extremes both of good and evil. Nowhere exists a purer spirit of patriotism; nowhere break forth more violent excesses of faction. In no country of Europe, perhaps, are there so many men who act steadily upon principle; yet in none exists, at the same time, so large a proportion of individuals living in habitual and open violation of all principle, and frequently in contempt of legal ordinances. Amidst numerous examples of judicious economy, we find some instances of sordid avarice; and too many of inconsiderate and boundless extravagance. Domestic life is cultivated by the English more sedulously than by any of the continental nations; the sanctity of marriage is more carefully guarded; and chastity in the female sex more strictly observed. The French, before the revolution, accused the English as deficient in the minor courtesies, — as blunt, rude, and untutored in the arts which render society agreeable; but they themselves have lost, in consequence of that revolution, much of the refinement on which they formerly prided themselves. In its minor features, the English character has undergone various changes. The vices of drinking and swearing, once so prevalent among country squires, among officers of the army and navy, as well as in what is called the gay world, are happily no longer fashionable; even the labouring classes, imitating the example of their betters, begin to be ashamed of them. Horse-racing, hunting, and rural sports, are carried to excess by some of the country gentlemen; and the more barbarous practice of boxing still has its zealous cultivators. Perhaps the most estimable quality of the English is their love of justice; the source of all honourable dealing among the higher classes, and of what is emphatically called *fair play*, in the transactions of humbler life. The principle, that a man's word should be his bond, is acted upon most rigorously where the greatest interests are at stake; as on its observance more than on that of any law that has been or can be devised, the commercial and financial prosperity of the country depends. The English are the most provident people in the world. More than a million of individuals are members of friendly societies, and the deposits in savings banks exceed 13,000,000*l.* The great extension of life insurance affords another proof of this laudable disposition. The English also deserve to be called a humane people, zealous, both from feeling and from principle, for the promotion of every thing that tends to the welfare of their fellow-creatures. In that cause they have ever been foremost; and, indeed, the character of a philanthropist, a man devoting his whole life to the service of his fellow-men, seems peculiar to this nation. — *Crime* in England has undergone a very considerable change. Highway robbery, so prevalent towards the beginning and middle of last century, is now nearly unknown, and all sorts of crimes of violence have been materially lessened. On the other hand, there has been a very rapid increase, particularly within the last sixteen or twenty years, of crimes against property. In point of fact, however, this increase has not been so great as it appears; for, owing to the establishment of a regular police, and of police magistrates, in most considerable towns, a much larger number of offences are now detected, and made the subject of prosecution, than formerly. Latterly the abominable crime of arson has been carried to an extent unknown at any former period. It is of so destructive a nature, that it ought to be met by the most prompt and energetic measures. A good number of crimes have arisen out of combinations of workmen; and the extent to which these sort of unions are now carried, and the dangerous nature of the objects to which they may be, and, indeed, have been, perverted, render them the objects of much jealousy and suspicion. A material change has recently been effected in the criminal law of England, by the abolition of an immense number of capital punishments. On the whole, we believe the change will be beneficial; though in some instances it has probably been carried too far.

1665. *Provision for the Poor.* A compulsory rate has been levied on all kinds of fixed property, for the support of all impotent, poor, and unemployed persons, ever since the reign of Elizabeth. In 1700, the rates amounted to about 1,000,000*l.*, and, notwithstanding the increase of population and of taxation in the interval, they were little more than 2,000,000*l.* at the close of the American war. In 1795 several ill-considered changes were made in the mode of granting relief, and the pernicious practice of eking out wages by contributions from the rates was then also adopted. From this period, down to the termination of the late French war, the progress of the rates was very rapid, so that they amounted to 9,320,000*l.* in the year 1817-18. They have since been reduced, but they still amounted in 1831-32 to 8,509,000*l.* Various and very discordant opinions have been entertained as to the policy of this provision. On the whole, however, we are inclined to think that it has been productive of a much greater amount of good than of evil. It has made the landlords and people of property oppose the unnecessary progress of population, the multiplication of cottages, and that subdivision of the land which has been the bane of Ireland; while it has maintained the public tranquillity by affording a refuge to the poor, and sustaining them in periods of distress and difficulty. The abuses arising out of the practice of paying wages out of rates are not inherent in the system. They were engrafted upon it so late as 1795, and may, and it is to be hoped will, be entirely removed. A reform of this sort would of itself take nearly a third part from the rates.

1666. *The English are, in general, a people soberly religious, though the nation, among its other excesses, has presented striking displays of infidelity and fanaticism.* The Church of England was established in the reign of Queen Elizabeth, when the reformation was completed which had been begun in that of Henry VIII. It is an integral part of the constitution, having for its head the king, who is declared to be, "in all causes ecclesiastical as well as civil, within these his dominions, supreme." By virtue of his authority, as head of the church, he nominates to vacant bishoprics and certain other preferments, constitutes or restrains ecclesiastical jurisdictions, inflicts ecclesiastical censures, and decides *in the last resort* in all ecclesiastical causes, an appeal lying ultimately to him in chancery, from the sentence of every ecclesiastical judge. In respect to its church government, England is primarily divided into two provinces or archbishoprics, Canterbury and York. Each province contains various dioceses or seats of suffragan bishops, Canterbury including twenty-one, and York three, besides the bishopric of Sodor and Man, which was annexed to it by Henry VIII. Every diocese is divided into archdeaconries, of which the whole number amounts to sixty, each archdeaconry into rural deaneries, which are the circuits of the archdeacon's and rural dean's jurisdiction; and each deanery into parishes, towns or villages, townships, and hamlets. The principal church of each see is appropriately called the *cathedral* church; it is possessed by a spiritual body corporate, called a dean and chapter, who are the council of the bishop, but derive their corporate capacity from the crown. Chapters are usually composed of canons and prebendaries; the maintenance or stipend of a canon as well as of a prebendary being a *prebend.* Prebendaries are distinguished into simple and dignitary. A simple prebendary has no cure, and nothing but his revenue for his support; a dignified prebendary has always a jurisdiction annexed, which is gained by prescription. The archdeacon has authority in the bishop's absence to hold visitations, and under the bishop to examine clerks previous to ordination, and also before institution and induction. He has also power to excommunicate, to impose penances, and to reform irregularities and abuses among the clergy, and has charge of the parish churches within the diocese. Below the archdeacon and the ecclesiastics composing the chapter, no member of the Church of England is entitled to the appellation of dignitary. The inferior orders constitute what is called the parochial clergy. The principal *person* of a parochial church is entitled either rector or vicar, that title, which is really more appropriate and honourable, having become corrupted by vulgar misuse. Curates are either temporary or perpetual; temporary when employed by the rector or vicar, and perpetual when appointed to officiate in parishes which have neither. The revenues of the church of England are very extensive; and considering the different offices and gradations of its members, very variously distributed. The rental subject to tithe has been stated, in returns made to parliament, at 20,000,000*l.* Besides the tenth of this amount, that is to say, the *tithe*, the clergy have other funds, which are supposed to raise their entire income to upwards of 3,000,000*l.* The episcopal revenues are of various amounts; that of the see of Durham is estimated at 30,000*l.* per annum, and is usually considered the largest. The lowest, that of Landaff, falls short of 3000*l.* The prebends enjoyed by canons and prebendaries are some of them very ample; those which exceed 1000*l.* a year are called golden prebends. Those dignitaries are also competent to hold livings as rectors and vicars. The salaries of curates were formerly in many cases extremely small; but, by a legislative provision and by funds allotted out of the public revenue, most of them have been augmented in proportion to the value of the benefice and its population: 80*l.* a year is the lowest stipend, and, if the living be worth 400*l.* per annum, the bishop may allow the curate of such living 100*l.* a year, whatever be its population.

1667. *The Church of England has produced many divines* eminent for their piety and learning, whose writings on the general doctrines of revealed religion, and on the evidences of its divine origin, have commanded the respect and veneration of all Christendom, and have furnished arguments against infidelity, of which even the doctors of the Romish church frankly avail themselves. Such examples are cited as proofs of the advantages arising from a richly endowed establishment. Its more learned votaries, holding academic or other offices, to which no laborious duties are attached, have been enabled to employ themselves in pursuits the most important that can occupy the human mind. Independently of higher motives, they might fairly be encouraged by the certainty that great attainments constitute a claim to preferment which is never disregarded when occasions present themselves. The highest dignities in the church are accessible to its humblest members.

1668. *In her intellectual character*, England may be justly considered as standing proudly eminent. Bacon, Boyle, Locke, Newton, Davy, with a long train of coadjutors, have disclosed to mankind perhaps a greater sum of important truths than the philosophers of any other country. Strong, clear, sound sense appears to be the quality peculiarly English; and her reasoners were the first to explode those scholastic subtleties which, having usurped the name of philosophy, so long reigned in the schools. It was their merit to discover and establish true philosophy, and apply it to objects of real interest and utility; and that merit is the greater, since the patronage bestowed on science has always been scanty, and the most illustrious of its cultivators have had to endure, and even to calculate upon, the indifference of the public. Their energies seem to have been roused, rather by the general stir and movement which was taking place around them among a great and free people, than by the prospect of any high personal rewards for their exertions.

1669. *In works of imagination*, the genius of the English is bold, original, and vigorous. In the drama, Shakspeare stands unrivalled among ancient and modern poets, by his profound and extensive knowledge of mankind, his boundless range of observation throughout all nature, his exquisite play of fancy, and his irresistible power in every province of thought and feeling, the sublime and the pathetic, the terrible and the humorous. England has to boast of other dramatic poets, whose works entitle them to eminence, although tinctured by that dissolute tone of manners which followed the overthrow of puritanic austerity on the restoration of the monarchy. In epic poetry, Milton is acknowledged by common consent to stand first among the moderns. Spenser and Dryden are alike eminent, the one for sweetness, the other for versatility; while in correctness of taste, and the polished harmony of numbers, Pope has no rival among the poets of any modern nation. The style of English poetry which prevailed in the age of Elizabeth, and which was principally distinguished by a bold irregularity, has in modern times been revived. The works of Byron, Campbell, Scott, Moore, and Southey amply sustain the ancient poetical renown of England, in an age when originality seems to have been stifled by criticism throughout the rest of Europe.

1670. *In historical writing*, England has many illustrious names, among which that of Gibbon, notwithstanding all his faults, deserves an honourable place. In oratory, some of her statesmen have acquired great renown, though the general taste both in the senate and at the bar seems to delight rather in plain sense and in cogency of argument, than in those elaborate, ornate, and declamatory flights by which the great speakers of antiquity acted on the imagination and passions of their hearers.

1671. *The institutions for public education* in England are extensive and splendidly endowed. The two universities of Oxford and Cambridge are not only the wealthiest but the most ancient in Europe. They enjoy among other privileges that of returning each two members to parliament, and of holding courts for the decision of causes in which members of their own body are interested. They were certainly of ecclesiastic origin; and, in common with every university in Europe, conferred degrees in all the faculties, by authority derived from a papal bull; but they have long been considered as lay corporations. Their possessions and resources have been augmented by the munificence of successive sovereigns, as well as by the grateful bequests of opulent individuals. The establishments composing them are distinguished into colleges and halls; the latter being academical houses not incorporated or endowed, though they have had considerable benefactions, which are dispensed to the students in exhibitions limited to a stated period. Oxford has nineteen colleges and five halls; Cambridge has thirteen colleges and four halls, which last, however, possess the same privileges as the former. Each university is under the government of a chancellor, high steward, vice-chancellor, and other officers; the persons who preside over the different establishments as masters, wardens, rectors, principals, or provosts, bear the general denomination of heads of colleges. Their appointments are on a liberal scale, and each college has a number of fellowships to which large emoluments and easy duties are attached. They possess also extensive patronage in church livings to which their own members may naturally aspire, and a number of exhibitions or scholarships bestowed, some through favour, and others as the rewards of successful competition. These, though of considerable value, are not supposed adequate to defray the expense of a residence at an university, which, at the lowest, is calculated to amount to 150*l.* a year. On the books of each university are the names of many members who have long ceased to reside; but, exclusive of these, the number actually resident at Oxford may be stated at 3000, and those at Cambridge amount to considerably more. Students, according to their proficiency in learning, are entitled to the degrees of bachelor and master of arts, bachelor and doctor in divinity, and bachelor and doctor in the faculties of physic and law. The time required by the statutes to be occupied in study before each student can be qualified for taking those degrees is three years for a bachelor, and about four years more for a master of arts; seven years after that, he may commence bachelor of divinity, and then five years more entitle him to take the degree of doctor in divinity. In law, a student may commence bachelor after six years', and in physic after five years' standing. Only one year's attendance and the hearing of a single course of lectures are required as preparatory for entering into holy orders; a preparation much less arduous than that which is required in universities under presbyterian discipline; but the lowness of the inferior church livings, and the expense of residence, may render it difficult to exact more from the greater number of candidates for ordination. The qualifications for a bishop exact a longer attendance and higher attainments, as they include the degree of doctor in divinity.

1672. *Whether highly endowed institutions be the most useful and efficient*, is a question often raised. It is said, that a teacher who has no dependence on the contributions of his pupils is apt to sink into indolence; and that, in an age remarkable not only for the rapid advancement but for the extensive diffusion of knowledge, such great establishments are liable to be outstripped, their progress being retarded by their adherence to antiquated studies and systems. Such a charge has certainly been made against the English universities, whose forms of instruction are in many respects peculiar to themselves. They can scarcely be said to include public lectures, an essential branch of instruction in most other universities. A few, indeed, have lately been founded; and others are sometimes given voluntarily by active members; but they are rather incidental appendages than constituent parts of a regular system. The established mode of instruction is by private tutors, who teach classical literature and the mathematics, the latter branch of study being particularly cultivated at Cambridge. The public examinations are conducted with great diligence and impartiality, and excite high emulation. The numerous lucrative fellowships may sometimes tempt their possessors to indulge in luxurious ease; but to those who are seriously disposed to study they afford a learned and dignified leisure, with all facilities for research, to an extent hardly attainable in any other sphere. The professorships, also, and the various annual prizes, present many honourable incentives to excellence, admirably adapted to awaken the sluggish, to encourage the timid, to confirm the hesitating, and give a salutary tone to that sensibility which always accompanies true genius, and often impedes its progress.

1673. *Of the two recent establishments, the London University and King's College, London*, it would be premature to say more than to express a hope that, by a generous emulation, they may realise the intentions and wishes of their founders.

1674. *Of the public schools of England*, the most distinguished are those of Westminster, Eton, Winchester, and Harrow. Although originally founded as charity-schools, yet being now appropriated to the education of boys of the first families, the habits formed in them are very expensive. Greek and Latin are almost exclusively taught there by masters eminently qualified; and Englishmen of education generally excel in the knowledge of both languages. Notwithstanding some disorders incident to these schools, the general training established in them is supposed to be hardy, independent, republican, and well adapted for the future legislators of a free state. For boys of the middle rank, and those destined for commercial pursuits, there are numerous private academies, commonly well conducted, and some of them entitled to very high commendation.

1675. *Colleges* for the particular study of law and equity have long been established in the metropolis, under the names of inns of court and inns of chancery. The principal of these are the Middle and Inner Temple, Lincoln's Inn, and Gray's Inn. Before any person can be admitted to practise as an advocate, he must be regularly entered in, and be a member of, one of the inns of court for five years, and must have kept his commons in such inn, twelve terms. In favour of those who have taken a degree of master of arts or bachelor of laws at an English university, three years are allowed as sufficient to be a member of the inn, but the twelve terms must be duly kept. After complying with these conditions, and paying the regular fees, the student may be called to the bar without having been required to make any public demonstration of his proficiency or ability.

1676. *Of primary schools* for the great body of the people, there formerly existed a considerable number; but the deficiency of them, at present, is greatly to be deplored. The metropolis, indeed, contains several, of which the most considerable is Christ-church Hospital or the Blue-coat School, in which about 1100 children are maintained and educated. This institution, founded by Edward VI., has been enriched by various benefactions, until its income amounts to 44,625*l.* From the report of a late parliamentary commission, also, it appears that the number of charitable foundations in different parts of the country amounts to 3,898, yielding an income of 65,395*l.* Of these, however, many give also board and lodging, so that their advantages can extend to only a small number; others have been neglected, and left exposed to those abuses to which old establishments are generally liable. So greatly was the influence of these institutions on the great body of the lower orders diminished, that within the last 30 years the larger proportion of labouring people were unable to read. The evils arising from want of education among them have, at length, been strongly felt; and very great exertions have been made, chiefly by the benevolence of private individuals, to remedy the defect. The system of mutual instruction, introduced by Lancaster and Bell, afforded the means of bringing knowledge within the reach of all classes at a moderate expense. The British and Foreign School Society, founded in 1808, on the plan of Lancaster, had, in 1816, an income of from 2000*l*. to 3000*l*. a year. They maintained only one school in the Borough Road, where 700 children were taught, at an expense of 380*l*. Their funds were chiefly expended in an establishment for rearing teachers, who, during their initiation, were furnished with board and lodging; and were then sent out, with authenticated recommendations, to different parts of the country. In connection with this society, 200 schools for boys and 79 for girls have been established. In 1811 was founded the National Society, on the plan of Dr. Bell, and under the patronage of the church of England. In the course of four years it received subscriptions to the amount of 24,000*l*., and this sum was employed for the establishment of a number of schools, in which about 7000 children are now educated. It has also contributed to the formation of 122 schools in different parts of England. "Union Schools" have been established with the same laudable object. Notwithstanding all these efforts, there was still found, in 1816, a great deficiency in the means of education. From the East Union District, containing a population of 250,000, it was reported that 12,000 children could pay for their education, 17,000 were educated by charity, 30,000 were uneducated. Of the second class, two thirds were taught in Sunday Schools by voluntary teachers, and by a process necessarily tedious and imperfect, at the rate of five hours a day. Although the provincial great towns have received great accessions to the means of education, yet it is to be apprehended that they are not, on the whole, much better provided than the metropolis; and that in the remote districts and country places the deficiency is still very great.

1677. *Of the scientific institutions of England* the foremost is "the Royal Society of London for improving Natural Knowledge." In its infancy it owed much to the protection of Oliver Cromwell; and, having survived the Commonwealth, was incorporated by royal charter, in 1663. Under its illustrious president, Sir Isaac Newton, it soon rose to great splendour, being the medium through which his grand discoveries were first communicated to the world. Under subsequent presidents, Sir John Pringle, Sir Joseph Banks, and Sir Humphry Davy, it maintained, in several respects, its former reputation, though the objects of pursuit were somewhat varied, and though numerous other establishments withdrew from it much of the public attention. The Society still publish an annual volume, in two parts, under the name of *Philosophical Transactions*. In the career of mathematics and astronomy it was surpassed by the National Institute of France; and it appears to have lost the spirit of emulation by which it was formerly animated. Its officers are a president, two secretaries, and a council of twenty-one. New members are balloted for, on a recommendation of three, and are elected if there be a majority of two thirds in their favour. The Society of Antiquaries traces its origin to the reign of Queen Elizabeth, but was not incorporated until 1821. It has published some interesting papers, amidst a mass of miscellaneous matter, in a series of volumes entitled *Archæologia*. Several private societies have been formed for the cultivation of particular branches of knowledge, by the union of individuals distinguished for their attainments in or devotion to those branches. Such are the Linnæan, instituted about twenty years ago, which flourished under the auspices of Sir James Edward Smith; and the Geological Society, under the able direction of Dr. Macculloch. Besides these and other institutions in the metropolis, most of the great provincial towns, as Manchester, Bristol, Derby, Liverpool, and Newcastle, have formed literary and philosophical societies, which have had to boast many distinguished names, and have made some important contributions to science and literature in their Transactions.

1678. *Public libraries*, and those auxiliary repositories called museums, have long been regarded as objects of primary interest among the enlightened nations of Europe. England, after having for a long period been reproached for coldness and apathy on this subject, became sensible of its importance, and made great exertions to repair the deficiencies caused by her neglect. The principal collections appropriated to public use have owed their origin to the spirit and enterprise of private individuals. Thus, the Bodleian Library at Oxford was the bequest of Sir Thomas Bodley, and was enriched by successive donations: it owes to government no contribution, except that arising from the statute securing to it a copy of every new work published in the united kingdom. The British Museum derived its first treasures from the collections of Sir Robert Cotton and Sir Hans Sloane; but in providing additions to them, the national funds have been liberally employed. It has acquired, through purchase by parliament, the Harleian and Lansdowne MSS., the libraries of Major Edwards and Dr. Burney, and several valuable collections of coins and minerals. It has also been enriched by gifts from Dr. Birch, Mr. Cracherode, and many other gentlemen. But the most superb donation ever bestowed on this or any other library is that of the entire collection of George III., presented to the nation by his late majesty. With this accession, the library, which previously consisted of 125,000 volumes, has been augmented by one half, and may take its place, though not the first place, among the great national libraries of Europe. The Museum is also very rich in specimens of natural history, particularly of mineralogy.

1679. *Institutions* of an humbler but highly useful character have sprung from the general desire of knowledge which marks the present age. Their object is to communicate knowledge to the commercial classes, as well as to persons who have not opportunities for a regular course of study; and the chief means employed for this purpose are a library, a reading-room, and courses of lectures. Of these establishments, the first in eminence is the Royal Institution, founded in 1800, which has now an excellent library, and at which annual lectures are given by distinguished men of science. The London Institution, founded five years afterwards, has of late been conducted with renovated spirit, and may at length answer the expectations and intentions of its founders. A similar establishment, called the Surrey Institution, was commenced about the same period, but failed for want of funds. All the great commercial cities and most of the manufacturing towns have now their public libraries; indeed, Liverpool may claim the merit of having given the example to the metropolis in the foundation of her Athenæum and Lyceum. She has also long enjoyed the advantage of a botanic garden, of which London is still destitute. The efforts of the Horticultural Society may in time supply this defect.

1680. *Of the Fine Arts, that of painting* was, during a long period, greatly neglected in England, to the astonishment of those who expected that a nation eminent in intellectual attainments would have favoured so congenial a pursuit. Portrait painting, indeed, always met with encouragement. Yet Vandyke, the leader in this branch of art, was a foreigner. It was only toward the close of the last century that Reynolds formed a style decidedly English, and of distinguished excellence. Thenceforward the patronage of his late majesty, inviting by its example the co-operation of private individuals, gave a decided impulse to the art, and the enterprising liberality of Alderman Boydell, in particular, called forth the dormant talents of native professors who had been deterred from emulating those of the foreign schools. In history, West, Stothard, Fuseli, and Northcote; in landscape, the unrivalled Wilson, and after him Turner, Collins, Callcott; in familiar life, Wilkie and Mulready; and in other departments, men of different degrees of genius; raised the British school to at least an equal rank with those of continental nations in modern times. The department of portrait painting, in particular, enjoys a large share of public favour, and is regaining the ascendency over that of history, the taste for which seems to be on the decline.

1681. *The Royal Academy*, under the immediate patronage of the king, consists of forty artists, including the president, while a number of others are attached in expectancy as associates. There are four professors, viz. of painting, of architecture, of anatomy, and of perspective, who annually read public lectures on the subjects of their several departments. To the schools of this academy free admission is given to all students properly qualified for receiving instruction, and there is an annual exhibition of paintings, sculpture, and architectural designs, to which all artists may send their works for admission, if approved by the committee appointed to judge them. For the farther encouragement of native talent, the British Institution was founded in 1805; it has a gallery in Pall Mall, which is annually opened, during a fixed period, for the exhibition and sale of the works of British artists. Subsequent to this annual exhibition, an assemblage of works by ancient masters is usually formed, to which students have access, and which is exhibited to the public for a limited time.

1682. *Public collections of paintings* are of national advantage, as they afford the means of judging by comparison the merits of the ancient and modern schools. In England, at an early period, some splendid collections had been formed, particularly that of Charles I.; but when the nation came under the austere sway of men who "cared for none of these things," the pictures contained in it were dispersed, and the greater part of them conveyed abroad. The palaces, however, still retained seven of the twelve cartoons of Raphael, and some master-pieces of the Italian schools. At later periods, some private collections gained celebrity: that formed at Houghton by Sir Robert Walpole was the most valuable, but it was purchased at his death by the empress of Russia. It was not until the convulsions caused on the Continent by the French revolution that England gained an opportunity of accumulating treasures which she had at length learned to appreciate. Works of art, preserved from the wreck of princely fortunes, and consigned for sale to relieve the distresses of their possessors, became objects of eager competition among the noble and the opulent of this favoured country. The splendid collection formed by the regent duke of Orleans was imported entire, and the greater part of it now embellishes the gallery of the Marquess of Stafford. The nobles of Italy, also, on the devastation of that country, were obliged to strip their palaces of these valued ornaments, and to dispose of them at low rates to English speculators. From those sources were formed the Grosvenor, the Angerstein, and many other rich private collections: thus the treasures of art in England, according to Mr. Buchanan, were more than doubled. Still the nation looked on with indifference; and it was not until 1824, when, on the death of Mr. Angerstein, the valuable assemblage of pictures left by that gentleman was likely to be dispersed, that ministers proposed to parliament to purchase it, and make it the basis of a national gallery. The time was past when such an establishment on a much grander scale might have been at once formed at a comparatively small expense, and enriched with the choicest treasures of France, Italy, and Spain. The National Gallery, however, has received additions both by purchase and bequest, and may gradually attain that magnitude which will accord with the wishes and greatness of the nation.

1683. *Sculpture* is another of the fine arts which England was tardy in promoting; but it has now attained to great eminence, though confined to what may be called the sculptured portrait, and to monumental and historic memorials.

1684. *Architecture* has been judiciously patronised by the successive sovereigns and the principal nobility of England; and many recent specimens, both in the Grecian and the Gothic style, reflect honour on the living professors of the art.

1685. *Engraving* necessarily followed as a subsidiary to the arts of painting, sculpture, and architecture. The first masters of this art in England who rose to high eminence were Woollett, Strange, and Vivares; with them, among later artists, may be ranked Sharpe, Bartolozzi, Schiavonetti, Landseer, Bromley, Finden, Burnet, and Scott, whose productions have gained for them a well-merited and lasting reputation. In scientific engraving, Wilson Lowry stood unrivalled; he may indeed be said to have carried this useful branch of the graphic art to perfection.

1686. *Music* was at all times admired rather than systematically cultivated in England. If not permitted to claim Handel as her own, she can boast few native compositions comparable with those of Italy and Germany; though Purcel and Matthew Lock may rank among the first masters. Her cathedral music is indeed admirable for sublimity and pathos; but her lighter productions, consisting chiefly of songs, ballads, and glees, are suited only to enliven the theatre or the convivial assembly. An impulse, however, was given to the cultivation of the art in its higher departments, by the institution of the Philharmonic Society in 1813. Native composers and performers of the first eminence have arisen in England, and her wealth has attracted the most distinguished professors from foreign countries. Exhibitions of musical skill on a comprehensive scale have not been confined to the metropolis; for in different provincial cities periodical festivals have been held, in which, at vast expense, the chief instrumental and vocal talent in the kingdom has been concentrated. By these means, and by others which fashionable refinement has devised, or which public charity has called to its aid, a taste for music has been very widely diffused.

1687. *The literature of England* is eminently prolific; and as the public taste for novelties especially in the lighter departments, is insatiable, the publishing and selling of books forms one of the principal branches of her productive industry. The number annually published may be calculated from data afforded by existing regulations relative to the supply of a copy of every new work to each of the national libraries. In 1817, the British Museum received eight folios, eighty quartos, seven hundred and sixty-one octavos, and two hundred and eighty-seven duodecimos. There being also a considerable number not entered at Stationers' Hall, or not delivered, the entire value could scarcely be less than 600*l.*; and allowing an average sale of seven hundred and fifty of each work, the produce would fall little short of half a million. The number of old books sold in each year might perhaps be valued at half that amount. The proverbial complaint of the poverty of authors may now be considered as in a great measure redressed; at least it may be observed, that a popular writer often obtains an amount of copyright sufficient to maintain him in comfort, if not in affluence. Periodical literature has a very extensive circulation. In the metropolis nearly sixty magazines and reviews are published, of which the monthly value has been estimated at 6000*l.* Another important characteristic of the national spirit may be remarked in the immense circulation of newspapers, notwithstanding a heavy stamp-duty, the policy of which is very questionable. There are in London eight daily morning papers, and five daily evening papers; seven papers published thrice a week; and upwards of forty weekly papers. Of the latter species of newspaper, every provincial city has two or three, and every town of consequence has one. These journals contain debates in parliament, public and domestic news, prices of funds, of grain and other commodities, anecdotes and miscellaneous notices of every kind: their chief profit arises from the advertisements. The total number of stamps issued for the London newspapers in 1832 was 21,432,882. The total produce of the duty in that year was 490,451*l.* 6*s.* 8*d.*

1688. *The favourite amusements* of the English are those which combine the advantages of air and exercise. The stage, though eminently rich in dramas, and supplied with actors of high talent, is not here, as on the Continent, the habitual resort of the people. In former times hunting was almost the sole business of life among the English squires; and though their tastes are now much varied, this original pastime, in all its forms, continues to be eagerly followed. By the nobility and gentry, horse-racing is supported with equal ardour, and no country rivals England in the high excellence to which she has brought the breed of animals employed in this diversion. The races of Doncaster, of York, and above all of Newmarket, are attended by the most distinguished persons in the country for rank and opulence; and other race-courses attract great multitudes of miscellaneous spectators. The deep stakes, however, and the practice of laying high bets on favourite horses, operate too strongly as an incentive to gambling. Among the common people boxing matches present a similar occasion of laying wagers; but their popularity has been on the decline since certain unexpected results excited doubts respecting the good faith of some combatants, and suspicions of the corruptibility of others. Bull-baiting, though a still more barbarous amusement, was put down only by statute; and a legislator of some note argued earnestly against its abolition. The amusements of those who constitute the fashionable world are nearly the same which prevail elsewhere among persons of that class. The French, in their criticisms on our national habits and manners, say that our social entertainments are formed less for the enjoyment of the guests than for the display of the wealth and importance of the host; that our balls are too crowded for dancing, our *conversaziones* for conversation, and even our dinner parties for eating in comfort. Of the national out-door games, those of cricket and tennis deserve especial commendation, from their tendency to enliven the spirits and invigorate the frame.

1689. *In their habits and modes of ordinary life*, the English may be called a domestic people, especially when compared with the French. Their dress is not remarkable for any thing but its general neatness, aptitude, and propriety. In regard to food, their taste is perhaps too much inclined to that which is solid and substantial, though it should be mentioned to their credit, that, as they require no rich sauces to stimulate appetite, they eat more moderately, even of animal food, than the French and the Germans. Roast beef or other viands cooked in the plainest manner, accord with the unsophisticated taste of the English, and the repast is not slowly despatched, being, perhaps, an object of less consideration here, than it is with our continental neighbours. The English love to dine together in large companies on any public occasion which can afford a plausible pretext for such an entertainment. A great dinner, followed by a long train of toasts, forms the bond of union to all political parties, and to all patriotic, benevolent, and even religious associations. In the metropolis, various anniversaries are celebrated by persons who are natives of the same county, or who have been educated at the same public school, or at the same college in either university. It is not the most uncommon thing in the world for the stewards or committee of these meetings to dine together on some day previous to the dinner, for the purpose of ordering it, and again on some day after it, for that of discharging the bill. In common with other northern nations, the English retain a taste for fermented or distilled liquors, which, however, has been in a great measure corrected and subdued among the higher and middle classes. Beer and porter constitute the staple drink of the great body of the people; but malt spirit of a cheap and very pernicious kind is still consumed in too great quantities by the lowest of the lower orders, especially in the metropolis, where, to the reproach of the legislature, it is rapidly accelerating their degeneracy. Among the middle classes the wines of Spain, Portugal, and Madeira are in general use; but the cellars of the rich are stored with the choicest products of the French vineyards. Convivial excess, so long the reproach of the English among foreign nations, has become comparatively rare, and is wholly discountenanced in all refined and elegant society.

Sect. VII. *Local Geography.*

1690. *England and Wales* are divided into counties or shires. Wales, until the time of Edward I., was an independent principality, but is now an appendent territory, of very inferior magnitude. It has still, however, its own courts of judicature, and retains some national peculiarities.

1691. *The division of England into counties or shires* was originally made by Alfred. Each county is under the jurisdiction of a lord lieutenant, a sheriff, and justices of the peace and quorum, who hold sessions for the trial of petty offences. The number of counties in England is forty, and in Wales twelve; making in all fifty-two. The following statistical table, collected from various sources, will be found to concentrate a general view of the extent, population, employment, and wealth of each county: —

Counties.	Square Miles.	Houses 10*l.* and upwards.	Rental of Houses.	Population 1831.	Income in 1814–15 arising from				Poor Rates 1830.	Cities and Towns.
					Land.	Trade.	Offices.	Mineral Produce.		
			£		£	£	£	£	£	
Bedford -	430	723	12,619	95,383	364,276	94,796	1,481	- -	96,994	Bedford - 6,959
Berks - -	744	3,713	83,572	145,289	719,889	299,703	3,217	- -	129,533	Reading - 15,595 Windsor - 7,103 Newbury - 5,959
Bucks - -	748	1,894	35,655	146,529	662,872	222,981	1,996	- -	158,483	Buckingham - 3,610 Aylesbury - 5,021
Cambridge	686	2,645	49,781	143,955	705,371	239,687	5,109	- -	115,163	Cambridge - 20,917 Ely - - 6,189
Chester (*a*)	1,017	1,784	92,854	334,410	1,114,927	289,309	4,207	26,608	144,102	Chester - 21,363 Macclesfield - 23,129
Cornwall -	1,407	2,858	48,117	302,440	922,258	230,112	3,233	77,986	121,202	Launceston - 2,231 Falmouth - 4,760
Cumberland	1,497	2,400	42,040	169,681	737,438	179,752	3,447	46,297	58,850	Carlisle - 20,006 Whitehaven - 11,393
Derby (*b*) -	1,077	2,967	45,633	237,170	883,370	210,583	2,908	43,000	108,343	Derby - - 23,627
Devon -	2,488	12,307	237,000	494,168	1,924,912	754,444	9,471	32,800	250,713	Exeter - 27,932 Plymouth - 40,651 Devonport - 34,883
Dorset - -	1,129	3,051	57,868	159,252	726,263	241,634	4,002	- -	104,822	Weymouth - 7,656 Poole - 6,459 Sherborne - 4,075
Durham (*c*)	1,040	4,269	69,471	253,827	885,580	253,631	3,771	52,300	100,646	Durham - 10,135 Sunderland - 17,060
Essex (*d*) -	1,525	6,284	139,806	317,233	1,584,108	603,985	8,630	52,248	320,541	Colchester - 16,167 Harwich - 4,297 Saffron Walden 4,762
Gloucester (*e*)	1,122	9,080	251,974	386,904	1,315,723	367,243	2,897	- -	201,402	Gloucester - 11,933 Bristol - - 59,074 Tewkesbury - 5,780 Cirencester - 5,420
Hereford -	971	1,794	30,424	110,976	629,156	61,851	2,790	- -	70,000	Hereford - 10,282
Hertford -	602	3,490	70,299	143,341	583,657	262,989	4,319	- -	115,092	Hertford - 5,247
Huntingdon	345	946	16,791	53,140	325,694	68,401	4,156	- -	50,092	Huntingdon - 3,267
Kent (*f*) -	1,462	16,129	347,110	479,155	1,687,442	1,686,228	19,342	- -	399,686	Canterbury - 13,649 Deptford and Greenwich - 44,348 Maidstone - 15,387

(*a*) Nantwich - 4,886
(*b*) Chesterfield - 5,775
Matlock 3,262
(*c*) Gateshead - 15,177
Bishop Wearmouth - 14,462
Stockton - - 7,763
South Shields 9,074
(*d*) Chelmsford - 5,435
(*e*) Cheltenham - 22,942
Stroud - - 8,607
(*f*) Rochester - 9,891
Deal - - 7,268
Margate - - 10,339
Ramsgate 7,985

TABLE — *continued.*

Counties.	Square Miles.	Houses 10*l.* and upwards.	Rental of Houses.	Population 1831.	Income in 1814–15 arising from				Poor Rates 1830.	Cities and Towns.
					Land.	Trade.	Offices.	Mineral Produce.		
			£		£	£	£	£	£	
Lancashire (*a*)	1,806	28,406	795,832	1336,854	3,139,043	2,292,079	39,020	- -	413,529	Manchester 182,812 Liverpool - 165,175 Lancaster - 12,613 Wigan - 20,774
Leicester (*b*)	816	3,357	62,748	197,003	951,908	319,607	5,827	- -	152,594	Leicester - 39,306
Lincoln -	2,787	4,026	78,694	317,244	2,096611	373,671	6,550	- -	228,952	Lincoln - - 11,843 Boston - 11,240 Stamford - - 5,837
Middlesex	297	1,16,279	5,143,340	1,358,541	5,763,373	15,255,245	1,174,865	- -	779,125	Part of London and Westminster.
Monmouth	516	1,688	31,572	98,130	298,961	102,571	437	9,200	32,089	Monmouth - 4,916
Norfolk (*c*)	2,013	5,333	97,067	390,054	1,516,651	523,010	16,505	- -	358,867	Norwich - 61,116 Yarmouth - 21,115
Northampton	965	2,237	40,327	179,276	947,578	185,204	1,421	- -	173,018	Northampton 15,351 Peterborough - 5,553
Northumberland (*d*)	1,809	6,140	120,424	222,912	1,291412	436,404	5,768	59,900	88,035	Newcastle - 42,260 Berwick - - 8,920
Nottingham	774	3,597	71,396	225,320	751,626	314,501	2,073	- -	106,707	Nottingham - 50,680 Newark - 9,557
Oxford - -	742	3,628	61,869	151,726	790,866	312,809	4,815	- -	151,235	Oxford - - 20,649
Rutland -	200	241	4,621	19,385	138,216	30,938	799	- -	12,872	
Salop -	1,403	3,402	63,091	222,503	1,083,701	279,932	4,861	26,205	99,665	Shrewsbury - 23,492 Wenlock - 17,435 Bridgenorth - 5,298 Ludlow - 5,253
Somerset (*e*)	1,549	16,568	512,909	403,908	2,508,723	1,329,265	13,827	20,100	209,566	Bath - - 38,063 Bridgewater - 7,897 Taunton - 11,139
Southampton -	1,533	9,362	198,321	314,313	1,240,547	923,718	10,751	8,700	239,122	Southampton - 19,134 Portsmouth - 50,389 Winchester - 8,712
Stafford (*f*)	1,196	6,122	108,507	410,485	1,200,324	536,720	10,826	48,600	171,578	Stafford - 6,956 Newcastle - 8,192 Lichfield - 6,499
Suffolk - -	1,566	3,575	61,909	296,304	1,151,304	453,484	11,972	- -	299,684	Ipswich - 20,201 Bury St. Edmunds - 11,436
Surrey - -	811	33,865	964,438	486,326	1,589,701	1,564,532	21,023	- -	321,304	Southwark - 91,501 Guildford - 3,916
Sussex (*g*)	1,461	6,818	202,837	272,328	919,350	372,058	4,610	- -	289,051	Brighton - 40,634 Lewes - 8,590 Chichester - 8,270
Warwick (*h*)	984	9,368	190,602	336,988	1,269,756	669,369	12,966	16,950	192,303	Birmingham 146,986 Coventry - 27,070 Warwick - 9,109
Westmoreland	722	1,039	21,120	55,041	299,583	52,575	1,184	- -	32,044	Kendal - 10,015
Wilts - -	1,283	3,682	68,577	239,181	1,215,619	376,070	6,981	3,100	220,931	Salisbury - 9,876
Worcester (*i*)	674	4,872	100,826	211,356	820,020	273,303	1,137	3,800	97,178	Worcester - 18,610
York (*k*) -	6,013	20,189	415,539	1,371,296	4,700,424	1,719,886	24,416	62,900	586,126	York - - 26,454 Leeds - - 123,393 Hull - - 36,293 Sheffield - 59,111
N. WALES.										
Anglesey -	402	260	4,080	48,325	94,766	3,998	- -	- -	19,196	Beaumaris - 2,497 Holyhead - 4,282
Caernarvon (*l*)	775	538	7,982	65,753	131,212	20,641	220	- -	23,440	Caernarvon - 7,642
Denbigh (*m*)	- -	856	14,411	83,167	312,576	19,677	305	- -	41,139	Denbigh - - 3,786
Flint (*n*) -	- -	176	3,375	60,012	175,115	11,666	795	15,400	25,513	Holywell - 8,969
Merioneth	- -	292	4,578	35,609	112,516	7,261	68	- -	16,760	Dolgelly - 4,087
Montgomery	- -	605	7,971	66,485	212,083	18,748	794	- -	38,665	Welshpool - 5,256
S. WALES.										
Brecknock	- -	460	7,599	47,763	161,989	22,783	560	- -	20,928	Brecknock - 5,026
Cardigan (*o*)	726	74	999	64,780	146,816	13,727	282	- -	20,685	Cardigan - 2,795
Caermarthen	926	570	8,363	100,655	282,091	30,320	5,361	- -	37,957	Caermarthen - 9,955
Glamorgan (*p*)	- -	1,712	31,268	126,612	572,603	103,203	3,149	55,900	42,301	Swansea - - 13,694
Pembroke (*q*)	- -	740	12,701	81,424	220,241	45,348	1,531	- -	28,308	Pembroke - 6,511
Radnor - -	- -	174	2,202	24,651	101,956	3,429	40	- -	15,298	Radnor - 1,989

(*a*) Bolton -	41,195
Salford -	40,786
Rochdale -	35,735
Preston -	33,112
Oldham -	32,381
Pilkington	11,006
Crompton	7,004
Blackburn	27,091
Toxteth Park	24,067
Chorlton Row	20,569
Warrington	16,018
Bury -	15,086
Chorley -	9,282
Prescot	5,055
(*b*) Loughborough	10,800
(*c*) Lynn Regis	13,370
(*d*) Tynemouth	10,182
North Shields	6,744
Hexham -	6,042
Morpeth -	3,890
(*e*) Wells -	6,649
(*f*) Wolverhampton -	24,732
Bilston -	14,499
(*g*) Hastings	10,097
Rye -	3,715
(*h*) Leamington -	6,209
Kenilworth	3,097
(*i*) Dudley	23,043
Kidderminster	14,981
Hornbridge	6,148
Evesham	3,991
Droitwich	2,487
(*k*) Whitby -	11,725
Scarborough	8,760
Beverley	8,302
Doncaster	10,801
Huddersfield	19,035
Halifax -	15,382
Bradford	23,233
Barnsley -	10,330
Ripon	5,080
Pontefract	4,832
(*l*) Bangor -	4,751
(*m*) Wrexham	5,483
Llangollen	5,630
(*n*) Mold -	8,066
Flint	2,216
(*o*) Aberystwith	4,128
(*p*) Merthyr Tydvil -	22,083
Cardiff -	6,187
(*q*) Haverfordwest	3,915
Tenby -	2,188

1692. *The immense local topographical details of England*, of which we are now to give a rapid sketch, may be conveniently distributed under the following *subsections*: — 1. Southern counties; 2. Eastern counties; 3. Midland counties; 4. Northern counties; 5. Western counties.

Subsect. 1. *Southern Counties.*

1693. *Under this head, Kent, Surrey, Sussex, Berkshire, Hampshire, Wiltshire, and Dorset*, the counties south of the Thames, and along the Channel, will be comprehended. This fine district is, in general, of that level character which is common to the greater part of England. It is traversed, however, by ranges of low hills or downs, which, without producing the greater effects of landscape, give to it a varied and picturesque aspect. Chalk is a predominant feature in its soil; and, on the coast, forms those bold and romantic cliffs, which characterise the southern boundary of Britain. Many tracts are under high cultivation, yielding, in perfection, the usual agricultural products, with others of great value, peculiar to this district; particularly hops, in Kent, and part of Sussex and Surrey. A very prominent feature consists of large expanses of downs, composed of chalky soil, scarcely fit for the plough, but pastured by vast flocks of sheep. This division contains several ancient and venerable cities; but not being supported by any extensive manufactures, they are small in comparison with the immense towns of western and northern England. On the coast are a number of ports delightfully situated, to which the inhabitants of the metropolis resort in crowds, during the summer months, to obtain the benefit of bathing, to inhale the sea-breeze, and enjoy the view of rural and marine scenery. The vicinity of the metropolis, and its own agreeable aspect, has caused this district to be covered with an unusual number of fine and ornamented seats, many of which are enriched with the choicest productions of the arts. Among its other striking characteristics are the great naval docks and stations; whence issue the fleets that support the maritime power of England. These immense public works are situated in Kent, at the mouth of the Thames and Medway; and in Hampshire at Portsmouth.

1694. *Kent is the largest and finest of these counties.* From its position it has ever been regarded as the key of England, connecting that kingdom with the Continent; whence it holds a conspicuous place in her annals. The men of Kent have been noted as a race peculiarly stout, hardy, and courageous. The surface and soil are remarkably diversified. In the west it contains extensive wealds imperfectly reclaimed from the state of continued forest, and presenting still many finely wooded districts; also large marshy tracts, interspersed, however, with dry cultivated portions, in which the best grain in the kingdom is raised. The interior around Maidstone and Canterbury forms almost a continued garden, supplying fruits for the markets of London; and above all, hops, that essential ingredient in the staple beverage of the English nation. Hops, both as to growth and trade, give rise to much speculation; their culture involves great expense in forming poles for the plants to twine round, in clearing and manuring the ground, and in picking them: the price fluctuates from three to fifteen pounds a hundred weight. Seeds, and some wood for dyeing, are also Kentish products.

1695. *Canterbury*, the chief though not the largest place in Kent, is, perhaps, the most ancient and venerable of the English cities. It is the ecclesiastical metropolis of the kingdom, the residence of its primate; who, as such, places the crown on the sovereign's head, and ranks next in dignity to the royal family. Its cathedral (*fig.* 139.) is of early origin and of vast extent; and if it does not display the same harmonious grandeur as those of York, Westminster, and some others, it is as richly ornamented, and instructively exhibits the various styles of architecture peculiar to those successive periods during which it was built and enlarged. While it was revered through the Catholic world as the shrine of the murdered Becket, it was visited by crowds of illustrious pilgrims, and enriched with the most precious offerings; but of all these treasures it was stripped by the reforming and rapacious hand of Henry VIII. The castle and the strong walls of the city have mouldered away; but Canterbury retains many traces of its ancient dignity. It is built in the form of a cross, and intersected by branches of the Stour. Manufactures of cloth, silk, and cotton were early introduced, and still subsist, though they cannot now bear a comparison with those of the great towns of the interior and of the north.

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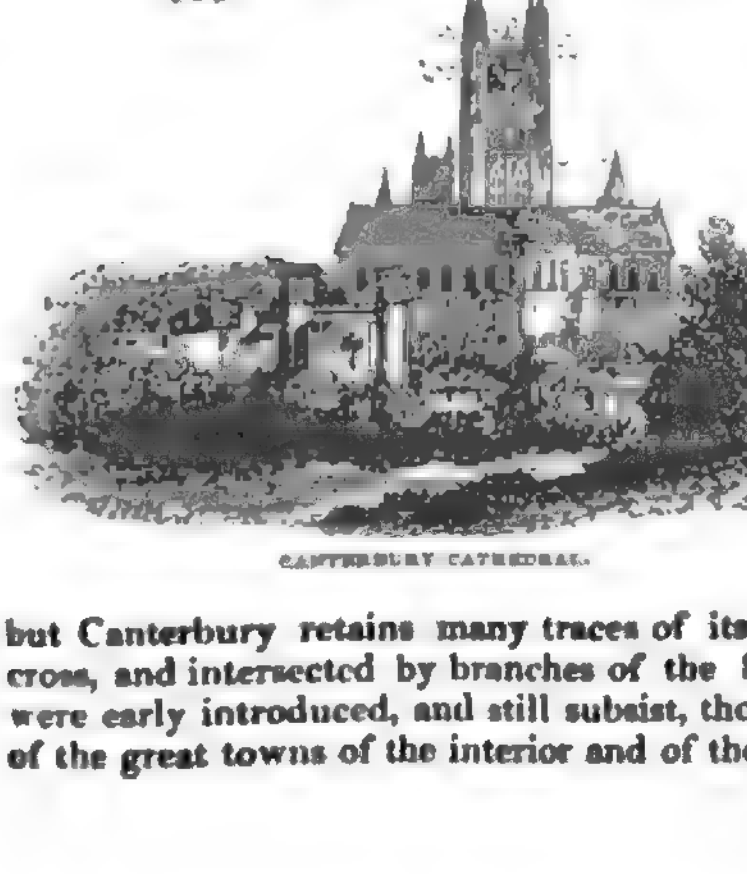

CANTERBURY CATHEDRAL.

1696. *Maidstone and Tunbridge* may also be reckoned among the agreeable inland towns in Kent. The former, of great antiquity, has one of the most extensive and elegant parochial churches in the kingdom. It is the chief market for hops; and has some considerable manufactures, particularly of paper. Tunbridge Wells, situated five or six miles from the town of Tunbridge, have long been a place of public resort. The springs, discovered in the reign of James I., were considered very efficacious in cases of debility and certain chronic disorders. This watering-place, like others, is no less frequented for pleasure than for health, having a double attraction in the purity of the air and the varied features of the surrounding scenery. Every thing has been provided which could render it a commodious and agreeable abode; a handsome bathing-house, a row of fine lime trees, and a covered portico running along the principal promenade; an orchestra, theatre, &c. The town has also a thriving little manufacture of what is called Tunbridge ware, consisting of various wooden ornaments, snuffboxes, tea-chests, dressing-cases, and children's toys.

1697. *But the chief places of Kent are maritime*, the most ancient being those called *the Cinque Ports*. At an early period, they were considered the most important stations for the defence of the kingdom, and invested with corresponding duties and privileges. They were bound to furnish and equip fifty-seven vessels, each manned with twenty-one sailors; in return for which, their citizens held the rank of barons, occupied a distinguished place at the ceremony of the coronation, and sent two members to parliament from each port. Their greatness is now departed. Of their harbours, some have been filled up by an accumulation of sand; and all the great naval depôts of the kingdom have been established in other quarters.

1698. *The Kentish Cinque Ports are Dover, Sandwich, Hythe, and Romney*. The first, as the point at which two mighty and long hostile kingdoms directly face each other, is still a place of considerable note. The spacious castle on a commanding eminence, the white and towering cliffs, present to the approaching mariner an imposing spectacle. As the main channel of communication with France, it maintains twenty-seven packets in constant service. Considerable exertions have been made to repair and improve the harbour, which admits vessels of 400 or 500 tons. Dover shares also in the general resort from London for the purpose of bathing. Folkestone, its dependency, has a considerable fishery of mackarel. Romney and Hythe are now of little maritime importance, though the former is noted for its adjacent territory of 50,000 acres, preserved by embankment from inundation, and now covered with the richest pasture. *Sandwich*, situated on the east coast, though retaining still about 8000 tons of shipping, unquestionably yields in importance to its nominal dependencies, Deal, Margate, and Ramsgate. Deal derives its prosperity from the vicinity of that fine anchorage, the Downs, where the outward-bound fleets of England usually remain for a certain period, when they obtain supplies and refreshments from Deal. It is a bustling, crowded, dirty seaport. Margate, of all the bathing-places to which the citizens of London resort, is the most crowded, though not the most fashionable. If its vicinity does not abound in picturesque beauty, its pier affords an agreeable marine promenade, and the establishment of steam-packets allows daily and speedy intercourse with the metropolis. It carries on also some trade with the Baltic, and supplies the metropolis with grain and fish. Having risen within the last half century, it is built with regularity and elegance, and contains twelve marble baths, into which the sea-water is admitted for those who prefer that mode of bathing. Ramsgate, situated on the isle or rather peninsula of Thanet, is also frequented with the same view, possessing the advantage of a very smooth and extensive beach. Considerable improvements have been made in the harbour at the expense of government, with the view to its yielding protection to vessels navigating this coast, where the dangerous shoals of the Goodwin Sands have often proved fatal. Between Margate and Ramsgate is Broad Stairs, also a considerable watering-place. Proceeding up the Thames, we come to those vast *works and depôts* belonging to that navy which has rendered Britain the mistress of the seas; these are—

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DOVER CASTLE.

1699. *Deptford, Woolwich, Chatham, and Sheerness; the grand establishments for the construction of ships of war.* Deptford contains also the Victualling Office, a department of immense extent in time of war. Woolwich is the depôt of artillery, and the theatre of all the operations connected with its construction and preparation. The first view of its grand park, and a large plain completely paved with cannon, strikes every beholder with astonishment. Here is also the Royal Military Academy, in which about an hundred young men of respectable family are trained in all the branches of knowledge necessary for the engineering department; and who, after a strict examination, are appointed to commissions in the service. Chatham is the grand magazine of naval stores, which are kept in the most perfect order in its immense warehouses. The rope-house is 1128 feet long, in which cables 101 fathoms in length, and upwards of two feet in circumference, are constructed. Twenty forges are constantly employed in the fabrication of anchors, some of which are five tons in weight. Great labour and expense have been employed in fortifying this important post, which, with the exception of Portsmouth, is now the strongest in Britain. *Sheerness*, on the Isle of Sheppey, is a smaller station, chiefly employed in the repair of shattered vessels, for receiving which its situation at the mouth of the Medway is very commodious.

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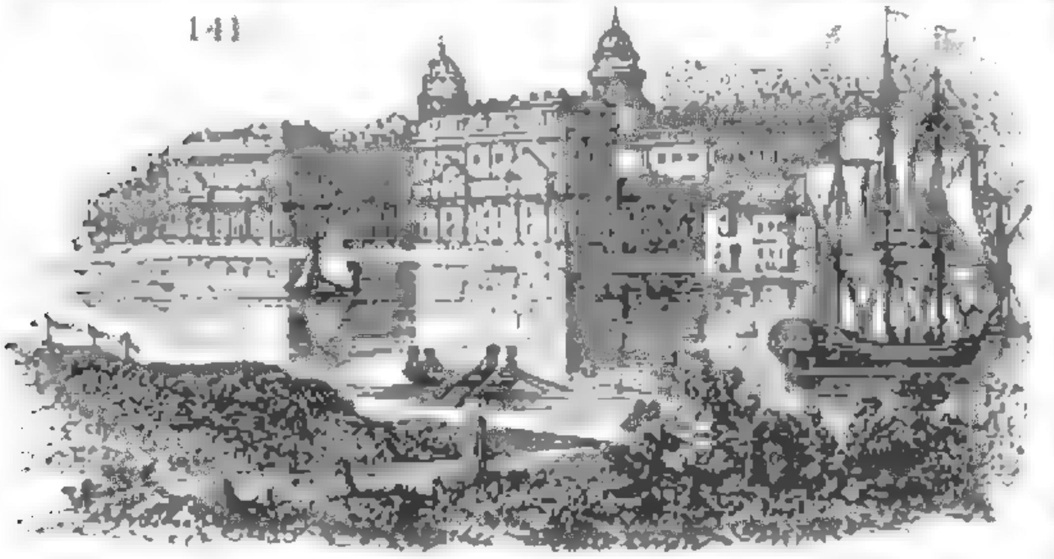

GREENWICH HOSPITAL.

1700. *Greenwich*, about two miles below Deptford, is celebrated for its superb and extensive hospital (*fig.* 141.) for disabled and superannuated mariners. This edifice was begun by Charles II., on a design of Inigo Jones, as a royal palace, in which character it may be said to possess a grandeur which has not perhaps yet been equalled. It remained unfinished and neglected, until the reign of William III., when government determined to convert it into a naval hospital; in which view another wing was added, upon the design of Sir Christopher Wren. Two others were built by Queen Mary and Queen Anne, and the whole four now enclose a grand and extensive square. The hospital, enriched by successive donations from government and from individuals, and by a tax of 6*d.* a month from every seaman, now supports 3000 boarders, and pays pensions to 5400 in different quarters of the kingdom. On a hill in the centre of Greenwich park stands the celebrated observatory, furnished with the best instruments that can be obtained for perfecting those observations by which British vessels are guided through the most distant seas. Nor has it served only this practical purpose, but has been the means of advancing, in a remarkable degree, the knowledge of mankind respecting the system of the universe. The recorded observations of Flamsteed, of Halley, of Bradley, and of Maskelyne, have ranked among the most important contributions to astronomical science.

1701. *Gravesend*, situated on the Thames, where it assumes nearly the character of an arm of the sea, has much occupation in the conveyance of passengers by boats to London. Here also the vessels employed in foreign commerce, both in going up and down, must stop and undergo an examination. Near Gravesend is Rochester, a neat town, with an ancient cathedral, containing in its vicinity numerous seats, among which may be particularly noted the fine grounds and mansion of Cobham Hall, which Lord Darnley has adorned with a valuable collection of paintings and sculpture. Lee Priory is also remarkable for its works of art; and Knowle Park forms a magnificent castellated structure of great extent, and adorned with numerous portraits.

1702. *Sussex*, west and south of Kent, extends about forty miles along the Channel. It is covered to the extent of 170,000 or 180,000 acres with those noble oaks which once overspread the whole county, and are still sought in preference to any other for the use of the royal navy. There are exsensive downs fitted only for the pasture of sheep, of which the Sussex breed is peculiarly valued both for mutton and wool.

1703. *Of cities and towns*, the capital is Chichester, an ancient little city with rather a fine cathedral. Winchelsea, Rye, and Hastings are Cinque Ports. The former has lost almost all its ancient importance, and presents scarcely any thing but ruins. Rye also is much reduced; but Hastings, from the fine views of land and sea, obtained from various spots in its vicinity, has attracted numerous visitants during the summer, and by the increase of new buildings seems to have become a favourite residence. In this respect, however, it is far surpassed by Brighton, which the sojourn of royalty during a considerable period rendered the gayest of all the southern watering-places. From being a large fishing village of some antiquity, it rapidly rose to be an elegant town, filled with commodious houses. Its environs present nothing particularly striking; but an extensive lawn called the Steyne, sloping towards the sea, forms an agreeable promenade. The Pavilion, or palace built by his late majesty, in this favourite spot, has been the subject of controversy as to its architectural taste; but none can withhold from it the praise of agreeable variety of effect, and all must acknowledge the splendour with which it has been furnished. Towards the sea, the chain pier is the distinguishing feature of Brighton, and affords great convenience to the packets between this port and those of France. Arundel, on the Arun, is rather a thriving port, whence a good deal of timber is exported. In all the ports of Sussex, there is a considerable fishery, particularly of mackarel, for the London market.

1704. *Surrey* fills up the inland space between Sussex and the Thames. Its aspect is various. The rough downs and bleak heaths which cover so much of the south of England, are here peculiarly extensive. These rude and often bold features, contrasted with the numerous fine parks and wooded districts, give to its scenery a striking and picturesque character. Their influence, however, on its productiveness, is much less favourable; and, notwithstanding the encouragement afforded by the vicinity of the metropolis, the agriculture is supposed to be less advanced than in other parts of the kingdom. Though the great impulse of the last thirty years has had the effect of reclaiming a considerable portion, there are supposed to be still upwards of seventy thousand acres almost entirely waste. Southwark is in Surrey; but it is too entirely a part of London to be treated separately from the rest of that capital. Guildford, Godalming, Croydon, Ryegate, Dorking, are neat pleasant little towns. The last in particular, placed in the most variegated part of the downs amidst eminences crowned with fine seats, is one of the pleasantest retreats in England. Along the southern bank of the Thames are likewise many fine spots: Kew, with its palace and fine gardens, containing valuable and curious plants from every quarter of the world; Richmond and its hill, which commands so expansive and magnificent a view of the Thames winding among wooded parks and palaces. Camberwell, Clapham, and other villages in the immediate vicinity of the capital, wear a very gay aspect, being entirely composed of the ornamented villas of opulent citizens. Surrey has also for the supply of London a great extent of garden ground, and many acres covered with various medicinal and aromatic plants. The *seats* are numerous and fine, but none very prominent, except the royal residences already mentioned, with Claremont Park, so interesting as the favourite abode of the late Princess Charlotte, and St. Anne's Hill, a beautiful villa on the Thames, where Mr. Fox passed many of the latter years of his life in literary retirement.

1705. *Berkshire*, continued westward from Surrey, occupies the whole southern bank of the Thames as far as Lechlade, where that river first assumes an important character. The chalk range is continued through the southern part of this county, rendering it fit only for sheep pasture; and a great expanse of its eastern border is occupied by forests, the principal of which is that of Windsor. Notwithstanding these deductions, more than half its extent consists of fine arable land. It sends to London a great quantity of excellent flour, and also of malt. The sheep fair of Ilsley is reckoned the most considerable in the kingdom, the annual number sold averaging two hundred and fifty thousand. The hogs also of this county are in high repute. Berkshire has the advantage of being watered by the Kennet and several tributaries to the Thames, and also of being traversed by two canals, the Berks and Wilts, and the Kennet and Avon. The cloth fabrics, however, which a century ago were considerable, have disappeared; and it is now only remarkable for the manufacture of copper into sheets and bolts, by mills, which are esteemed the most complete and powerful in the kingdom. The metal is brought from Swansea to the annual extent of six hundred to one thousand tons.

1706. *Reading*, the capital of Berkshire, is a place somewhat remarkable in history, as several parliaments were held there, and a siege of considerable length was sustained during the period of the civil war. It still enjoys some prosperity, through the residence of a number of wealthy families, and the export of the rich produce of the fertile surrounding district.

1707. *Windsor*, however, is the pride of Berkshire, both from the beauty of its site, on an eminence near the Thames, and the magnificence of its royal castle (*fig.* 142.), which crowns the summit and forms a commanding feature in the prospect for many miles around. The site both of town and castle were granted by Edward the Confessor to the abbey of Westminster; but William I. exchanged it for some lands in Essex, and constructed here a fortress of considerable size. Henry I. greatly enlarged the building, and erected a chapel. Other additions were made by succeeding sovereigns; but the whole structure was re-modelled by Edward III. Since it ceased to be important as a place of strength, it has been occupied as a palace; and is the only one, in fact, suitable to the dignity of the monarch. Queen Elizabeth formed a terrace walk on the north side of the castle; and Charles II. extended this noble promenade round the east and part of the south front. It is 1870 feet in length, and commands a finely varied and extensive prospect. The same monarch injured the style of the structure by introducing circular French windows, instead of the Gothic ones; but his alterations of the interior were in better taste. George III. completely repaired St. George's chapel, and partly restored the north front of the upper ward to its original appearance; but in consequence of his illness, the other improvements were suspended for eleven years. George IV. resumed them on a scale commensurate with the importance of so venerable and magnificent an edifice; and large sums of money were voted by parliament for this national purpose. The most distinguished architects in England were competitors for the execution of the work; but the plans of Mr. (afterwards Sir Geoffrey) Wyattville were finally determined on, the commissioners being the Duke of Wellington, the Earls of Liverpool and Aberdeen, Lord Farnborough, and Mr. Baring. Among the external improvements was that of raising the buildings on the south and east sides of the quadrangle, and lowering the area, removing Augusta Lodge, and Queen's Lodge, forming a new entrance gateway opposite the long walk in Windsor Great Park, which forms a noble approach. East of the gateway is York Tower, and another to correspond was founded on the west side by George IV., and called Lancaster Tower. Immediately opposite this gateway is the principal entrance to the state apartments. A corridor extends round the south and east sides of the building, and forms a fine promenade when the weather is unfavourable for out-door exercise. At the south-east angle is the king's private entrance. On the east side of the archway opening into the quadrangle is a small tower; in front of the entrance are the royal arms in basso-rilievo. Folding doors at intervals open into the various apartments; those on the east being appropriated to the king; those on the south to the household. The royal apartments have fine oriel windows, and are exquisitely finished; they are fire-proof, the floors being of brick, and the girders iron. On the exterior near the eastern angle of the terrace an octagonal-shaped tower has been erected, called Brunswick Tower. Another improvement on this side [illegible] a pentagon terrace, with bastions at the angles, extending into the park, and communicating with the old terrace on the north and south sides. The alterations on the south front are confined to the new gateway, and the raising of the building to a level corresponding with the interior of the quadrangle. On the north side a communication is established between Brunswick Tower and the state apartments by a corridor terminating at the king's guard-chamber, where a new tower has been erected, called George the Fourth's tower. The royal apartments contain an extensive collection of paintings of various degrees of excellence, among which are some fine portraits by Vandyke, and some historical pictures by Guido, Correggio, Carlo Dolci, and Leonardo da Vinci. The chapel of St. George is considered one of the finest specimens of the ornamented Gothic in the kingdom. The choir in particular is of admirable workmanship, and adorned with banners of knights of the garter ranged on each side. It includes also the tombs of many of the English princes, particularly their late majesties, and the Princess Charlotte; and some of its windows are painted with considerable beauty by Jervis and Forrest, after the designs of Reynolds. To the south of the palace extend Windsor Great Park, and Windsor Forest, grand features, first formed by William the Conqueror, in his fixed determination to enjoy, at whatever cost, the pleasures of the chase. Even after the considerable abridgment that has taken place, the domain is still fifty-six miles in circumference, containing within its range some noble timber. Parts of it were devoted by George III. to his favourite and useful pursuit of experimental farming.

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WINDSOR CASTLE.

1708. *The other towns of Berkshire* are small, but ancient and neat. Abingdon, Farringdon, Newbury, once the seat of a great woollen manufacture, and where two obstinate battles were fought in 1643 and 1644. Maidenhead (formerly Mainhithe), on the the Thames, is beautifully encircled with villas.

1709. *Seats.* Frogmore, the neat small palace of the late Queen Charlotte, surrounded by fine retired gardens. Park Place, near Henley-on-Thames, the grounds of which are very beautiful. There are also numerous fine villas on a smaller scale.

1710. *Hampshire,* between Berks and the sea, is a fine and important county. Here are the extensive remains of those grand forests which once overspread so great a part of England. The principal is the New Forest, covering the whole south-western part of the county, bordering on the Channel and the bay of Southampton. From this tract of about 92,365 acres, the ruthless tyranny of William the Conqueror drove out all the wretched inhabitants, and demolished the parish churches, that the royal sports might be carried on undisturbed. The forests of Bex, Holt, Alice, &c., containing upwards of 30,000 acres, belong also to the crown. The wood is chiefly oak and beech; the former with a short thick trunk and strong crooked branches, rendering it of excellent service as knee timber for the navy. The extent of these forests, with their many-coloured foliage, and the deep glades and cultivated tracts intervening, exhibit all the varieties and beauties of forest scenery. Numerous herds of royal deer traverse their recesses; while its masts, acorns, and other produce, are most beneficially appropriated to feeding hogs in great number and of vast size, weighing sometimes eight hundred pounds, and producing the best bacon in the kingdom. The chalky downs that traverse the county are not such as to render it rugged or sterile; they every where afford excellent pasture for sheep, and are even capable, with good management, of being brought under the plough. Many of the valleys are very rich, and the system of management is good; so that Hampshire is altogether a very productive province.

1711. *Winchester* claims precedence over Southampton as capital of Hampshire; and is, perhaps, the most ancient and venerable of all the cities in England. During the greater part of the Saxon period, it ranked as the metropolis of the kingdom. It had at one time upwards of ninety churches and chapels, with colleges and monasteries attached to them. Being frequented on account of its fairs, and chosen as one of the staples for wool, it became at one period the seat of a very extensive commerce. After the Norman conquest, when London became gradually the royal residence, the decline of Winchester commenced, and was accelerated by the removal of the wool trade; but above all by the dissolution of the monasteries, in the time of Henry VIII. It suffered also during the civil wars; and now owes its chief importance to its rank as an episcopal city, and a county town in which assizes are held alternately with Southampton. Its venerable cathedral (*fig.* 148.) has been the work of successive ages. It was founded under the Saxon kings, and part of what was built by Ethelwold is still remaining. It was then enlarged by Bishop Walkenlin in the eleventh century, and still more by William of Wykeham under Edward III. The completion is ascribed to Bishop Fox, in the beginning of the sixteenth century, when extensive additions were made to it in the highly ornamented and pointed English style; of which several of the specimens here preserved are reckoned the finest in the kingdom. The college, or rather school, founded by Bishop Wykeham is also a magnificent edifice, especially its chapel and hall. It has always maintained its reputation, and is one of the four great classical schools to which the distinguished youth of England resort. Southampton now surpasses Winchester, and is a gay and flourishing town; at the head of the bay or estuary called Southampton Water. In the Saxon period it was called Hanton or Hampton, and gave name to the county; it afterwards declined, but has since revived. It carries on a considerable trade with the south of Europe, and with Jersey and Guernsey; and regular packets sail from it to Havre de Grace. It is also supported by the resort of strangers for the purpose of bathing, and of visiting the romantic scenery of the New Forest and the Isle of Wight.

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WINCHESTER CATHEDRAL.

1712. *Portsmouth*, however, now eclipses in magnitude all other places in Hampshire; being the grand arsenal for equipping the powerful navies of Great Britain. No port in this country, or perhaps in the world, affords a greater combination of natural advantages. The harbour is formed by a considerable bay, with a commodious entrance, perfectly landlocked, and sheltered from every wind, affording secure anchorage all round; and capable from its dimensions of containing the whole British navy. The Isle of Wight, opposite and parallel to the English coast, forms at its eastern extremity the safe and magnificent road of Spithead, which has so long formed the principal rendezvous of the national fleets. Every thing has been done by art to improve these natural advantages. The place has been strengthened by successive fortifications, particularly by immense batteries on the seaside, till it has become the strongest and most finished fortress in the empire, and is considered absolutely impregnable. Portsmouth itself is situated on an island about fourteen miles in circumference, separated from the land only by a narrow channel. The suburb of Portsea, on the same island, begun only a century ago, has now outgrown the original town, and contains the principal dockyards. Here are carried on, upon a gigantic scale, all the operations subservient to building, equipping, and refitting ships, and supplying the navy. The sea-wall of the dockyards extends nearly three quarters of a mile, and encloses an area of one hundred acres: the forge, where, with tremendous and stunning noise, anchors of huge dimensions are formed, and the wharf on which they are piled; the ropery, above a thousand feet long; the spacious dry docks; the endless range of warehouses; the gun-wharf; the armoury, are all objects which astonish by their immensity. The intelligent spectator is highly gratified by the displays of ingenuity made in various processes, as the making of ropes, and particularly machinery for cutting blocks. From its destination, Portsmouth was not very likely to become an elegant town; yet it contains several handsome structures for the residence of the government officers, as well as for religious purposes.

1713. *The other towns of Hampshire* do not want interest. Christchurch, at the western extremity, is noted for a curious and fine ancient church. Lymington, a small seaport, is the real capital of the New Forest, though that title is given to the village of Lyndhurst; while Beaulieu with the ruins of its venerable abbey, is placed in the centre of its most beautiful scenery. Andover, Basingstoke, and Romsey are considerable towns, employed in the trade of grain and provisions, and manufacture some druggets and shalloons.

1714. *The seats are numerous*, as Avington, Stratton Park, Broadlands, Cuffnells, most of them finely situated, and adorned with paintings of considerable value; the last has a fine library.

1715. *The Isle of Wight* ranks as part of Hampshire; but it is so separated, and has features so peculiar to itself, that we keep it distinct. This fine island is about twenty-three miles in length, and thirteen in breadth; divided by a channel of only a few miles from the opposite coast of England, on which are the bays of Portsmouth and Southampton. It is traversed by a ridge of the same chalky downs which prevail in southern England, in which are fed about forty thousand fine-woolled sheep of the Dorsetshire breed. On the north of these downs, however, are luxuriant meadows, supporting valuable breeds of horses and cattle; while on the south are fine arable plains, yielding grain much beyond the consumption of the island. The myrtle and vine flourish in the open air, which is rendered fragrant by numerous other plants and flowers. The island, however, is chiefly celebrated for its striking and peculiar scenery; the grand views of land and sea enjoyed from its high open downs; the deep and dark ravines of its southern shore, and the bold romantic cliffs which it there presents to the expanse of the English Channel. One of the most conspicuous features is the range of coast called the Undercliff. "Bold cliffs," says Mr. Windham, "low lands or declining shores, are the usual boundaries of the ocean; but here a wall-like precipice of lofty rock extends about a mile from the sea: in this interval of rock and water, colossal fragments of stone, torn or sunk from the precipice, are scattered below in the most irregular confusion. These masses are of such ponderous magnitude, that they form high eminences of the most capricious shapes, while their intermediate spaces become deep valleys, in which houses are built, and even ash trees and elms are seen to flourish, sheltered from the storms and spray of the sea by the hospitable and lofty shades of the fragments." This district, when viewed from the sea, presents the appearance of a series of gigantic steps rising from the shore, itself steep, to the summit of the great perpendicular wall. The *chines*, or chasms, with torrents bursting through them, are also characteristic features. The most picturesque is that of Shanklin, the opposite sides of which, about three hundred feet high, approach each other till they leave scarcely space for the rivulet to penetrate; and are grotesquely lined with shrubs, bushes, and a few trees. Farther to the east, immediately under St. Catherine's Hill, the highest spot on the island, is Blackgang Chine. Two rapid torrents here roll through separate chasms, till, uniting, they form a stream of much greater breadth, and at a short distance the whole body of water rushes down a rock forty feet high. This chine has nothing of the gay and ornamented appearance of that of Shanklin. Not a shrub clothes its sides, composed only of rugged and mouldering rocks; the whole scene is dark, grand, and awful.

1716. *The western part of the Isle of Wight* presents also very striking objects. At its farthest extremity rises a succession of rugged and pointed cliffs, called the Needles; an object of some danger to the mariner, though of admiration to the curious spectator. Fifty years ago, one of these, which rose to the height of 120 feet, fell, with a crash which shook the whole island, and was felt as far as Southampton; and no vestige of it has ever since been seen above the waves. Westward extends Allum or Freshwater Bay, presenting a range of magnificent white cliffs, rising perpendicularly to the height of 500 or 600 feet. These dreadful precipices are inhabited by gulls and puffins, the eggs of which are taken by the daring islander, suspended in a basket, which is fixed by a rope to the summit. Several large cavities occur, particularly that called Freshwater Cave, which opens with great magnificence, and forms two arches having their sides covered with moss and weeds, and the entrance obstructed by large fragments of rock.

1717. *The eastern shore of the isle*, where it faces the Channel, presents the Culver Cliffs, a range of precipices which, in grandeur and ruggedness, are not surpassed by any other on the island. The coast, however, which ranges along the bay of Spithead is diversified only with gentle hills; and the chief interest is in viewing those immense ranges of shipping which fill that road and the opposite haven of Portsmouth.

1718. *The castle of Carisbrook*, in the very centre of the island, is an ancient edifice, in which the unfortunate Charles I. was for some time imprisoned. It appears to have been built by William Fitz Osborne, about the time of the Conqueror, but was enlarged by successive owners, and particularly by Elizabeth. The walls were at one time three quarters of a mile in circumference, surrounded by a deep ditch, and considered in those days as impregnable. Even in its state of progressive decay, it presents a curious specimen of Gothic architecture, as well as a striking monument of baronial grandeur.

1719. *The towns of the isle* are small and neat. Newport, in the interior, derives its principal support from travellers, to whom it serves as a central resort, on proceeding to the different points on the southern coast. It has also a manufacture of biscuits for the navy. Yarmouth, Cowes, and Ryde, are agreeable seaports, to which packets sail from Lymington, Southampton, and Portsmouth. The villas of Lord Henry Seymour and of Mr. Nash at East and West Cowes are particularly admired.

1720. *Proceeding along the southern counties, we come to Dorset.* It consists, still more than those already described, of open chalky downs, fit only for sheep, which are here of a breed called the Southdown, peculiarly fine both as to carcass and wool. The Southdown sheep (*fig.* 144.) are without horns; they have dark or black-grey faces and legs, fine bones, long small necks; are low before, high on the shoulder, and light in the fore quarter; the sides are good, and the loin tolerably broad, back-bone too high, the thigh full, and twist good. The fleece is very short and fine, weighing from 2½ to 3 lbs. The average weight of two years' old wethers is about 18 lbs. per quarter, the mutton fine in the grain, and of an excellent flavour. These sheep have been brought to a high state of improvement by Elman of Glynd, and other intelligent breeders. They prevail in Sussex, on very dry chalky downs, producing short fine herbage. The number fed is estimated at 800,000, producing 2,790,000 pounds' weight of wool. A considerable

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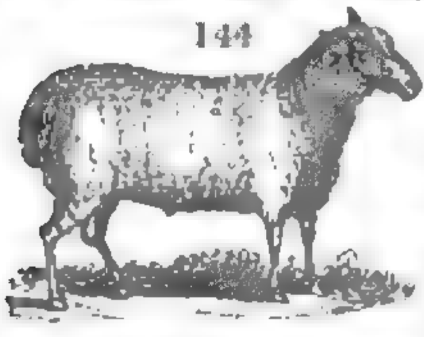

SOUTHDOWN SHEEP.

quantity of hemp and flax is also produced, and employed in pretty extensive manufactories of ropes, sacking, &c. Here also a vast number of women and children are maintained by the making of shirt buttons. The islands of Purbeck and Portland are valuable for the production of fine freestone, an article generally wanting in the east and west of England; and therefore largely exported for ornamental edifices in the great cities, particularly London.

1721. *Dorsetshire has no very remarkable towns.* Dorchester, its capital, is well built, and contains a county jail, formed on the plan of Howard. Pool, with an excellent harbour, carries on trade with the Baltic and with Newcastle, sends vessels to the Newfoundland fishery, and has a considerable export of pipe-clay. Weymouth has lost its trade, but is finely situated for a bathing-place, in which capacity it has been much frequented, especially since George III. made it his favourite resort during the season.

1722. *The principal seats.* Sherborne Castle, the residence of the Earl of Digby; rather a fine old mansion; formerly occupied by Sir Walter Raleigh. Lulworth Castle. Milton Abbey, the residence of the earls of Dorchester. Corfe Castle, an ancient fortress of great strength and extent, where Edward, king of the West Saxons, fell a victim to his mother-in-law, Elfrida. It is now uninhabited, and a complete ruin, having been blown up by order of Oliver Cromwell.

1723. *Wiltshire*, which concludes our southern list, is a large and fine county, which almost approaches to the character of the western manufacturing districts. The long range of chalk hills here terminating, forms that large table land which separates the county into two divisions, called North and South Wilts, and is termed Salisbury Plain; a vast, naked, undulating surface, which affords pasturage for sheep. The northern part of Wiltshire, watered by the Thames, is chiefly underwood and pasture, and supports a valuable breed of cattle, from whose milk is made the excellent cheese bearing the name of the province. The arable land does not much exceed a fifth of the whole extent. Wiltshire is a manufacturing county. The woollen fabrics, in quitting the southern districts, where they once generally flourished, have remained here to a considerable extent. There is not, as in the north, any metropolitan seat of the manufacture; but a number of flourishing little towns carry it on separately. The produce is of the finest description; superfine broadcloth, kerseymeres, and what are called fancy articles; to which we may add, fine flannels at Salisbury, and at Wilton the carpets which bear its name, and rank next to those of oriental manufacture. There are also, in detached places, some cutlery, linen, and cotton, though not on a great scale.

1724. *Salisbury*, the capital of Wiltshire, though not of very great extent, is a handsome and well-built town. The streets are spacious and regular, crossing each other at right angles, and kept extremely clean by streams of water, derived from the river Avon, running through each. These channels were formerly open, but are now mostly covered in. The pride of Salisbury is its cathedral (*fig.* 145.) commenced in 1219, and completed in 1258, which, though it may not possess the imposing grandeur of York Minster, is considered the most elegant and finished Gothic structure in the kingdom, and at the same time the most regularly built, having been founded after the demolition of the very ancient cathedral of Old Sarum. It has also the loftiest spire, rising to the height of four hundred and ten feet. The chapter-house is universally admired, and contains some curious specimens of antique carving in stone. Salisbury was formerly noted for its flannels and cutlery, but both these have declined. It is a place of much resort, not only from its importance as the county town, but from the vicinity of numerous seats of the nobility and gentry.

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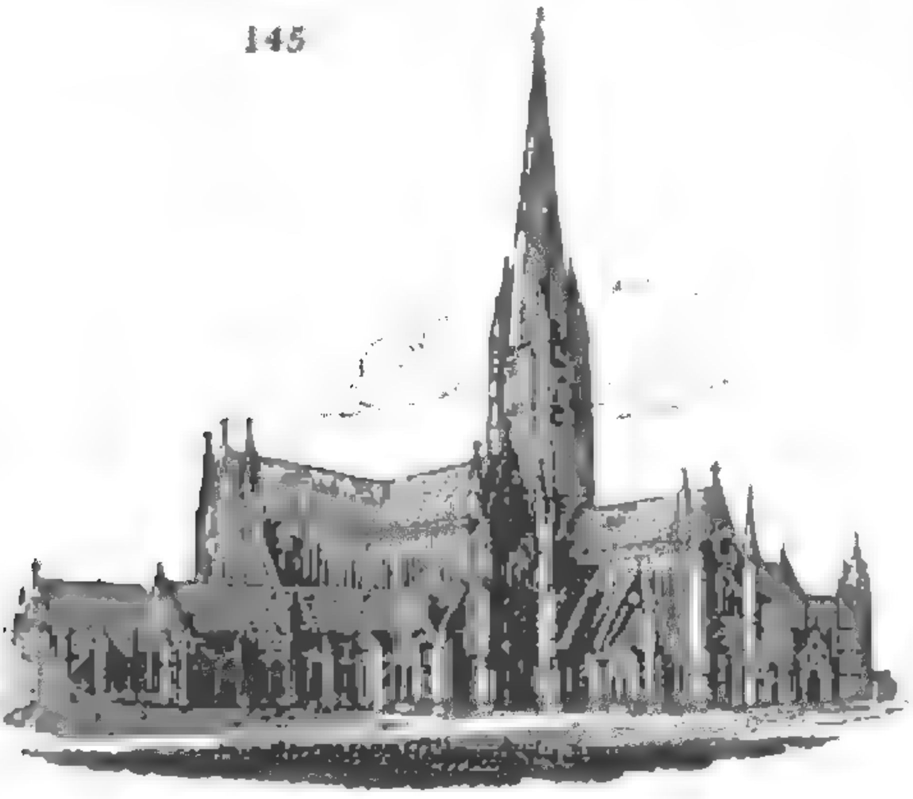

SALISBURY CATHEDRAL.

1725. *Old Sarum*, or the locally denominated Old Castle, exhibits on the summit of a hill traces of the ancient fortress of the earls of Salisbury, which have a very singular and imposing appearance, though scarcely a fragment of the walls has been left.

1726. *Wiltshire has a number of neat thriving little towns*, in which fine woollen manufactures are carried on with activity: Devizes, Marlborough, Chippenham, Malmsbury, Warminster, Wilton, &c. Most of them are pretty ancient, and adorned with fine old churches.

1727. *Stonehenge* (*fig.* 146.), near the little town of Amesbury, in a corner of Salisbury Plain, is the most remarkable monument of antiquity in the island, and now supposed to be the remnant of a temple of the Druids. "It consists," says Mr. Sullivan, "of the remains of two circular and two oval ranges, having one common centre. The outer circle

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STONEHENGE.

is one hundred and eight feet in diameter, and in its perfection consisted of thirty upright stones. The upright stones are from eighteen to twenty feet high, from six to seven broad, and about three feet thick; and being placed at the distance of three feet and a half from each other, are joined at the top by imposts or stones laid across. The inner circle is somewhat more than eight feet from the inside of the outward one, and consisted originally of forty smaller stones; of which there are about nineteen left, and of these only eleven standing. The walk between these circles is three hundred feet in circumference; and from this walk the structure has a surprising and awful effect." In the interior of all are two oval ranges, supposed to be the principal part of the work, composing the cell or adytum. The stones that form it are stupendous, some of them measuring thirty feet in height. The whole number is computed to have been originally one hundred and forty.

1728. *No county in England, perhaps, is adorned with so many and such fine seats as Wiltshire.* Wilton House, "Pembroke's proud domain," with a fine front by Inigo Jones, is classed by Mr. Young as one of the four which might rank as palaces. It contains the finest private collection of ancient sculpture in the kingdom, also numerous paintings, of which some are valuable. Corsham House and Longford Castle contain celebrated collections of pictures. Wardour Castle is distinguished for its grand terrace, commanding a noble view; and Stourhead for the romantic beauty of the grounds: both these residences contain valuable paintings. Longleat is a superb seat, adorned with a most extensive collection of English portraits. Fonthill once surpassed them all in fairy and fantastic splendour; but it is now a ruin.

Subsect. 2. *The Eastern Counties.*

1729. *Under this title are comprehended the counties of Essex, Suffolk, Norfolk, Cambridge, Huntingdon, and Lincoln.* Level as the surface of England generally is, that of these districts is, beyond all others, flat and unvaried. This great lowland of England scarcely rises above the sea in its eastern boundaries. The mariner discerns its existence only by a dark line, above which a tower or steeple occasionally rears it head. Its sluggish streams unite in the shallow marshy estuary of the Wash, which divides this region into two unequal parts. A great proportion of its waters, however, never reach that receptacle; but, spreading and stagnating over the land, form what is called the Fens, a tract which is not unproductive to the husbandman, but sends forth pestilential vapours, subjecting the inhabitants of the surrounding districts to perpetual attacks of fever and ague. It must not be omitted, however, that the active spirit of modern husbandry has done much to drain these waste tracts, rendering them at once more productive and healthy. These districts contain wide portions of good arable land, which are well cultivated by skilful farmers with large capitals, who find a ready market in the metropolis. Generally speaking, the district is most noted for its breeds of cattle, some of which are very valuable, and for the products of butter and cheese. There are seats, and some of the greatest magnificence, but they are not so numerous as in the south, and rather attached to property than chosen for felicity of situation.

1730. *Essex*, situated along the north of the Thames, is, perhaps, the richest of the English counties. It is not a dead or swampy bed, but diversified by gentle undulations, which do not interrupt the careful culture given to its rich alluvial soil. Its wheat, with that of Kent, is reckoned the best in England; but the districts closely approaching the metropolis are chiefly in pasture, or artificial grass, for supplying calves to the London market, or for fattening the cattle brought up from the north. There are some woollen manufactures, but of no great consequence. At the mouth of the Colne, Blackwater, and other rivers, about 200 vessels are employed in dredging for oysters, of which they are supposed to send to London about 20,000 bushels annually.

1731. *The towns of Essex* are not very conspicuous. Chelmsford, the county town, is a small regularly built place, with a handsome town-hall. Colchester, nearly triple in size, is supposed to be the ancient Camelodunum, and contains in fact a strong castle, said to have been founded by the Romans. It is supported by a manufacture of baize, considerable though decayed, and by the oyster fishery. Harwich, a seaport with a deep and spacious harbour, is the place where the government packets, in time of peace, sail for Holland and Germany. It is a gay place, convenient for sea-bathing, and surrounded with agreeable scenery.

1732. *Seats.* Wanstead House, considered by Mr. Young as one of the noblest houses in England, is now demolished. Audley-end has fine grounds, and some good pastures. Mirtley is beautifully situated. Many other villas have been erected in this county, in consequence of its vicinity to the metropolis.

1733. *Suffolk*, north of Essex, is almost an inland county, bordered by only a small proportion of eastern coast. Though considerably encroached upon by the fens, and though some of the tracts on the coast are sandy, by much the greater part of it is capable of good cultivation, and is carefully tilled by substantial and skilful farmers. The cows of Suffolk are famous for their copious supplies of milk, out of which is made an abundance of excellent butter, also plenty of poor cheese from the skimmed milk. The Suffolk breed of horses is also esteemed, and very considerable flocks of sheep are fed on some of the open tracts.

The rabbit, the pigeon, the turkey, also flourish in Suffolk. The county is almost purely agricultural, there being neither trade nor manufactures of any importance.

1734. *Among the towns of Suffolk*, Ipswich is still considerable, though it has lost its once flourishing woollen manufacture, and its employment is confined to sending down the Orwell malt and grain, the produce of the county. Bury St. Edmund's is an ancient town, delightfully situated, and rendered venerable by some fine old churches. Lowestoff, the most easterly point of England, and the most conspicuous feature in the county, stands somewhat romantically on a cliff overlooking the sea, where a large lighthouse has been erected. It is a noted seat of the herring fishery.

1735. *Seats.* There is a great division of property in Suffolk, and consequently it has few seats of the first rank. We may, however, mention Ickworth Hall, the unfinished mansion of the Earl of Bristol. Henningham Hall, a noble seat, is adorned with good Dutch pictures.

1736. *Norfolk*, though inferior in fertility to the two counties now described, has, by its industry, rendered itself more flourishing than either. The sea and the coast of the Wash make a great sweep round it on the north, giving it a large extent of coast. The fens encroach only to a limited extent on its western district; where the soil generally is a light sand, scarcely fit, originally, for any thing but sheep. Beneath, however, is a bed of rich soapy marl, which the farmers, with great labour, dig out, and spread over the ground. Thus was effected a wonderful change; "for," says Mr. Young, "instead of boundless wilds, and uncultivated wastes, inhabited by scarcely any thing but sheep, the country is all cut into inclosures, cultivated in a most husband-like manner, richly manured, well peopled, and yielding an hundred times the produce that it did in its former state." The light sandy loam thus formed is peculiarly favourable to the growth of barley, in which grain two thirds of the country is laid out. The farmers carry on their business on a great scale, and have introduced all the most improved and economical modes of culture. Nor do the "North folk" limit their exertions to the culture of the ground; they carry on with spirit every branch of industry. Norfolk is the only eastern county that has extensive manufactures; it produces various ornamental fabrics of silk and worsted. The ports carry on a very considerable export of grain, and a very spirited fishery.

1737. *Norwich* is the finest city in the east of England. It may be called a seaport, being so near the mouth of the river Wensom that large vessels can come up to its walls. Within the last few years most extensive improvements have been made in this navigation. The chief industry of Norwich, however, consists in manufactures. Towards the end of the sixteenth century, a large colony of Flemings settled there, and established the fabric of woollens, which soon reached an unprecedented height. The light and ornamented forms became the staples; bombasines, crapes, fine camblets, and worsted damask. The woollen manufacture, while it declined in every other part of the east and south of England, continued to advance in this city, though not with the same rapid steps as in the north. Its only severe check was sustained during the late war, from the shutting of the continental ports, for which the Norwich goods had been chiefly destined. Between 1786 and 1801, its population fell from 40,000 to 36,800; but since the peace it has revived very rapidly, having risen, as above stated, to 61,116. Yet there have been recent complaints of want of employment, chiefly owing, we are informed, to combinations among the workmen. In its general structure, it has the defects of an old town, the streets being narrow and winding, though those recently built are in a more improved style. The chief ornaments, however, are its ancient structures, erected at the earliest eras of British history. The cathedral (*fig.* 147.), founded in the eleventh century, ranks among the very first ecclesiastical edifices in the kingdom. Its style of architecture is the Saxon, of that broad and massive character which prevailed before the introduction of the pointed arch and the light ornamented style. The effect is grand and imposing, though somewhat injured through unfortunate additions made by modern hands. The castle, placed in the centre, is considerably more ancient still, since antiquaries now generally agree in referring it to the reign of Canute. Its style is Saxon; the keep remains entire.

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NORWICH CATHEDRAL.

1738. *Yarmouth*, by commerce and fishery, has attained a prosperity almost equal to that of Norwich. Situated at the mouth of the Yare, it is the chief channel by which the manufactures of that city are transported to foreign parts. A more important resource is the herring fishery, of which Yarmouth has always been a grand centre; which employs six thousand seamen, and produces annually upwards of fifty thousand barrels. It even derives advantage from the dreadful perils incident to a coast encumbered with sandbanks, that leave only narrow and precarious passages. This induces the small craft from Newcastle and other northern ports to seek shelter in that of Yarmouth, which is excellent and perfectly safe. Its quay, upwards of a mile long, is said to be second only to that of Seville; but the maintenance of the piles by which it is protected, involves an annual expense of 2000*l.* Yarmouth is also much frequented as a watering-place. The church dedicated to St. Nicholas is regularly built, and has an organ said to be superior to any other in this country.

1739. *Of other towns in Norfolk*, the chief is Lynn Regis, a flourishing seaport on the Wash, at the mouth of the Ouse, which, with its tributaries, brings down the agricultural produce of many rich counties. Cromer and Wells are tolerable fishing ports.

1740. *Seats.* Though Norfolk is not generally an ornamented county, it contains several of the most superb seats in England. Foremost stands Holkham, built by Lord Leicester on a design of Inigo Jones, and particularly noted for a gallery room which is considered almost matchless. It is richly adorned with sculpture and paintings, particularly by Claude, and has also a very extensive library, to which the present munificent possessor is daily adding. Houghton is still a magnificent seat, though the collection of paintings, formed by Sir Robert Walpole, and considered the first in the kingdom, was purchased for the Empress of Russia.

1741. *Cambridgeshire* presents a very considerable variety of surface. Its northern district, called the Isle of Ely, intersected by the lower channels of the Ouse and the Nen, exists almost in an intermediate state between land and sea. Their full waters overflowing this dead flat, part of the great Bedford level, a shallow swampy inundation is produced, called *fen*, unfavourable to every produce, except a rank luxuriance of pasture, and causing among the inhabitants severe fever and ague. Drainage, however, to a great extent has been effected during the late period of improvement; many tracts have been converted into fine meadow, or made to yield large crops of oats, though the danger of inundation can never be wholly averted. The classic stream of the Cam or Granta, in descending to join the Ouse, waters a valley called " the Dairies," where some good cheeses and long rolls of excellent butter are prepared for the tables of the Cambridge students. The southern and western districts of Cambridge are encroached upon by the downs from the south, which are filled with calcareous substances, and only fit for the pasture of sheep.

1742. *The capital of Cambridgeshire is the seat of one of the two great universities.* The first origin of this institution is a subject of antiquarian controversy; but, from a deed of Henry III., it appears to have assumed its regular character and functions in 1229. Since that time, have been built the thirteen colleges and four halls, in which the masters, tutors, and students, not only teach and are taught, but are lodged and boarded. Some of the largest of these endowments are stated to be for " poor and indigent scholars;" but this destination is entirely changed, and they are filled with the sons of the most opulent families in the kingdom, who cannot live there but at a very considerable expense. Yet the resort continues to increase, and the existing colleges are insufficient to contain the applicants, who must often wait several years previously to admission. These colleges are large, and generally fine and handsome buildings; yet they do not produce the same noble and imposing effect as those in the sister university. They are not arranged along two grand streets, but dispersed through those of a secondary class, sometimes almost in by-lanes. Cambridge is a busy stirring place, dealing largely in corn, malt, butter, solid and useful objects, not quite in harmony with the refined purposes of this great institution; yet it can boast two single structures such as its rival cannot match. The first of these is the chapel of King's College, (*fig.* 148.), built between the reigns of Henry VI. and Henry VIII. Its interior has been called matchless; and though we could not consider it in sublimity as rivalling that of York, it is certainly more beautiful and more brilliant. The roof is of the most perfect workmanship, and its support without pillars has been viewed as an architectural mystery. But the most striking characteristic is the prodigious blaze of painted glass, on each side, from twelve brilliantly tinted windows fifty feet high, giving to the fabric the appearance of being walled with painted glass. The whole has the aspect, less, perhaps, of a solemn religious edifice, than of a fairy palace called up by the wand of an eastern enchanter. The other very fine edifice is Trinity College, particularly admired for its library, two hundred feet long, designed by Sir Christopher Wren, and perhaps the most elegant library room in the kingdom. The hall is also the largest in Cambridge; and the roof is ornamented with fine specimens of old wood-work. Its chapel is marked by a beautiful simplicity, and contains Roubiliac's statue of Sir Isaac Newton, supposed the best resemblance that exists of that great man. It would be impossible to give even a cursory list of the *admiranda* of Cambridge; but it must not be omitted that great exertions are now making to extend its beauties, and to clear away the obstructions by which they have been hidden from the public eye. King's College, in particular, will, it is said, be completed in all its parts, according to the grand original plan, hitherto carried into effect only in regard to the chapel.

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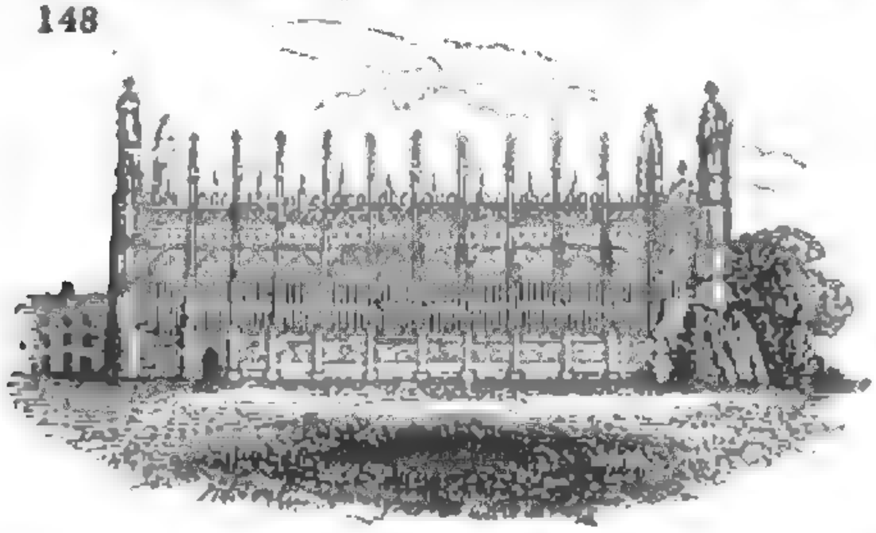

KING'S COLLEGE CHAPEL.

1743. *Among public collections*, the principal library, though it cannot rank with the Bodleian, contains 100,000 volumes, many of which are scarce and valuable. Trinity College, in its ornamented hall, has 40,000. Earl Fitzwilliam, from his seat near Richmond, presented lately a handsome library, some fine pictures, and a large collection of engravings. Valuable manuscripts and antiquities have been presented to the university by its *alumni* who have travelled into foreign countries. The botanic garden is reckoned inferior to none in the kingdom, except those of Kew and Liverpool.

1744. *The great men* who have issued from this university are too numerous for our limits to admit any attempt an enumeration. Since it was adorned by the immortal name of Newton, mathematics and natural philosophy have been the ruling pursuits; and, notwithstanding the lustre reflected on it by Milton, as well as by Bentley and Porson, it has left to Oxford the foremost place in classical knowledge. Among the statesmen who studied here, Cromwell and Pitt may be particularly noted. Cambridge has produced a number of adventurous and distinguished travellers, among whom Browne and Clarke deserve particular mention.

1745. *The population of Cambridge*, amounting, as above stated, to 20,971, is double that in 1801. The resident members of the university in 1801 were 811; in 1811 were 814; but in the two last enumerations they have not been distinguished.

1746. *Cambridgeshire*, besides its scenes of sober industry and high intellectual exertion, displays others of a very different kind, yet equally characteristic of England; for it is at *Newmarket* that *horse-racing* has chosen its most favourite ground. This town lies on the Suffolk border, and within the county of that name, amid bleak hills, that have, however, a sufficient extent of level heath to make the finest course in the kingdom. The amusement, animating in itself, and deriving some elegance from the beauty of the animals engaged in it, might, without blame, be pursued in moderation; but the deep and ruinous betting, and the various forms of dissipation usually attendant on it, render Newmarket one of the most dangerous scenes for young men of fortune. The town itself is small, consisting of one long street, chiefly filled with inns and coffee-houses for the reception of the sporting world, who crowd thither in the appropriate seasons, which are April, July, and October. The bustle is then immense. "Trains of horses," says Dr. Spiker, "were led up and down the streets. Excellent equipages, gigs, curricles, landaus, flew past us and past each other with the swiftness of an arrow. Horses were prancing about with their riders; jockeys were carrying bridles to and fro: in short, all was life and bustle." The course is covered with turf, whence the pursuit of horse-racing itself is usually designated *the turf*. Close to the goal is drawn on rollers a small wooden house, in which sits the *judge*, usually an experienced groom, who decides which is the winner; a delicate task when the difference does not sometimes exceed half a head. The stand is an open raised house for ladies and other merely curious spectators; but men of real business crowd round the betting post, immediately behind the judge, where they remain closely wedged together, "and nothing is heard but the continual cry of twenty, thirty, forty, two hundred pounds on such a horse."

1747. *Of other places*, the small curious city of Ely rises like an island amidst the surrounding fens, and displays a magnificent cathedral. Wisbeach, a neat thriving town on a navigable branch of the Ouse, different from that of Lynn, combines a prosperous trade with some spirit of literary enquiry.

1748. *The small county of Huntingdon* lies to the eastward of Cambridge, by which it is partly enclosed. The two are governed by the same sheriff, chosen alternately in each. Huntingdon is entirely agricultural, but on the north-east side is somewhat encroached upon by the fens; which, however, have been much improved by draining. In other parts the moisture is merely such as to render the pastures peculiarly rich, and adapt it for producing that cheese called Stilton, which seems to rank above any other in Britain. Huntingdon, the county town, though small, has an antique and respectable appearance. St. Ives is a large pleasant village on the Ouse, whose banks are, in this part, hilly and wooded. Stilton claims little notice except from its cheese.

1749. *Lincolnshire is an extensive and important county*, occupying all the eastern coast from the Wash to the Humber. The southern territory, called, from that circumstance, "Holland," comprises more than half of the Bedford level, or fen country, and is naturally an almost continuous swamp; but a great extent of it has now been drained, and produces fine pasture land, and excellent crops of oats. The middle and northern interior is high and somewhat bleak, not very well fitted for grain. The rearing of live stock forms the chief occupation; and Lincoln has breeds of every description that are held in high estimation. The sheep, which are very numerous, amounting, it is said, to upwards of 2,000,000, produce that species of wool called long wool, which, from the length of its staple, is chiefly fitted for worsted, baize, and other fabrics. Rabbits, almost innumerable, are bred in the upper districts; and the unreclaimed fens, during the wet season, swarm with teal, ducks, geese, and aquatic game of every form and description, with which London and many other parts of England are chiefly supplied from this county. Manufactures have entirely deserted it; even its own wool, since the late inventions in machinery, is no longer spun or carded within itself. The internal intercourse is considerable, as the Witham and Axeholme, streams of some importance, flow, respectively, to the Wash and the Humber; while the Trent, during all its course through this county, is navigable for large vessels. Artificial channels unite these streams, particularly the Foss Dyke, between the Witham and the Trent. Foreign commerce, however, is much limited by the increasing sand-banks, by which the coasts and harbours are obstructed.

1750. *The city of Lincoln* was, during the middle ages, one of the most conspicuous and splendid capitals of England. The cathedral (*fig.* 149.) still holds the very first rank among religious edifices. From a distance its three towers appear conspicuous; two of them 180, and one 300, feet high, and ornamented with various pillars and tracery; and as the structure stands on a hill, in the midst of a vast surrounding flat, it has the most commanding site in the county. The most embellished part is considered to be the western. When plundered, with devout rapacity, in 1540, by Henry VIII., it was found to contain an extraordinary treasure, not only in gold and silver, but in pearls, diamonds, and other precious stones, gifts of the faithful during many ages. Lincoln having fallen from its high estate, is supported only by its county trade, and by the remaining opulence of the cathedral; it holds a moderate rank among provincial towns. Its fifty churches are reduced to eleven; and the fragments of the others are dispersed throughout the town, many ordinary houses being adorned with Gothic arches, doorways, and windows.

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LINCOLN CATHEDRAL.

1751. *Of other towns,* Boston on the Witham, near its junction with the Wash, carries on the trade of Holland, or southern Lincolnshire. After declining from early prosperity, it has considerably revived since the fens have become productive. It now exports the grain, and affords a great market for the cattle reared in them, and has thus doubled its population. A fine Gothic church attests the original prosperity of Boston. Spalding and Holbeach are small towns among the fens. Gainsborough has some trade by the Trent, which is navigable thus far for vessels of 150 tons. Louth, from the interior, sends by a canal corn and wool. Great Grimsby, the chief eastern port, after seeing nearly all its commerce transferred to Hull, has of late somewhat revived. Stamford and Grantham are respectable old towns, a good deal decayed; but the revival of their importance is favoured by their position on the great north road.

SUBSECT. 3. *Central Counties.*

1752. *Under this term we shall comprehend* that part of the interior of England which is bounded on the south and south-west by the two divisions already described; on the north and north-west by Yorkshire and Lancashire; and on the west by the counties of Salop, Worcester, and Gloucester, which will be ranked among the western counties.

1753. *In a description* of this portion of the country, LONDON claims a distinct and separate notice. As the metropolis of the united kingdom, it is the seat of legislation, jurisprudence, and government; the principal residence of the sovereign, at which affairs of state are transacted, and relations maintained with foreign courts; the centre of all important operations whether of commerce or finance, and of correspondence with every quarter of the globe.

1754. *London,* in its comprehensive sense, includes the city and liberties of London, the city of Westminster and its liberties, the borough of Southwark, and the parishes and precincts contiguous to those three component parts of the metropolis. Its extent, from Poplar in the east to Belgrave-square in the west, is nearly eight miles; its breadth, from Islington in the north to Walworth in the south, exceeds five miles. The circumference, allowing for inequalities, is computed at thirty miles. The buildings, streets, squares, and other spaces, including that taken up by the river Thames, winding from the eastern to the western extremity, about seven miles on an average breadth of a quarter of a mile, occupy an area of eighteen square miles.

1755. *By a more convenient topographical arrangement,* London has been divided into six grand portions: 1st, the City, which is the central division; 2d, the western division, including Westminster; 3d, the north-west division, including the district north of Oxford-street and west of Tottenham-court-road, — these two divisions make the west-end of the town; 4th, the northern division, comprising the whole district north of Holborn and the City from Tottenham-court-road on the west to Shoreditch and Kingsland-road on the east, including St. Pancras, Somers-town, Pentonville, Islington, Hoxton, and Kingsland; 5th, the eastern division, including the whole district east of the city and of Shoreditch; 6th, the southern division, comprising the borough of Southwark, and the mass of buildings extending from Rotherhithe to Vauxhall, and ranging southward for more than two miles. The divisions north and south of the Thames communicate by five bridges, — London Bridge, Southwark Bridge, Blackfriars, Waterloo, and Westminster bridges.

1756. *The port of London* extends from London Bridge to Deptford, a distance of about four miles, with an average breadth of from four hundred to five hundred yards. Its divisions are the Upper, Middle, and Lower Pools, and the space between Limehouse and Deptford. Connected with it are certain spacious docks, which will be hereafter noticed.

1757. *The population of London,* according to the returns in 1831 of the census in 1830, is thus stated: —

	Persons.
City of London within the walls	57,695
———— without the walls (including the Inns of Court)	67,878
Borough of Southwark	91,501
City of Westminster	202,080
Parishes within the bills of mortality	761,348
Adjacent parishes not within the bills	293,567
Total	1,474,069

1758. *The north division of London,* as viewed from the most central and elevated point, rises gently from the Thames, and extends to the foot of a range of hills on which are situated the villages of Hampstead and Highgate. On the east and west are fertile plains extending at least twenty miles, and watered by the winding and gently flowing Thames. On the south, the distant view is bounded by the high grounds of Richmond, Wimbledon, Epsom, Norwood, and Blackheath, terminating in the horizon by Leith Hill, Boxhill, and the Reigate and Wrotham Hills. Shooter's Hill is a conspicuous object to the eastward; and, in a more northerly direction, parts of Epping Forest and other wooded uplands of Essex.

1759. *London* retains in its name an evidence of its Gothic origin. Its founders were the Trinobantes, by whose name geographers have distinguished it from the more ancient capital of Scania, still designated, in the works printed at its university, *Londinum Gothorum.** So early as the reign of Nero, London had become a place of considerable traffic, as appears from Tacitus, the earliest of the Roman historians who mention it by name. The Romans fortified it with a wall, and made it one of their principal stations. At the beginning of the third century, in the reign of the emperor Severus, it is represented as a great and wealthy city, and considered to be the metropolis of Britain. Such was the extent of its commerce, that we are told, by the historian Zosimus, that, in the year 359, 800 vessels belonging to this place were employed in the exportation of grain. In the end of the sixth century, it became the capital of the East Saxons, whose king, Sebert, is generally reputed the founder of the cathedral church dedicated to Saint Paul, and of the abbey and abbey church of Westminster. After the union of the seven kingdoms, Egbert, in 833, held here his first *wittenagemote,* or council: but London was not constituted the capital of England until its recovery from the Danes by Alfred, who laid the foundation of its present municipal government. William of Normandy, whose interest it was to conciliate the citizens, though he built the fortress called the Tower, to keep them in awe, confirmed the privileges and immunities which they had enjoyed under his patron Edward the Confessor; subsequent sovereigns augmented and extended them by various charters, one of which, granted by King John, authorised "the barons" of London to choose a mayor annually, or continue the same person in that office from year to year, at their pleasure. The city attained to great splendour under Edward III., who held frequent tournays in Smithfield and other places; and its architecture at that period exhibited every variety of the richest style of Gothic, both in public and private edifices. The cathedral of St. Paul held the preeminence; and its spire is said to have been five hundred and twenty feet high. The streets were mostly narrow, and the higher stories of the houses projected over the lower. There were no glass windows; and on the ground floors the wares of tradesmen were openly displayed. Notwithstanding several visitations of fire and pestilence, London continued to increase, especially after the accession of the Tudors, when the overthrow of feudal vassalage, and the more frequent resort to the capital, caused an augmentation so rapid as to alarm the government. The dissolution of monasteries, of which London contained so large a proportion, accelerated this increase, while it gave an impulse to industry and commerce. In the reign of Elizabeth, the influx of strangers driven from the Netherlands, by the persecutions of the Duke of Alva, heightened the alarm, and the queen was even induced to issue the absurd and futile decree that no more dwelling-houses should be built; a prohibition which does not seem for a moment to have retarded the growth of the city. Her public spirit was more sensibly manifested after Sir Thomas Gresham had erected a bourse for the merchants, which she visited in great state, and caused to be proclaimed "The Royal Exchange." In this reign the luxury of coaches was introduced from Holland, by William Boones, a Dutchman, who was appointed coachman to the queen. It was an epoch alike intellectual and prosperous, adorned with the names of Bacon, Cecil, and Walsingham; of Raleigh and Drake; of Shakspeare, Spenser, and Jonson. Some of these great men also illustrated the pacific reign of James I., scarcely disturbed except by one singular event; the discovery of a conspiracy of fanatic jesuits and papists to blow up the king and both houses of Parliament. In 1636, the refinements of Paris and Madrid were emulated in London by the introduction of hackney coaches and sedan chairs. During the civil wars, the capital participated in the troubles that afflicted the country, and also in the advantages accruing from the famous navigation act passed in 1651, during the interregnum. The citizens, secretly alienated from Cromwell and his council by the execution of the king, hailed with enthusiasm the restoration of Charles II., and adopted with indiscriminate eagerness the change of manners introduced by his court and followers from France.

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* Now *Lund,* in Schonen, the southernmost province of Sweden, the seat of a university founded by Charles XI. It is said to have been a flourishing city at the birth of our Saviour, though its present population scarcely exceeds 800. The similarity of the modern names and the *identity* of the Latin appellations are striking.

1760. *The reign of Charles II.* includes the most memorable epoch in the history of London. In 1665, a plague swept away 100,000 persons. In September, 1666, broke out that great and awful fire which destroyed 400 streets, 13,000 houses, 89 churches, including the venerable cathedral of St. Paul, the Guildhall, the Herald's College, the Royal Exchange, and many other structures. For the rebuilding of the city, an admirable plan was presented by Sir Christopher Wren, the architect; but the regard due to private property, and the difficulty of reconciling conflicting interests, allowed it to be but very partially adopted. He rebuilt the cathedral of St. Paul and most of the parish churches in the Grecian style, and the front of Guildhall in the original Gothic, of Portland stone. Instead of wood and plaster, the chief materials of the former city, the new dwelling-houses and the halls of the city companies were built of brick, in the substantial though heavy style then in vogue; with greater regard to convenience than to external display: ornament, however, of a certain kind was not wanting. In the streets occupied by traders, gaudy signs with various devices, in iron and gilded brasswork, hung over every door or projected from every house; the simple distinction of numbering not having been adopted, or perhaps thought of. There were no flagged footpaths; the streets were ill-paved; and as there was no system of drainage by sewers, and no distribution of pure water by pipes, they were in some places far from endurable. The city, however, had gained greatly by the change, though with the sacrifice of many interesting memorials of its ancient state, and of its most glorious times. In 1687, the revocation of the edict of Nantes by Louis XIV. gave to London its colony of silk weavers. The revolution of 1688 was effected without the slightest public commotion in London, except that which ensued on the sudden return of James II. to Whitehall, previously to his final departure from the kingdom. The first years of the reign of William and Mary were signalised by the establishment of the Bank of England, the institution of the funding system, and the introduction of those changes in the operations of commerce by which it was necessarily accompanied.

1761. *Westminster*, though founded in the time of the Saxons, and chosen at an early period as a royal residence, did not at first keep pace with London. The abbey and its church, founded by Sebert, gave place to a grander structure raised by Edward the Confessor; and afterwards enlarged, if not wholly rebuilt, by the accomplished architects who reared so many splendid fabrics of Gothic masonry in the reigns of Henry III. and Edward I. The celebrated hall was built by William Rufus in 1097 and 1098. Having become ruinous in that of Richard II., it underwent a thorough repair, and received the addition of a new roof, and a stately portal at the western entrance. That monarch made it a scene of luxurious banqueting, which provoked the severe but unavailing censures of his uncle, John of Gaunt. In the reign of Elizabeth, Westminster consisted only of a few streets adjoining the hall and the abbey. On the dissolution of monasteries, Henry VIII. converted this religious establishment into a college, appointing William Benson the abbot to be its first dean. He afterwards converted it into a bishopric, assigning all Middlesex except Fulham as its diocese. Westminster thus became a city, and has ever since retained that rank by courtesy, though it never had but one bishop, having been, in 1550, transferred by Edward VI. to the see of Norwich.

1762. *The city of Westminster* is comprised in the united parishes of St. Margaret and St. John; the liberties include seven other parishes, St. Martin's in the Fields, St. James's, St. Ann's, St. Clement Danes, St. Mary's le Strand, St. George's Hanover Square, and St. Paul's Covent Garden, with the precinct of the Savoy and that of St. Martin's le Grand. Several of the parishes westward of Temple Bar had each its church and contiguous village, communicating with each other by roads and footpaths. The Strand was originally a high road connecting London with Westminster by the village of Charing. A range of mansions, among which the Savoy Palace was conspicuous, extended along its south side; a convenient site from its proximity to the river, at a time when that was the principal communication with London, Westminster, and the theatres at Bankside, in Southwark. The names of the proprietors of those mansions have been conveyed to the streets since erected there; as Essex, Norfolk, Somerset, Beaufort, Buckingham, Cecil, Craven, and Northumberland. On the north side of the Strand, a considerable extent of ground, formerly belonging to a religious house, became the property of the family of Russell at the Reformation: in the reign of Queen Anne this quarter was the centre of fashion, and was afterwards chosen as the site of the two national theatres, Drury Lane and Covent Garden. After the Restoration, the west end of the town rapidly increased; and its inhabitants, affecting superior refinement of manners, claimed to be considered as a distinct class of beings from the industrious merchants east of Temple Bar. The distinction of court and city was maintained in the comedies of Congreve, Vanbrugh, Farquhar, and their successors, as well as in the periodical essays of Addison and Steele, which so happily illustrated the manners of that age. By degrees, as the vacant ground was built upon, the two cities and their suburbs were united; the fields near St. Martin's and Leicester House were covered with streets; and at length the distant villages of Mary-le-bone and St. Pancras became integral parts of the metropolis. A splendid quarter, now occupied by the most fashionable part of the community, has been built to the west of St. James's Park and the new palace. All the villages surrounding London, formerly at some distance, — on the east, Stepney and Limehouse; on the south, Peckham, Camberwell, Brixton, Clapham; on the west, Brompton and Knightsbridge; on the north, Hackney, Hoxton, Islington, to which we may even add Highgate and Hampstead, — have swelled into large towns, and, being joined to the metropolis by continued ranges of streets, may be considered as integral portions of it. The population within a radius of eight miles from St. Paul's, which is all virtually London, does not fall short of 1,800,000.

1763. *The growth of London*, as a port, was at first by no means rapid. Notwithstanding the impulse given to commerce, after Vasco de Gama and Columbus had navigated to the East and West Indies, and although an East India Company was established so early as 1600, the number of ships then trading to this port was comparatively very small. Indeed, less than a century ago, London had not one twentieth of its present trade. Its subsequent increase has been accelerated by various causes, the operation of which might furnish an interesting subject of enquiry. During the wars with France, from 1793 to 1815, especially while the continental system of Napoleon was in full vigour, London engrossed almost all the foreign trade of the kingdom; which began to return to its wonted channels after the conclusion of peace. In 1824, there entered into the port of London from foreign parts 3132 British, and 1643 foreign shipping; 513 from Ireland; 7117 colliers; 11,213 coasters; 3769 fishing vessels. In 1832, there entered the port of London 2025 ships, of the burthen of 525,299 tons; and 851 foreign, of 150,425 tons. Of these, 415 were from Russia; 5022, the Netherlands; 256, Portugal, &c.; 282, German States; 201, Spain; 305, France; 230, Prussia; 103, Denmark; 105, Italy; 73, United States; 135, foreign America; 20, China. In 1832, besides boats and other craft not registered, there belonged to the port of London 2669 ships, of the burthen of 565,174 tons; manned by 32,786 men and boys. In the same year, the gross customs duty collected in the port of London amounted to 9,434,854*l*.

1764. *The Port of London* has already been described as extending from London Bridge to Deptford, a distance of four miles; the average breadth being fully a quarter of a mile. Even these limits were far from affording adequate accommodation to the shipping; and the example of improvement exhibited by Liverpool at length roused the merchants of London to form companies for constructing docks, with commodious quays and warehouses. The *West India Docks*, stretching across the isthmus forming the Isle of Dogs to the Middlesex side of the river, were opened in 1802. They consisted originally of an import and an export dock, the former containing about 30 and the latter about 25 acres of water, exclusive of basins. To these have recently been added the south dock, formerly the City Canal. The warehouses at the West India Docks are of vast extent, and are, in all respects, most commodious. The *London Docks*, also of very great extent, are situated at Wapping. The tobacco warehouse belonging to them is the largest and finest building of its kind in the world. It covers a space of near 5 acres! The vaults underneath the ground are 18¼ acres in extent; and, excluding gangways, &c., have stowage for 66,000 pipes of wine! There are also the *St. Katharine's Docks*, adjoining the Tower; the *East India Docks*, at Blackwall; and the *Commercial Docks*, on the Surrey side of the river. Owing to the competition of the different companies, all sorts of dock charges are now reduced to the lowest level, and hardly one of the concerns can be said to be profitable. The dividend on London Dock stock in 1833 was only 2½ per cent.; and it is supposed that the dividend on the stock of some of the other dock companies will, at no distant period, be even lower.

1765. *Southwark*, the third great portion of the metropolis, (more commonly called the *Borough*, and as such returning two members to parliament,) is situated on the south bank of the Thames. It is considered at least coeval with London, if not more ancient; and the Romans are said to have raised the large embankment by which it is protected from the river. The Borough was governed by its own bailiffs until the year 1327, when a grant was obtained by which the lord mayor was constituted bailiff and empowered to act by deputy. The inhabitants afterwards recovered their former privileges, and enjoyed them until Edward VI. granted Southwark to the city of London for a sum of money; after which it became one of the city wards by the name of Bridge Ward Without. Southwark is much frequented by agriculturists from Kent, Surrey, and Sussex; and is the principal hop-market in the kingdom. Numerous streets in every direction connect it with the surrounding villages; and by the five magnificent bridges it communicates with every quarter of London and Westminster. Yet, having never been the centre either of commerce or of fashion, it has always held a subordinate rank; and at present the number of inhabitants does not equal a tenth of the entire population of the capital.

1766. *London*, though not the most splendid, is the cleanest, the healthiest, and most commodious metropolis in the world. It is well built, well paved, well lighted and abundantly supplied with water for domestic purposes, and for the all-important object of preventing conflagration. Foreigners who visit it for the first time soon discover that utility, not ornament, is the main characteristic of the town, and that business, not amusement, occupies the minds of its inhabitants. The main streets are spacious; and all the streets have the advantage of flagged foot-pavements on each side. The houses are of brick; and though in the most populous streets discoloured by smoke, have by no means a gloomy appearance. Having been built at various periods, and chiefly on the site of old streets or along the lines of roads, the metropolis can lay no claim to regularity of plan; some parts are regular, others irregular: but it is for that reason more agreeable than if it had been a parallelogram of streets intersecting each other at right angles, than which nothing can be more wearisome to the eye, especially if, as in the new town of Edinburgh, the walls be built, and the streets paved, with stone of the same grey colour, producing an effect which may truly be called dismal. The charm of London, as a great city, is its variety. Those who dislike the high-piled and narrow streets of the city, shady in summer, and sheltered from cold winds in winter, may delight in the spacious streets and squares of the west end of the town: those who desire to contemplate what Dr. Johnson called "the full tide of human existence," may visit Cheapside, Fleet Street, or the Strand: Pall Mall, and St. James's Street, by some fortunate peculiarity of position, not easily defined, look light and cheerful in the heaviest weather; Bond Street is still the resort of gaiety and fashion; and Regent Street, for architectural effect, is the grandest street in Europe. Great improvements have been made on the north side of the Strand from Charing Cross to Burleigh Street, by taking down an immense mass of small and old houses, partly in narrow streets and courts, and erecting others of large dimensions, and forming wide and handsome streets. Here also has been erected the elegant and commodious structure of Hungerford Market. Another improvement is that of opening a line northward from Bridge Street, Blackfriars, through the site of Fleet Market and across Clerkenwell, to Islington: it is intended that a parallel line should extend from Waterloo Bridge across the Strand, past the portico of Covent Garden Theatre, and into the northern district of the metropolis.

1767. *The public buildings of London* would many of them require a great sacrifice of private property to expose them advantageously to view. But here the remark so often made by foreigners again suggests itself, — that business, and not display, occupies the minds of the inhabitants. They want no grand avenue to afford a prospect of St. Paul's, — no range of quays for promenading along the river. Though not utterly indifferent to public walks, they regard even them rather as spectacles, than as places of recreation; and in Hyde Park all the company in carriages, on horseback, or on foot, are crowded along the eastern line, as if the sole purpose of the many were to see and to be seen. Munificent in contributing to the expense of constructing public edifices, they regard the demolition of property for the purpose of displaying them as mere extravagance.

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ST. PAUL'S.

1768. *St. Paul's Cathedral* (*fig.* 150.), the masterpiece of Sir Christopher Wren, is allowed to be the finest specimen of modern architecture in the kingdom, and, after St. Peter's at Rome, may rank as the finest ecclesiastical structure in Christendom. But it is so surrounded with buildings that the beauty of its exterior cannot be appreciated. The style unites grandeur of design with justness of proportion; but being Grecian, it suggests the idea of a pagan temple appropriated for Christian worship rather than that of a temple founded by Christians. That architecture which is called Gothic is essentially more grand and solemn: it dates its origin from the early propagation of the Gospel; implants in all its ground-plans the symbol of the cross; and may be said to have grown with the growth of Christianity. The interior of St. Paul's is too bare of ornament; but the defect is partly supplied by marble monuments, of the merits of which, as works of sculpture, various opinions are entertained.

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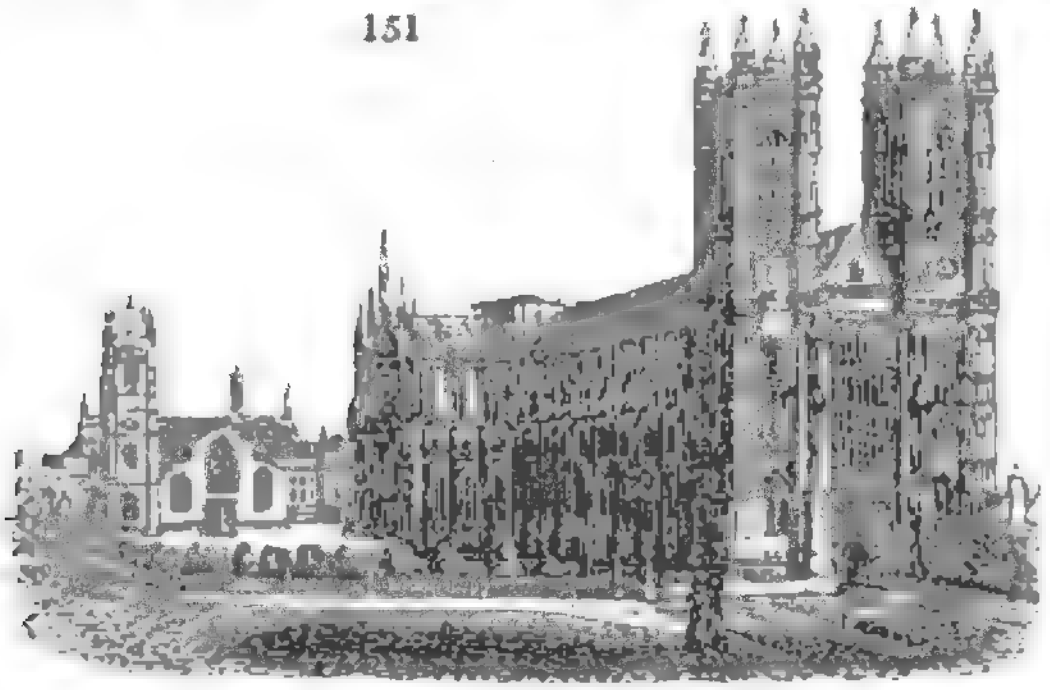

WESTMINSTER ABBEY.

1769. *Westminster Abbey* (*fig.* 151.) is a very noble specimen of Gothic architecture. The interior is grand in design and rich in detail, and the interest which it excites is enhanced by the numerous monuments of kings, warriors, statesmen, philosophers, and poets, which it encloses. The chapel built at the western extremity by Henry VII. in honour of the blessed Virgin, is in the richest style of the later Gothic, and its exterior has been skilfully renovated.

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SOMERSET HOUSE.

1770. *Among the parish churches of the metropolis*, that of St. Stephen's, Walbrook, is distinguished for the fine proportions and finished elegance of its interior. The stately portico of St. Martin's, Charing Cross, excites universal admiration; next to which may rank that of the new church of St. Pancras; the steeple of which edifice, constructed on the model of the Temple of the Winds at Athens, has a very airy and pleasing effect. The other public buildings are too numerous to be described, and a bare mention of them would give little satisfaction. The principal inns of court, and their subsidiary inns, are remarkable rather for plainness than magnificence of architecture. The pile called Somerset House (*fig.* 152.) would have a grand effect if its eastern wing were completed; and this desideratum is partly supplied by the buildings assigned to "King's College, London." The Mansion House attracts the notice of travellers, from its accordance in style of architecture with a palace in Italy. The Banqueting House at Whitehall is a memorial of the fine taste of Inigo Jones; and its ceiling is decorated with an allegorical painting from the pencil of Rubens, which is still exposed to view, though the apartment has been converted into a chapel. Westminster Hall, of which the portal has been rebuilt in the original style, is reputed the longest hall in Europe unsupported by pillars. It is 276 feet long by 76 broad. Within it, on coronation festivals, 10,000 persons have dined. On its south side are entrances to the new law courts, the King's Bench, Common Pleas, Exchequer, and Chancery, with an additional court for the vice-chancellor. The central door at the upper end opens into a passage leading to both houses of parliament. The House of Peers is a spacious and lofty chamber, decorated with tapestry representing the defeat of the Spanish armada. The subordinate apartments and passages are of recent construction and of a dignified elegance. The House of Commons, originally a chapel dedicated to St. Stephen, retains, perhaps, too much of that character in its front and side galleries, the seats rising on either hand beneath them, and the speaker's chair exactly in the place where a pulpit might have stood. The house was altered and enlarged, to admit the accession of members consequent on the union with Ireland. The Bank of England is a building of great extent, the larger part erected by Sir John Soane. The

Royal Exchange, rebuilt after the great fire, has been recently repaired. The East India House, in Leadenhall-street, has a handsome portico in front, completed in 1799. The Tower is the most considerable relic of antiquity in the east of the metropolis; it has still an arsenal and a garrison, being the depository of the regalia of the United Kingdom. The Trinity House, and the New Mint, both situated on Tower Hill, are handsome edifices. The apparatus for coining, in the mint, exhibits one of the most ingenious specimens of machinery moved by steam power that has ever been contrived. The new Post Office, in St. Martin's le Grand, near St. Paul's, is a structure highly honourable to the talents and taste of Mr. Robert Smirke. Of the New Palace in St. James's Park the architect is Mr. Nash, to whose boldness of design the public are indebted for the noble range of buildings called Regent-street, from Pall Mall to Portland Place.

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THE MONUMENT.

1771. The column called *The Monument* (*fig.* 153.) is one of the most conspicuous ornaments of the metropolis. The pedestal is 42 feet, the shaft of the column 120 feet, the cone at the top with the blazing urn of gilt brass 40 feet, making the total height of the monument 202 feet; which considerably exceeds that of the Trajan and Antonine columns at Rome. It was erected by Sir Christopher Wren, to commemorate the fire of London, in 1666.

1772. *The bridges of London* attract attention by their beauty and utility. Until the year 1740, the only one existing was *London Bridge*, built in the twelfth century, with arches so narrow, unequal, and ill-placed, as to form a sort of breakwater, occasioning a *rapid*, or *fall* of the stream, highly dangerous to boats and barges. Its removal having been determined on, the corporation, after considering various plans offered for a new bridge, adopted that proposed by Mr. Rennie, which was accordingly sanctioned by act of parliament. That celebrated architect dying (11th October, 1821) before the work had been begun, the execution of it was entrusted to his son, Sir John Rennie, under whom Messrs. Joliffe and Banks were employed as building contractors. The government, regarding the undertaking as national, agreed to contribute 200,000*l.*, on condition that the Lords of the Treasury should exercise a joint control over it with the corporation. According to Mr. Rennie's original design, *the new bridge* was to have been built on the site of the old one, a temporary structure of wood being provided to prevent interruption of traffic; but the corporation, not sufficiently mindful of the expenses attending new approaches, decided it to be 180 feet higher up the stream. Mr. Rennie's estimate for the new bridge was 430,000*l.* with an additional 20,000*l.* for the temporary bridge; and in regard to the structure itself, that sum proves to have been very little exceeded. The change in the site, with the new approaches chosen by the corporation, added 456,000*l.* to the estimate. "But in consequence of the injudicious nature of these approaches," it is observed, in a professional survey, "others had to be substituted, which raised the actual expenditure to nearly 2,000,000*l.* The work was commenced in March, 1824, when the first pile of a coffer-dam was driven. The first stone was laid in June, 1825; and in July, 1831, the structure (*fig.* 154.) was complete. On the 1st of August in that year, it was opened, in the presence of King William IV., his queen and the royal family, and a vast concourse of spectators. The bridge consists of five semi-

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NEW LONDON BRIDGE.

elliptical arches; the centre arch 152 feet span, with a rise above high water-mark of 29 feet 6 inches; the two next the centre arch, 140 feet span, rise 27 feet 6 inches; the two abutment arches, 130 feet span, rise 24 feet 6 inches. The length of the bridge from the extremities of the abutments is 928 feet; within the abutments 782 feet. The roadway is 53 feet between the parapets, being eight feet wider than any other bridge on the Thames. Of this width the footways occupy 9 feet each, and the carriage-way 35 feet.

1773. *Southwark Bridge,* from Queenhithe to Bankside, Southwark, was projected by Mr. John Wyatt; but the work was commenced under the direction of the late Mr. Rennie, in September, 1814. Of its three arches of cast iron, the central one is 240 feet span; the others 210 feet each. The piers and abutments are of stone, the rest of the work iron: this is the most stupendous bridge of these materials in the world.

1774. *Blackfriars Bridge,* built by Mr. Robert Mylne, between the years 1760 and 1769, has 8 piers and 9 elliptical arches; the centre one 100 feet span; those on each side respectively 93, 80, and 70; the length is 995 feet, the breadth of the carriage-way 28 feet, the flagged foot-ways 7 feet each.

1775. *Waterloo Bridge* (*fig.* 155.), begun in 1811, and completed in 1817, was planned by Mr. George Dodd; but in consequence of a misunderstanding between him and the company, the execution was intrusted to Mr. Rennie. It has nine arches, each 120 feet span; the piers are 20 feet thick. The balustrades are of Aberdeen granite, the other parts of Cornish granite.

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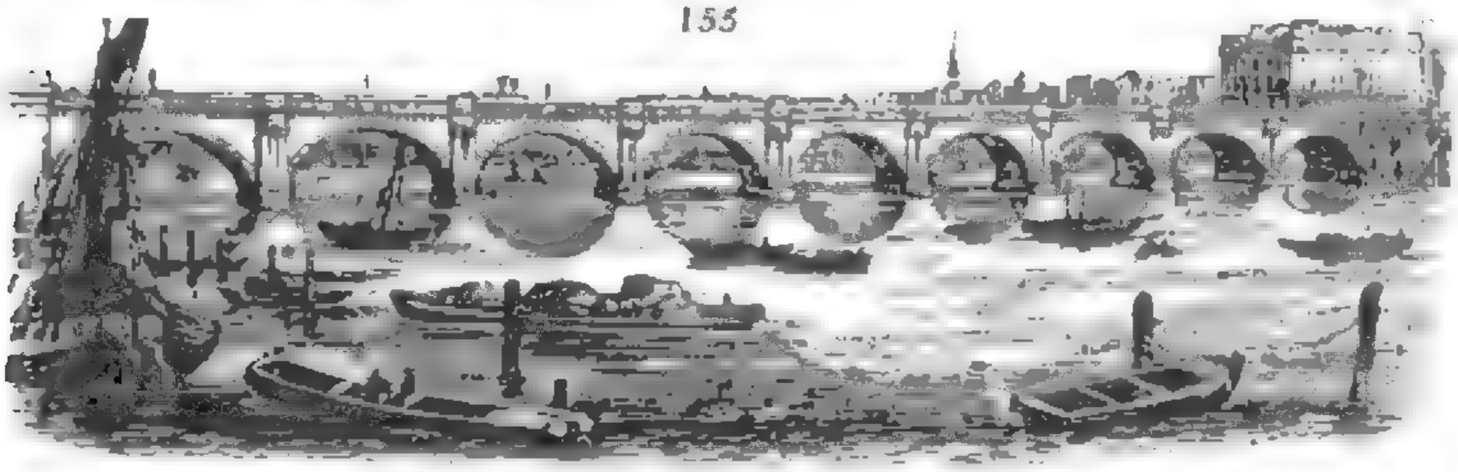


WATERLOO BRIDGE.

1776. *Westminster Bridge,* built between the years 1739 and 1759, has fourteen piers supporting thirteen large and two small arches. The width of the middle arch is 76 feet; that of the two next, 72, that of the last, 52. Of these structures, Waterloo Bridge is entitled to the pre-eminence, and may be regarded as the finest piece of masonry in Europe. The expense exceeded 1,000,000*l.*; and the returns, it is painful to add, have as yet totally disappointed the hopes of the shareholders in this great undertaking. It must always, however, redound to the glory of the English nation, that these immense works, with the exception of London Bridge, have all been accomplished by associations of private individuals.

1777. *The municipal institutions of London* are venerable for their antiquity, and have received from time to time such modifications as were requisite to preserve and improve them. The city is divided into twenty-five wards, the Borough, as Bridge Ward Without, making the twenty-sixth. Each has for its magistrate an alderman chosen for life; and those persons collectively form the Court of Aldermen. The chief magistrate, styled Lord Mayor, is elected annually, and generally in the order of rotation, from the Court of Aldermen, by the great body of freemen called the Livery, in whom was likewise vested the right of electing four members to represent the city in parliament, but this is now shared by all householders paying 10*l.* a year. Previously to 1475, the right of electing the lord mayor belonged to the Common Council, an elective body representing the several wards; but by an act of the council then made, the election of the mayor and two sheriffs was vested in the lord mayor for the time being, the aldermen, the common council, and the master, wardens, and livery of each of the city companies. These public bodies form a sort of parliament, the court of aldermen ranking as peers, that of common council as the commons. On public occasions when a petition to the throne has been proposed, very important questions have been discussed in these assemblies. The military force of the city formerly consisted of the Train Bands; but under an act passed in 1794, two regiments of militia are raised by ballot, each consisting of 2200 men. No troops can enter the city, nor can its own militia depart from it, without permission of the lord mayor. His power is very great; and though his office be elective, his authority does not cease on the demise or abdication of the king, as that of the commission officers does; and in such cases the Lord Mayor of London is said to be the principal officer of the kingdom. There are two sheriffs, one for London and one for Middlesex; but, from a peculiarity originating in the grant of the sheriffwicks, they regularly make but one officer; and therefore, if one of them dies, the office is at an end until a successor to him is chosen, and the courts of Westminster can award no process to the other. The next chief officers in rank are, the Recorder the Chamberlain, and the Common Serjeant.

1778. *The police of the metropolis* has not been brought to a very high degree of efficiency, but is continually undergoing improvements. There are eleven offices: the Mansion House; the Guildhall; Bow Street; Queen Square, Westminster; Marlborough Street; High Street, Mary-le-bone; Hatton Garden; Worship Street; Lambeth Street, in Whitechapel; High Street, Shadwell; Union Street, Southwark; and Wapping New Stairs, for offences connected with the shipping and port. The Bow Street Police Office is wholly under the direction and management of the Secretary of State for the Home Department. All the magistrates belonging to it are in the commission of the peace for the counties of Middlesex, Surrey, Kent, and Essex, this being the chief police office of England. Subject to its authority is that very efficient body of foot and horse patrole by which the roads within ten miles of the metropolis are watched and guarded during a considerable part of the night. In another department of police a most important change has been effected by substituting for the nightly watch appointed by different parishes without concert or co-operation, a CONSTABULARY POLICE FORCE, regularly organised, and subject to officers appointed by the Home Secretary of State. The men are maintained by rates levied on the different parishes, and are on duty night and day, in successive divisions, relieving each other, like gendarmes. Great advantages may result from this system, when it shall have received those improvements which experience may dictate, and when the parish authorities shall be enabled to satisfy themselves as to the characters of the individuals composing this protective force.

1779. *The gaols and prisons of the metropolis* present a subject which, however painful, cannot be passed without notice. The King's Bench prison, in Southwark, is under the particular authority of the Court of King's Bench. The liberties, or *rules*, comprehend an area contiguous to the prison, three miles in circumference, within any part of which debtors may reside on paying certain fees. The Fleet Prison, chiefly for debtors, is situated on the east side of Farringdon Street; its rules were formerly bounded by that street, Fleet Lane, the Old Bailey, and Ludgate Street; but they were enlarged, in 1824, by an order of the Court of Common Pleas. Whitecross-street prison was erected in 1815—1817, for the reception of such debtors as were liable to be confined in the city gaols of Newgate and the Compter.

1780. *Newgate*, now a place of confinement for prisoners before and after trial, has been placed under new regulations, through the efforts of several benevolent persons anxious to render it as effectual a place of reform as a prison can be. Bridewell, Blackfriars, though a prison, is usually ranked among the hospitals. The Middlesex House of Correction, in Coldbath Fields, erected at an expense of 80,000*l.* has long been the terror of delinquents, through the double punishment of incarceration and hard labour. The Penitentiary at Milbank, erected by government at an expense of 500,000*l.*, was destined for the reception of such convicts as might be selected from those sentenced to transportation or to confinement on board the hulks for a certain term of years. They are confined here to hard labour for a shorter term, part of which is remitted if they behave well. Tothill-fields Bridewell is a large pile of building, finished in 1833. A new House of Correction has been erected at Brixton, in Surrey; and there, as well as at Coldbath Fields prison, a treadmill has been erected for the occupation and punishment of prisoners sentenced to hard labour.

1781. *The charitable institutions* of London would require a volume for their description. The term hospital, applied to many of them, however appropriate, seems so general as to be rather vague. Chelsea and Greenwich hospitals are asylums provided by national gratitude to support the aged or infirm who have devoted their best days to the service of their country by land and sea. Under the system of charity ascribed to Edward the Sixth, by which the poor were distinguished into classes, St. Bartholomew's and St. Thomas's hospitals were assigned to the maimed and diseased, Bridewell Hospital to the employment and correction of the idle, and Christ's Hospital to the support and education of the young and helpless. For the cure of diseases, and for the prompt relief of accidental injuries, there are various institutions of the metropolis; such are the London, Middlesex, St. George's and Westminster hospitals; St. Bartholomew's, St. Thomas's, and Guy's are also celebrated as schools of surgery; the hospitals of Bethlehem and St. Luke's are appropriated to insane patients: there are sixteen medical charities for particular purposes, as the Dispensary for Diseases of the Ear, the Ophthalmic Institution, the Small-pox Hospital, the Vaccine Society, the London Truss Society, the Sea-Bathing Society; fourteen lying-in hospitals and charities: among other foundations may be mentioned the schools for the indigent blind, and for the deaf and dumb; the Philanthropic and Humane Societies, the Refuge for the Destitute, the Foundling Hospital, the Magdalen Asylum, and the Female Penitentiary. To the class of charitable foundations belong also the alms-houses of the various city companies. Besides national societies, such as the Caledonian, the Hibernian, and the Welsh, associations have been formed of natives [illegible] many English counties; and the benefit societies of various kinds are too numerous to be particularised.

1782. *The most distinguished schools of the metropolis* are, Christ's Hospital, the Charter-house, Westminster, St. Paul's, and Merchant Tailors' schools. Those for the education of the people on the plan of Lancaster and Bell have been mentioned in another part of this work. For the acquisition of the higher branches of knowledge, an important provision has been made in the establishment of the London University, and in that of the institution called King's College, London.

1783. *Of the scientific and literary ascoiations of the metropolis,* the most considerable are the Royal Society; the Society of Antiquaries; the Society for the Encouragement of Arts and Manufactures; the Royal Institution for facilitating the introduction of useful Inventions and Improvements; the London, and the Russel Institutions. The College of Physicians, and the Royal College of Surgeons, decide on the admission of members to practise in each of those professions. For the cultivation of sciences connected with them, four eminent societies exist, and lectures are established at various theatres of anatomy and hospitals. Of institutions for particular branches of knowledge, the more eminent are the Linnean, the Geological, the Horticultural, the Geographical, and the Zoological societies. As a national repository of literature, of antiquities, and of objects belonging to natural history, the British Museum, elsewhere described, is daily rising in public estimation.

1784. *London is the principal literary emporium of the kingdom.* Almost all books of importance are there printed and published; and thence distributed over the kingdom, forming a considerable branch of commerce. The annual value sold is estimated at from 1,000,000*l.* to 2,000,000*l.* sterling. Being also the centre of intelligence relative to public affairs at home and abroad, the metropolis gives circulation to a prodigious number of newspapers and periodical journals. Some of the newspapers circulate upwards of 8000 a day; and by the profit derived from such extensive sale, and from advertisements, they are enabled to maintain complete and costly establishments for obtaining early political intelligence, and for reporting trials and parliamentary proceedings. The number of single papers published annually in London, as calculated from the stamp returns, exceeds 16,000,000. The metropolis is also the chief market for collections of rare and curious books; and these literary treasures, that have been accumulating since the invention of printing, present a fund of interesting research and speculation, which cannot be paralleled in any other European capital.

1785. *In London, also, the English school of art* may be considered as established; and it is here that the most eminent professors of painting, sculpture, and architecture fix their permanent abode. In all that concerns the drama, the sanction of a London audience is decisive both as to authors and actors; and the same remark may apply with respect to music, both vocal and instrumental. It is a subject of regret, however, that the profits of opera and concert should be chiefly appropriated by foreign professors, to the great discouragement of native talent.

1786. *The manufactures of the metropolis* are too miscellaneous to be particularised; indeed, London may be called a commercial rather than a manufacturing city. The most considerable is the Spitalfields silk manufacture, which, however, has for years remained stationary, while that of other parts of the kingdom has been rapidly extending. In household furniture, especially cabinet-work, the artisans of London take the lead both in the design or fashion of the articles, and in the excellence of their construction. The same may be said of coaches, carriages, and harness, and of watches, of gold and silver plate, and of jewellery. Of articles of consumption, the peculiar product of London is *porter*. In 1823–4, the quantity brewed was 1,168,000 barrels, including a comparatively small quantity of ale; and almost the whole of which was produced by eleven great establishments. The distilleries of British spirits, fewer in number by one half than the breweries, are very extensive, and are conducted with great skill. The consumption of gin has latterly increased; but not nearly to the extent that is commonly supposed. The abolition of the duties on beer and porter will probably, indeed, throw the balance in favour of the latter.

1787. *The foreign trade of London* has, since the peace, continued nearly stationary. The vicinity of Liverpool to the manufacturing districts, and her more easy and frequent intercourse with Ireland, give her considerable advantages. But, on the other hand, the vast population of London and of the basin of the Thames, her proximity to the Continent, the immense wealth and connections of her merchants, will most probably suffice to ensure her predominance. The charges on vessels frequenting the Thames, though within these few years very heavy, are now extremely moderate.

1788. *The inland trade of London* is very extensive, as appears from the number of coaches, waggons, and other vehicles continually arriving and departing by all the great roads of the metropolis, and by the Regent's Canal, extending from the Thames at Limehouse, along the northern boundary of London, to the basin at Paddington, a sort of internal port, communicating with the principal canals of the kingdom. For the correspondence required by commercial and general intercourse, sixty-four mail-coaches and a great number of steam-packets maintain a constant communication between the London General Post-Office and the principal cities, towns, and out-ports, and through numerous ramifications with every town and village in Great Britain and Ireland. The regulated speed of the mails is eight miles an hour, including stoppages; and by the improved state of the roads, a day has been saved in the interchange of letters between London and Liverpool, as well as all towns within the distance of 200 miles from the metropolis. The post-office is the most systematic and economical of all the government establishments.

1789. *London is the great money market of the empire*; much of the correspondence carried on through the post being that of country banks with London bankers, and of private individuals with their agents for the purchase and sale of government securities. The Bank of England, founded in 1694, has become the greatest bank of circulation and deposit in this country and in Europe. Its pecuniary transactions are immense. Its usual issue amounts to about 20,000,000*l.* sterling; it advances about 10,000,000*l.* sterling to government, and discounts bills to the value of about 3,000,000*l.* Though some of its exclusive privileges are curtailed by the late act, this is compensated by the regulation which makes its notes a legal tender. The Stock Exchange, in Capel Court, near the Bank, is the place where purchases and sales are effected by brokers, at a commission of one eighth per cent. on the amount of stock purchased or sold. The establishment consists of a certain number of brokers, about thirteen hundred, elected annually by ballot, and bound in a certain sum to the observance of certain regulations, which are superintended and enforced by a committee. None but members are admitted on the stock exchange; and no stock-broker can, by the regulations, become a dealer, and subject himself to the operation of the bankrupt laws. If he becomes a bankrupt, he is designated a scrivener. The property bought and sold in this market, between the hours of ten and four, is sometimes enormous. London is also the principal emporium in the world for the insurance of ships, merchandise, and property of every description. The Insurance Companies are about twenty in number, of which only three are incorporated by charter. Of other joint-stock companies, for purposes immediately connected with London, the principal are the Water and Gas Light Companies.

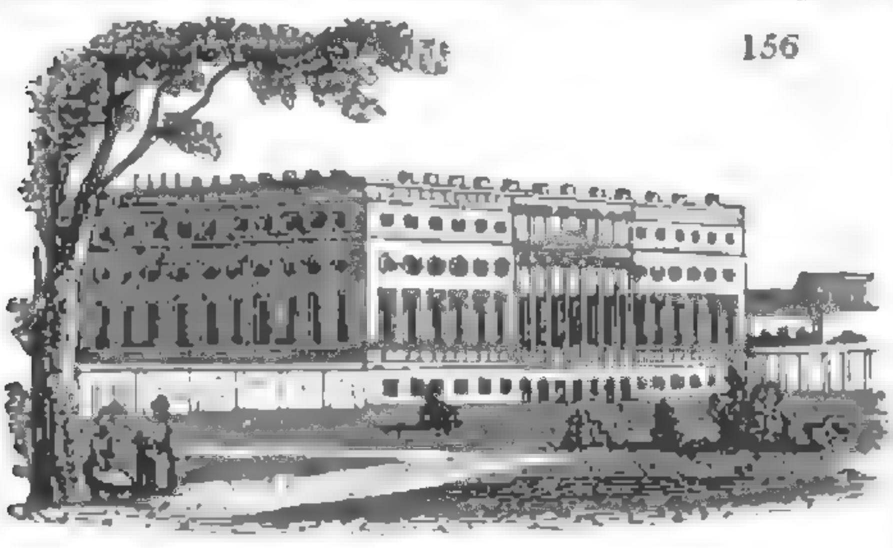
1790. *As the seat of legislation and jurisprudence*, London is necessarily the resort of the principal persons in the kingdom during the session of parliament, which usually continues from Christmas to midsummer; and as that period includes three of the four law terms, the afflux of strangers is increased by those who are interested in any proceedings before the courts. It is natural that persons of opulence and leisure should choose to reside in the metropolis during such a period; but, notwithstanding the trite ridicule on a London winter as extending to midsummer, what is called the fashionable season really appears to be regulated not by caprice but by necessity.

1791. *The town mansions* of the nobility and gentry are not so remarkable as their country residences for architectural beauty. Some of them are celebrated for their treasures of literature or art, as that of Earl Spencer for the finest private library in the kingdom, those of the Duke of Sutherland, Marquis of Westminster, and H. T. Hope, Esq. for their magnificent collections of paintings, and that of the Marquis of Lansdowne for some exquisite specimens of antique and modern sculpture. The house and museum of Sir John Soane, in Lincoln's Inn Fields, contains an interesting collection of works of arts and virtù.

1792. *From its rapid increase of late years,* London, in the opinion of some persons, is likely very soon to be overgrown. Yet such an alarm will surely appear unfounded, when we consider that the principal squares exhibit, in the flourishing plantations that adorn them, an agreeable mixture of town and country not to be paralleled in any other capital; that the grounds of St. James's Park, Hyde Park, and Kensington Gardens, emphatically called the lungs of London, are and will be preserved from encroachment; and that the finely disposed enclosure of the Regent's Park is destined in perpetuity for the recreation of the public.

1793. *Middlesex,* with one exception, the smallest county in England, may be regarded as the dairy and garden of London. Its soil is mostly a poor gravel; but, by the copious application of manure, it is fitted for kitchen gardens to the extent of nearly three thousand acres; and from the ready market, yielding a produce of 200*l.* per acre, the same extent of fruit gardens to the west, and about half that extent of nurseries, whence the greater part of England is supplied with choice plants and exotics. But the largest portion of Middlesex is in grass, partly for the support of 10,000 cows, which supply London with milk, which is, in some cases, diluted, and retailed at a great profit; and partly for furnishing its numerous stables with hay, that of Middlesex being said to be made in a superior manner to any other in the kingdom. Great profits have been derived from that species of clay which is convertible into brick. Large tracts have yielded 4000*l.* an acre; and after this clayey substance has been pared off, the soil has been easily restored, by manure, to the uses of agriculture.

1794. *Middlesex is not remarkable for seats of the nobility;* but it contains Hampton Court (*fig.* 156.), built by Cardinal Wolsey, and enlarged by Sir Christopher Wren, and forming one of the largest of the English palaces. Here are displayed many fine and curious pictures, among which are seven of the cartoons of Raphael, regarded as the master-pieces of that renowned painter. They are shown to the public, though not, perhaps, with that full freedom which visitants of taste would desire. The gardens of this palace are formally disposed; but they harmonise with the style of the edifice. Bushy Park, the seat of William IV. while Duke of Clarence, is surrounded with magnificent woods. Chiswick, the highly ornamented villa of the Duke of Devonshire, and Osterley Park, are both in this vicinity, and contain fine paintings. Syon House is the seat of the Duke of Northumberland. But the chief ornaments of Middlesex are its villas, wholly composed of the embellished retirements of the wealthy citizens of London. At Twickenham, indeed, barbarous hands have demolished Pope's villa; but the stranger may still wander on the ornamented grounds, sloping down to the river, on which the eye of the poet was accustomed to rest. Strawberry Hill is a light fantastic fabric, built by Horace Walpole. The villas which cover the sister hills of Hampstead and Highgate command beautiful prospects.



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HAMPTON COURT.

1795. *The other midland counties,* if we except the outer border formed by those of Warwick, Stafford, Derby, and Nottingham, which have each a marked distinctive character, so much resemble each other, that they may be considered in close connection. These counties are, *Hertford, Bedford, Buckingham, Oxford, Northampton, Leicester.* This great inland tract consists generally of a vast plain, not of the same wide exposed flats as in the eastern counties; but varied by gentle undulations, which, in a region of bolder features, could not aspire to the name of hills. The surface is not subject to swamp or inundation; the air is healthy and pure; the agriculturists are of the old steady English character, careful and laborious, but without that great activity and inventive spirit usually excited among farmers who have greater difficulties to struggle with. One exception must, indeed, be made, in the breed of horses and black cattle, to which the annual shows once held at Woburn Abbey gave a great impulse, and which Mr. Bakewell of Leicestershire carried to such perfection as to make the breed of that county famous throughout the kingdom. The whole tract is almost destitute of manufactures. Bedford and Berks have some fabrics of shawls, straw hats, and bone lace, but scarcely amounting to a national object. Silk and woollen hosiery have found their way into Leicester and Oxford shires, and Coventry has for centuries been renowned for its silk manufacture. There are in this district several respectable and ancient towns; but few can aspire to rank with or rival the large manufacturing towns of the north.

1796. *Oxford* justly claims the first rank among the midland cities. Its university, the most richly endowed in Europe, and the nursery of so many great men; the numerous and extensive edifices connected with it, arranged in such a manner as to produce a truly noble effect, render it one of the most interesting places in England. The visiter, as he passes along either of the two main streets (*fig.* 157.), beholds at every step some antique and majestic structure; he feels as if he belonged to another and a greater age. Even the houses of private individuals, though not perhaps in strict harmony with the rest, presenting the aspect of ornamented cottages rising one above the other, have a better effect than the usual common-place and mechanical lines of street. This beautiful city is supported almost entirely by the university, which is of great antiquity, having been founded by Alfred, and the principal buildings which now ornament it built between the times of Henry VI. and Elizabeth. Oxford, in the reign of Charles I., was a place of considerable political importance; parliaments were summoned to meet there, and the king maintained it long as his last strong-hold. At present it is solely distinguished as the tranquil seat of the muses. It has nineteen colleges and four halls, in which reside above three thousand persons, of whom about a third are maintained out of the funds of the colleges; and many, under the character of masters, fellows, and other functionaries, enjoy liberal incomes. Oxford, like Cambridge, improves its students rather by private tutorship, with strict and impartial public examination, than by lectureships; for though these are numerous on the foundation, they have fallen into desuetude, with the exception of a few, which have of late been revived with success.

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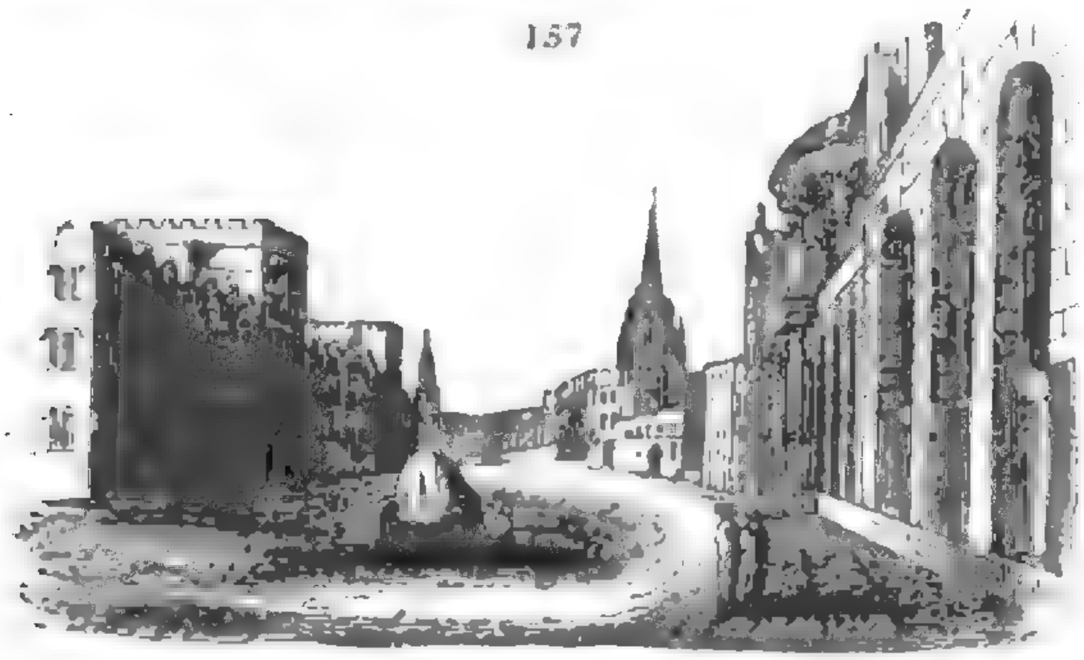

HIGH STREET, OXFORD.

1797. *Oxford is richly endowed: it possesses the Bodleian Library,* which was the most extensive in England, till that of the British Museum was increased by the library of his majesty George III. It was founded by the bequest of Sir Thomas Bodley, and enriched by subsequent donations, particularly that made by Mr. Gough of his immense collection of British topography. It has also a right to claim a copy of every new book entered at Stationers' Hall. The volumes are commodiously contained in a spacious apartment, and, as our experience can testify, the freest admission and most liberal aid are afforded to the literary enquirer. In the spacious quadrangle which contains this library are also the public schools; a large gallery of portraits having reference to the university; the Arundel marbles, well classed and arranged; and the Pomfret statues, which, though much mutilated, present some fine specimens of ancient sculpture. The Radcliffe Library is a lofty and noble rotunda, the finest library room in Oxford; but it labours under a deficiency of books.

1798. *In respect to striking single objects,* we have already observed that Oxford has not quite so many as Cambridge. Christ-church, however, is an ample and venerable edifice, adorned with some fine old painted glass. In an adjoining apartment is the collection of pictures bequeathed by General Guise, which, though of unequal merit, contains some specimens of unquestioned excellence. New College chapel attracts admiration by its fine series of paintings on glass, executed by Jervis, after the designs of Sir Joshua Reynolds. All-Souls College, likewise Magdalen College, and Queen's College (of recent erection), display architectural beauties of no common order.

1799. *Among the other towns of this extensive district,* Woodstock has a gay aspect, and really interesting features in English history and romance, to which it adds the solid benefit of a large manufacture of leather gloves. Buckingham, Stony Stratford, Towcester, and Daventry are small antique towns, the last three chiefly supported by their situation on the high road from London to the north-west of England. The streets of Stony Stratford have a very bad reputation for their rugged and dangerous character, which the utmost endeavours of the parliamentary commissioners have not thoroughly cured. Newport Pagnell, in Bucks, forms a sort of centre of the lace trade. Bedford carries on some manufactures of this description; and being situated in a rich valley, watered by the Ouse, has a considerable stir in transmitting its produce. The smaller towns of Woburn, Ampthill, and Luton depend chiefly on the fine seats adjoining to them; but the industry of Dunstable is at once attested by the straw hats which bear its name. Hertford is a small provincial capital, now chiefly remarkable for the college which the East India Company have founded, on a very liberal scale, for the education of the civil servants whom they send abroad; but St. Alban's is a town venerable for its antiquity, containing a cathedral of early renown, and ornamented during successive ages. Northampton, a place of considerable name in English history, is still a well-built town on the Nen, with a market-place which has been reckoned the finest in the kingdom. It has a manufactory of boots and shoes for exportation, and of lace. It is a great centre of the inland travelling between London and the north; and the trade in horses has always been carried on in great fairs at this place. Leicester is a still more important provincial capital. It is a place of note in English history, and attests its ancient importance by some fine old churches; but it had fallen into considerable decay, till it was revived by the prosperity of the surrounding country, chiefly in consequence of the introduction of new breeds of stock into fine pastures. This was mainly the work of Mr. Bakewell, who changed the large-boned, disgustingly fat, and coarse-woolled sheep, for a breed displaying the opposite of all these bad qualities. The horses and hogs of Leicestershire have also a high reputation; and great quantities of the best cheese are brought to its markets. The city of Leicester has also a large fabric of woollen stockings, in which it is only excelled by Nottingham, and which, under favourable circumstances, employs seven or eight thousand persons. Oakham, the capital of Rutlandshire, is a very small town; Rockingham still smaller, but having contiguous to it the remains of a very strong castle, erected by William the Conqueror.

1800. *The seats in this extensive district*, though not so thickly planted as in the southern, are yet numerous, and several may aspire to the rank of palaces. Foremost stands Blenheim, (*fig.* 158.) that proud monument of a nation's gratitude to its long unrivalled hero. Yet, though no cost was spared, taste criticises the edifice, in its external aspect, as displaying that minuteness of detail and general heaviness, which characterise the designs of Vanbrugh, the fashionable architect of that age. Some of the apartments, however, are of almost unequalled grandeur; particularly the great hall, fifty-three feet by forty-four, and sixty high, (though Mr. Young thinks this altitude somewhat disproportioned); and the library, one hundred and eighty feet by forty-three. The woods, also, the lake, and the general disposition of the grounds, are greatly admired. The gallery of pictures is one of the very finest in the kingdom, containing some of the best works of Rubens, Vandyke, and Titian. Stowe, the seat of the Duke of Buckingham, is celebrated as the most elaborate and splendid example of the species of gardening called classical; in which the trim alleys, clipped hedges, and trees fantastically cut into the forms of men and animals were abandoned, and an attempt was made to present nature herself in an ornamented form. Her own proper ornaments, of wood, water, hill and plain, are heightened by the introduction of temples, ruins, statues, inscriptions, and other objects calculated to excite lofty and poetical ideas. A more refined modern taste has rejected many of these accessories, as breaking in upon the idea of simple nature, to which it seeks to make the nearest possible approach; yet, a space of four hundred acres, filled with groves, temples, and meandering streams, must present many beautiful sites. "The rich landscapes," says Walpole, "occasioned by the multiplicity of temples and obelisks, and various pictures that present themselves as we shift our situation; occasion surprise and pleasure, sometimes recalling Albano's landscapes to our mind, and oftener to our fancy the idolatrous and luxurious vales of Daphne and Tempe." The house also is handsome and richly ornamented, and contains some fine paintings. Woburn Abbey, where the house of Russel, by princely shows and festivals, have thrown a new lustre on British agriculture, is a magnificent edifice. The stables, experimental farm, and other appendages of the most useful of arts, excite the admiration of every farmer and even amateur; nor is this residence deficient in the lighter embellishments of painting and statuary. Althorp, near Northampton, where the black-letter sages held their festival, is adorned with many rare and valuable works of art; but it is in London chiefly that Earl Spencer keeps his library, the first in the kingdom. Opposite to Stamford is Burleigh, a noble old residence of Cecil, Elizabeth's minister. It contains a fine library of books and manuscripts; and the Exeter family have enriched it with a collection of paintings, generally supposed to be the most extensive in England. They are chiefly of the Italian school, and illustrate the beauties of its greatest masters; and if too many are by artists of a modern and even secondary class, even these, being fine specimens, are not without their value. Twelve miles west, near Oakham, is another Burleigh *on the hill*, a Doric mansion, one of the finest in England, and once the seat of the gay revels of Buckingham. It has a noble terrace in front, and contains a good library, with some curious paintings. At Ampthill Park, the collection of portraits is interesting. In Hertfordshire, Cashiobury Park, and Nuneham Wimpole are fine seats, well adorned with works of art; and the same may be said of Luton Hoo, in Bedfordshire. On the border of Leicestershire, and half claimed by Lincolnshire, stands the Duke of Rutland's proud castellated edifice of Belvoir. From a lofty height, it overlooks a vast extent of country, including the vale of the same name, one of the richest and most beautiful in England. The collection of paintings, made chiefly by a late duke, is of great value, including a series of the Seven Sacraments by Poussin.

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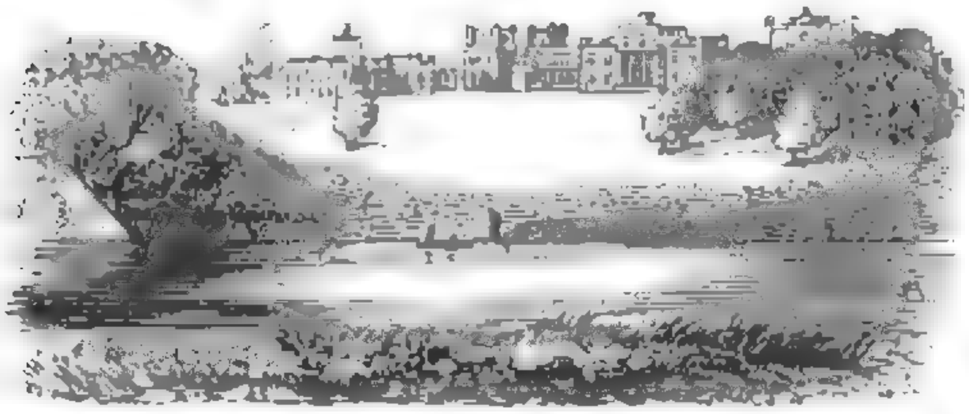

Blenheim.

1801. *Four counties, those of Warwick, Stafford, Derby, and Nottingham*, border on the north this great midland region; but all these possess striking and peculiar features, which will require a special notice.

1802. *Warwick* is a noble county. Its woodlands, the remains of the wide ancient forest of Arden, are still extensive, and a great part lies in fine natural grass. The extensive plains are so diversified by hills and rivers as to improve the picturesque aspect of the country, and harmonise with the grand objects of art which it contains. Pasturage predominates greatly over agriculture, occupying nearly two thirds.

1803. *Of the towns*, the first in rank is *Warwick*, ancient and well built, and still preserving a portion of its prosperity by the manufacture of woollens. It has some good buildings ancient and modern; and its chief ornament is the castle, of which a description will elsewhere be found. Of much greater importance is *Coventry*, a large old town, built very irregularly without rule or line, and many of the houses exhibiting the uncouth architecture of a distant period. Its ecclesiastical monuments, however, are of importance. Of the three churches, Trinity, St. John's, and St. Michael's, the last, the only one which displays much beauty, is a very light and elegant structure. At some points, however, where all the three are seen, forming a continuous line of vast extent, the effect is extremely grand. The spire rises to three hundred feet; a perpendicular height which is almost sublime. Coventry has not slumbered on its antique distinctions. The fabric of silk, introduced more than a century ago by the French refugees, has made most rapid progress, so that in 1819 it employed 2819 looms. In the making of watches, also, this city now rivals London. *Leamington*, though its spa is mentioned by Camden, never became a scene of crowded resort, till the beginning of this century; yet so great since that period has been its attraction, that it has risen from a mere village to be a flourishing place. There are both hot and cold baths; and the waters are used either for drinking or bathing. Leamington now possesses, on a handsome scale, baths, inns, a theatre, an assembly-room, — all the accommodation for the sick and the gay. *Stratford* is a considerable town on the Avon, to which the deathless muse has given a name that may proudly vie with any other in England. It is the undoubted birthplace of Shakspeare, the unrivalled master of the English drama. Many things are shown as memorials of the bard, which the severe antiquary may suspect as apocryphal; but the poetical pilgrim is sure that he beholds the genuine tomb of the poet, and the site of the house chosen by him for his final residence; though the house itself a barbarous hand has demolished. He sees the early scenery on which the eye of Shakspeare dwelt, and which without any bold features presents an agreeable variety; while the vicinity of the castles of Warwick and Kenilworth, displaying feudal life in all its grandeur, must have wonderfully opened the mind of the youthful bard. Birmingham is in Warwickshire, according to the record; but as its actual position is clearly that of the capital of the iron country, which is almost wholly in Staffordshire, we propose, though against law and statute, to class it with the great towns devoted to the working of that material.

1804. *There are two castellated seats* in this county, Kenilworth and Warwick, both of almost matchless grandeur; but the former presents only the picturesque and antique remains of its pristine state (*fig.* 159.). Founded in the reign of Henry I., it was chiefly extended and adorned by John of Gaunt; and remained with the princes of the house of Lancaster till wrested from them by the triumph of the house of York. It continued thenceforth a royal appanage; and was bestowed by Elizabeth on her handsome favourite, Leicester, whose residence here, and the splendid fêtes and romantic incidents connected with it, have been so happily worked up by the greatest romance writer of the age. At the close of the civil wars, it was given up wholly by Cromwell to his soldiers for plunder; a destination consummated with such eagerness, and so combined with that love of wanton destruction in which vulgar minds delight, that Kenilworth was reduced to the totally fallen state in which it now appears. The walls are indeed entire, but completely naked, and every where roofless; and the visiter who stands at the interior foot of the tower can trace only by chimneys, and other slight marks, the successive apartments rising above each other till they are terminated by the dome of the sky. Seated on an eminence, and exhibiting in solemn profusion mouldering walls, dismantled towers, shattered staircases, and broken battlements; the endless apartments, the grandeur of some, the studied concealment of others, — the wilderness of galleries,—staircases in every direction,—cells built in the solid wall,—dungeons impervious to the light of day,—caverns and confessionals,—ramparts, turrets, and buttresses, — cause it to exhibit traces of all that is most magnificent, as well as awful and mysterious, in the castles of the feudal age. This stupendous pile is now abandoned to total neglect; and when the present writer visited it, hogs were wallowing in the mire, in the court of this once almost regal seat of Lancaster and Dudley. Kenilworth exhibits the feudal age in its total downfall; but the traveller has only to proceed a few miles in order to see it entire and in full glory. This is in the proud mansion once inhabited by the king-making Earl of Warwick (*fig.* 160.). In the reign of Edward the Confessor, this castle was a fortress of the crown; but having been demolished in the course of civil contests, its present existence is due to Thomas Beauchamp, Earl of Warwick, who, in the fourteenth century, distinguished himself at the battles of Cressy and Poitiers. It remained in the hands of that powerful house till the reign of Edward IV., who seized an opportunity of annexing it to the crown. It was afterwards bestowed by King James on Lord Brooke, who spent a large sum in restoring it from a state of decay; and when it had again suffered from time, Francis, the late earl, repaired it so judiciously, and made even his additions in such harmony with the original pile, that he may be considered almost the creator of the edifice in its present state. It is scarcely possible to give to those who have not seen it an idea of this range of mighty clustering towers, their walls richly mantled with ivy, and overlooking a perpendicular rock which rises from the Avon; while vast woods embosom it on every other side. The entrance, cut through a rock, and opening at once on three of the loftiest towers, has an effect truly striking. The interior is equally grand and interesting. First is a passage or corridor upwards of 300 feet in extent, seen from end to end, and along which the state apartments are arranged. The grand hall, 62 feet long, is wainscotted with oak, hung with armour, and maintained in full feudal keeping. There are many fine pictures; but, perhaps, the best productions of the mimic art scarcely produce their due impression, on first view at least, in the presence of such mighty realities of nature and art.

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KENILWORTH CASTLE.

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WARWICK CASTLE.

1805. *Staffordshire* has a somewhat bleak and uninviting aspect. A great part of its eastern surface is composed of moorland hills, some of them above a thousand feet high, and affording only scanty pasturage; yet, as these hills give rise to the Trent, and to numerous smaller rivers which feed the great canals, they are highly serviceable to British inland commerce. Of the cultivated part of the county, the greater part is arable, though there are rich pastures along the rivers; but, on the whole, the farms are smaller, and improvements less advanced, than in the other midland counties. Other sources of wealth, opened within the last fifty years, appear to have, in a great measure, absorbed attention: its mineral stores are immense. The region of coal is supposed to be about 50,000 acres in extent, and cannot be exhausted for ages. Besides its economical uses, this mineral is the main basis of the works and manufactures of the county, and of all those in the north-west of England, which, but for this ample supply of fuel, could never have attained their present astonishing height. Iron, the most useful of metals, exists in equal abundance; and since the discovery that it could be worked with coke, iron works have been established on an immense scale. The whole district from Wolverhampton to Birmingham may be called a Cyclopean land, where furnaces without number are continually pouring out fire and smoke. Even in the darkest night, the flames are visible in the distance, and the horizon appears in a glow. Staffordshire is also traversed by limestone rocks, some of which approach to the quality of marble. The clays are more valuable, as they afford the material of the pottery, which forms the other great Staffordshire manufacture. It is long since some coarse vessels were made at Burslem; where, in the course of last century, some improvements in the art of pottery were made. But it was Mr. Wedgwood who, by a series of happy inventions, raised this fabric at once to the highest perfection, and rendered it an object of national importance. Not content with the native materials, he imported the finest white clays and best flints from the southern counties; and formed that variety of articles called Wedgwood's ware, applicable to all purposes of use and ornament, and superior in some respects to the best porcelain. Hence has sprung up a range of villages forming a district called the Potteries, of which Burslem is the centre, and which contain about 60,000 inhabitants.

1806. *The principal cluster of large towns in Staffordshire* consists of those in the southern quarter which are employed in making iron, and manufacturing it into various forms. Of this district Birmingham is undoubtedly the capital; and we therefore reserved for this place the description of that great emporium of British industry.

1807. *Birmingham* is named in history so early as the reign of Alfred; and at the remotest periods iron is mentioned as its staple. In the time of the civil wars, it naturally took part with the parliament against the king; and was besieged and taken by Prince Rupert. The Restoration, though not a welcome event to Birmingham, gave a beginning to her prosperity, by the market which it afforded to the toys and ornamental articles for which it became more and more noted. But the grand impulse given was early in the last century, when John Taylor Esq., the founder of the wealthy family of that name, Matthew Boulton Esq., and other individuals, by the magnificence and spirit of their undertakings, and by their liberal patronage of skill and ingenuity in every line, contributed greatly to the establishment of the manufacturing fame of the town. Mr. Boulton, having secured the celebrated Mr. Watt, established, in conjunction with him, at Soho, near Birmingham, their immense manufactory, in which talent, science, capital, experience, united every thing which could raise hardware articles to perfection. Pre-eminent above all is the steam-engine, which Mr. Watt, its great improver, not only applied to the use of his works here, but constructed for the rest of England. The copper coinage executed at Soho by steam power for the use of government has been greatly admired. Under the impulse of such an example, the citizens of Birmingham soon produced their standard articles of a cheapness and excellence which defied all competition.

The articles manufactured in Birmingham consist, in a great measure, of such as, individually, appear unworthy of being named, yet astonish and dazzle by their magnitude, when half the world is to be supplied with them; such as pins, buttons, nails, paper trays, filigree, and toys. The buckle manufacture, now almost extinct, was the source of employment to many hundreds during the latter half of the century. There are not wanting, however, fabrics of greater magnitude, taken even singly, such as that of fire-arms, &c. During the last war, the gunsmiths of Birmingham met the demand with such energy, that, on one occasion, they delivered to government 14,000 muskets in a week. Of ponderous machinery, none, perhaps, is more interesting than that of the metal rolling-mills. Birmingham, at least that largest part which is new, is fairly and commodiously built, with suitable churches and other edifices, but without any thing prominent in architecture, or any antique monuments. The town can boast of enlightened citizens, under whose auspices letters and the arts have been cultivated with ardour. The institutions for the education of the poor are not, perhaps, surpassed by any in the kingdom for extent and efficacy. Like all other great seats of manufacture, the place has suffered deeply by the changes from war to peace, and by the many recent vicissitudes; yet the conduct of its citizens has been generally good.

1808. *The other great manufacturing towns*, almost all in Staffordshire, are, *Wolverhampton*, a very populous place, of considerable antiquity, with a very fine old church; but indebted for its present greatness to the making of locks and keys in a manner superior to any town in the world. *Wednesbury* must be still more ancient, if it derives its name from Woden: it has a very fine old Gothic church; but its main boast at present is, the making all the hard materials of coach harness in an unrivalled manner. *Walsall* flourishes by the making of every thing connected with saddlery; *Dudley* by its nails: but it has also a castle of some note in history, commanding a view of seven counties, and seated on vast excavated limestone rocks. *Bilston*, in the very centre of the coal and iron mines, is busily employed in the exportation of their produce.

1809. *The nominal capital*, *Stafford*, is yet to be noticed; an ancient but small town, of neat appearance, ornamented with the usual county buildings. The Grand Trunk Canal, however, passing by it, has given an impulse to its industry; and it carries on a considerable manufacture of boots and shoes. Newcastle-under-Lyne, and Tamworth, are both considerable towns on one of the great London roads.

1810. *Lichfield* is a more elegant and interesting place. Its most prominent object is the cathedral, of high antiquity, the finest part of which was built in 1140, by Roger Clinton; some particular portions have been pronounced equal to any thing of the kind in Britain, or even in Europe: such are the portico, richly adorned with sculpture; the choir; and St. Mary's chapel. It contains also the monuments of eminent characters belonging to Lichfield. The society fixed there by this richly endowed establishment, together with the neatness of the town, and its pleasant situation, have induced many of the gentry in this quarter to make it their residence. These circumstances may have contributed to give to Lichfield that intellectual character which is so conspicuous, and has made it almost the literary metropolis of south-western England. The birth and early education of Johnson and Garrick are alone sufficient to immortalise it. More recently, Miss Seward and her friends have zealously cultivated letters and poetry; and Dr. Darwin may, perhaps, be considered as a member of the same school. Lichfield enjoys high privileges as a city, having a district of some extent round it considered a county of itself. It has some small manufactures of sheeting and sail-cloth.

1811. *Seats* are not particularly numerous in Staffordshire. Trentham Park is a noble mansion of the Marquess of Stafford, where the family portraits are preserved. Leighton Beau Desert, the seat of the Marquess of Anglesey. Etruria, erected by Mr. Wedgwood, has been rendered classic and splendid, even amid the smoke of the surrounding manufactures.

1812. *Derbyshire*, in its natural features, is perhaps the most remarkable of any county of England. Except in the lower and southern districts on the Trent, the whole county is traversed by ranges of rugged and rocky hills, penetrated by vast excavations, and separated by narrow valleys. In these bleak and high districts, an inferior agriculture is necessarily practised. Oats are the chief grain; and the sheep and cattle are often diminutive. Lead is abundant and characteristic, occurring chiefly in the form of galena, with a very small admixture of silver. Iron is also worked very plentifully. This county is also celebrated for the variety and beauty of its calcareous substances, particularly the kind called Blue John (fluor spar), which, by the skilful application of a gentle heat, is made to exhibit the most brilliant colours. Lastly, there are numerous hot springs variously impregnated; and the county contains two of the most remarkable watering-places in the kingdom, Matlock and Buxton.

1813. *The scenery and the wonders of Derbyshire* have attracted much attention. The north-eastern quarter, in particular, called the "High Peak," exhibits an aspect altogether peculiar. In proceeding to Castleton, the traveller passes through the Winyats, or gates of the winds, a narrow road of about a mile in length, between precipices a thousand feet high, dark, rugged, and perpendicular. At the end of this road opens on one side Mam Tor, or the Shivering Mountain, 1300 feet high, shattered, and precipitous; on the other the High Peak itself crowned with the ruins of a Saxon fortress; and at its foot, the wonder of wonders "the Peak Cavern" (*fig.* 161.). This is a huge gulf, 42 ft. high and 120 long, at the foot of perpendicular cliffs of amazing height. Gilpin considers it as the only cavern which can be called sublime, most others resembling mere holes. The visiter is thence guided through a succession of dark cavernous apartments, and is ferried along a subterraneous river; above which the rocks rise so close, that he must lie flat on his face. At the end of somewhat above 2000 feet the cavern terminates, or, at least, becomes no longer passable. Elden Hole is an object of a still more awful character. It is a fissure near Buxton, which descends perpendicularly to an unknown depth. A line of 2652 feet has been let down without finding a bottom. Repeated suspicions having arisen of persons murdered by being thrown into this hole, two daring parties caused themselves to be let down; but at the depth of 1000 feet the lights expired, and they were obliged to return. Poole's Hole, near Buxton, is chiefly remarkable for the large masses of stalactite, and other petrifactions with which it is filled.

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PEAK CAVERN, DERBYSHIRE.

1814. *On descending into the Low Peak*, a milder grandeur presents itself. The most rugged chains of Derbyshire are interspersed with beautiful valleys; but none equals that of Matlock, where the banks of the Derwent are bordered by extensive woods, interspersed with the boldest and most varied forms of rock. Dovedale (*fig.* 162.) is a wilder scene, where the river Dove is hemmed in by perpendicular rocks, of forms so bold, and covered with such variety of trees and shrubs, that this has sometimes been deemed the most picturesque spot in England.

1815. *Derby*, the fine capital of this county, has scarcely any thing in common with the other parts. It is watered by the Derwent, now descended from its mountain career, and peacefully flowing to join the Trent, in the broad plain of central England. This town is handsome and well built, without any architectural monuments of the first class: it has extensive and elegant manufactures. Silk, introduced at the commencement of the last century, has continued to flourish; and the silk mill of Derby was considered quite astonishing, till it was surpassed by the machinery of the cotton manufacture. In the principal establishment, a single water-wheel produces upwards of 100,000 different movements, by which the silk is converted from the skein, or raw state, to a form fit for the weaver. Porcelain is also manufactured here; and what is called its white ware is considered almost unrivalled. A considerable number of workmen are employed in cutting and polishing marble; and the Derbyshire spar is fashioned into a variety of beautiful forms by a machine, the varied movements of which are produced by one water-wheel.

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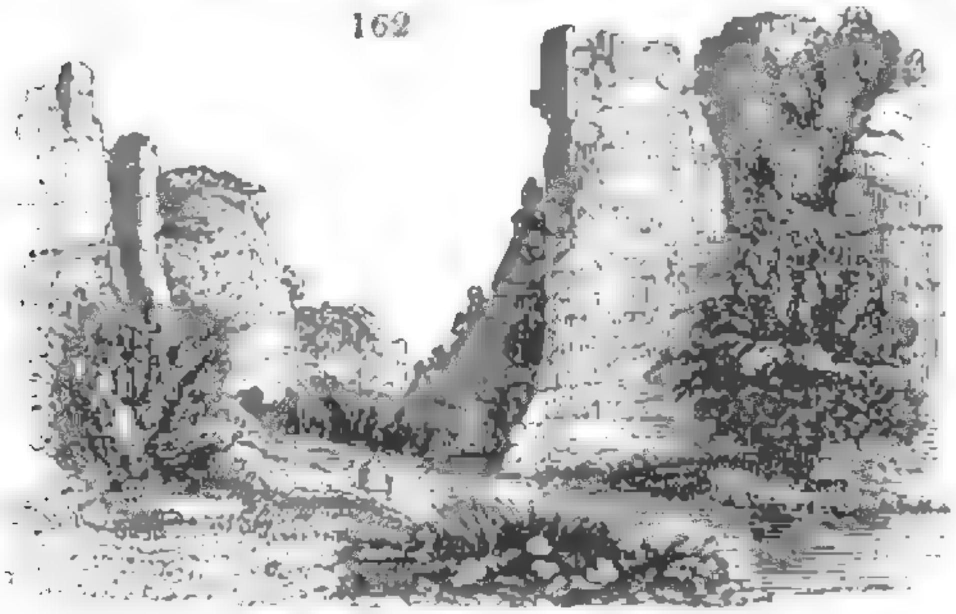

DOVEDALE.

1816. *The watering-places* in Derbyshire have the next real claim to notice. Matlock contains mineral springs, somewhat similar to those of Bristol, and reckoned efficacious in consumptive and rheumatic complaints. The accommodations are good and cheap; and the scenery, as already described, beautiful. Buxton, in the High Peak, surrounded by naked mountains, attracts a much greater multitude; and its waters are considered very powerful in rheumatism, gout, and other diseases. The Duke of Devonshire has here constructed a most superb crescent, occupied by inns, shops, ball-rooms, and every thing that can contribute to the accommodation and gaiety of the visitants.

1817. *Other towns.* Chesterfield is neat and respectable, participating in the trade of Yorkshire, on which it borders. Belper is a considerable town; and Cromford, a thriving village, in which Sir Richard Arkwright first applied his wonderful inventions, to be employed on the great scale in a different quarter. Ashbourne is a tolerable town, whence travellers visit Dovedale; Castleton and Tideswell are villages in the High Peak, supported by the mining employment.

1818. *Of seats*, Chatsworth has sometimes been considered the finest in England. It was built by William first duke of Devonshire, in 1702; and is 191 feet square, of the Ionic order, richly ornamented both within and without. There are curious water-works, but in a style now considered antiquated. Formerly it was not distinguished by works of art; but the present duke, after making considerable additions, has both enlarged the mansion, and, we understand, deposited in it a pretty extensive collection of antiquities. It has been almost eclipsed by Keddlestone House, whose fine Doric front, 360 feet long, by Adams, is considered one of the finest architectural features in England. Within are some very fine paintings. Sir Richard Arkwright built a fine modern seat near Cromford. Hardwicke Hall is viewed with emotion, as long the residence of the unfortunate Mary; the furniture and the portraits remain, in many respects, in the same state as during her residence.

1819. *Nottingham*, the last of these limitary counties, is likewise fine and extensive. The southern portion is watered by the broad stream of the Trent, its tributaries, and numerous canals. The Vale of Belvoir, to the south-east, ranks with the richest tracts in the island. The north-western part, on the contrary, contains the remnant of the great forest of Sherwood, famed for the revelries of the merry outlaw Robin Hood. Being covered, also, in a great measure, with the ornamented grounds of noblemen of high rank, it is called the "dukeries." There is coal only upon the Derbyshire border. The manufactures of hosiery in this county, Leicester, and Derby, employ, according to Mr. Falkin, 33,000 frames and 73,000 operatives, producing in cotton 880,000*l.*, worsted 870,000*l.*, silk 241,000*l.* The lace trade has become of vast importance, employing, it is said, 150,000 embroiderers in this county.

1820. *Nottingham* is a large town, boldly and picturesquely situated upon the Trent. Its streets are arranged along the face of a hill so steep, that the ground floors of the street behind, in some instances, rise higher than the roofs of those in front. The rocky materials of this hill are so soft and yielding, that they are cut to a great extent into cellars and warehouses. The castle of Nottingham, once of great strength, was demolished by Charles II.; and its churches suffered during the civil wars. The making of stockings, now of various materials, has always been the staple of Nottingham. They are worked on frames, which, in the middle of last century, scarcely exceeded 1200, and at present amount to 10,000. The lace trade recently added is of very great importance. There are stated to be 1240 machines in the town, and 1070 in the neighbourhood; and the lace sold in its market is valued at 130,000*l.* Nottingham has also a great inland trade by the Trent and canals connected with it.

1821. *There are few other large towns.* Newark is renowned in history for its castle, founded by King Stephen, still venerable in ruin; and for a parish church, said to be the finest in the kingdom, almost meriting the rank of a cathedral. *Mansfield*, on a small scale, has the same manufactures as Nottingham. *Worksop* may be called the capital of the dukeries: it is a pleasant little town, with a very fine old abbey church.

1822. *Nottinghamshire may boast some splendid seats*, particularly those around Worksop. Worksop Manor, built but half a century ago by the Duke of Norfolk, contains fine portraits of the Howard family. Clumber Park, nearly of the same date, is fitted up in a magnificent style by the Duke of Newcastle, with a very valuable collection of pictures. Welbeck Abbey, a seat of the Duke of Portland, is noted for its fine stables. Thoresby Manor has extensive and beautiful grounds. In all these, and particularly the last, are found interesting and decaying remains of the trees of Sherwood. Newstead Abbey had been stripped of its fine furniture and paintings before it came to the late Lord Byron, by whom it was sold.

Subsect. 4. *The Northern Counties.*

1823. *The northern counties of England* may be described, generally, as reaching from the Humber and the Mersey to the Scottish border. They include the wide extent of *Yorkshire*, divided into three ridings, and of *Lancashire, Durham, Northumberland, Cumberland*, and *Westmoreland*. They form almost an outer kingdom, powerfully influencing, however, the destiny of the rest. During the stormy age of border contest, when every hour might bring in the tide of invasion, the lords or wardens of the marches were necessarily invested with high powers to summon their vassals and neighbours. Accustomed to command troops thus inured to battle, they acted powerfully upon the civil contests in the south; and, in the list of those who braved our early sovereigns, the names of Northumberland and Westmoreland often stand foremost. Again, at the commencement of the civil wars, this part of the kingdom, destitute as yet of manufacturing cities and thriving burghers, rejected as odious their popular innovations. When the king repaired to York, all the pure and untainted gentry of the north ranged themselves round his standard, and rendered him for some time superior in the field. Strange revolution! Not two centuries have elapsed, and this rude portion of the kingdom has, in wealth, arts, and the immense products of its manufacturing industry, nearly eclipsed those fairer southern portions, by which it was then considered as semi-barbarous.

1824. *Northern England may be divided into three portions;* the eastern, containing pretty extensive fertile valleys on the coast and rivers, but interspersed with large bleak tracts of mountain, moss, and moor. Its ports, on the eastern coast, carry on a thriving trade in coarse, bulky, and useful commodities. The south-western, comprising Lancashire and the west riding of Yorkshire, is the district which, by the vast produce of its manufactories, leaves far behind it every other, not only in England, but in the whole world. Lastly, there is the north-western, Cumberland and Westmoreland, or the country of the Lakes, to which Nature, having denied wealth, has granted a higher degree of beauty than any other part of England.

1825. *The counties of Northumberland and Durham* are of the first rank. The whole of their interior is very hilly and elevated; that of Durham, indeed, along the upper courses of the Tees and Wear, rises into mountains. The fall of the Tees presents a cascade on a grander scale than almost any other in the kingdom. The interior of Northumberland consists chiefly of moors and bleak hills. It contains, however, large improvable tracts, of which the Northumberland farmers have happily availed themselves, by introducing all the most improved processes, and the best breeds of cattle, so as to render the district almost a school of agriculture. A breed of black-faced sheep, of the most delicate flavour, is bred on the fine mountain pastures of the Cheviot The chief wealth of both counties, however, is subterraneous. A species of coarse coal, mixed with lead, every where abounds; and the lead is exported to the extent of from five to ten thousand tons. But within this mineral region there is enclosed a smaller one, reaching from the mouth of the Coquet to the Tees, a length of about fifty miles, and having its greatest breadth of about twenty miles upon the Tyne. Within this tract are found uninterrupted beds of that valuable coal with which London is wholly supplied, and of which great quantities are either sent to other parts of the kingdom, or exported.

1826. *Newcastle* was famed at an early period in the military annals of England. It formed a leading point in the wall of Hadrian and in that of Severus. Robert, son of the Conqueror, built here a castle of immense strength, more than two miles in circuit, which served long as the main bulwark against Scottish invasion. Scarcely a trace of it now remains; and the occupations of Newcastle are entirely changed. Both banks of the river, down to Tynemouth, form an immense wharf, to which, by railways and steam waggons, coals are conveyed from the contiguous pits. In 1830, the quantity exported was 867,513 chaldrons, about 2,300,000 tons. Newcastle carries on very extensive manufactures, particularly that of glass. There are thirty-one works on the Tyne, which in some years have produced glass to the value of 500,000*l.* In shipping it is second only to London, having belonging to it, in 1832, 1077 vessels, of the burthen of 220,784 tons. Foundery, pottery, weaving, are not on a very great scale. Newcastle is now, on the whole, a well-built town, though some of the streets are inconveniently steep: it is highly ornamented by the spire of St. Nicholas, considered by the best judges as one of the finest specimens of the Gothic. It possesses a literary society, which has published valuable transactions; and an antiquarian society, destined particularly to receive the Roman coins, &c. which are frequently dug up on this line. The large town of Gateshead, on the opposite side of the river, though placed in Durham, is really part of Newcastle, and raises its population to 57,000.

1827. *A continued range of great commercial towns* cluster thick around Newcastle. Near the mouth of the Tyne are North Shields and South Shields, on opposite sides of the river; the latter being in the county of Durham. They carry on with activity the coal trade, and the others proper to Newcastle; particularly ship-building and the making of ropes and sails. Tynemouth, at the immediate opening of the river into the ocean, displays, on a bold promontory, a castle, a light-house, and a fine old abbey; they form a striking and romantic scene, which contrasts with those immediately above. At the mouth of the Wear, only seven or eight miles south of that of the Tyne, are Sunderland and Wearmouth,—the one a very great, and the other a considerable, port. Their prosperity is supported by the same great trade of coals, of which in 1832 they sent 600,000 tons to the port of London, two thirds of that which comes down the Tyne. They carry on also the same manufactures, particularly ship-building, in which Sunderland is supposed to exert a greater activity than any other place in the kingdom. The bridge there has long been celebrated: it consists of one arch of iron framework thrown across the river, 200 feet span, and 100 feet high, allowing very large vessels to pass under without lowering their sails. "Nothing," says M. Dupin, "can be more striking than this view of the two cities, and the bridge that unites them; that majestic arch drawn against the sky, which allows large vessels to pass under its vault with their sails flying." He afterwards adds, in regard to these ports generally: "It is an admirable thing, within an extent of coast which a man may walk over on foot in three or four hours, to see two great rivers receive 16,000 vessels, and send them away loaded with the produce of their banks. On the same narrow space are six flourishing towns, containing a population of 85,927 persons, all devoted to commerce and industry."

1828. *Durham*, amid these busy scenes, stands isolated, in grave ecclesiastical dignity. It is handsomely built, though on very uneven ground; but its grand ornament is the cathedral, reared in the eleventh century, which, though yielding to some in extent and beauty, is perhaps unrivalled as to its grand situation, ranging along the summit of a precipitous rock eighty feet high above the Wear, which winds along its base. The see of Durham is deemed the richest in England; and the cathedral, besides a dean, twelve prebendaries, and two archdeacons, has attached to it about sixty spiritual servants of various ranks.

1829. *The number of smaller towns* in those counties is still considerable. In Durham, Stockton near the mouth of the Tees carries on the trade of that river; in 1832 it carried 173,000 tons of coal to London, and has also the Baltic trade, and the manufacture of sailcloth and other naval materials. It is described as a very neat, pretty town, with some refined society, and even literary cultivation. Darlington is a neat inland town, with a fabric of linen and some other small manufactures. Hexham, on the Upper Tyne, is the capital of interior Northumberland, and of the grand ancient scene of border debate. Accordingly the whole neighbourhood is filled with ruined castles, warlike monuments, and spots commemorated in tales of feudal contest. Many Roman antiquities are also found there on the line of the Roman wall. Forgetting these scenes of conflict and greatness, the people of Hexham wisely occupy themselves in the manufacture of boots, shoes, and gloves. Alnwick is important only by its castle. Morpeth has a most extensive weekly market for the cattle brought up from Scotland.

1830. *The seats* are chiefly great baronial castles, at the head of which stands Alnwick (*fig.* 163.). This proud keep of the Percies, when kings trembled at their name, appears to have been a Roman station; but figures first in history under Rufus, when Malcolm III. of Scotland lost his life in attempting to storm it. It covers five acres, and is defended by sixteen towers, rudely adorned by representations cut in stone, of warriors fighting in various attitudes. An expense of 200,000*l.* has been incurred in converting the interior from a feudal castle into the most splendid of modern mansions. The chapel, in particular, presents a most brilliant picture of Gothic decoration; having been copied from what was considered most beautiful in York and other cathedrals. Warkworth Castle, another great seat of the Percies, retains its antique character, and is rendered very interesting by the beautiful hermitage in its neighbourhood. Near Durham, Lumley, the feudal castle of the Earls of Scarborough, presents entire its august and formidable front. Raby Castle, Howick, Lambton Hall, and Bishop Auckland, are all fine and highly ornamented seats.

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ALNWICK CASTLE.

1831. *Yorkshire* is next in order: its eastern division resembles the two counties just described; while the western forms part of the great central seat of English manufacture. Amid all its varieties, this great county is considered as decidedly one, and forms, as it were, a kingdom by itself. Yorkshire is supposed to have feelings and interests independent of those which it shares with the rest of England. Its accent and dialect are peculiar. The Yorkshireman has a character of his own, marked by shrewdness, simplicity, good humour, and a species of drollery; so that the London comic stage is considered incomplete without one of his representatives.

1832. *The three ridings of Yorkshire* must be distinguished in giving a view of its surface. The North Riding, which immediately borders on Durham, consists, to a great extent, of moorlands; the hills of which rise often to a considerable height. These dreary tracts spread over the whole riding, so that culture can exist only in the valleys; as in that of York, of the Ure, the Swale, and, above all, in the fine Vale of Cleveland. The minerals, though considerable in quantity, have not been turned to much account. The East Riding, which extends to the Humber, is traversed also by a range of high wolds, which, though rugged, have not been able to resist the energies of British industry; the trees are even made sometimes to afford shelter to the adjoining grounds. Both these Ridings are maritime, and present to the German Ocean high and often precipitous rocks, of which Flamborough Head, with a perpendicular face nearly 500 feet high, penetrated by deep caverns, echoing the cries of numberless sea birds, forms one of the boldest features in English landscape. The West Riding, much more highly gifted by nature, is composed chiefly of a wide, flat, fertile plain, traversed by the Aire, the Calder, and other navigable rivers, which convey its produce to the eastern, and by means of canals, to the western sea. In this favoured tract, accordingly, is placed the immense manufacturing district of Yorkshire. Yet, that the county may still retain its varied character, it has in its extreme west the district of Craven, the most rugged and mountainous of all England; for here rise Ingleborough, Wharnside, Pennigent, each to the height of nearly three thousand feet. Being composed chiefly, too, of bleak heavy ridges, they possess only in a few points the picturesque character of an alpine region. It may be generally observed, that there is scarcely a county in which the spirit of agricultural improvement has been so active as in Yorkshire; and vast tracts of waste and common land, which were deplored by Mr. Young in 1770, are now reclaimed and rendered productive. This is particularly the case in regard to the East Riding, which formerly grew only barley and oats, but now produces a surplus of wheat for exportation.

1833. *The flourishing ports of Yorkshire* are chiefly engaged in the Baltic trade, shipbuilding, and the whale fishery. *Hull*, the principal one, ranked during the civil wars as a most important fortress; but its walls are now demolished, and its present distinction is, as the fourth commercial city in England, only surpassed by London, Liverpool, and Bristol. It carries on a most extensive export of goods brought by the interior system of rivers and canals. Those by the Aire and Calder alone, from Leeds, Sheffield, &c., have been estimated at 5,000,000*l.* annually. It is the principal of the whale-fishery ports; though this branch has lately declined. During the nine years ending with 1818, the average number of vessels fitted out from Hull for the whale fishery amounted to 53¾; while, in 1830, it sent out only 33. In 1832, it owned 557 ships, carrying 68,892 tons, and there entered its port 1279 vessels of the burden of 192,661 tons, chiefly from Russia, the Hanse towns, the Netherlands, and British America. The merchants of Hull have usefully displayed their spirit by the construction of spacious docks for shipping. The Old Dock, completed in 1778, the Humber Dock in 1809, and the Junction Dock in 1829, contain a space of twenty-three acres. Hull, besides ship-building, carries on manufactures of soap, iron, &c. George Street, Charlotte Street, with other parts of the town, are very handsomely built. *Goole*, on the Ouse, a little above its junction with the Humber, is beginning to share with Hull in the exportation of woollens. Though a few years ago a mere village, and still, in 1831, containing only 1670 inhabitants, it has two spacious docks, and in 1829 the customs exceeded 40,000*l.*, and the declared value of exports amounted to 625,000*l.* Goods sent from Leeds or Wakefield by rivers or canals can reach and be embarked at Goole in the course of twelve hours.

Whitby is a very ancient town, with the remains of a fine abbey built soon after the Conquest. Its modern importance is derived from large mines of alum discovered in its vicinity two centuries ago. The export of their produce forms a considerable trade, to which Whitby soon added the other branches prevalent on this coast, and became second only to Hull.

Scarborough, romantically situated on a promontory between two rocks overlooking the sea, is the chief watering-place of the north of England.

1834. *York*, the capital, is the first object that strikes us as we proceed into the interior of the North and West Ridings. This celebrated city, though so much eclipsed by several that are only of to-day, still boasts a dignity superior to them, and to almost any other in England. Eboracum was a distinguished Roman station; the emperors Hadrian and Severus each resided in it occasionally, and the latter died there. For some time York disputed with London the distinction of being the capital of England; and when obliged to give up this claim, continued the unquestioned metropolis of the north, till the creative powers of trade raised up rivals to it in the north-west. The houses are high, and the streets narrow; yet, altogether, York is a handsome, respectable-looking old city. It boasts one feature of almost unrivalled beauty, — its cathedral. (*fig.* 164.) On the exterior all the richness and elegance of Gothic ornament has been lavished, particularly upon the western front and the large window in the eastern. But the interior is without a rival in the empire; its effect is altogether sublime: it seems almost to rise above the works of art, and to rival the grandeur of nature. The numerous windows of painted glass have here nothing gay and fantastic; but shed that dim, solemn, religious light, which is in full accordance with the character of the edifice. The chapter-house is of singular elegance and magnificence; and, though of great extent, has its roof supported by a single pin. The choir of this splendid edifice suffered severe injury from a fire kindled by the hands of a maniac; but by great exertions has been fully repaired. The small remains of the ruined abbey of St. Mary, and those of several of the twenty-three churches of York, are also deserving notice. There are likewise some elegant modern edifices, particularly the assembly room, designed by the Earl of Burlington, and considered once the finest in England; the county hall, guildhall, the mansion-house, and the museum of the Yorkshire Philosophical Society. York is still a gay town, visited by many of the northern gentry, particularly at the time of its races. It carries on some inland trade by the Ouse, which passes through it.

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YORK CATHEDRAL.

1835. *In this part of Yorkshire are a number of handsome smaller towns.* Beverley is a well-built place, a sort of municipal capital of the East Riding; and sends a good deal of grain to Hull. Doncaster is one of the gayest and pleasantest towns in the North, and much frequented during the time of its races. Pontefract is also pleasant, surrounded by a great extent of garden and nursery ground, the produce of which is sent to a considerable distance. Scarcely a vestige remains of that immense and powerful keep, covering seven acres, in which Thomas of Lancaster, Richard II., and many other fallen chiefs and statesmen, were immured. The parliament, during the civil wars, having taken it after three successive and arduous sieges, caused it to be completely demolished.

1836. *Leeds* is the capital of western Yorkshire, and, in a commercial sense, of the whole county. Although it was of some note even in early times, its present greatness is modern, and of the most rapid growth. The population, which in 1775 was only 17,117, amounted in 1831 to 123,393; being thus nearly quintupled. A peculiar activity and spirit of enterprise has been observed among the manufacturers of Leeds: it was, doubtless, greatly favoured by the vast extent of inland navigation, which seemed to centre here, connecting it with the capital, with both seas, and with the counties to the south, from which it derives inexhaustible supplies of fine coal. The woollen manufacture is not carried on wholly in large towns; the cloth is wrought to a certain state of forwardness in the numerous villages, thence sent into Leeds, where it is purchased and worked up into a saleable state. The cloths thus sent in are sold in weekly markets, which were originally held on the open parapet of the bridge of the Aire, a most disadvantageous situation, exposed to weather and passengers. This inconvenience, after being little improved by the raising of temporary stalls in one of the open streets, was at length fully redressed by the erection of the cloth halls, the most remarkable feature in Leeds. That for mixed cloths was built in 1758, that for white cloth in 1775. They form quadrangular edifices round an open area, and are divided into stands, of which in the first hall are 1800, and in the second 1210. These are let at a moderate rent to the owners of the cloth, who, on the ringing of a bell, occupy their stands, and though the market remains open only an hour, goods to an immense value are often disposed of. Although the staple of Leeds and of Yorkshire be common cloth, yet other branches are in some degree included, as sailcloth, cotton, carpets, and superfine cloths. Mr. Drinkwater states the persons employed in the mills for wool at 5290; worsted, 702; flax, 2434; cotton, 80; silk, 158; in all 8664; of whom 5318 are males, and 3346 females; to which may be added 1814 in the suburb of Holbeck. The town of Leeds is mostly well built, with several broad and spacious streets; and the theatre, the new court-house, and the commercial buildings, finished in 1829, are elegant structures. Kirkstall Abbey, three miles distant, presents, in a beautiful situation, the most complete specimen of the architecture of the 12th century that is extant. Before the late parliamentary commission was instituted, it had only five parish churches. The people of Leeds have shown a laudable anxiety to avoid the reproach of neglecting higher and more refined objects in the pursuit of wealth. They have formed a literary and philosophical society, and an institution for the promotion of the fine arts; for the purposes of which a very handsome and commodious edifice has been erected: meritorious exertions have also been made for the education of the poor.

1837. *Of the other towns of the clothing district*, which cluster round Leeds, *Wakefield* is well built, and beautifully situated on the Calder. It has a fine Gothic church, and a curious bridge, built in the reign of Edward III. It has a cloth market, on a smaller scale, resembling that of Leeds; and, as the surrounding country is equally rich and beautiful, it has also great grain and cattle markets. *Halifax*, and the whole district about twenty miles round it, has been converted from a desert into a populous and prosperous scene, containing altogether 110,000 inhabitants. Its staples are what are properly called stuffs; shalloons, serges, baize, moreens, kerseys; and it has lately embraced a considerable share of the cotton manufacture. Huddersfield is also a very thriving town, employed nearly in the same branches; and its market hall is supposed, next to that of Leeds, to present the greatest show of woollens in the kingdom. Bradford and Keighley are large towns, which carry on to a great extent the manufacture of worsted: besides which, Bradford has great iron founderies in its neighbourhood. In the southern part of this riding, the manufactures of iron and cutlery take place of those of woollen; and flourish to such an extent, that they are second only to the great iron district around Birmingham.

1838. *Sheffield* is the undisputed capital of this district. It appears to have derived early and considerable importance from the fabrication of arms, an article in universal demand during the days of ancient feud. It has, however, reached a much higher degree of greatness since it quitted this deadly trade, and betook itself to the more useful fabrics of knives, forks, razors, snuffers, scissors, combs, buttons, saws, sickles, and various instruments of husbandry. The art of plating goods with silver, introduced in 1758, by Mr. Thomas Hancock, has been carried to a vast extent. The silver is soldered upon the copper; and the articles are wrought by the hand or stamped. The cutlers of Sheffield keep many hundred patterns of knives, of which some are of the value of seven or eight guineas, containing twenty-eight blades within the handle; while others, after passing through a multitude of different hands, are sold for a penny each. The rapid growth of Sheffield commenced about the year 1750, when a communication was opened with the Continent, and the river Don was rendered navigable to within a few miles of the town. Since that time its advance has been steady; new branches having been constantly adding, and the former ones extending. The houses are chiefly modern, and well built; and the town makes a tolerable appearance, notwithstanding the smoke of the forges in which it is involved. The military barracks erected here form an extensive pile of building. The infirmary is considered equal to any in the kingdom; and great credit is due to Sheffield for the excellence of the schools which it maintains for the education of the lower orders. It supports also many public charities; has a literary society, a mechanics' institute, and a library.

1839. *The rivals of Sheffield* in her manufactures are few and not large. Barnsley produces wire, nails, and other articles, but derives its chief importance from the linen manufacture. Rotherham has been kept alive by the active ingenuity of the family of Walker, who in the middle of last century, established a great foundery for cannon. The view of the melted iron, rolling through the works like liquid fire, is peculiarly striking. The first iron bridge was constructed at the works of Messrs. Walker; and they have since executed those of Sunderland, Staines, and Yarm. Rotherham, being in a fine country, has also a great corn and cattle market.

1840. *The mountain district in the north-west*, comprising Ingleborough, &c., is alike destitute of agriculture and manufactures; yet it abounds in some places with rich pastures, which give some consequence to the cattle markets at Skipton, Settle, and other small towns. Although the region be not generally picturesque, it contains some remarkable caves and striking waterfalls.

1841. *The superb seats which adorn Yorkshire* are so many, that to enumerate even the most distinguished can with difficulty suit our limits. Near the eastern coast is Sledmere, remarkable for having contained the vast collection of books, curiosities, and works of art of the late Sir Mark Masterman Sykes. Castle Howard is a magnificent pile, and is highly noted for its classical collection of sculpture and painting; to which last the late

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Earl of Carlisle added several of the very finest pieces in the Orleans collection. Duncombe Park is admired for the noble view obtained from the terrace in front; for the ruins of Rivaulx Abbey, situated in a beautiful vale at a little distance; and for a collection of paintings, not extensive, but highly select. Newby Hall contains an admirable collection of sculpture Studley Royal is considered an almost unrivalled specimen of an ornamented park. It has the advantage of enclosing within its precincts, besides finely varied grounds and extensive woods, Fountain's Abbey, one of the grandest of monastic remains, covering several acres. At a few miles' distance is Hackfall, a wild woodland dell, leading through a great variety of sylvan and sequestered scenery. Harewood Hall is a splendidly ornamented mansion. Temple Newsome is said to contain a capital collection of pictures. Wentworth House is generally considered the noblest mansion in the north. The principal front extends upwards of 600 feet, forming a centre and two wings, in the middle of which is a fine Corinthian portico. The house contains a celebrated portrait of Lord Strafford, by Vandyke; and other works of art of a high class. The grounds also are particularly fine. Wentworth Castle, now called Stainborough Hall, is also a finely ornamented seat, though not on the same scale. Keveton is a fine old house of the Duke of Leeds, said to be of late a good deal neglected.

1842. *Lancashire*, situated beyond the hilly border of York West Riding, forms the capital or central seat of manufacture for Britain, and even for the world. Under this character we have no doubt that, notwithstanding some temporary difficulties, it will long continue to be distinguished. Lancashire is a long county, reaching seventy miles north and south between the hills and the sea-coast, which is very extensive. Its soil and climate are unfavourable; the upland tracts being rocky and barren, and the coast too low and flat, while the moisture from the Atlantic is injurious to the growth of the finer kinds of grain. The division of property into small portions, and the prevalence of other pursuits, have retarded the improvement of agriculture. The chief activity is displayed around the towns for their immediate supply of milk, butter, fruits, and vegetables, particularly potatoes. But Lancashire has an under-ground product, which she has turned to immense account. Coal traverses in large beds the south and south-eastern parts of the county; and being conveyed by short canal lines to all the great towns, affords cheap and abundant fuel for the steam-engines and other grand manufacturing apparatus. Canal navigation, which originated in Lancashire, has been carried to a greater extent there than in any other part of the kingdom. Besides those smaller canals which connect all the great thriving towns, it has the Lancaster Canal running north and south through nearly its whole extent, and into Westmoreland as far as Kendal; and the still more important line of the Leeds and Liverpool Canal; while, in the southern border, the Grand Trunk connects it with London and the whole centre of England. A most important additional communication has recently been opened by the grand railway, elsewhere described, by which Liverpool and Manchester, so far as respects personal conveyance, are brought almost into contact.

1843. *Manchester*, the centre of British industry, and the manufacturing capital of the empire, is favourably situated on the Irwell; though this stream, navigable for barges, scarcely makes any figure beside the vast artificial lines formed from its waters. Although the cotton manufacture is now widely diffused throughout England, Manchester continues the centre of the trade; receiving and distributing the raw material, collecting the produce worked up in numerous towns and villages, and transmitting it to the various markets. Though a Roman station, and consequently of high antiquity, no monument of importance dates earlier than the fourteenth century. Even at that era it is recorded as an industrious town, carrying on diligently woollen and linen fabrics, the staples of that day. As soon, however, as cotton appeared, Manchester seems to have grasped it as her own, and to have comparatively neglected most other branches. From the middle of last century she has advanced with amazing and accelerated rapidity; and the system of inland navigation having afforded copious channels by which the material can be introduced and the manufactured article exported, every obstacle to the absorption of the whole into this centre was removed. The discoveries of Hargreaves, of Arkwright, and of Crompton, though made in different and distant quarters, may be said to form the basis of the cotton manufacture; and are thus, in fact, the foundations of the greatness of Manchester. Its manufacture, however, does not consist exclusively in the finer muslins and other delicate fabrics, in which Scotland takes, perhaps, the lead; but embraces the plain and useful forms of dimities, fustians, velveteens, checks, shirtings, ginghams, diapers, cambric muslins, figured muslins, calicoes for printing, and various fancy goods. The different cotton fabrics generally denominated Manchester goods, are not all manufactured within the town itself, but in the neighbouring towns and districts; and, after being bleached, and some of them printed, are sent in a finished state to Manchester to be sold; the chief *market days* being Tuesdays and Saturdays. Thus Marseilles quiltings, cambric muslins, calicoes for printing, bed quilts and counterpanes, checks, fustians, and shirtings, are brought in from the surrounding towns and villages. A vast deal of yarn is also spun for exportation. Manchester has extensive establishments for printing and dyeing; also, for constructing and keeping in repair steam-engines, as well as other machines employed in manufacture. Even iron founderies are necessary to supply the materials. Other important branches have recently been added. Manchester now rivals Macclesfield and Norwich in the manufacture of silks, and Nottingham in that of lace. In 1832, there were at work in the townships of Manchester and Salford, 96 cotton mills, 16 silk, 4 woollen and worsted, and 2 flax mills. The number employed in cotton factories amounted to 20,585; of whom, 5361 were male and 7035 female adults; 4286 male and 3903 female children. The wages paid to them per month were 40,333*l.*, making about 9*s.* 9*d.* of average weekly earnings to each individual. There were 7174 mule spinners, earning 15,106*l.* per month, averaging 10*s.* 6*d.* each per week; 1497 spinners of a higher class, earning 8491*l.* per month, or 1*l.* 8*s.* 4*d.* each per week. Piecers' scavengers 2944, earning 3287*l.* per month, each weekly 5*s.* 6*d.* In the power looms, women receive 8*s.* to 12*s.*; men, 15*s.* to 16*s.* 10*d.*; dressers, 28*s.* to 30*s.* per week. Manchester is not generally an elegant town; some parts of its interior are narrow, crowded, full of warehouses and factories in huge masses. The entrances, however, have been made handsome; and, in the extremities of the town, streets of elegant houses have been built for the accommodation of the opulent merchants. It has one handsome Gothic collegiate church of the fifteenth century, and several more modern, that are creditable to the taste of the town. The Exchange, which includes a news-room and a good library, is a fine and spacious building. Still more elegant displays of architecture are made in the Infirmary (which in one year received above 12,000 patients), the Town Hall, and the Royal Institution. The Town Hall contains one of the most splendid public rooms in Europe. The Royal Institution for the Promotion of the Fine Arts was erected by subscription, at the cost of nearly 30,000*l.* The Portico (a news-room and library), and a concert-hall, recently built, are also handsome edifices. The prison called the New Bailey is an immense structure, — the too numerous inmates of which are classed and provided with employment to a considerable extent. Manchester is remarkable for its charitable institutions: as the Commercial Clerks' Society; the Travellers' Society; Strangers' Friends' Society; hospitals of different kinds; and large schools for the education of the poor. The establishment called Cheetham's Hospital, besides maintaining eighty poor children, has a library of 18,000 or 20,000 volumes, containing rare and valuable works. In 1781, a literary and philosophical society was formed at Manchester, and produced several valuable volumes of Transactions, enriched by the contributions of Percival, Ferriar, Dalton, Henry, and other eminent gentlemen there resident. In 1585, Manchester was estimated to contain 10,000 inhabitants, and by 1635 was supposed to have doubled that number. Yet in 1774, the population of the whole parish was not found to be more than 41,000. Since that time, the progress has been continued and rapid. The amount of 142,000 for 1831 by no means comprehends all that may be considered Manchester. The large towns and villages which have sprung up within its parish form really its suburbs, and raise the entire population to 270,000. Of these, the most important are Salford, immediately contiguous, and now raised to the rank of a borough; and Chorlton Row, which in 1801 contained 675 inhabitants; in 1831, as elsewhere stated, 20,565.

1844. *Huge towns, resembling cities, devoted to the cotton manufacture*, are found in every direction round Manchester. To the north are *Blackburn* and *Bolton*; the former chiefly employed in the branch of printed calicoes, which are supposed to be produced to the annual value of 2,000,000*l.* Hargreaves was a native of this place. A great advantage is derived from the Leeds and Liverpool Canal passing close by it. Bolton is a town anciently of some strength, but now supported entirely by industry. Some of the greatest improvements in the cotton manufacture, and the processes connected with it, have been made by Arkwright and Crompton, residents in this place. Preston was only considered a genteel retired town till within these last forty years, when the single exertions of Mr. John Horrocks made it a flourishing seat of manufacture. It continues, however, to be distinguished among all the cotton towns, as a gay handsome place; and has the advantage, or disadvantage, of electing two members on a basis of almost universal suffrage. Wigan is a large town, of some note in history, and which adds to those of cotton and linen some manufactures of brass and pewter. Bury, very near Manchester, besides extensive cotton works, has some of woollen. Oldham was early a place of some consequence, carrying on a large fabric of hats; but the introduction of the cotton manufacture has caused it to make an astonishing progress, so that in thirty years it has nearly trebled its population, and the parish, including Pilkington, Crompton, and other towns, contains 67,500 inhabitants. There are here now 65 cotton mills and 140 steam-engines, almost all erected during the present century. To this long list may be added Chorley, a neat thriving little town; Middleton; Clitheroe, where there is an old castle; Garstang, and several other towns.

1845. *Some large towns employed in other manufactures than those of cotton* lie on the borders of Lancashire. Rochdale, near the western point of Yorkshire, and in character a Yorkshire town, has for its staple woollen stuffs and flannels, of which 8000 pieces are made weekly: fifty-seven steam-engines are employed here, and about 84,000 lbs. of cotton yarn spun in the week. This place, composed of the townships of Spottland, Castleton, and Wardleworth, has of late been greatly improved. Warrington, on the south border, stands on the Mersey, which is navigable for vessels of eighty tons from Liverpool. It is ancient, and in Henry VIII.'s time was superior to Manchester; but though slowly advancing, it is now left far behind. Its staples of sailcloth and coarse linens have been exchanged for cotton, to which it adds glass and pins. Prescot, on the same line, is noted for the making of watch wheels, springs, chains, &c. several of which have been invented and improved by its workmen. Near it, at St. Helen's, is a great manufactory of plate glass, erected at an expense of 40,000*l.* and employing 300 persons.

1846. *Liverpool*, the commercial capital of Lancashire, is, if possible, a still grander object, and far surpassing indeed every other seaport, with the exception of the metropolis. Nothing can be more remarkable than the contrast of its present state with its humble origin. In the sixteenth century, it is described as a small place, with only a chapel, having no parish church within four miles. It had then 138 inhabitants, and two or three ships, whose aggregate tonnage was 223 tons; and in a petition to Elizabeth, about the year 1578, it is styled, "her majesty's poor decayed town." It continued gradually to increase during the seventeenth century, till, in 1700, it was raised to the dignity of a parish and had 5000 inhabitants. Since that time it has advanced with rapid and accelerated steps; in 1730, it had 12,000; in 1760, 26,000; in 1700, 56,000 inhabitants; but the most rapid growth has been between 1811 and 1821, when it rose from 94,376 to 141,487. The increase to 165,000 in 1831 appears less rapid; but in fact, the population during this period has overflowed into the adjacent villages, and swelled them into large towns; Toxteth-park increased from 2069 in 1801, to 24,067 in 1831; West Derby, Kirkdale, Everton, form in fact the suburbs of Liverpool, and, added to it, make an amount of 208,000. There must always have been a considerable port at the mouth of the Mersey; but this estuary, in its natural navigation, could never come in competition with the Humber or the Severn. When, however, its disadvantages as a seaport were partly removed, by the formation of docks, — and, much more, when it became the basis of a canal system reaching eastward to the German Ocean, and southward to the Thames, — Liverpool could communicate with an immense interior circle. It derived benefit, above all, from the cotton manufacture established, on such an extensive scale, in the country immediately behind; the materials of which were brought to Liverpool from the opposite side of the Atlantic, and the finished fabric thence exported, partly to the same quarter. At the same time Liverpool imported, for a great part of England at least, articles of consumption from America and the West Indies. It found also a most extensive employment in bringing grain and provisions from Ireland, and returning salt, coals, and pottery. The merchants of Liverpool, meanwhile, were most active in improving these circumstances, particularly by the construction of that immense line of docks, which M. Dupin has described with such admiration. A dock, or space enclosed all round, and fed with sluices, in which the vessels while they receive or discharge their cargoes are kept regularly afloat, without being exposed to swell, tide, or current, is an obvious improvement upon the best natural harbour. The expense, however, is great; and it was not till 1710 that Liverpool began the first dock in Britain, called the Old Dock, which has recently been filled up. Twenty years were employed in its completion; and a still longer time in that of the next, or the Salthouse Dock. The others were, however, constructed on a more extensive scale, and with greater rapidity: — George's (II.) Dock; the King's Dock, for Greenland ships and tobacco; the Queen's Dock, directly for the Baltic and North American trade. On a still larger scale have been constructed the Prince Regent Dock, opened in 1821, and the Clarence Dock, in 1830. The Brunswick Dock, intended for the accommodation of vessels with cargoes of timber, is in progress, and will nearly complete the present plan, when the whole area of water in the docks will exceed 90 acres. In 1832, there belonged to it 853 registered vessels, of the burthen of 166,028 tons. The customs paid at the port amounted, in 1733, to 92,466*l.*; in 1765, to 269,000*l.*; in 1785, to 680,000*l.*; in 1810, to 2,675,000*l.*; in 1824, to 1,984,000*l.*; and in 1832 they had risen to 3,925,062*l.* The following are stated as the leading articles of import in the year 1830: — 792,350 bags of cotton, 510,000 hides, 42,000 hogsheads of sugar, 8000 hogsheads of tobacco, 300,500 barrels of flour, 7800 casks and 7300 barrels and bags of coffee, 27,000 casks of palm oil, 900 serons and 1430 chests of indigo, 12,000 puncheons of rum, 31,200 bags of rice, 22,500 barrels of American ashes, 42,500 barrels of tar, 51,000 barrels of turpentine, 6200 tons of logwood, 5650 logs of mahogany. The dock duties, which in 1800 were only 23,379*l.*, amounted, in 1832, to 170,000*l.* In 1832, the ships entered inwards were 10,266, tonnage 1,361,000; outwards, 8717 ships, tonnage 1,218,645. Of this, 610,000 tons were from foreign parts, chiefly the United States and British America, the rest coasters, of which 386,000 were from Ireland. The value of agricultural produce from that country amounted to 4,444,000*l.*

Liverpool has numerous lines of packets to all the principal foreign ports. Every month four sail to New York, two to Philadelphia, one to Boston, two respectively to Rio Janeiro, Genoa and Leghorn, and to Lisbon; one every three weeks to Oporto. The New York packets are first-rate vessels, containing splendid accommodations for passengers, and the value of goods conveyed in one of them has been known to exceed 140,000*l.* Trading vessels also are continually sailing to the above and to all other commercial places throughout the world. An almost daily communication is maintained by steam packets with Dublin, Belfast, Glasgow, Whitehaven, and all ports of any consequence in Ireland and on the western coast of England. The solid construction of its docks; the powerful iron gates by which they are enclosed; the long covered ways where the goods may be landed without injury from the inclemency of the weather; the immense magazines, some rising to the height of 12 or 13 stories, — all denote a gigantic industry and a magnificence, which spares no sacrifice to attain objects of public utility. The inhabitants of Liverpool have generally shown the same spirit in their other arrangements as in those connected with trade. The town is well lighted with gas. The public buildings have an elegant and classical character, almost peculiar to Liverpool. The Town-hall (*fig.* 165.) is a fine Grecian edifice, ornamented with a superb cupola and appropriate statues. The Exchange forms behind it an elegant square, in the midst of which is a sculptural composition, by Westmacott, representing Nelson and his victories. The new edifice erected for a market is, perhaps, the most spacious and commodious of any employed in the kingdom for that purpose. There are also several elegant modern churches, one formed of cast-iron. The finest view of Liverpool is obtained from the sea, where the vast height and extent of the exterior dock wall, the forests of masts above, and the town behind, make a most imposing appearance. The charitable institutions are administered on a great scale, and with activity. Foremost stands the Blind Asylum, the first established in England, which continues to be conducted with unequalled success, receiving inmates from all parts of the kingdom. The infirmary is in a very spacious and airy situation; and, among the other institutions common to great towns, the Strangers' Friends' Society distinguishes itself by its generous exertions. The English mercantile towns generally show a zeal to combine intellectual pursuits with those of wealth; but none, perhaps, so successfully as Liverpool, — one of whose merchants, while carrying on an extensive business, produced works which rank him among the most classical English writers. Although this example be single, it is connected with a general spirit, which displays itself in the liberal procedure of several individuals; in the Lyceum and the Athenæum; two public libraries and literary institutions, supported by subscription; and in a botanic garden, which ranks as the first that was formed, and at least the third as to eminence, in the kingdom. It is at present about to be transplanted to a more commodious situation. Both

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TOWN-HALL, LIVERPOOL.

the Athenæum and botanic garden owe their foundation to the public spirit and the munificent example of Mr. Roscoe, who had also the magnanimity to exert his powerful talents for the abolition of the slave trade, in a town long devoted to that traffic.

1847. *Lancaster*, though the county town, has been almost overlooked amid the new and vast objects which have sprung up within its domain. Yet it is a fine, handsome, small town, built of a beautiful freestone, which never moulders or blackens, like that of Portland and Edinburgh. The Town-hall and some other buildings are handsome; but the castle (*fig.* 166.) forms one of the grandest monuments of the feudal age. Its vast extent; its commanding site; the greatness of all its features, even now, when three of its seven towers are fallen into ruin; produce the most powerful impression. It has been converted into a well-arranged prison for the county. Lancaster, though no longer the chief seat of commerce on this coast, and though its river, the Lune, is not navigable for vessels of more than 250 tons, still possesses 73 sail. It builds some ships. It makes sailcloth, and even a little cotton. About a mile from it, the Lancaster Canal is carried over the Lune by a very noble aqueduct bridge.

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LANCASTER CASTLE.

1848. *The counties of Cumberland and Westmoreland, or the country of the Lakes*, form a bold and peculiar region, to complete the picture of the north of England. It presents a striking contrast to those recently surveyed; being enriched neither by natural wealth nor by the wonders of human industry. Wide ranges of high and rocky mountains, enclosing long lakes and narrow vales, afford scanty space for the plough. A great proportion of these fells and moors is absolutely barren; in the more favoured spots the herbage is often scanty; and even the arable tracts are, in general, fit only for the coarser grain of oats. The new modes of agriculture have penetrated slowly; the lands being, in a great measure, divided among estatesmen, or small early proprietors, like Scottish lairds, some of whom even trace their possession to a date anterior to the Conquest. Still, the pride of these regions consists in the beauty with which nature, in the absence of more solid gifts, has lavishly adorned them. The multitude of mountains crowded together, their bold, perpendicular, and often projecting forms; the pleasing though not extensive lakes, and soft pastoral valleys, which they enclose, with the rich shadows and varied tints that adorn them; all these, which mark a region of alpine wildness, mingled with features of cultivated nature, render this the most beautiful country of England, and the favourite resort of all the admirers of the picturesque and sublime.

1849. *Three divisions* are distinctly seen in these counties, reaching from north to south. I. A plain eastward of the mountains, through which the high road runs by Kendal and Carlisle to London. II. The mountains and lakes, occupying the larger portion of their surface. III. A sea-coast, containing some harbours of importance.

1850. *The first part* consists of a plain, which, though narrow, is in many places fertile; and contains some large towns. In the northern part is "merry Carlisle," long distinguished in the border annals, and the scene of interesting events in the contest of 1745. Carlisle being a military post of the first consequence, its castle and walls were considered a model of strength, according to the ideas of the middle ages; and, though of no importance at present, they are still maintained. The cathedral is an ancient elaborate edifice, still nearly entire; but in which the heavy Saxon style too much prevails. Carlisle is finely situated on a height overlooking a verdant plain, in which the Eden and the Caldew unite their waters. It has of late begun to carry on some manufacture, chiefly cotton; also woollen, linen, and a few minor articles. A canal connects it with the Solway, and enables it to employ some shipping. Eastward from Carlisle is the great debateable line; and near Brampton is Naworth Castle, that powerful station where Lord William Howard undertook to bridle the licence of the border. Yet, however strong, it forms rather a dark border keep, than a display of feudal grandour. Lord Howard's apartments, which, with their books, furniture, and armour, remain almost undisturbed, are separated by four strong doors from the rest of the castle; and secret passages lead to every part, and to the dungeons beneath. The high road from Carlisle southward has, parallel to it, the beautiful and rural valley of the Eden. Penrith, a neat little town, commands from its beacon, and even from the road above, a noble view of the Cumberland Pells. Considerably farther south is Kendal, the chief town of Westmoreland; a considerable place, with an old manufactory of woollens bearing its name, and some of cotton and leather. Burton and Kirby Lonsdale are small neat towns on the border of Lancashire.

1851. *Our second division* comprises the country of the Lakes, forming the peculiar characteristic of the country, and chiefly distinguished by its scenery. Ullswater, the first approached from Penrith, is a long narrow sheet of water (*fig.* 167.) divided into three reaches. The mountains are very numerous, steep and lofty, not broken or impending, but of a peculiarly bold and swelling form. The two highest on the lake, and in the region, Helvellyn, and the square rocky mass of Stone Cross Pike, appear at first distant, and behind lower hills. As the traveller advances, their apparent dimensions increase; and at the end of the second reach they display themselves in their full grandeur, rearing their almost perpendicular forms to an amazing height above the wooded hills which cluster round them. Opposite rises the immense precipitous steep of Place Fell; and the whole produces a scene of

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ULLSWATER.

solemn and simple grandeur, which can scarcely be surpassed. At the end of the third reach is Patterdale, quite a different scene, where, though the features be grand, the beautiful predominates. From the meadows bordering the lake, the numerous glens branching off, with the scattered abodes of the shepherds and dalesmen, present one of the sweetest of alpine pastoral scenes. Keswick or Derwentwater (*fig.* 168.) is of equal grandeur, but a quite different aspect. The mountains preserve no regular form, but are broken, shattered, impending, shooting into a thousand fantastic shapes; and though they do not produce the same grand unity of effect, astonish by a continual change of scenery. In the wooded cliffs and waterfall of Lodore (*fig.* 169.), and on the rocks of Borrowdale, Nature seems to have sported her wildest fancies. Yet exquisite beauty is here mingled with horrors, particularly in the views of the lake from the south, with Skiddaw behind; and in a lovely rural vale, which runs along its northern border, and is seen to peculiar advantage from the road to Ambleside. Among the greatest beauties of this lake are its tints, which, when illuminated by the sun, are purple, azure, and gold; though, perhaps, the deep shadows of Ullswater are still more impressive. He who has made the circuit of these two lakes has not yet formed an idea of the third great one, Windermere (*fig.* 170.). The water here is of much wider extent; not shut in by mountainous cliffs, but bordered by wooded and ornamented hills. Around its northern banks, however, is ranged an amphitheatre of very high mountains, which, with their varied summits, form a sublime background to all its landscapes. These are generally grand, open, diffusive, and extended. Those from Lowood, and from behind the grounds of Calgarth, where all the features are on the greatest scale, are perhaps more striking than those from Bowness, which yet presents some very fine stations. The islands and peninsulæ, doubtless, have much beauty; but suffer by coming into direct competition with Lomond, amid a manifest inferiority. The other lakes, Coniston, Grasmere, Buttermere, Cromack, Wastdale, Ennerdale, cannot be here specially noticed; but they possess a peculiar character, and have attractions for the admirers of nature. In this district, the only places to which the name of towns could be given are Keswick on Derwentwater, and Ambleside on Windermere; yet even these are only large villages, supported by the resort of travellers, and by some persons of distinction who are induced to reside there by the beauty of the neighbourhood.

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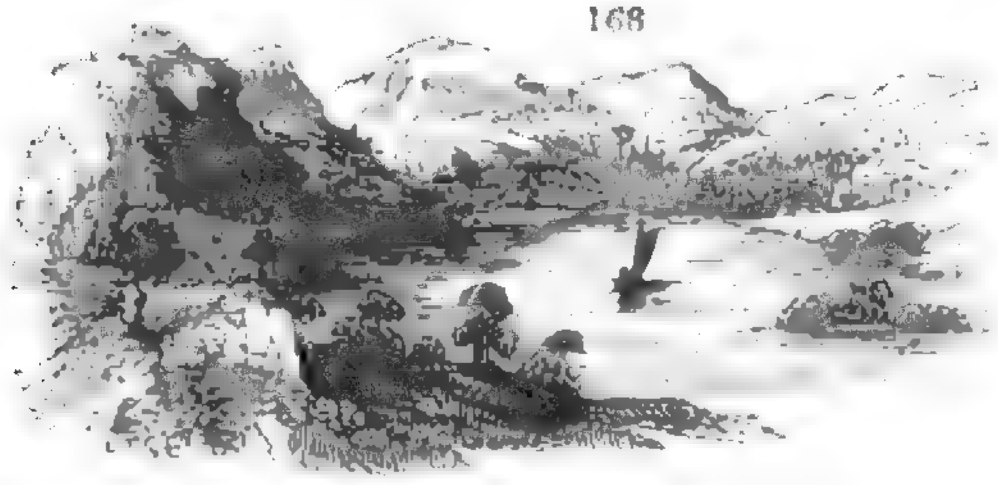
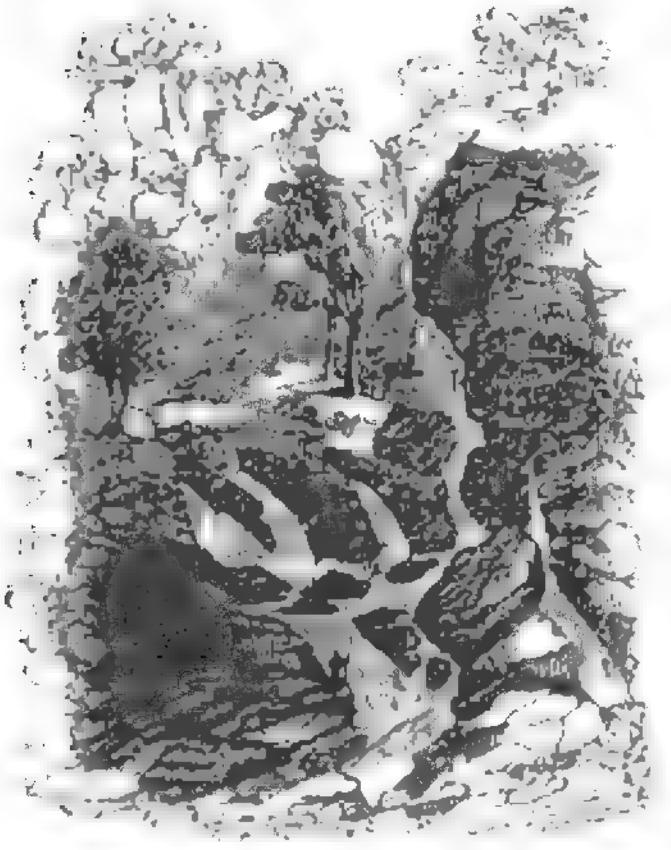


KESWICK LAKE.



LODORE WATERFALL.

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WINDERMERE LAKE.

1852. *The third division* consists of the sea-coast. The most considerable port is Whitehaven, which two centuries ago was a mere fishing-town; but has become flourishing in consequence of the immense coal mines found and worked in its immediate vicinity. Some of them have a depth of 320 yards, supposed to be greater than any other in the world; and some extend several miles beneath the sea. The total quantity worked is estimated at 100,000 chaldrons, chiefly exported to Ireland; besides which, Whitehaven has pushed its trade to Africa, America, and the West Indies; and carries on much ship-building. Workington combines a considerable extent of the same coal trade, with some sail-cloth, and a fishery of salmon, which is sent even to London. Cockermouth, somewhat inland, at the confluence of the Derwent, has a manufactory of coarse woollens and linens. Maryport has some cotton manufacture, as well as some trade and a fishery.

1853. *Of the seats*, Greystoke Castle is a noble mansion, originally built by the Danes, from whom it descended to the Duke of Norfolk, and contains fine portraits, and memorials of Mary of Scotland. Lowther Hall is celebrated for the noble woods which surround it. Armathwaite and Corby Castle, to the latter of which adjoins Wetherall Priory, are admired for the extreme beauty of their situation on the Eden.

Subsect. 5. *Western Counties.*

1854. *The western counties* form the last division of England Proper. The term is of somewhat vague application; but we here use it as applying to all the counties south of the Mersey, which form the western boundary of England. This extensive line has scarcely any character which can be said generally to apply to it. We mention *Cheshire*, *Shropshire*, *Hereford*, and *Monmouth*, as bordering on Wales, and the last three partaking somewhat of its rude and romantic character; *Worcester*, *Gloucester*, and *Somerset*, occupying the fine valley of the Severn, — a region filled with commerce and cultivation, and containing several great cities; lastly, Cornwall and Devon, the extreme corner of England, but marked by a mild climate, rich mines, and a surface agreeably diversified.

1855. *Cheshire*, immediately south of the Mersey, though bordering on Wales, has nothing of a rugged character, and sees only at a distance the vast mountains of Montgomery and Caernarvon. The soil is generally fit for all the purposes of agriculture, particularly in the valley of the Dee: but the dairy is the branch pursued with peculiar success; and it produces the cheese which, bearing the name of the county, equals in richness, though not in delicacy, any other in Britain. There are valuable mines of coal, and some of iron; but the mineral substance of which Cheshire chiefly boasts is salt. The pits were discovered about a century and a half ago, at Northwich, Middlewich, and Nantwich, and have proved of the highest importance to the nation, at once for internal consumption, for the curing of fish, and for exportation. Cheshire has manufactures of gloves, silk, silk-twist, cotton, and a number of detached articles, but not sufficient to constitute it a manufacturing county.

1856. *Chester* is, perhaps, the city in Britain which bears the most venerable character of antiquity. The very name implies a Roman camp, the form of which is still preserved in the direction of its principal streets. The effect is heightened by the mouldering red stone, of which its most ancient edifices are built. The principal streets have a very peculiar structure. The lower story, which has been hollowed out of the rock, consists of shops, above which is a paved way covered by the projecting upper story; but the middle part of the house appears thus retired from the open street behind this species of arcade. The arrangement is neither very elegant nor very convenient. The castle of Chester presents a very complete specimen of early military architecture, though the keeping is not very strictly preserved. Connected with it is a range of very handsome Grecian buildings, containing the barracks, county hall, and county gaol. The cathedral, though not ranking with the first in the kingdom, displays, however, considerable grandeur, and has a very elegant chapter-house. The improvements on the Dee enable vessels of 300 tons to come up to Chester, which has 62 vessels, of above 4000 tons; yet its trade with Ireland has been transferred to Liverpool. Gloves, lead, shot, and some other fabrics, do not make it a manufacturing town.

1857. *Of the other towns*, the most remarkable are those near which the salt mines are situated, particularly Northwich. There are fourteen pits of rock salt, and between thirty and forty of brine salt. The rock salt is hard and brown; the pits, after being dug to a certain depth, are excavated horizontally, leaving a portion of the salt for a roof. They thus form apartments, often of more than an acre in extent; and the reflection of lights from the mineral, like that of numberless precious stones, produces a magical effect. The pits of Middlewich are on an inferior scale; and those of Nantwich, though the most ancient, are become now of secondary importance. On the extreme eastern border are Stockport and Macclesfield, two large towns, which have flourished greatly in consequence of the introduction from Lancashire of the cotton manufacture, to which Macclesfield adds some branches of that of silk.

1858. *Among the seats* are Eaton Hall, a magnificent Gothic edifice, which Earl Grosvenor has erected at an expense, it is said, of 400,000*l.* Tabley Park is a fine Doric edifice; and Marbury Hall contains some valuable sculpture.

1859. *Shropshire*, or Salop, is a large and interesting county, consisting chiefly of a wide plain watered by the Severn, which, issuing from Wales, follows first an easterly, and then a southerly course. The soil is mostly well fitted for agriculture, which is carried on in a respectable manner, without any extreme skill or peculiar processes. On its eastern border it shares to a great extent in the mineral wealth of Staffordshire, coal and iron. These are carried on in a remarkable manner at Colebrook; a deep-wooded vale on the Severn, here traversed by the first iron bridge erected in the kingdom. So well is the spot arranged, that, notwithstanding the gloomy fire and smoke of the works, it still retains much of its picturesque effect. This county is also interesting to the student of English history; many spots having been the scenes of remarkable events, on which the destinies of the kingdom have depended.

1860. *Shrewsbury*, the capital, is particularly rich in memorable recollections, and forms a sort of key to the history of England during its turbulent era. Being the strongest fortress on the western marches, it became a rendezvous of the royal army, both for overawing the Welsh, and for northern expeditions. It is well situated on a peninsular eminence, overlooking the Severn, of which, and of the fine country watered by it, a noble view is commanded from the ramparts. Though a striking, it cannot be said to be a well-built city, as many of the streets are narrow, winding, and irregular, and the old and new buildings too closely intermingled. Only a small part of the castle remains; giving, however, an idea of its great strength in former times. St. Mary's church is elegant and entire. One of the most remarkable objects is the free school, founded by Edward VI. and Queen Elizabeth; a spacious and lofty structure, which has produced several eminent teachers and pupils. Shrewsbury is praised for its house of industry, and for the arrangement of its county gaol. Placed at the entrance of Wales, it formerly carried on all the trade of that principality, and has still a considerable share of it, as well as of the river navigation down the Severn.

1861. *Shropshire has also Ludlow*, an ancient and memorable town, not unfrequently the residence of royalty, and the regular station of those powerful officers the Lords Presidents of the Marches. The castle, defended by thick walls of great extent, and placed on a wooded rock overhanging the Terne, was considered one of the strongest places in the kingdom. In its vicinity occurred many of the most distinguished events in the contest between the houses of York and Lancaster. It was afterwards dismantled; yet remained a splended private mansion, in which Milton's "Comus" was first performed, and where Butler wrote a part of his "Hudibras." It is now entirely roofless and covered with ivy, but still adorns the town, which is well built and pleasantly situated.

1862. *The other towns* are not very remarkable; but we may mention Broseley, in the centre of the coal and iron works; Bridgenorth, which carries on a considerable trade on the Severn; and Wellington, a good market town near the Wrekin. Ellesmere and Oswestry are agreeable towns on the Welsh frontier, and carry on a thriving trade by means of a canal which communicates with the Grand Trunk.

1863. *Hereford and Monmouth*, two demi-Welsh counties, fill the interval from Shropshire southwards to the British Channel. Being traversed first in an easterly, and then in a westerly direction, by the Wye, the most picturesque of the English rivers, they may vie in beauty with almost any part of the kingdom. Without the bold and sublime features of Cumberland and Wales, they are broken into swelling hills, covered to the summit with trees and cultivation, rich with luxuriant foliage, and affording an inexhaustible variety of delightful prospects. The soil is in many places very favourable, yet the culture of grain has not made very great progress; though the district, being almost entirely agricultural, affords a certain surplus for the Bristol market. But the chief care and success is in the rearing of fruit, and the whole county is as it were covered with orchards. Hence Hereford draws its staple production of cider and perry, in peculiar abundance and perfection. The crop is precarious; but in a good year the produce of an acre will be from eighteen to twenty-four hogsheads, each requiring between twenty-four and thirty bushels of apples. The liquor is sometimes of such very fine quality, that it will sell from the press at 20*l*. a hogshead. It is chiefly sent to London and Bristol, whence a large proportion is exported to America and the West Indies. The western district of Hereford produces also a large quantity of hops, and has one of the finest breeds of cattle in the kingdom, both for draught and feeding, in which latter capacity they often reach the metropolis. The breed of sheep, called Ryeland (*fig.* 171.), besides the excellence of their flesh, bear the very finest wool in the kingdom. Monmouth is not so fertile, yet has a good breed of cattle, and particularly of mules; and supplies Bristol plentifully with fruit. Its chief wealth, however, is mineral, coal being most abundant; and iron works are established to such an extent, that they have been known to produce a thousand tons in the week.

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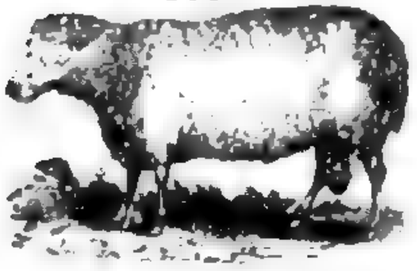

RYELAND SHEEP.

1864. *Of the towns*, Hereford bears venerable marks of antiquity, particularly its cathedral, notwithstanding the fall of its principal tower. From the defects, however, in the navigation of the Wye, it has never attained to much commerce. Ross, once the residence of Mr. Kyrle, celebrated by Pope as "the Man of Ross," is a beautiful village, considered as a sort of centre of the picturesque scenes of the Wye. Leominster and Ledbury are small towns, which have lost a great part of their former manufacture of cloth.

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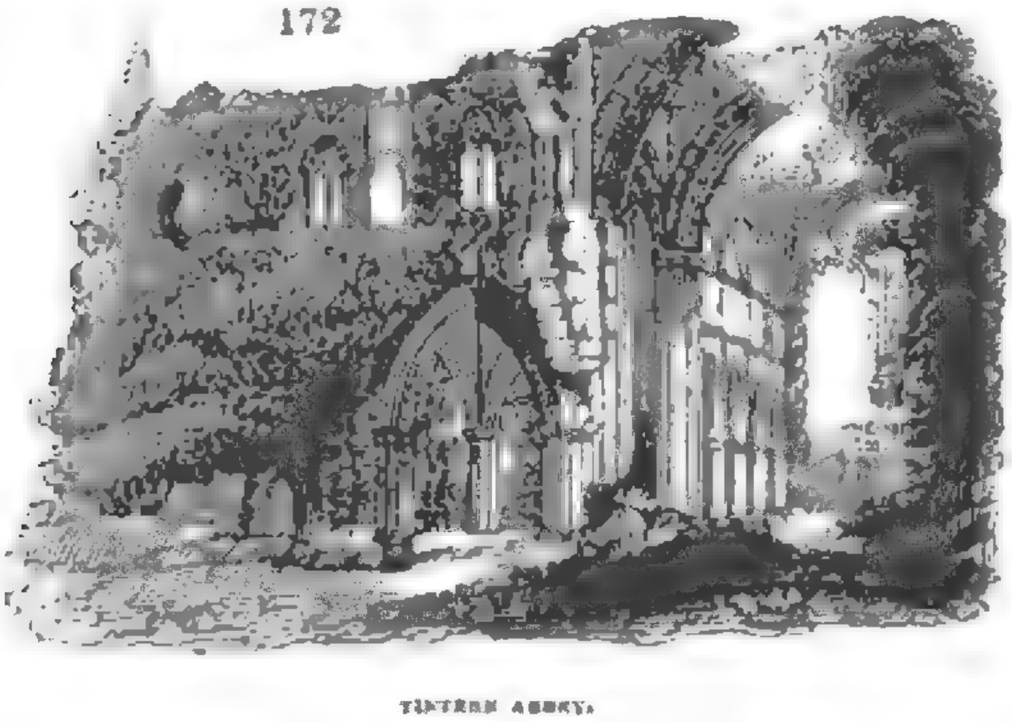

TINTERN ABBEY.

1865. *The towns of Monmouthshire* are small, but its local features are striking. The capital is of little extent, and has only a limited trade along the Wye; but its situation, in the midst of a delightful country, has attracted some neighbouring gentry, who have built good houses. There are still remains of its once powerful castle, and of a Benedictine priory. A few miles from Monmouth is Tintern Abbey (*fig.* 172.), the most picturesque, perhaps, of all the English monastic remains. This arises, not merely from its extent and beauty, although these be great; but from its roofless and ruined state, whence the walls, both within and without, are overgrown with luxuriant ivy, and decaying art and nature are blended together. The situation is beautifully sequestered, and surrounded by the most romantic objects. In another direction is Ragland Castle, the seat of the dukes of Beaufort (*fig.* 173.), and considered one of the strongest of the ancient fortresses; but, after the gallant defence made by the marquess of Worcester for Charles I., "Cromwell," says Gilpin, "laid his iron hand upon it, and shattered it to ruins; to which it owes its present picturesque form." Chepstow, at the mouth of the Wye, is a neat town, and from its situation carries on some thriving trade. It is chiefly interesting, however, from the remains of its castle, one of the most striking of all the mighty fortresses of Wales. Five or six large towers still remain, with the outer walls of a magnificent chapel; which, being overgrown with ivy, and almost united with the lofty cliff on which it stands, presents an appearance venerably sublime, not only from the town, but for many miles round. Near Chepstow are the grounds of Persfield, the views from which over the Wye, bordered by immense woods and precipices, the Severn and its rich valley, and the many picturesque objects which fill the landscape on every side, are considered almost unrivalled. Farther to the west is Caerleon, once the celebrated capital of the ancient Britons, and a great Roman station. But though huge fragments of wall are still found scattered about, there is no ruin left in tolerable shape or preservation. Uske, a rude old town, on a rapid river of the same name, has considerable remains of a strong castle. Abergavenny, higher up the Uske, is an agreeable and frequented town, surrounded by fine scenery. Newport, near the mouth of this river, has a little trade in articles brought down its course. Pont-y-pool, farther west, has lost, in a great measure, its tin and Japan fabrics; but it is in the centre of the great coal and iron works in the western part of the county.

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RAGLAND CASTLE.

1866. *Worcester and Gloucester*, two fine counties, lie eastward of the above. They occupy the lower valley of the Severn, which there becomes a river of the first magnitude. This valley is broad, smooth, and fertile, yet nowhere degenerates into a dead unvaried level. Worcester has, on the west, the Malvern Hills, of whose waving summits some rise to the height of nearly 1500 feet, and afford prospects, rarely equalled, over an extent of rich and cultivated country, bounded by distant hills. Gloucestershire, again, has to the east the Cotswold Hills, more rugged, though not so elevated; while to the west are the rugged remains of the Forest of Dean. Worcestershire has, besides, the valley of the Lower Avon and of Evesham, which, especially the last, are famed over the kingdom for their beauty and fertility. The vales of these fine counties are fitted for produce of every description,—grain, fruits, pasturage, with some preference of the two latter. Cider and perry are produced every where in the utmost abundance, and often of superior excellence, though not quite equalling that of Hereford. Gloucester, however, is particularly distinguished for its dairies, which produce that rich cheese well known under its name. The best, or double Gloucester, is produced in the vale of Berkeley, situated along the lowest part of the course of the Severn. The mineral productions are not extensive; they are chiefly the salt of Droitwich, and a considerable quantity of coal, and even of iron in the forest of Dean. Both counties have flourishing manufactures, though not on the vast scale of the northern districts. Gloucester, in particular, has a very extensive fabric of fine woollens, carried on through numberless villages, in what are called "the Bottoms," a range of territory along the lower part of the Cotswold Hills. Its scarlet and blue woollens are in particular repute. There are besides a number of detached manufactures, which will be noticed under the places in which they are carried on.

1867. *Worcester* is a considerable and very handsome city, the principal streets being spacious and regular, with many good houses, and presenting a general air of neatness and comfort. It is of high antiquity, the cathedral (*fig.* 174.) having been founded in the 7th century, by Ethelred, king of Mercia. The original edifice sustained various disasters; and the present structure was almost entirely erected in the thirteenth and fourteenth centuries. It is of great extent, simple and august, without the rich ornament which distinguishes some others. It contains the tomb of King John, one of the most ancient in England; also that of Prince Arthur. Worcester is chiefly noted in history for the great battle in which Cromwell totally routed the Scots army, and compelled Charles II. to quit England as a fugitive. The city has lost its woollen manufacture; but has still one of porcelain, the finest in the kingdom. Fifteen different materials are used, chiefly white granite, and steatite from Cornwall; and every piece passes through twenty-three hands before it is brought to perfection. Mr. Warner, in his tour, mentions a set of coffee cups then making for the Grand Seignior, and representing the battle of the Nile, each of which was of the value of 10 guineas; yet of such surpassing beauty, that the price appeared moderate. Gloves are also made; and there is a considerable trade up and down the Severn.

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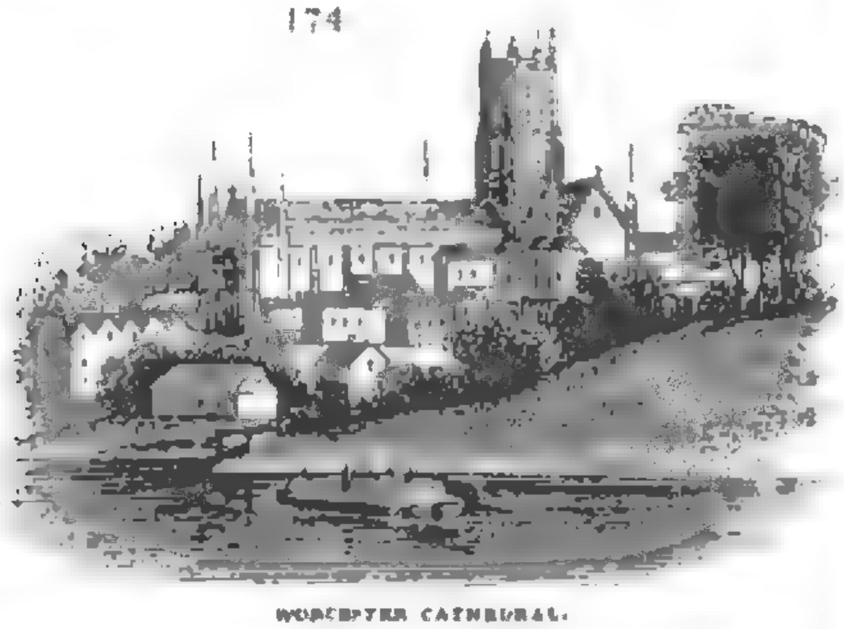

WORCESTER CATHEDRAL.

1868. *Of other towns in Worcestershire.* Kidderminster is large and flourishing, in consequence of a very extensive manufactory of carpets. Bromsgrove carries on the making of nails and needles; and Stourbridge that of glass. Droitwich is noted for its salt springs. They are covered with a deep stratum of gypsum: and for a long time the salt was made only from the brine which penetrated this bed; but, about a century ago, it was bored through, when the brine rushed up in vast quantities, and a large salt river was found to flow beneath. Thus the salt can now be procured in any quantity, and supplies a great part of England. Evesham and Pershore are large villages, noted for the beauty of their situation.

1869. *Gloucester* is also an ancient and fine city, though not quite so large as Worcester. It bears, in the arrangement of its streets, the marks of having been a Roman station. It was formerly, also, a place of great strength. The manner in which it frequently baffled the utmost efforts of Charles I. was one of the circumstances which contributed most to the downfall of the royal cause. The most conspicuous feature at present is the cathedral, built in the Saxon and Norman styles, between the 11th and 13th centuries. The beautiful lightness of its tower; its east window, said to be the largest in the kingdom; and its whispering gallery; attract peculiar notice. The gaol, built at an expense of 40,000*l.*, afforded one of the first applications of the beneficent principles of Howard. Pins are the chief manufacture of Gloucester; and, small as the article [illegible], the sale is so great as to render the amount it returns considerable. Its trade has been much obstructed by the bad navigation of the Severn; but since the parallel line of the Berkeley Canal has just been completed, by which large ships can come up from the Channel, Gloucester is placed almost on a footing with Bristol.

1870. *Cheltenham*, by the fame of its waters, and its attractions as a place of fashionable resort, has become a greater and more crowded place than Gloucester. The virtue of these waters had been repeatedly noticed; but it is only within the last forty years that they have attracted such crowds of visiters. In 1780 there were not above thirty lodging-houses; now there are several thousands. The waters are at once saline and chalybeate; and, being thus both tonic and aperient, are efficacious in indigestion, biliary affections, and similar disorders. There are several springs in different parts of the town, the proprietors of which vie with each other in the elegance of the rooms, and the accommodations. The town, though of brick, and without any striking features, is light, gay, and commodious. The immediate vicinity is level; but, at a little distance, a branch of the Cotswold Hills gives variety to the scenery. Upon the whole, Cheltenham seems now to rank second only to Bath, both as a resort for invalids and a gay rendezvous of the fashionable world.

1871. *There are other interesting towns* in Gloucestershire. Tewkesbury has in close vicinity the "Bloody Meadow," on which was fought the great battle which finally crushed the fortunes of the house of Lancaster. Placed at the junction of the Severn and Avon, it is a venerable old town, containing in the Abbey church a remnant of that grand monastery, of which the superior, being a mitred abbot, sat in the House of Peers. Cirencester, a town of great historical name, covers only part of its ancient site, but contains one of the finest parochial churches in the kingdom. Stroud is the centre of the woollen manufacture carried on, not in itself, but in the surrounding valleys, and raising the population of the parish to 42,000. It is carried on also at Uley, Dursley, and Wotton under Edge. Bristol we consider as belonging to Somerset.

1872. *Of the seats* in this part of England, the most interesting is Hagley, the grounds of which Lord Lyttelton adorned with classic taste; while he enriched the interior with portraits of his illustrious friends, and with other paintings. Near it is the smaller, but equally interesting, spot of the Leasowes, embellished by Shenstone with all the taste of a poet. Berkeley Castle is a grand castellated edifice, almost as old as the Conquest, and the scene of Edward II.'s death; retaining still its antique character. Crome Park, Oakley Park, and Badminton Hall are superb mansions, in which are some interesting works of art.

1873. *Somerset* is a large county, whose coast commences where the Severn opens into the Bristol Channel, the windings of which it follows in a westward direction. The county extends also to a considerable depth inland. Its surface is exceedingly varied; and contains copious specimens of the best and the worst, the smoothest and most rugged, situations and soils. It has vales almost as extensive as those of Gloucester, yet is crossed by long ranges of those steep and rugged hills which pervade all the extreme west of England. The most easterly are the Mendip Hills, dark and barren, but rich in mineral stores; broken also at different points into deep chasms and caverns. Farther west are the Quantock Hills, — separated, however, by fine valleys or *coombs*; while on the borders of Devon lies Exmoor Forest, the most elevated of all these tracts — its highest point, Dunkerry Beacon, being 1668 feet high. There are, besides, between the hills and along the coast, marshes of great extent frequented by clouds of wild geese, the feathers of which are a staple product; but, by extensive drainage, many of these marshes have now been converted into rich pasture. Somersetshire contains many fine arable tracts, yielding in the lower grounds wheat, in the higher, oats and flax. The prevailing husbandry is pasturage, chiefly of rich natural grass; and, besides a number of cattle sent to the London markets, the dairy is a great branch of industry. Chedder cheese is considered equal to any in England; and a great quantity of what is called Gloucester is produced in Somerset. Bath and Bristol are also well supplied with excellent butter. The orchards are extensive, and cider and perry nearly as abundant as in the counties on the Severn. The Mendip Hills yield excellent coal, lead of fine quality, and calamine. The manufactures are considerable, both woollen and linen; the former chiefly of the finer sorts; the latter, mostly dowlas, tickens, and sail-cloth.

1874. *Bristol*, since it is here attached to Somerset, must hold the first place. This city, already distinguished in the reign of Henry II., ranked long as second to the metropolis in commercial importance; but in the course of the last century, it has remained nearly stationary in extent and population, though not in wealth. In 1736, it had 80,000 inhabitants; in 1821, 87,771, but in 1831, with its suburbs, 104,886. It has still a very extensive trade, chiefly with Wales, Ireland, and the West Indies. Nor does its spirit seem abated; since, in 1809, it completed, at an expense of 60,000*l.*, a series of extensive improvements, by which the rivers Avon and Frome were spread out into two vast basins, for the commodious reception of vessels. The manufactures of Bristol are very considerable; the glass-works are twenty in number; its brass founderies the most extensive in the kingdom; to which it adds patent shot, pottery, &c. In 1832 there belonged to it 296 ships, of the burthen of 46,567 tons. The amount of customs, in 1831, was 1,168,978*l.*, chiefly from duties on West India produce; and there entered its port 2547 vessels, of the burthen of 625,000 tons. It has still the remains of a magnificent cathedral, and the beautiful church of St. Mary Redcliffe, with many interesting monuments. The old interior of Bristol is ill-built and inconvenient; but the merchants in the new quarters of the city have reared some handsome streets and squares. Bristol has wells, considered very efficacious, especially in consumptive complaints. Visiters chiefly resort to the beautiful village of Clifton, about a mile distant, amid the romantic rocks of St. Vincent. Bristol stands conspicuous for its beneficent institutions, which were actively promoted by Mr. Colston, one of its most distinguished citizens, and in which those for education stand prominent. The charge of dulness, which it seems was once preferred against this city, seems now completely wiped off; since, in science, Dr. Beddoes, a native of Shiffnall in Salop, established here that institution which called forth the talents of his pupil Sir Humphry Davy, originally from Penzance; and in poetry, Chatterton, Southey, and Coleridge were natives of Bristol.

1875. *Bath* (*fig.* 175.), a gayer scene, next attracts our notice. Its name implies the circumstance to which from the earliest ages it has owed its importance. The Romans, passionately attached to the species of luxury which its hot springs afforded, made it one of their principal stations, and built splendid baths, of which the remains have been discovered. Bath, therefore, was always considerable; but it was not till near the middle of the last century, when the taste for watering-places was so much extended, that it became so very distinguished as a scene of fashionable residence. It continued to increase till recently, when its attraction was shared by Cheltenham and some newer places of resort. It became the most beautiful, we may nearly say the only beautiful, city in England. The houses, built of a fine freestone, while those of almost all the other great towns are of brick, have a decidedly superior aspect; and several of the streets, as Great Pulteney Street, the Crescent, the Parades, &c., being not only composed of fine houses, but formed on a regular plan, may vie with the finest in Europe. The city, moreover, rising by a gentle ascent from the Avon, large portions of it may often be seen at once in the most advantageous points of view. The pump-room, the assembly-room, and every structure raised for the sick or the gay, are unequalled in splendour. Bath has a Gothic cathedral, one of the latest built, and on a small scale, but the most highly ornamented in the kingdom; the chief beauty is in the west front.

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BATH.

1876. *Other venerable and interesting cities are found in Somersetshire.* *Wells* is chiefly distinguished by a cathedral (*fig.* 176.), which ranks with the finest in England. Various styles prevail; but the western front, built in the 13th century by bishop Jocelyn, is one of the most splendid specimens existing of the light and highly ornamented Gothic. In the interior, a chapel dedicated to the Virgin is much admired; the rest is Saxon, and heavy. The place itself is small, but neat and handsome. About two miles distant is Wookey Hole, a natural cavern, one of the greatest of English curiosities. The aperture, at first, merely allows one man to pass; but it soon opens into a succession of large apartments, filled with spars, concretions, petrifactions of the most fantastic forms, to which the people of the county assign strange names and

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WELLS CATHEDRAL.

similitudes. A subterraneous river prevents farther advance. A few miles distant are Chedder Cliffs, forming an awful chasm of broken perpendicular rocks, resembling ruined towers and battlements, and penetrated by deep caverns. Glastonbury contains the small remains of the most extensive monastery in the kingdom; which, with its various gardens and offices, covered sixty acres, supported 500 monks, and enjoyed a revenue of 25,000*l*. Even the church attached to it rivalled the greatest of the English cathedrals. Plundered by the reforming avidity of Henry VIII., it was successively demolished; and only a few fragments of extreme beauty are left. Bridgewater and Taunton are both considerable towns of note in history, which carry on some trade and manufactures. Wellington gives a title to the greatest commander of the age, in whose honour a pillar is there erected. Frome is a large and flourishing town, employed in the woollen manufacture; which Shepton Mallet, near it, carries on upon a smaller scale. Ilchester, Bruton, and Castle Cary are pleasantly situated in the fine eastern vales of Somerset. Minehead and Porlock are picturesque watering-places on the Bristol Channel.

1877. *The seats are few*, property in this county being much subdivided. At Burton Pynsent, is a monument to the memory of the late Lord Chatham, to whose family it now belongs. Mr. Miles, at Leigh Court near Bristol, has formed a splendid collection of paintings, including the Altieri Claudes.

1878. *Devonshire* is the most westerly county except one, and, next to Yorkshire, the most extensive, filling the greater part of the space between the Bristol and the English channels. The surface is uniform, without being level. It is traversed by great ridges of hills, low, broad, and flat, which, seen from a height, appear often as one uninterrupted plain; but on minuter inspection are found separated by deep valleys called *coombs*, so walled in by the steep sides of the hills, that they would often appear inaccessible, did not the appearance of culture and habitation prove the contrary. This structure produces many sequestered and romantic sites, of a character peculiar to Devonshire. It renders, however, many of the roads steep and circuitous, and in some places, where they are not carefully made, scarcely passable, unless for a Devonian. The forest of Dartmoor, an extensive district on the west of the county, is of a character peculiarly rugged, broken into fantastic summits, and the valleys chiefly under wood or lying waste. On the other hand, the Vale of Exeter, and what are called the Hams, in the southern districts, are distinguished for fertility, which is rather heightened than injured by the moderate inequalities of the surface. Grain, cattle, sheep, potatoes, excellent cider, are raised according to the situation, and are all generally good. The cattle are of a very superior breed, both for feeding and draught. Mr. Marshall considers the charge of an inordinate self-esteem as established against the Devonians; inspired perhaps by their having preceded central England in civilisation, yet being unwilling to adopt its now improved practices. Much good has, however, been done by an agricultural society established at Exeter. Devonshire does not rank high as a manufacturing county; yet woollens are made to some extent in Exeter and several other places. Fishing is carried on with spirit and success, both in the sea and in the rivers; of which last, the Exe and the Tamar are the principal. The Western Canal, joining the two channels, passes chiefly through Devonshire.

1879. *Exeter*, the capital, is an ancient and pleasantly situated town, near the mouth of the Exe. In consequence of its advantages for education and society, many of the gentry from different parts of the county have made it their residence. Its manufacture and export of serges and kerseys have declined, but are still considerable; the East India Company taking them to the annual value of 400,000*l*. The cathedral holds a high rank among ecclesiastical antiquities. Some part of it is traced to the ninth century; but the greater proportion belongs to the thirteenth and fourteenth. The painted east window, and the bell of 12,500 lbs. weight, the gift of Bishop Courtenay, are particularly noticed. Some modern embellishments have been added.

1880. *Plymouth* is the most important of the towns of Devonshire, and one of the great naval arsenals of Britain. The main and central depôts lie at Portsmouth and on the Thames; but it is important that the fleets should have this exterior station, where they may rendezvous, and receive their final equipment and supplies before leaving the Channel; where also, when exhausted, they may put in and refit. The Plym and the Tamar, at their junction, form an estuary of nearly two miles broad, composing a harbour, or rather a series of harbours, capable of containing 2000 vessels in a state of perfect security. In that of Hamoaze, on the Tamar, 100 sail of the line may be safely moored. Catwater (properly Cadwater, from the rivulet Cad, which flows into it), the port at the mouth of the Plym; and Sutton Pool, immediately adjoining the town; are both excellent and extensive. Plymouth Bay forms also an excellent roadstead, though exposed to the heavy swell which came in from the Atlantic. To remedy this, government undertook that stupendous work the Breakwater, a mole formed by immense stones heaped upon each other, stretching across the entrance, and at a certain distance from either shore (*fig.* 177.). The estimated expense was 1,170,000*l*.; and the quantity of stone, 2,000,000 tons. It has completely answered expectation; and, in proportion as it has advanced, has rendered the roadstead more secure. As the approach was also rendered dangerous by the Eddystone rocks, a lighthouse has, after much difficulty and several unsuccessful trials, been erected there by

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PLYMOUTH BREAKWATER.

Mr. Smeaton, sufficiently firm to withstand the furious assaults of the At
which it is exposed. Plymouth is now divided into two nearly equal pa
and Plymouth Dock, at the mouth of the Tamar, recently called Devonport,
dignity of a separate borough. The dock-yard is most superb; 3500 yard
from 1000 to 1600 in breadth. All the establishments connected with
smithy, saw-pits, mast-houses, as also the victualling departments, are on the
scale, yet conducted in the most regular order. Plymouth is not, on the wh
town: but it contains some handsome edifices; as the government-hous
chiefly of cast-iron, and said to be the handsomest country theatre in Engl
library, an elegant and classical structure. The charitable institutions are n

1881. *Devonshire has besides a number of small towns*, of from 2000 to 5000 inhabitant
sort of capital of North Devon, situated on a rich plain, retaining still a few manufactures,
some fashionable society. Biddeford is a dirty seaport, with, however, some little trad
decayed seaport, surrounded by some of the wildest and most peculiar scenery in Dev
between the villages of Coomb Martin and Linton, is the Valley of Stones, a dreary abys
rocks and piles of loose stones present themselves under every wild and rugged aspect. On
Dartmouth carries on some foreign trade; while between it and Teignmouth is Torbay, wh
the heavy gales that blow up the Channel, the British fleet can ride safely at anchor. Teig
Exmouth, and Sidmouth, are agreeable ports, commanding grand views of the sea and the
Tiverton, Honiton, Axminster, South Molton, Tavistock, are neat interior towns with some
ticularly the first, which has also a name in history. Okehampton and Lidford, on the bo
of Dartmoor, are noted for the ruins of castles formerly of great strength.

1882. *Among a number of fine seats*, we must not omit Mount Edgecombe, superbly o
which slopes down to the English channel, and which has been considered, as to situation
England. Powderham Castle, the richly ornamented seat of the Courtenays; Ugbrook,
where Lord De Clifford has a beautiful library and collection of pictures — are conspicuous

1883. *Cornwall*, the most westerly county of England, is a peninsula of a
bounded on the east by Devon, and on the other sides by the sea. The hil
more lofty than those of Devon, are much more sterile and rocky: they forn
ridge, diminishing in height as it extends westward, and terminating in
obtuse point called the Land's End. In figure, this county has been said to
nucopia; a resemblance which well accords with its ancient British name, *Co*
signifying a horn, and aptly applied to designate a headland or promontory.
borne from the Atlantic by the prevailing westerly winds, render this, perhaps
district of England. The sterility of the hills is increased by the frequent
down the vegetable soil; but some of the narrow valleys, from the same
wear the aspect of smiling fertility. Almost the only lands under cultivat
situations, or in others equally sheltered, near the sea-coast. Oats, barley,
potatoes, are grown there in abundance; but wheat is imported. In some
the climate is so genial, that the myrtle and other shrubs peculiar to the s
flourish in the open air. The principal rivers are the Tamar, the Lynker
Fowey, the Camel or Alan, and the Fale; besides which there are numero
springs of excellent water. The county is seventy-eight miles in length;
boundary its breadth exceeds forty-three miles, but continually diminishes to
its area is computed at 1327 square miles; and the mines give occupation
16,000 of its inhabitants.

1884. *Cornwall has from the earliest ages been renowned for its mineral p*
were the objects of a considerable commerce in times when only the western
and the Isles of Scilly were obscurely known to the Greeks, under the name
In the reign of Henry III., the mines, with the Jews who farmed them,
that sovereign at the disposal of his brother Richard earl of Cornwall a
Romans, who enjoyed nearly the entire profit of supplying all Europe w
mining districts of Spain had been brought under subjection of the Moors.
year of Edward III., this earldom was constituted a duchy by a charter;
guished as the first ever issued for creating a duke in England. Edward th
was declared Duke of Cornwall, to hold to himself and his heirs, kings of E
their *first-born* sons: at the same time, lands in other counties, as well as in
constituted parts of the duchy; and a grant was made by patent of the stan
wall, together with the coinage of tin, and all the issues and profits thence
the profits and perquisites of the court of stannaries, with certain reservations
Cornwall has the power of appointing a chancellor, a lord warden, a receiv
other officers for the administration and management of the affairs of the duc

1885. *The mineral products of Cornwall* are principally tin and copper
some lead. These metals occur in the granite chain, extending eastward
moor in Devon; but at present the principal mining district is that betw
End and St. Austel. The most celebrated are the tin mines of Palgooth *,
west of that town: in these there are no fewer than fifty shafts, of which
are constantly in use. The principal vein of ore, which is about six feet t
east to west, and dips to the north with an inclination of about six feet in a

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* Dr. Maton's Observations on the Western Counties.

ore is of the vitreous kind, but rarely found in crystals; the colour for the most part greyish-brown; the *country* of the ore is a grey killas. About fifty or sixty feet below the surface of this mine, the water that percolates through the different strata begins to form small streams, which would soon overflow the lower part if not constantly carried away. This operation is performed by a stupendous steam-engine, which raises up to the adit, and discharges at each movement a column of water fifty-six fathoms deep and fifteen inches in diameter. Steam power has also been substituted for that of horses in moving the machinery employed for raising, washing, and stamping the ore; after which last operation it is carried to the smelting-house. Tin cannot be sold until it is assayed and stamped with the duchy seal; for which purpose meetings are usually held four times a year. The annual produce is estimated at 20,000 or 25,000 blocks, each block weighing from 2¾ to 3¼ cwt., and valued on the average at ten guineas. *Grain tin*, which is obtained from stream ore, is deemed superior in value to the common metal, and has been procured to the amount of 2000 or 2400 blocks annually. In some of the stream-works native gold has been occasionally found. The annual produce of copper is about 13,000 tons, estimated at 1,300,000*l*. The lead mines, being considered as not productive, are not much worked, although the ores are understood to be rich in silver. The tinners are in many respects a distinct body of men; they have a court and parliament of their own. The stannary laws, by which the mines and the operations connected with them are regulated, do not appear to have undergone any change since the reign of Charles II.

1886. *The pilchard fishery* affords another source of wealth to Cornwall. The pilchards appear annually in vast shoals about the middle of July; and are taken in large nets of a peculiar form, called *seans*, each sean managed by three boats, containing eighteen men. In productive seasons, nearly 30,000 hogsheads have been brought into the port of Fowey alone. After lying salted in store for six weeks, the fish are packed in hogsheads, so closely that the whole contents, when turned out, appear in a compact state. The oil expressed from them is so considerable in quantity as to have become an article of trade. The principal export of pilchards is to the catholic countries on the shores of the Mediterranean. The average price is from 35*s*. to 42*s*. per hogshead. The total quantity annually exported from the Cornish coast may be worth 50,000*l*., including the receipts for oil. The number of persons employed in this fishery is about 5000.

1887. *The Cornish men*, especially the miners, are a peculiar race, whose origin is said to be Celtic. Their language, now extinct, was reputed to be more harmonious than either the Welsh or the Armoric language of Bretagne. Traces of it are found in the names of ancient towns and castles, as well as in those of rivers and mountains, and in the technical terms relative to the arts of mining, fishing, and husbandry.

1888. *Of the preponderance till now possessed by Cornwall* in the national representation, through the return of 44 members to parliament, a vague notion is entertained by some persons, that it resulted from a state manœuvre of Charles II. Its real origin indeed is not very ancient, and is ascribed to the large revenue yielded by the duchy to the crown, or to the heir apparent. In the time of Edward I., only the *county*, and the five boroughs of *Launceston, Liskeard, Truro, Bodmin*, and *Helston*, had the right of returning members. In the reign of Edward II., *Lestwithiel* was enfranchised; and it was not until that of Edward VI. that this privilege was extended to *Camelford, West Looe, Grampound, Bossiney*, and *Newport*. In the first year of Queen Mary, *Penryn* was added to the list of boroughs; and about three years afterwards, *St. Ives*. A short time subsequent to the accession of Elizabeth, *Tregony* was enfranchised; in the fifth year of her reign, *St. German's* and *St. Mawe's*; in the thirteenth, *East Looe* and *Fowey;* and in the twenty-seventh, *Callington;* by which addition the boroughs were increased to twenty-one. By the Reform Bill thirteen of these — *St. Michael's, Bossiney, St. Mawe's, West Looe, St. Germain's, Newport, Camelford, East Looe, Tregony, Callington, Saltash, Fowey, Lostwithiel*, were disfranchised, leaving only seven.

1889. *The towns of Cornwall* are small. Launceston, situated on the Tamar, at the very border of Devonshire, extends up the side of a hill, on the summit of which are the remains of a small fortress called *Castle Terrible*, where a vigorous stand was made to sustain the sinking fortunes of Charles I. Its church, built in the reign of Henry VIII., exhibits a specimen of the meretricious finery which disgraced the Gothic architecture of that period. Truro is a neat thriving town, the trade of which consists in a considerable export of tin. At Bodmin, a place of ancient note, the summer assizes are still held. Redruth is a populous town, in the heart of the mining district. Penryn flourishes by the pilchard fishery. Penzance, near the Land's End, participates in the same source of wealth, and has of late years acquired distinction and prosperity from other causes. The mild salubrity of its air has been found highly beneficial to persons of delicate constitutions, particularly of a consumptive tendency; and those who take up their residence at Penzance are agreeably surprised by the lovely scenery in its neighbourhood. Its market is well supplied with excellent provisions, especially fish, at a cheap rate. Falmouth, the westernmost of the fine harbours on the Channel, is the principal packet station for Lisbon, the Mediterranean, and the West Indies. Notwithstanding its natural advantages, it dates its importance as a seaport no earlier than the reign of James I., and did not receive its present name until that of Charles II.

SUBSECT. 5. *Wales.*

1890. *Wales* is a territory which, though united to England by early conq
the title of a separate principality, and possesses a national aspect, and eve
existence peculiar to itself. The verdant and extensive plains of wester
give place to the lofty mountain, the deep valley, the roaring torrent,
ful precipice. Wales, like Cumberland, is a mountain region, and still
but it is not a country of lakes. About sixty have, indeed, been numbere
mere lakelets or tarns, rocky basins formed in the acclivity of steep hills; n
expanses, which give a soft grandeur to the Cumbrian scenery. Wales, on
has rivers and torrents without number, which roll through its mountain va
banks, adorned with verdure and cultivation, combine in the most striking
lofty and varied summits which tower above them. Sometimes these str
way through deep rocky recesses, the perpendicular sides of which rise
height; and occasionally a bridge thrown across from one to the other, ov
ing deep beneath, produces some of the most picturesque and terrific scen
found in the island. All the loftiest mountains are in North Wales; its v
and narrower; and it presents more strikingly all the characteristic features
In South Wales, on the contrary, the valleys are broader, more fertile, and
and villages; they often even expand into wide plains, still encircled by a mou
Agriculture, in such a country, labours under many disadvantages, and
often upon the old system of infield and outfield. The associations, howe
for its advancement, the improvement of the roads, and the formation of cana
to produce happy effects. Manufactures are nearly confined to the comf
flannel, which has been always a fabric of the Welsh, in which they still exce
rivals. It is made in almost every farm-house, and under the various form
gloves, wigs, and socks. It is to mining, however, that the industry of
chiefly attracted, by the profusion of mineral wealth which nature has lodg
of its mountains. Silver is little more than an object of curiosity, though a
once assumed the name of the Welsh Potosi. But the lead of Flint, Caern
counties of North Wales, the copper of Anglesey, and, above all, the iro
and other counties in the British Channel, are objects of real and exten
Coal is found almost every where, and is employed either for domestic purp
and refining the metallic ores.

1891. *The Welsh are a Celtic race*, the genuine descendants of the ancie
in these mountain recesses, sought refuge from the destroying sword of th
so completely dispossessed them of the low country of England. They had
off the effeminacy of their ancestors; yet could not resist the overwhelmin
ward I., who annexed Wales to the English crown. In order to hold
however, he was obliged to construct, not only on its frontier, but in its in
immense extent and strength. These castles now form one of the mo
characteristic features of Wales, Conway, Caernarvon, and perhaps Caerphil
not prevent formidable insurrections, in one of which Owen Glendower ma
for years as an independent prince. Within the last 300 years, the Wel
peaceable as any other subjects of the empire. Like the Highlanders, they
their feudal habits, only venial and amiable failings. Among these is nation
which the genuine Cambrian holds his country and his nation superio
and regards the *Sasna*, or Saxon, as a lower race of yesterday. With this is
high degree, the pride of pedigree; even the humblest Welshman tracin
above any lowland genealogy. Strong ties of friendship subsist between
and their tenants: manifested, on one side, by indulgence and protecting k
other, by a profound veneration for the representatives of the ancient chi
The Welsh have many superstitions, mixed with much genuine religious
are hardy, active, lively, hospitable, kind-hearted; only a little hot and quar
English neighbours complain that they have not yet attained that pitch
cleanliness in which the former place their pride.

1892. *Wales*, as we have already observed, *is divided into North and Sout*
former contains, on the greatest scale, all that is most distinctive in the
country and people.

1893. *North Wales* comprises the counties of *Caernarvon, Merioneth, M*
bigh, and *Flint*, with the island of *Anglesey*. The whole might be comp
limits of a very large English county. The characteristic feature of this div
the very elevated chains of mountains which cross it from north to south,
Channel. The chef or chief is Snowdon, which raises its head to the heig
yet it is only the most elevated of a crowd of summits, called the Snowd
many of which rear peaks almost as high. They cover a great part of the
narvon, at the northern part of which they present to the Bay of Beaumari

of Penmanmawr, whose broken fragments threaten to bury him who travels the difficult path which has been formed along its almost perpendicular sides. Snowdonia encloses in its rocky basins many clear little lakes, full of delicate fish, of which the principal is Bala, which gives rise to the Dee. Merioneth is chiefly covered with inferior, but still very lofty and rugged mountains, bearing the names of Ferwyn, Arren, and Arrenig; till, towards the southern extremity, they tower into Cader Idris, the second summit of Wales. It is every where steep, craggy, and precipitous, piercing to the sky by three lofty pinnacles. Lastly, in the heart of Montgomery, towers the huge mass of Plinlimmon, with a crowd of attendant mountains.

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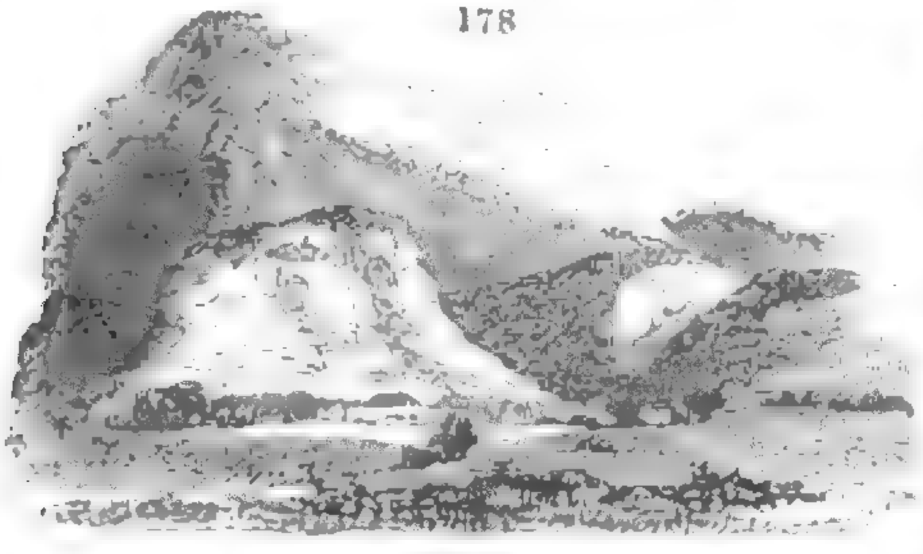

SNOWDON.

1894. *The vales* which intervene between these heights diversify bleak and barren regions, otherwise calculated to inspire only impressions of dreary sublimity. The most extensive is that of Clwyd, in the county of Denbigh, where the mountain chains gradually sink. It is about twenty miles in length, and four or five of average breadth; and presents a more brilliant picture of fertility, heightened, doubtless, by contrast, than almost any other spot in the island. The narrower vales, however, present more of picturesque beauty, particularly that of Llangollen, where the Dee, winding through cultivated and pastoral scenes, overhung by high rocks and cliffs, presents at every step a varying landscape. Even in the heart of Snowdonia, the little verdant and wooded vale of Festiniog, with numerous streams uniting at the bottom into a little river, forms a scene of almost unrivalled beauty. The island of Anglesey is generally level, and its scenery presents few striking features, except the rocks of its western shore. It has happened, fortunately for the improvement of this formidable range of territory, that it lies on the highway from London towards Dublin; and with the view of facilitating the intercourse between the kingdoms, government, at the national expense, has formed one of the finest roads in the world; among the principal features of which is the stupendous iron suspension-bridge, formed across the arm of the sea, called the Menai Channel. The chief centre of the flannel manufacture is in Montgomery and Merioneth. The lead mines of Holywell and the copper mines of Anglesey possess an importance scarcely inferior to those of South Wales.

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CAERNARVON CASTLE.

1895. *Caernarvonshire* includes the grandest and most characteristic features of North Wales. The capital, Caernarvon, is a handsome, well-built town, and, for its situation, considerable. Its chief ornament is the castle, a mighty and stately edifice (*fig.* 179.), built by Edward I. to curb the spirit of the newly subdued Welsh, and also to soothe them by the circumstance of his queen, Elinor, giving birth within its walls to the heir of the monarchy. It encloses an area of two acres and a half; the towers are of stupendous magnitude, and crowned by light and beautiful turrets. To the south of Caernarvon is the steep ascent of Snowdon, whence a view of astonishing extent is commanded; though only to be seen in those fortunate days when the veil of mist, which usually wraps it, has been dissipated. On its declivity is the wild and rocky lake of Llanbieris, with the ruined castle of Dolbadern overhanging its banks. Nearly at the opposite extremity of the county is Conway; rather a poor town, but containing the walls of a still more magnificent castle (*fig.* 180.), also erected by Edward I. The interior is in a state of total ruin; but the view, from a little distance, of its eight mighty towers, ranging along the summit of a lofty rock, which overlooks the broad surface of the Bay

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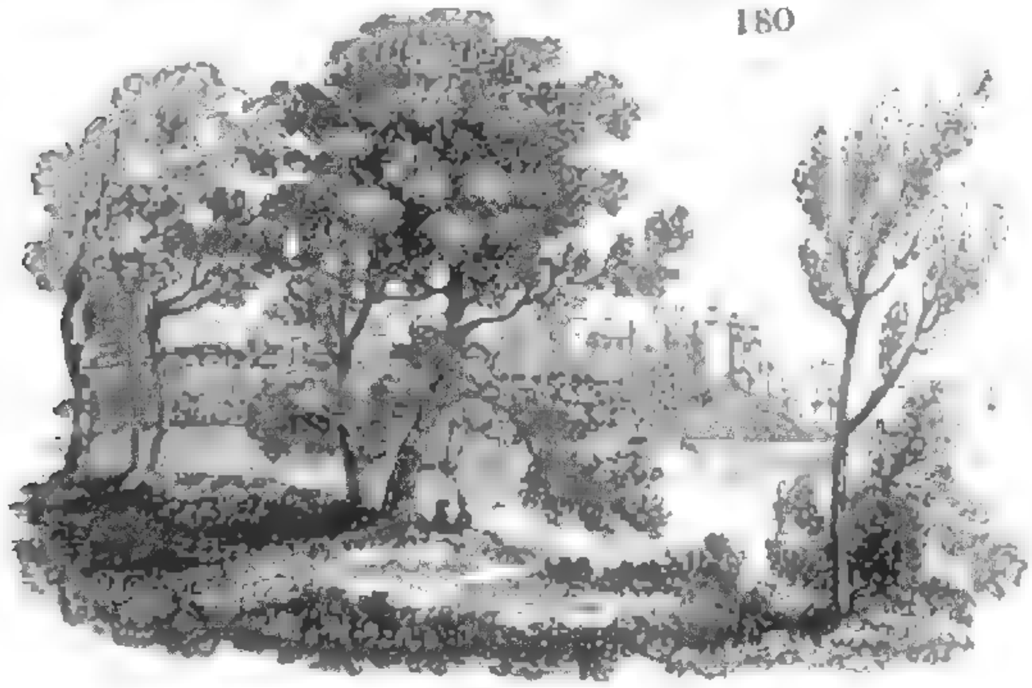

CONWAY CASTLE.

of Beaumaris, presents an image of grandeur which scarcely any other castellated structure
can rival. About midway between these two castled sites is Bangor, a pleasant little tow
side the awful grandeur of Snowdonia, and on the other the fine expanse of Beaumaris Bay.
the high road to Holyhead and Dublin; and about two miles distant is the suspension bridge
already mentioned. Here, and at Penryn, is a great shipment of slates, brought from the
neighbouring mountains.

1896. *Merioneth*, though it cannot boast a summit equal to Snowdon, di
still more uniformly wild and rugged. It has a few large villages, each
circuit of lofty and almost inaccessible mountains. Corwen is a pleasant littl
high road, and on the eastern border. Bala is supported by a small manuf
gloves and stockings, and by
the largest of the little lakes of
has clear water and abounds
gelly, about midway between
Cader Idris (*fig.* 181.), is seat
heart of all the grandest scen
To the north are a succession of
cades, particularly those of the
vale of Festiniog, with the plea
Maentwrog at its foot. Pont
affords one of the grandest ex
bridge scenery of Wales. On
the steeps of Cader Idris, on
side of which is the little mar
Towyn. On the coast, the cast
built also by Edward, bears marks of great strength.

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CADER IDRIS.

1897. *Montgomery*, though its centre is occupied by the "huge Plinlimmon," whence bran
every direction, giving rise to the Severn and the Wye, is yet, on the whole, of a milder aspect.
valleys, particularly that of the Severn; and many of its hills are green to the summit. The
flannel is carried on with considerable spirit. The town of Montgomery is small, pleasantly
declivity of a hill, crowned with the ruins of a once noble castle. Welshpool is an ill-built
but has a great market for flannels; and communicates by a canal with Chester and Ellesme

1898. *In proceeding to Denbigh and Flint*, which border on the Irish Sea, we quit the
region of North Wales, and come to broader valleys, and hills gradually diminishing down to
western England. Denbigh, a pleasant, ancient, little town, is crowned by a castle, seated
looking down to the vale of Clwyd, proverbial for its smiling fertility. Farther down the val
little town of Ruthin. In the valley of the Dee, and on the confines of Cheshire, to which i
is the considerable town of Wrexham, noted for its fairs, in which Welsh flannel is the
But the chief ornament of Denbigh is Llangollen Vale, on the upper Dee, where the mixtur
wildness produces the most striking variety of scenery. Among its leading features are the
Dinas Bran, crowning the steep summit of one of the principal hills; and the remains of the
Crucis. This last is situated in a valley connected with that of Llangollen, enclosed by
verdant to the summit, and sprinkled with trees. The edifice has been in the simplest style
tecture; but the situation, the fragments that lie strewed around, and the trees and shrubs
in its interior, render it one of the most picturesque spots in England. Chirk, an agreeable
it a castle, one of the most perfect of the many with which Wales is adorned. Near it als
aqueduct of Pont-y-Cysilte, by which Mr. Telford has conducted the Ellesmere Canal over the
18 piers, 1007 feet in length, and 126 feet above the level of the river.

1899. *Flint* is a small county, diversified by rocky hills of lower elevation, but rich in lead a
stores. The county town of Flint, and its castle, have entirely lost the importance they poss
were the prison of Richard II.; and the glory of Caerwys, the ancient scene of musical and
has entirely passed away. The chief interest of the county consists in the industrious to
which, besides its extensive lead mine, carries on works in brass and copper, and even so
Here the sacred well of St. Winifrede, from which it derives its name, is beneficially applie
of industry. Hawarden flourishes by a foundery for ordnance, and by extensive works in eart
on in the neighbouring hill of Bulkley. The lead mine of Llan-y-Pander is the most extensive
and employs four vast steam-engines in clearing off the water. Mold is a pretty large town,
rich plain of the same name. St. Asaph attracts notice by its small but very neat cathedral.

1900. *The Island of Anglesey* is now considered a province of North Wales, though, instead
character, it presents, generally, that of a naked and gloomy flat. It is said to have been anci
seat of druidical superstition, still attested by the *cromlechs*, or large, flat, stone tables support
which are more numerous here than in any other part of Britain. Its importance has rested
upon its mineral treasures, particularly those extracted from the bosom of the Paris
Amlwch. This mountain consisted of one entire mass of copper, the greater part of
dug out of its excavated sides. These are now laid open to the eye of the spectator,
the edge, sees an awful range of huge caverns, profound hollows, stupendous arches, and
of rock; and amid all these, the miners plying their singular and perilous trade. The o
25 per cent. of metal; and the entire produce has amounted to nearly 80,000 tons; but
has become very unproductive,
amount is only from 750 to 950 t
which ranks as the capital, is a neat
manding from Baron Hill, in its im
a most splendid view of the mou
North Wales. Much more import
Holyhead, now the main point of
between England and Ireland. To
government has constructed a
London, across the most rugged
Wales, and also made an admirab
neighbouring coast is very bold,
tory, called the Head (*fig.* 182.), con
masses of precipitous rocks, holl
caverns, and echoing with the clan
sea-fowl. The town itself has
tended and improved.

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HOLYHEAD.

1901. *The seats in North Wales*, though not extremely numerous, are yet more than we can well recount. Bacon Hill, in Anglesey, has been mentioned for its beautiful views. Plas Newydd and Penrhyn Castle, finely situated on the Menai Strait, are both castellated mansions, modernised and highly ornamented. Wynnstay Park, near Llangollen, is the ancient domain of the Wynns. In Flintshire are Hawarden Castle, surrounded by extensive woods, and Mostyn Hall, near Holywell, presenting varied specimens of the different styles of architecture successively prevalent from the reign of Henry VI. Near Montgomery is Powis Castle, which dates from the twelfth century, and was long one of the proudest fortresses in Wales: it is still a superb modern seat; though the principal residence of the Powis family has been transferred to Walcot House, in Shropshire.

1902. *South Wales* comprises the counties of Radnor, Cardigan, Brecknock, Caermarthen, Pembroke, and Glamorgan. Its general character has been already noticed in comparison with that of North Wales. Though its features are not on so vast a scale, it presents scenery equally romantic, mingled with a greater degree of softness and cultivation; and its agricultural and mining products are of considerably greater value.

1903. *Radnor*, the first county that presents itself as we proceed from the north, is one of the least considerable. It is composed of bleak ranges of mountains, in some parts almost impassable. The Wye, in traversing it, forms a valley in which there is some cultivation; but the greater part is only fitted to afford pasture for sheep, the wool of which is valuable. New Radnor, once a fortified city, is dwindled into a village. Presteign, though not meriting any higher title, is neater and more flourishing.

1904. *Cardigan* is a much more interesting county. Its mountains, though not of stupendous elevation, are varied, broken, interspersed with deep valleys and ravines, through which a number of small rivers dash towards the bay of Cardigan. The county thus includes some of the boldest features of Welsh scenery. The domain of Hafod, in particular, has been covered with extensive plantations, so happily disposed as to render it almost a scene of enchantment. At a few miles' distance is an object which, from its sublime and terrific aspect, is called "the Devil's Bridge;" an arch thrown over a deep and narrow rocky chasm, overgrown with wood, at the bottom of which rolls the Mynach, after rushing down three lofty cascades; forming altogether the grandest scene of the kind in the kingdom. The lead mines of Cardiganshire are very extensive, though the want of fuel has caused the working of many of them to be discontinued. Cardigan is a small old town, which carries on a considerable coasting trade, having nearly 300 small vessels belonging to it. There is great resort to Aberystwyth, an agreeable bathing place, which commands an extensive view of the range of the northern mountains. Its trade is also considerable, extending even to Bristol and Liverpool.

1905. *Brecon*, or *Brecknock*, in the interior from Cardigan, is, like the rest of Wales, mountainous and rugged, but has some fertile lands in the valleys of the Uske and the Wye. There, chiefly through the exertions of a county society, agriculture is conducted in a more skilful manner than in most other parts of Wales. Brecon is an ancient town on the Uske, amid lofty mountains, and surrounded by delightful walks. Like every other place in Wales, it has the remains of a castle, which was once strong, and held by Buckingham, the favourite and afterwards the victim of Richard III.

1906. *Caermarthen* is a more favoured province; and though it includes an ample proportion of bleak and barren hills, these are intermixed with large fertile valleys, particularly that of the Towey, which traverses the whole extent of the county. It thus produces, not wheat indeed, but oats and barley, of which quantities are exported to Bristol. There are also abundance of coal, and some iron works on the Glamorgan border. The capital, situated on the Towey, which admits to it vessels of 300 tons, is one of the most flourishing and best built towns in Wales. Its antiquities are almost effaced; but it has a handsome town hall and modern church.

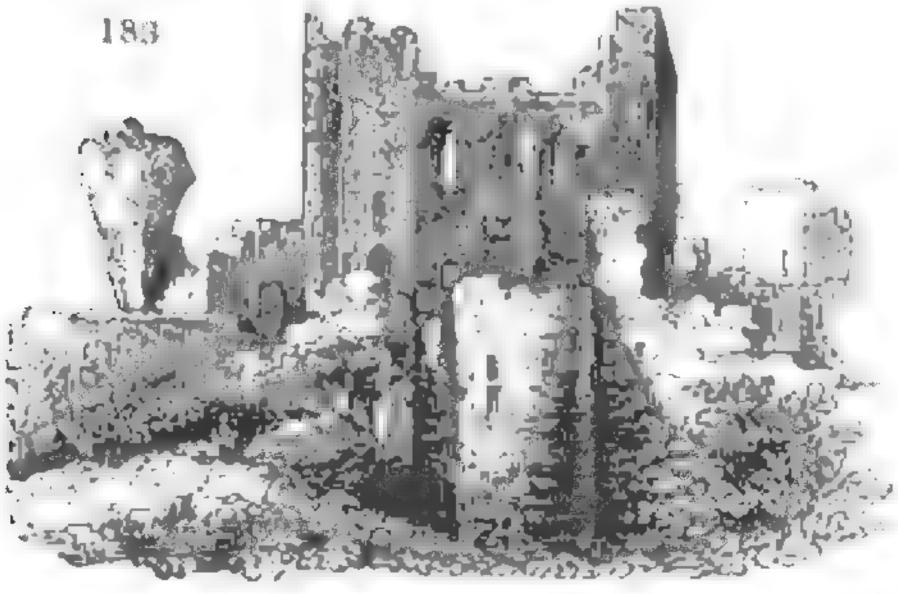
1907. *Pembroke*, the most remote extremity of Wales, consists of a peninsula branching out between the Irish and Bristol channels. The great range of the Welsh mountains here terminates; and, with the exception of a few detached summits, the country presents merely an undulating surface, rising at most to elevations of 200 or 300 feet. Hence, notwithstanding a rude and antiquated system of agriculture, it is made to yield considerable quantities of oats, of barley, and even of wheat. Its breed of cattle is also in high repute. Its wide and indented coasts contain some of the finest harbours in Britain; yet it does not excel either in trade or manufactures. The mineral field also here terminates; and the coal that occurs is of inferior quality. Two Roman roads, in different directions, cross this county, which is also very rich both in druidical and feudal monuments. The ancient city of Pembroke is strikingly situated on an almost insulated neck of land on the bay of Milford Haven, the highest part of which presents the vast remains of its castle, one of the most magnificent structures of which Wales or England could boast. It was built in 1092, upon the site of a more ancient British fort, and was considered almost impregnable till, after an obstinate resistance, it was reduced by Oliver Cromwell. The town contains some churches, ancient, but not elegant. The large bay composing Milford Haven is now generally allowed to form the most capacious and secure harbour in Britain. Hence government have been induced, at the new towns of Milford and Haberstone, on its northern shore, to form dockyards and establish packets for the south of Ireland. The largest town of Pembroke, however, is Haverfordwest, situated on a small river which falls into St. Bride's Bay, and admits vessels of 100 tons. It continues to support itself by some trade and industry. Fishguard is a fishing town on a very fine bay of the same name. St. David's, the ecclesiastical capital of South Wales, is now only a large dirty village, adorned, however, with venerable ancient structures. Narberth is a neat town with some striking remains of a castle. Pembroke is crowded with castles, among which stands, in solitary grandeur, Kilgarran, on the borders of Cardigan, where its massy towers and fragments present a most imposing spectacle. It commands also a fine view along the course of the Towey. Carew Castle, near a small village of the same name, shows, likewise, some magnificent remains.

1908. *Glamorgan* is the finest county in South Wales, and, as to wealth, superior to any other in the principality. Its coast, along the Bristol Channel, and for some miles inland, is level, and fertile in the extreme. Thence the ground rises into hills of continually increasing elevation, till, on the frontier, they rise to the height of upwards of 2000 feet, and unite with the Brecon chains. From these heights descend numerous streams, which, in their progress to the sea, produce all the varieties of ravines, wooded vales, falls, and cataracts; which, with the beauty of the plains below, and the fine views over the Bristol Channel, render Glamorgan equal in picturesque beauty to any other county in Wales. Notwithstanding, also, too close an adherence to the old system of exhausting the ground, and leaving it to recruit, and the employment of huge and useless teams of oxen, the crops of every description of grain are ample; and there are good breeds both of cattle and sheep. But all these objects are trifling, when compared with the mineral treasures of Glamorgan. It forms the centre of a vast field of coal and iron, from which branches extend into the neighbouring counties. Since it was found that iron could be smelted with coke, the working of this metal has prodigiously increased, and the town of Merthyr Tydvil, near which it is most abundant, has grown from a mere village to be the most populous place in all Wales. In consequence also of the abundance of fuel, the copper ore dug out in Anglesey, Cornwall, and Ireland, is brought hither to be smelted and refined. The plating of iron with tin is also an extensive occupation. The iron is reduced by immense rollers to the requisite thinness, and is then cut by enormous scissors into plates, which afterwards require little more than simple immersion into the smelted tin. The coal, besides its essential use in these various works, is in itself a most extensive object of exportation, amounting in some years to 300,000 tons. The rivers of Glamorgan are very imperfectly navigable; but this defect has been supplied by industry. From Neath, Cardiff, and Swansea, canals reach far into the interior; and their benefits being extended by railways, a channel has been opened for conveying to the sea the produce even of the most interior mines. Cardiff ranks as the county town, but is now much surpassed by others. Yet it carries on a considerable trade; having a commodious harbour, and being

connected by a skilfully conducted canal with the interior works at Merthyr Tydvil, the
exports, as well as that of a large tin-plate manufactory in its neighbourhood. It is
surpassed by Swansea, which has risen to its present importance by immense works in
by the exportation of coal; which is furnished in such abundance, that a large vessel m
and go out loaded at the next Its pleasant situation on a fine bay has also made it an
sea-bathing, and led to the erection of many elegant buildings. Swansea has thus risen
of South Wales; yet it is not so large as Merthyr Tydvil has been rendered by the exte
and round it. There are near it seventeen furnaces, in one of which 11,000 tons of pig iro
bar iron are produced annually. Neath, on a river of the same name, flourishes by the or
county. The scenery on the upper Neath, and particularly on its tributaries the Fel
extremely romantic. Caerphilly, a thriving little town, with some manufactures, deserves
the remains of its immense castle (*fig.* 183), which present a most stupendous scene of r
have been a mile and a
ference, and capable of
son of 20,000 men.
ornamented in a style
siderable architectural
conjectures regarding
probable seems that of
ascribes it to Edward
forget Llandaff, the o
the county, but now on
of the least richly en
Wales. The cathedral,
ruin.

1909. *Elegant villas*
parts of South Wales,
mansions of the first clas
Hafod, already noticed
nent features of Cardiga
entirely corresponds t
scenery. Margham, in
only a handsome edifice
of cabinet of curiosities;
specimens of statuary, a
edifices. We may add
erected by Mr. Wyndham, on the supposed site of that of Caractacus; and Knoll, whose
grounds have been lately neglected.

183



CAERPHILLY CASTLE.

1910. *The smaller islands attached to England,* being too few and unim
by themselves, are, for want of any more appropriate place, attached to this

1911. *Man* (the Mona of Cæsar), thirty miles in length by twelve in br
equidistant from each of the three kingdoms; having opposite to it Cumber
Galloway on the north, and the Irish county of Down on the west. It c
siderable extent of level territory; but rises in the interior into high m
which Snowfell, nearly 2000 feet high, stands conspicuous. Many parts
very rocky, particularly the Calf, a small appendent island at its souther
round by gloomy caverns and stupendous rocks, against which large ve
dashed to pieces. Its caves and precipices are tenanted by a great variet
whose shrill discordant notes increase the wildness of the scenery. Man ra
independent sovereignty, held by the Earls of Derby, and is celebrated for
ill-requited defence made by the countess of that name for Charles I.
afterwards to the Duke of Athol, from whom the sovereignty was purcha
the British government, with a view to the prevention of smuggling, and t
ment of a free trade. The coasts of Man are generally susceptible of
much enriched by the quantity of sea-weed thrown upon them; which, wit
ments in agriculture, enable it to produce large crops of barley and other g
is a great exportation of cattle and butter. The herring-fishery is now
The natives are shown to be a Celtic race by their language, which bear
to the Welsh and Gaelic.

1912. *Castletown,* the capital and seat of the courts, [illegible] the neatest town in the island;
Castle Rushen, the ancient palace of the kings of Man, rears its gloomy and majestic bro
ever, as being the spot in which the whole trade circulates, is now of superior importance,
great number of English settlers. Peel and Ramsay are both much decayed; but the [illegible]
the venerable ruins of its castle, once deemed impregnable.

1913. *Scilly* is the name given to a group of islands, or rather islets, s
distance from the western extremity of Cornwall. They were celebrat
under the appellation of Cassiterides, or the Islands of Tin; under which,
wall, and sometimes even the whole British Isles, were confessedly includ
they are only tenanted by 2000 poor inhabitants, who raise a little grain, bu
upon fishing, pilotage, and the making of kelp. St. Mary, the largest tow
tion of 700 inhabitants, and is defended by a small garrison; while on Samp
place, there resides only one family.

1914. *Jersey, Guernsey, and Alderney, with Sark,* form a group natura
originally part of the patrimony of the Norman kings, which the nava
England has enabled her to retain. They enjoy certain privileges and imm
on this distinction, as laid down by Coke, that, "though parcel of the
crown of England, they are not, nor ever were, parcel of the *realm* of
climate is mild and agreeable, and the soil generally fertile. *Jersey,* the fin

is beautifully diversified with hill and dale, and is so abundant in orchards, that cider forms the chief object of exportation. These islands, especially Jersey, flourished remarkably during the war, from the naval depôts and fortifications formed upon them, and from the favourable stations which they afforded for privateering. Hence St. Helier, the capital of Jersey, was converted from a mere village to a handsome and agreeable town.

Chap. III.

SCOTLAND.

1915. *The place which Scotland* holds as part of Great Britain, has already been exhibited in the introduction to the chapter on England. It is now time to describe in detail this important, though secondary, member of the empire.

Sect. I. *Geographical Outline.*

1916. *Scotland* is bounded on the south by England, from which it is separated by a line drawn along the Tweed, the Cheviot Hills, and thence to the Solway Frith. Its south-west corner faces the coast of Ireland. On every other side it is bounded by vast and stormy seas; the Atlantic and the Northern oceans, which extend to America, Greenland, and the Pole. The length of Scotland between north and south, from the Mull of Galloway (*fig.* 184.), in about 54° 40 to Dunnet Head, Caithness, in 58° 40′, comprises four degrees of latitude, or 280 miles. The greatest breadth, if taken from Buchan-Ness, to a point on the opposite shore of Inverness, is nearly four degrees of longitude, which, at this distance from the equator, make only 130 miles. This breadth varies little in the large interval between the friths of Forth and Moray; but to the south of the former, the average breadth scarcely exceeds 100, and to the north of the Moray Frith, 40 or 50 miles. The entire extent of Scotland is estimated in the agricultural reports at 29,600 square miles.

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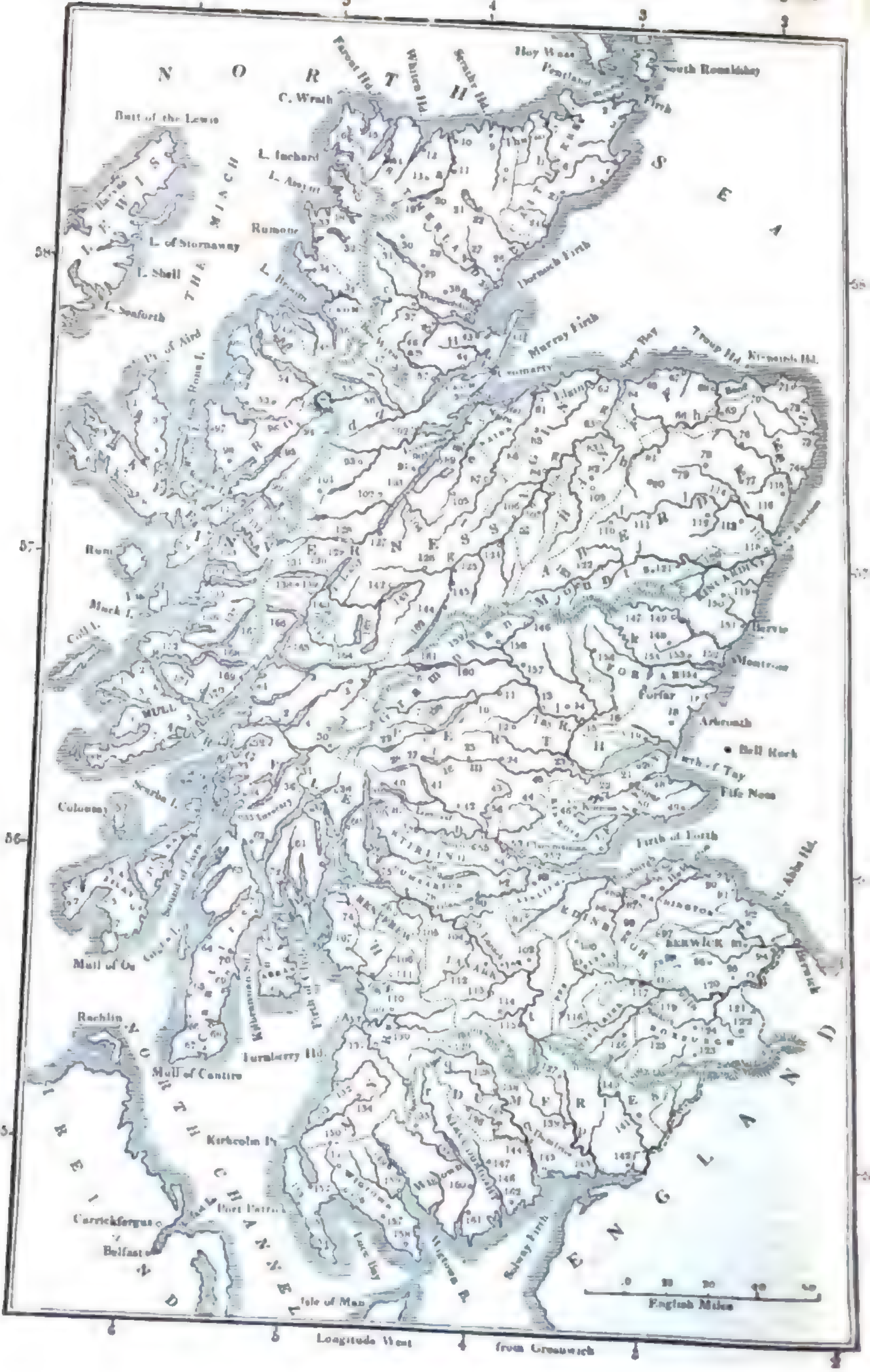
MULL OF GALLOWAY.

1917. *Scotland, in its general outline,* consists of two great and perfectly distinct parts: the Lowlands and the Highlands. The former comprehends all Scotland south of the friths of Forth and Clyde; for the pastoral hills of the southern and western borders, less elevated than the northern mountains, and inhabited by a different race, are not considered as forming any tie between these and the Highlands properly so called. Immediately north of the Clyde, the highland ranges begin to tower in endless succession; but on the east coast, the Lowlands extend beyond the Forth, and northward through the counties of Fife, Forfar, Kincardine, and Aberdeen; though these last are closely encroached upon by the mountain territory. The lowland district also extends round the northern promontory of Aberdeen, and along the borders of the Moray Frith, which contain as level tracts of territory, and enjoy as mild a climate, as any part of Scotland. This level tract does not comprehend quite the half of the country; nor does it any where exhibit those almost boundless plains which characterise the southern part of the island. Even the Lothians, and still more the western provinces, are hemmed in by low ridges of bleak table-lands, covered, in a great measure, with heath and moss. The arable lands are almost solely comprised in broad flat valleys, chiefly along the friths, called *straths* or *carses.* Several of these are much famed for fertility, a blessing but partially bestowed even on the best districts of Scotland.

1918. *The Highlands,* which comprise the whole west and centre of northern Scotland, form a region of very bleak and rugged aspect. A chain of long and lofty ridges extends from south-west to north-east, not reaching, however, the German Ocean or the Moray Frith, but leaving between them the level interval of the northern lowland. These mountains usually dip, almost perpendicularly, into the lakes and seas on which they border; and even the interior valleys are on so high a level that in this climate they admit only in scattered patches the culture of the coarser kinds of grain, particularly oats and bigg. These mountains, particularly the great Grampian barrier, which extends across from Ben Lomond to Blair-Athol, lock in closely with each other, and can be entered only by formidable and easily defended passes. The consequence has been, that they have preserved within their recesses a primitive people, who, in dress, language, and the whole train of their social

MAP OF SCOTLAND.

Fig. 185.



ideas, differ essentially from the Lowlanders, and have retained antique and striking characteristics, both physical and moral, that are obliterated in almost every other part of Great Britain.

1919. *Another very usual though somewhat vague distinction* is into the north and south of Scotland, separated by the friths of Tay and Clyde. The northern lowlands, particularly Aberdeen and Moray, though they are highland neither in aspect nor population, are yet, in both respects, considerably dissimilar to the southern lowlands.

1920. *The Isles* may be considered as comprising the remaining third part of Scotland. On the east, indeed, and even on great part of the south-west coast, only a few bold and naked rocks rise perpendicularly from the ocean. But the western highlands are bordered by the Hebrides, an extensive range of large islands, some of which, Skye, Mull, Jura, are separated from the continent by such narrow channels, that they may almost be considered as forming part of it. Again, the northern extremity of Scotland is prolonged by the two ranges of the Orkney and Shetland islands, in a continuous line with each other, but at some distance. These islands are not highland; they are rocky and bare, exposed to excessive moisture and the perpetual storms of the Atlantic. The population is neither English nor Celtic: it bears, in language and features, the marks of a Scandinavian origin; dating from the period when the piratical rovers of the north made extensive inroads on the western states of Europe.

1921. *Among the Scottish mountains*, the most considerable are the Grampians, a name which is given very generally to all those which cover the surface of the Highlands, but applied more particularly to the chain running across the counties of Perth and Argyle, and comprising Ben Lomond, Ben Ledi, Ben More, Ben Lawers, and others of that elevated ridge which directly face the low country of Stirling and Perth. Several of these approach, and even exceed, the altitude of 4000 feet. Ben Nevis rises to the height of 4315 feet. On the borders of Inverness and Ross-shire, Ben Wyvis, Mealfourvounie,

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References to the Map of Scotland.

NORTH PART.
1. Dunnet
2. Cannesby
3. Freswick
4. Wick
5. Ulbster
6. Easkay
7. Thurso
8. Brachey
9. Strathy
10. Farr Kirk
11. Kirtegill
12. Tongue
13. Inch Keanloch
14. Loch Eriboll
15. Gradey
16. Drumacrey
17. Scourie
18. Colearene
19. Inver Bagaly
20. Loch Naver
21. Loch Hulm
22. Achnahos
23. Latheron
24. Berridale
25. Helmsdale
26. Clyne
27. Achintraw
28. Dalmor
29. Lairg
30. Tulloch
31. Loch Shin
32. Assynt
33. Stoir
34. Dornay
35. Cannahoulish
36. Ullapool
37. Portinlick
38. Bra
39. Golspie
40. Dornoch
41. Tarbet
42. Cromarty
43. Tain
44. Invergordon
45. Kincardine
46. Kildrimore
47. Ben Wyvis
48. Lochbroom
49. Loch Fuir
50. Tinahdine
51. Melvag
52. Erridale
53. Gairloch
54. Loch Maree
55. Loch Fannich
56. Loch Luichard
57. Kiltearn
58. Fortrose
59. Fort George
60. Nairn
61. Forres
62. Elgin
63. Rothes
64. Fochabers
65. Cullen
66. Marnoch
67. Portsoy
68. Banff
69. Turreff
70. Aberdour
71. Fraserburgh
72. Strichen
73. Peterhead
74. Cruden
75. Ellon
76. Rothie
77. Meldrum
78. Cusalmond
79. Kinnethmont
80. Achindore
81. Huntley
82. Kinnacoll
83. Aberlour
84. Grantown
85. Edenskillie
86. Dyner
87. Cairmichyle
88. Inverness
89. Dares
90. Obriachan
91. Kilmuir
92. Beauly
93. Murrich
94. Kilnacrow
95. Attadale
96. Torridon
97. Vunebane
98. Applecross
99. Killilan
100. Glen Shiel
101. Affarie
102. Dundracam
103. Loch Ness
104. Bellaloin
105. Aberarder
106. Aviemore
107. Kincardine
108. Abernethy
109. Achenraw
110. Strathdon
111. Towie
112. Cluny
113. Kintore
114. Inverury
115. Foveran
116. Fintray
117. Old Aberdeen
118. New Aberdeen
119. Stonehaven
120. Ternan
121. Birse
122. Balmoral
123. Braemar
124. Inch
125. Invernahaven
126. Laggan
127. Fort Augustus
128. Loch Garry
129. Loch Lochy
130. Clunes
131. Loch Arkeg
132. Rosary
133. Baddroch
134. Loch Morrey
135. Arasaig
136. Seminasary
137. Loch Shiel
138. Cromer
139. Strane
140. Ben Nevis
141. Port William
142. Aberarder
143. Loch Laggan
144. Dalwhinnie
145. Etrish
146. Clachay
147. Clova
148. Mennuir
149. Craigour
150. Glenbervie
151. Bervie
152. Montrose
153. Brechin
154. Lunan
155. Oathlaw
156. Glenisla
157. Moulin
158. Blair-Athol
159. Dalnacardoch
160. Schechallion
161. Loch Rannoch
162. Loch Ericht
163. Loch Treag
164. Kinlochmore
165. Corrilwrich
166. Aryboulan
167. Scarnadale
168. Langall
169. Liddesdale
170. Kinlochaline
171. Morven
172. Ardnamurchan.

SOUTH PART.
1. Appin
2. Ardchattan
3. Glencoe
4. Loch Etive
5. King's House
6. Fingart
7. Ben Lawers
8. Killin
9. Loch Tay
10. Kenmore
11. Aberfeldy
12. Amulree
13. Dunkeld
14. Blairgowrie
15. Cupar-Angus
16. Meigle
17. Arbroath
18. Muirdrum
19. Dundee
20. Kilmeny
21. Cupar
22. Newburgh
23. Perth
24. Crieff
25. Comrie
26. Loch Earn
27. Craggan
28. Loch Voil
29. Loch Lochart
30. Glenurchay
31. Cladich
32. Kilmore
33. Ardmaddy
34. Craignish
35. Kilmartin
36. Inverary
37. Strachur
38. Kilmorish
39. Ben Lomond
40. Loch Katrine
41. Loch Lubnaig
42. Doune
43. Williamstown
44. Muchart
45. Forteviot
46. Kinross
47. Falkland
48. St. Andrews
49. Anstruther
50. Leven
51. Kinghorn
52. Dunfermline
53. Clackmannan
54. Airth
55. Stirling
56. Dumblane
57. Milton
58. Campsie
59. Loch Lomond
60. Tarbat
61. Kilmodan
62. Gilphead
63. Achahoish
64. Carnmore
65. Killarrow
66. Kilchenzie
67. Southend
68. Campbelton
69. Suddale
70. Gorton
71. Skipness
72. Ruban
73. Greenock
74. Kilbirnie
75. Dumbarton
76. Paisley
77. Renfrew
78. Glasgow
79. Bothwell
80. Airdrie
81. Whitburn
82. Falkirk
83. Linlithgow
84. Borrowstownness
85. Edinburgh
86. Dalkeith
87. Musselburgh
88. Haddington
89. North Berwick
90. Dunbar
91. Scateraw
92. Bunkle
93. Dunse
94. Paxton
95. Eccles
96. Gordon
97. Channelkirk
98. Lauder
99. Middleton
100. Linton
101. Peebles
102. Carnwath
103. Lanark
104. Hamilton
105. Eaglesham
106. Stewarton
107. Dalry
108. Irvine
109. Ayr
110. Mauchline
111. Kilmarnock
112. Strathaven
113. Douglas
114. Crawfordjohn
115. Crawford
116. Culter Fell
117. Galashiels
118. Melrose
119. Selkirk
120. Kelso
121. Yetholm
122. Hownam
123. Southdean
124. Jedburgh
125. Hawick
126. Bedford Green
127. Kirkpatrick
128. Sanquhar
129. Kirkconnel
130. Ochiltree
131. Dalrymple
132. Girvan
133. Ballintrae
134. Balloch
135. Garry
136. Minihive
137. Dunscore
138. Penpont
139. Lochmaben
140. Westerkirk
141. Langholm
142. Gretna Green
143. Annan
144. Dumfries
145. Caerlaverock
146. Douglas
147. Urr
148. Loch Ken
149. Newton Stewart
150. Craigach
151. New Luce
152. Stranraer
153. Portpatrick
154. Maidenkirk
155. Ardwell
156. Glenluce
157. Mochrum
158. Whitehorn
159. Wigton
160. Laurieston
161. Kirkcudbright
162. Colvend.

Rivers.
a Naver Water
b Thurso Water
c Oikel
d Orrin
e Nairn
f Findhorn
g Spey
h Doveran
i Don
j Dee
k Esk
l Tay
m Earn
n Forth
o Tweed
p Annan
q Nith
r Ken
s Ayr
t Clyde.

SKYE ISLE
1. Dig
2. Uig
3. Totnacrach
4. Snizort
5. Stein
6. Roag
7. Bracadale
8. Drumah
9. Gillan
10. Broadford
11. Kyle.

MULL ISLE
1. Kilninian
2. Tobermorie
3. Kealian
4. Aros
5. Achnacraig
6. Cambus
7. Moy
8. Pidden.

JURA ISLE.
1. Langhall
2. Lagg.

ISLAY ISLE.
1. Sanaig
2. Kilchoman
3. Bolsha
4. Askaig
5. Bowmore
6. Kildalton
7. Kintra.

ARRAN ISLE.
1. Oran
2. Corrie
3. Kilbride
4. Kilmory.

and some others, are of nearly equal elevation. The south of Scotland i
but its heights are seldom more than 2000 feet, green and pastoral. The
are the boundary chain of the Cheviot, celebrated in the annals of early f
border warfare. The Lowthers, a steep high ridge, including valuable
pastoral hills of Ettrick and Yarrow; Criffel and Cairnsmuir, in Gallowa
objects: the lower ranges of the Pentland and Lammermoor border the

1922. *The rivers of Scotland* are not so much distinguished for their leng
as for the pastoral scenery through which they wind their early course, an
ficent estuaries which they form at their junction with the sea.

1923. *The Forth* derives from this last circumstance a higher distinctio
It rises near the foot of Ben Lomond, flows due west towards Stirling
swelled by the larger stream of the Teith; whence, after many windings t
tiful plain overlooked by Stirling castle, it opens into the great frith on
of Scotland is situated.

1924. *The Clyde* has a course marked by still more striking objects. I
in Lanarkshire, on the borders of Dumfries-shire; flows for a considerab
a wild pastoral valley; then winding near Tinto, it descends, by a success
turesque cascades, into the lower region of Lanarkshire. After passing
which may be denominated the garden of Scotland, and adjoining to th
Hamilton and Bothwell, it enters Glasgow; then, totally changing its p
it becomes a broad stream, and the channel of a most extensive commer
course, it expands into a winding frith, not so broad as the Forth, but the
more active trade. Here also its shores are rendered highly picturesq
castle of Dumbarton, the beautiful coast of Bute, and the lofty heigh
Argyle.

1925. *The Tweed* rises from the same chain as the Clyde, and pursues,
parallel course, separated only by the high ridge of Culter Fell. It then
and waters the most beautiful and classic of the pastoral districts of Scotlan
Tweed is the favourite name. Of similar fame are its tributaries, the Yarr
Teviot; swelled by whose waters it rolls, a broad stream, by Melrose an
reaching Berwick affords a capacious harbour for the trade of that port.

1926. *The Tay* rises in the central Highlands, out of the lake of the sa
passed by some of the loftiest of the Grampians. It early receives the mo
the Lyon, the Tummel, the Bran; and, after sweeping under the picture
hills of Dunkeld, descends into the lowlands of Perthshire. Having wi
round the city of Perth, it expands into the Frith of Tay, on the northern
swells the luxuriant tract called the Carse of Gowrie. Finally, the Tay f
of Dundee, and becomes the channel through which the trade of that thriv
interior districts is carried on.

1927. *The Spey*, though last in rank, has a longer course than any other;
midst of the Perthshire highlands, and rolling northward through the wild
and Braemar, its line is comparatively obscure, and seldom visited even b
mountain scenery. Its rude banks are bordered, however, by the exten
Glenmore and Strathspey, the timber of which is floated down to the sea a

1928. *The other rivers of Scotland are numerous*, but of subordinate
Aberdeen, the Esk of Montrose, the Nith and Annan of Dumfries, the
Ayr. There are inferior streams of all gradations; every mountain valley
and almost every hill sends down its rivulet or "burn."

1929. *Lochs* form another most characteristic feature of Scotland. T
exactly coincide with lake; for many lochs are long arms of the sea, run
heart of the mountains, and enclosed by them in the manner of lakes.
Lochs Lomond is pre-eminent, and is justly held as the pride of Scotlan
admires its vast expanse, its gay and numerous islands, its wooded promo
and the high mountain barrier at its head. Loch Katrine, in a smaller co
singular combination of magical and romantic beauty. Loch Tay, enclo
of the Grampians, presents alpine scenery on the grandest scale; while a
Fyne unites the pomp of art with that of nature. The long chain of Loch
and Ness, stretching diagonally across Scotland, comprises much fine
afforded facilities for making a navigable communication between the Ger
oceans. Lochs Broom, Maree, Moidart, and others, deeply indent the
are in various places enclosed by the remains of large forests; their remo
ever, renders them not generally known, even to Scotsmen, though they h
the seat of extensive herring-fisheries.

SECT. II. *Natural Geography.*

1930. This section will contain Geology only, as the Botany and Zoo
were described along with that of Great Britain in general, under the hea

Subsect. 1. *Geology of Scotland.*

1931. *Scotland may be divided geologically* into the following great districts: — 1. Southern; 2. Middle; 3. Northern; 4. Insular.

1932. (1.) *Southern division.* This division includes that part of the country bounded on the south by the northern frontier of England; on the north and west, by the comparatively flat country between the Forth and the Clyde; and on the east by the sea. It is traversed from St. Abb's Head on the east coast to Portpatrick on the west coast by a high land, named the *great southern high land of Scotland,* in which are situated the highest mountains in this division of Scotland. This lofty range sends out branches in different directions, many of which reach the sea-coast, while others terminate in the lower and flatter parts of the country that lies around them. The principal rivers of the south of Scotland rise from this high land, as the Tweed, which flows towards the east; the Clyde, towards the north-west; the rivers of Ayrshire, that flow towards the west; those of Dumfries-shire, towards the south; and the rivers of the Lothians, towards the north. Although thus abundantly supplied with rivers, the southern division contains but few lakes, in this respect forming a striking contrast with the middle and northern divisions. The only lakes worthy of being named are Loch Ken in Galloway, and St. Mary's Loch and the Loch of the Lows in Selkirkshire. Springs are sufficiently numerous; but their nature and chemical history have not hitherto engaged much of the attention of observers.

1933. *In this division of Scotland* rocks of the primitive class are wanting; but transition, secondary, and alluvial formations abound. The mountainous regions are composed of transition rocks, while the lower and flatter consist principally of secondary and alluvial formations.

1934. I. *Transition rocks.* The predominating rocks of the Neptunian class are greywacke, with subordinate beds of clay slate, flinty slate, and transition limestone; the Plutonian species are granite, syenite, porphyry, serpentine, and trap. The great southern high land, with many of its branches, is principally composed of these rocks, of which by far the most abundant is the greywacke; all the others, from their small quantity, occurring in a subordinate manner. The principal lead-mines in Scotland, those of Leadhills and Wanlockhead, are situated in the greywacke. They have been worked from an early period, and during a long course of years have yielded to the proprietors a very rich return. Of late years, owing to the disturbed state of the world, their prosperity has been interrupted. Copper ores have been raised in Galloway, but not in considerable quantity; and the same may be said of the sulphuret of antimony, formerly mined at Glendinning in Dumfries-shire.

1935. II. *Secondary rocks.* Scotland, as already remarked, is distinguished from England by the smaller number of its secondary formations, and their more limited distribution. The southern division of Scotland, in comparison of its magnitude, contains a greater proportion of secondary rocks than either the middle or northern; and hence approaches more nearly to England in a general geognostic point of view. The following secondary formations have been observed: — 1. Old red sandstone. 2. Mountain limestone. 3. Coal formation. 4. New red sandstone. 5. Various trap and porphyry rocks.

1. *Old red sandstone.* This formation skirts the transition chains of mountains lying immediately upon the greywacke, &c. It is well exposed in the Pentlands, the upper part of the river district of the river Clyde, in the course of the river Tweed, in various points in Dumfries-shire, &c. In the districts where it occurs, it is frequently quarried and used as a building-stone.

2. *Mountain limestone.* The beds of limestone in the lower part of the coal formation in the neighbourhood of Edinburgh, and the beds of limestone upon which the coal formation rests in other quarters, as in Dumfries-shire, belong to the mountain limestone.

3. *Coal formation.* This important deposit occupies considerable portions of East, Mid, and West Lothian, and extends westward to Glasgow. It forms extensive tracts in Ayrshire; in Dumfries-shire it occurs at Sanquhar, in the lower part of Annandale, and at Cannoby in Eskdale; and in Berwickshire. The coal mines in the Lothians and around Glasgow are the most productive in Scotland. Even one small coalfield, the property of the Marquess of Lothian, in the vicinity of Edinburgh, Mr. Bald has shown, will serve that city at the rate of 350,000 tons yearly, for the long period of 500 years. The annual quantity of coal brought into Glasgow is 561,049 tons: of this enormous quantity, 124,000 tons are exported from the Clyde at the Bromielaw and Bowling Bay, and from Port Eglinton by the Ardrossan canal; so that there remains for the use of families and public works in that city and its suburbs, 437,049 tons. It may also be noticed, as connected with coal, that in Glasgow, during twenty-four hours in the winter months, the gas company make upwards of 500,000 cubic feet of gas from coal; and during the same period in the summer months, about 120,000. The pipes extend to more than 100 miles through streets. The great iron-works at Carron are supplied with the ore from which the iron is obtained, from the coalfields of this and the middle division of Scotland. The ore or stone, which is

Google

an argillaceous carbonate of iron, occurs in beds and embedded masses, anc slate of the coal deposit. The admirable building-stone around Edinb is a sandstone which occurs in beds in the coal formation.

4. *New red sandstone.* This formation in the regular successio coal formation, in which position it is to be seen in the neighbourhood of fries-shire.

5. *Trap and porphyry rocks.* These Plutonian or ignigenous mas quantity in many parts: they abound, for instance, all around Edinburgl the Calton Hill, Castle Hill, Salisbury Craigs, Arthur Seat, Corstorphin and Braid hills, the Pentlands, &c.: the beautiful conical hill named No the Bass Rock, the Isle of May, Traprain Law, are also of igneous orig trap and porphyry rocks. Renfrewshire and Ayrshire also abound in spl ing displays of trap and porphyry; and there, as in all other parts of Sc appear, exhibit numerous relations illustrative of their igneous origin, anc have occasioned in the Neptunian strata in their progress from the int In many parts of the country these Plutonian rocks are used as buildi greenstone of the trap series affords an admirable material for road-maki causeways and roads around Edinburgh are of greenstone.

1936. III. *Alluvial rocks.* In various parts of the country there occ alluvium, or what is called *diluvium*, and every where the modern allu forming, meets the eye.

1937. (2.) *Middle division.* This division of Scotland is bounded to southern division; on the north by the Moray Frith and the great chain from Inverness to Fort William and the Linnhe Loch. It is traversed in westerly direction by the Grampian range of mountains, which extends Cantyre to Stonehaven in Kincardineshire, and to the rocky northern c shire and Banffshire. The country in general falls rapidly to the west of tain range, and comparatively gently to the eastward of it: hence the w steep and short, the eastern gentle and long. On the eastern acclivity connected with it are situated the Sidlay, Ochil, and Campsie hills, forr tinuous range; and Kellie Law, Largo Law, the Lomonds, and the Saline forming a less continuous and lower range of hills. Water is abundant this district, in the form of rivers, lakes, and springs. The principal riv eastern acclivity of the land; such are the Tay, the Esk, Dee, and Don. T in this division of Scotland, flows down the declivity extending from the of the Grampians. Lakes, which are so rare in the southern division, ar distributed, and exhibit many beautiful and splendid scenes. Of these la siderable are the following: Loch Lomond, Loch Tay, Loch Ness, Although springs are abundant, no one has hitherto enquired in an ap into their chemical or natural history. The rocks are more varied in southern division; magnificent displays of primitive, transition, and sec present themselves to our attention.

1938. I. *Primitive and transition rocks.* The Neptunian kinds ar mica slate, clay slate, talc slate, chlorite slate, quartz rock, greywack Plutonian rocks are granite, syenite, porphyry, trap, and serpentine. Th generally range from north-east to south-west; most frequently dip under 45°; and are variously upheaved, broken, and disturbed by the Plutonian principally confined to the Grampian high land and its branches. The granite and syenite districts are Cairngorm, Benachie, Aberdeen, Pet achan; and Ben Nevis conjoins along with its slaty Neptunian strata gra porphyry. The granite quarries of Aberdeen and Peterhead, especially afforded and still continue to yield a large revenue to the proprietors. the limestone is raised as marble, as in Glen Tilt; but more frequen and burnt into quicklime. The clay slate quarries of Luss, on the banks those of Balachulish, in Argyleshire; and the slate quarries in the deenshire, are of considerable extent, and employ many workmen. T of ore at present worked in the Grampians; but formerly there were neighbourhood of Tyndrum, where the lead glance, or sulphuret of lea veins in quartz rock and mica slate.

1939. II. *Secondary rocks.* These are, old red sandstone, mountai formation, and new red sandstone, and probably the lias formation: these intermingled with trap and porphyry rocks.

1. *Old red sandstone.* This rock, in some parts of the country, as Stonehaven and near Blair-Gowrie, exhibits magnificent cliffs of conglo the principal rock in the great tract of country included between Stonehaven by Blair-Gowrie, Comrie, Callender, Dumbarton, Stirling, Arbroath, Montrose, and Bervie. It appears again near Inverness, and

Loch Ness. In many localities there are extensive quarries, the sandstone being used as a building-stone, and as a pavement-stone. The Kinguddie sandstone and the Arbroath pavement-stone, from old red sandstone localities, are well known.

2. *Coal formation.* The coal formation in the middle division of Scotland has not been met with farther north than Fifeshire. The counties of Fife, Clackmannan, and Stirling, abound in coal; of these counties Fife is that which contains the greatest fields of this valuable mineral.

3. *New red sandstone* occurs apparently in some points on the east coast, and also on the north coast between Cullen and the Cromarty Frith.

4. *Lias formation.* Near to Banff there are beds of clay, which, from the organic remains contained in them, may turn out to belong to this formation.

5. *Plutonian rocks.* These are various traps, as greenstone, amygdaloid, trap tuffa, and basalt; and porphyries, having a basis of claystone or clinkstone. The famous headland the Red Head, on the east coast, exhibits a fine display of Plutonian rocks, connected with the red sandstone. Bervie Head and the vicinity are interesting from their porphyry rocks. The trap rocks of Montrose are famous on account of the agates they afford. Kinnoul Hill, at Perth, is composed of amygdaloid, tuffa, and other rocks of the trap series, and abounds in agates. The Ochil Hills are principally composed of trap and porphyry; and trap rocks abound in the Campsie range. The Fifeshire hills, viz. Kellie Law, Largo Law, the cones of the Lomond, and the Saline Hills, are of trap. These various traps and porphyries have, as is generally the case, broken and changed more or less the Neptunian strata with which they are intermingled.

1940. III. *Alluvial rocks.* These have the same general characters as those met with in the southern division. In a few districts, however, as near to Peterhead, and in the vicinity of Banff, there are numerous *chalk flints.* These, by some, are considered as alluvial, and foreign to Scotland; while others are opinion that they are remains of the chalk formation, formerly distributed in some of the tracts where the flints are found.

1941. (3.) *Northern division.* This division is bounded on the south by the chain of lakes which forms the northern limit of the middle division, and on the north, the east, and the west, by the ocean. It is even more rugged, mountainous, and hilly than the middle division. The high land ranges throughout its whole length, from south-west to north-east. The western acclivity is steep and short; the eastern comparatively gently inclined and long. The principal rivers, none of which, however, are comparable in magnitude with the Tay and the Spey, flow down the eastern acclivity to the sea; others, of less size, flow down the northern acclivity, in the northern part of the country, to the sea; and the least considerable flow down the western acclivity to the western sea. There are a good many lakes, as Loch Shin, and others, mentioned in the geographical account of the country. The springs are numerous, but hitherto observers have passed them by without examination.

The whole of this division, nearly, is composed of primitive and transition rocks, the secondary occurring principally along the east coast and a small extent of the north-west coast.

1942. I. *Primitive and transition rocks.* The Neptunian species are disposed in strata that often range from south-west to north-east, are of gneiss, mica slate, clay slate, quartz rock, talc slate, limestone, and greywacke. The Plutonian rocks are less abundant than in the middle and southern divisions of Scotland; and are granite, syenite, porphyry, and trap. The only mines are those at Strontian, where the ore is lead glance, or sulphuret of lead, in veins traversing gneiss. The mineral in which the *Strontian earth* was first found occurs in these mines, along with other curious minerals, of which the cross-stone is the most interesting.

1943. II. *Secondary Rocks.* The formations of this class are both Neptunian and Plutonian. The Neptunian are old red sandstone, new red sandstone, lias, and oolite; the Plutonian, trap and porphyry.

1. *Old red sandstone.* Much of the county of Caithness, and some tracts on the east coast, and a few points on the west, are composed of this formation.

2. *New red sandstone.* The county of Caithness affords examples of this deposit, which is remarkable on account of the beds of *fossil fishes* it contains.

3. *Lias and oolite.* This formation we noticed many years ago near Brora and other points on the east coast of Sutherland. From the kind of coal associated with the rocks, and their fossil animal remains, we referred them, in a paper read to the Wernerian Society, to a formation newer than the coal and new red sandstone. The precise position of the deposit, and the characters of its organic remains, were first made out by Mr. Murchison, in an excellent paper, read before the Geological Society of London, and published in their Memoirs. The coal mines at Brora are situated in this deposit, and are the most northern mines of this mineral in Britain. The coal is, however, of indifferent quality, and of late years has been less extensively worked than formerly.

1944. *The Plutonian rocks* are not frequent, and consist principally of trap and porphyry.

1945. III. *Alluvial rocks.* These exhibit the same characters as in the middle and southern divisions.

1946. (4.) *Insular division.* This may be subdivided in the follo
1. Forth Islands; 2. Clyde Islands; 3. Hebrides; 4. Orkneys; 5. Shet

1947. (1.) *Forth Islands.* Under this division we include the islan
Forth, which are the Bell Rock, Island of May, Bass, Inchkeith, Cram
Columb, and Inch Garvie. The Bell Rock, on which the most perfect and
light-houses is perched, is of a red sandstone, having the same charact
neighbouring coast at Arbroath. The other islands are principally compo
occasionally associated with clinkstone porphyry, and rocks of the co
these, Inchkeith, within a few miles of Edinburgh, is the most interesti
cal point of view; while the Island of May and the Bass Rock present the n
scenery.

1948. (2.) *Clyde Islands.* These, which are situated in the Frith of Cl
brays, Bute, Arran, and the Craig of Ailsa.

1949. *The Cumbrays.* Two islands have this name; the one is the so-c
bray, the other the Lesser Cumbray. They are composed of secondar
Neptunian and partly of Plutonian origin. The Neptunian rocks are ch
stone, which is traversed and overlaid by different kinds of trap rocks, o
magnificent displays in these islands.

1950. *Bute.* This, which is the most beautiful of the Clyde islands, m
divided into three districts, viz. southern, middle, and northern. The
entirely composed of rocks of igneous origin, belonging to the trap serie
old red sandstone; the northern of clay slate, mica slate, quartz rock, and
clay slate occur in the northern district.

1951. *Arran.* With exception of the Isle of Skye, no island of the Br
scenery so imposing and magnificent as Arran. Its geognosy, too, is also
and as British geology may be said to have arisen in that remarkab
always occupy a prominent place in the history of geology. We gave th
account of Arran. The interesting phenomena so abundantly exhibite
island, afterwards engaged the attention of other observers. It would b
space allowed for geology in this work, to attempt to give even a ger
ran. We can only say, that it affords highly illustrative examples of Ne
tonian rocks of the primitive and transition classes, viz. clay slate, mica sl
Neptunian deposits; and granite, as a Plutonian rock. The junctions
which there are two formations, with each other and with the Neptunian s
structive, and annually attract to Arran visiters from all parts of Britain
distant continental countries. Reposing on these rocks is a deposit of t
stone, on which rests the coal formation; and the whole are covered, m
pletely, with new red sandstone. These Neptunian secondary rocks are
directions by Plutonian rocks of the porphyry and trap series, affording a
to the geologist interested in the natural history of ignigenous formations.

1952. *Alluvial deposits* occur all round the coast, and covering, more or
bottom and sides of valleys. Both old and new alluvium are met with in

1953. *Craig of Ailsa.* This splendid rock which forms so striking an
coast of Ayshire, is 900 feet high, and is composed of secondary syenit
disposed in magnificent columns, and traversed by veins of secondary gree

1954. (3.) *Hebrides or Western Islands.* These lie along the west coast
of Scotland, and may be described as forming two groups; the one, ran
along the coast, the *Inner Hebrides;* the other, lying beyond, to the we
Hebrides.

1955. *Inner Hebrides.* The islands of *Gigha, Ila, Jura, Colonsay, Or*
Slate Islands, Mull, Iona, Staffa, Tiree, Coll, Eigg, Rum, Canna, Skye, R
form the group of the Inner Hebrides. *Gigha, Ila, Jura, Colonsay, Oronsa*
Slate Isles are principally composed of Neptunian primitive and transiti
frequently a north-east and south-west direction; and variously disposed,
inclined to the vertical position. The rocks are mica slate, quartz rock, t
slate, hornblende slate, clay slate, limestone, and greywacke. These are
intermingled with, Plutonian rocks of the trap and porphyry series.
extensively quarried in the isle of Eisdale, one of the Slate Islands. In *Is*
deposit of limestone, in which formerly lead mines were worked. *Iona,*
are principally composed of gneiss, mica slate, quartz rock, hornblende
sional intermixtures of granite and syenite, and all traversed, more or le
veins of trap rock. *Mull,* one of the largest of the Hebrides, with the
Ross of Mull, and one or two other points, which are composed of granite,
slate, is composed of secondary trap and porphyry rocks, with occasional
lias limestones, and lias coals. The usual alluvial deposits appear in diff
island. *Staffa,* which is composed of basalt, amygdaloid, and trap tuffa
celebrated on account of its splendid columnar basaltic cave, the Fingal's C

Egg is principally composed of trap rocks, occasionally intermingled with lias limestones. The Scure Egg is a remarkable columnar ridge of pitchstone porphyry (which we first described many years ago), presenting the most splendid display of the natural columnar structure to be met with any where in the British islands. *Canna* is entirely composed of secondary trap rocks; and *Rum*, a wild, rugged, and hilly island, besides red sandstone, which forms a prominent constituent part, also contains many varieties of trap, some of which are remarkable from their containing agates, bloodstone, opal, &c. *Skye*, the largest of the Inner Hebrides, exhibits great variety of scenery and of geological arrangement. The scenery of Coruisk is the most savage any where to be seen in Britain. The *southern part* of the island is composed of primitive and transition rocks, principally of the Neptunian series; namely, mica slate, clay slate, chlorite slate, hornblende rock, quartz rock, greywacke, and limestone. *The middle part or division* affords magnificent displays of Plutonian rocks, as syenite, porphyry, and trap, which are frequently observed intermixed with lias limestone, which in many places is seen converted into marble through the agency of those ignigenous rocks: the *northern division* of the island is principally composed of various trap rocks, often abounding in zeolite and other curious minerals, and intermingled with lias limestone and coal. The alluvium here exhibits its usual characters. *Rasay.* The southern and middle parts of this island are of secondary formation, principally of old red sandstone and lias sandstone; the northern extremity is of primitive rocks, principally gneiss. *Rona.* This island, which appears formerly to have been a part of Rasay, is entirely of primitive formation, the prevailing rock being gneiss, with subordinate mica slate, quartz rock, hornblende rock, &c., traversed by splendid veins of granite.

1956. *Outer Hebrides.* This group, which lies in a north-east and south-west direction, consists of the following islands; viz. Lewis, Harris, North Uist, South Uist, and Barra. The whole range of islands is nearly of primitive formation, and the predominating rocks, which are gneiss and mica slate, range generally from north-east to south-west. The following rocks, which are generally subordinate to those just mentioned, viz. quartz rock, clay slate, chlorite slate, hornblende rock of various kinds, limestone (?), serpentine, with masses and veins of granite, syenite, and porphyry, present many interesting phenomena.

1957. (4.) *Orkney Islands.* This group of islands is distinguished from all the others that lie around the coasts of Scotland, by the uniformity of its structure and composition. With the exception of a small extent of transition rocks near Stromness in the island of Pomona, the largest of the Orkneys, that island and all the others are composed of the old red sandstone, with some rare appearances of secondary trap.

1958. *Fair Isle.* Judging from the specimens sent to us, never having landed on that secluded spot, it appears to be entirely composed of old red sandstone.

1959. (5.) *Shetland Islands.* This very interesting group of islands exhibits great variety in its geognostical structure and composition, and affords an admirable field to the student of geology for the study of the older rocks of which the crust of the earth is composed. The following are the principal islands of the group: Mainland, the largest island, Unst, Fetlar, Yell, Whalsey, Bressay, Barra, Mousa, Papa Stour, and Foula.

1960. *Mainland.* With the exception of a band of old red sandstone extending from the line of Sumburgh Head to Rovey Head, on the east coast, the whole of this island is formed of primitive rocks. These are partly Neptunian, partly Plutonian. The Neptunian strata are gneiss, with subordinate mica slate, clay slate, quartz rock, limestone, and hornblende rocks; the Plutonian rocks, which frequently alter and upraise the Neptunian strata, are granite, syenite, porphyry, greenstone, and epidotic syenite.

1961. *Yell.* This island, next in size to the Mainland, is almost entirely composed of gneiss, variously intersected by veins of granite.

1962. *Unst.* This interesting island, the next in magnitude to Yell, is composed of gneiss, mica slate, talc slate, chlorite slate, and limestone, which are variously intermixed with serpentine and diallage rocks. Hermaness, the most northern point of the British dominions in Europe, is composed of gneiss; while the Land's End of Cornwall, the most south-westerly cape of Britain, is formed of granite. Unst and the neigbouring island of Fetlar abound in chromate of iron. This valuable ore we met with in Unst many years ago; afterwards it was found in great quantities by Dr. Hibbert, and has afforded a large annual income to some of the proprietors. Hydrate of magnesia, grenatite, precious garnet, and other beautiful minerals, occur in this island.

1963. *Fetlar.* This island is smaller than Unst. It is composed of serpentine as the predominating rock, with diallage rock, gneiss, mica slate, chlorite slate, and quartz rock.

1964. *Whalsey*, which is still less extensive than Fetlar, is composed of gneiss.

1965. *Bressay*, *Noss*, and *Mousa.* Bressay, which with the mainland forms the famous bay of Lerwick, as also the isle of Noss, are composed of old red sandstone; and the island of Mousa, some miles to the south of Lerwick, is composed of the same sandstone formation.

1966. *Barra, House,* and *Papa Stour.* The two first-mentioned islands gneiss and mica slate, with subordinate limestone; while Papa Stour is phyry. In the porphyry of this island we, many years ago, found, in d the rock, crystals of a mineral very abundant in England, but very rare i fluor spar.

1967. *Foula.* This isle, the *Ultima Thule* of some authors, is the m most remote of the Shetland islands. Its coast scenery, on the west storms of the Atlantic Ocean, is most magnificent. The predominating sandstone; at one point there is a limited display of primitive rocks of grani slate, and clay slate.

Sect. III. *Historical Survey.*

1968. *To the Greek and Roman writers, Scotland* was less known than, pe part of Europe, if we except Scandinavia. It was not, indeed, recognis country under that or any other name. Albion, or Britain, was viewed as celled out among a multitude of different tribes. Agricola first penetrated Britain which we now call Scotland. He easily over-ran the low country, a most obstinate resistance when he approached the Caledonians, who app held all the northern districts. An obstinate battle, the precise place of been ascertained, was fought at the foot of the Grampians. All the rude donia could not match the skill of Agricola and the discipline of the Roma whole open country was abandoned to the invaders, whose progress, howeve what they termed the Caledonian forest, under which they seem to have hended the vast pine woods of Glenmore and the steep barrier of the Gra military occupation, however, is attested by the formation of numerous that at Ardoch (*fig.* 186.), ten miles north of Stirling, is the most extensive From these mountain ever, our ancestors ru made their name terri querors of the world. endeavoured to resist by rearing, at differe walls, one between the and the other south of of Scotland, between the Tyne. The north ever, continued their chiefly under the nam seem clearly to have people with the Caled fifth century, Britain by the Romans, and Saxons, who occupied of the south of Scotla Forth.

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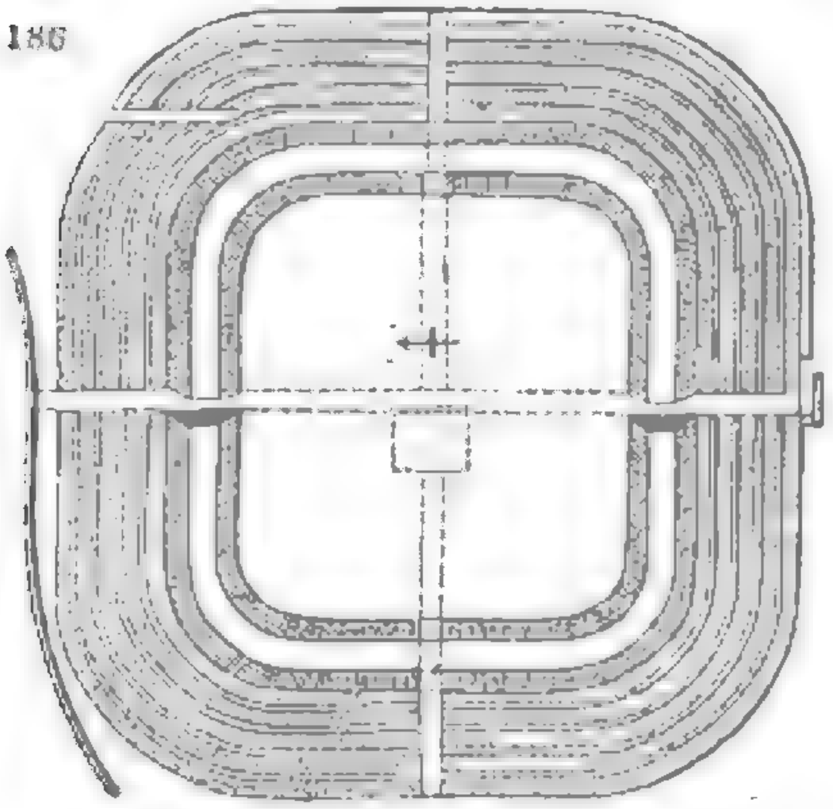

CAMP AT ARDOCH.

1969. *The western into the kingdom of* flourished for about 30 rendered illustrious by exploits of Arthur and his knights, whose power, from 508 to 542, is represe as having been predominant over the south of Scotland and the north of capital and bulwark of this kingdom was Alcluyd, called afterwards Dun B barton, seated on an insulated precipitous rock at the mouth of the Clyde. Britons, closely pressed by their Saxon neighbours, endeavoured to defend a lengthened *fosse,* of which the traces have been supposed to remain in Picts'-work Ditch, drawn across the counties of Selkirk and Roxburgh defences could not support a sinking monarchy; in 757, Alcluyd was taken and the kingdom subverted.

1970. *The Scots,* before this time, had come from Ireland, their original the fourth century, was often called Scotland. Even before the departure the Scots, joined with the Picts, are mentioned as the ravagers of defenceless appear at one time to have been driven back into Ireland; but in 508 they Cantyre, and during the next four centuries spread gradually over the kingd under the victorious reign of Kenneth, which commenced in 836, they wre from Wred the Pictish king, and established supreme sway over the whole which, from them, was ever afterwards called Scotland.

1971. *The Scoto-Saxon era,* as Mr. Chalmers calls it, is memorable rather change, than for any sudden revolution. After the subversion of the kingdom of Strathcluyd, by the Saxons, that people had colonised and filled the whole south; and the Scottish kings, though of Celtic origin, having established themselves in this more fertile part of their territories, soon began to imbibe the spirit of its occupants. From this or other causes the whole lowlands of Scotland is in language and manners Teutonic, and the Gael or Celts were again confined within their mountain boundary.

1972. *An era of disputed succession* arose out of the contending claims of Bruce and Baliol, after the death of Margaret of Norway. Edward I., availing himself of this dissension, succeeded in introducing himself under the character of an arbiter, and having established Baliol on the throne by an armed interference, sought to rule Scotland as a vassal kingdom. The result was a struggle, calamitous to Scotland, but which, however, placed in a conspicuous light the energy and heroism of the nation, and brought forward the names of Wallace and Bruce, ever afterwards the foremost in her annals. The result was glorious; the concentrated force of the English was finally defeated in a pitched battle at Bannockburn; they were compelled to renounce their ambitious pretensions, and allow the kingdom to be governed by its native princes.

1973. *Under the turbulent and unfortunate sway of the Stuarts*, Scotland continued for several centuries without any prominent revolution, though with a continued tendency to internal commotion. This dynasty, from their connection with the French and English courts, had acquired the idea of more polished manners, and habits of greater subordination as due from the nobles. Such views were ill suited to the power and temper of a Douglas, and many other powerful chieftains, through whose resistance the attempts of the monarchs were followed with disaster, and often with violent death. The introduction of the reformed religion especially, in open opposition to the court, which granted only a reluctant and precarious toleration, was unfavourable to the crown, and fatal to a princess whose beauty and misfortunes have rendered her an object of enthusiasm to the gay and chivalric part of the Scottish nation.

1974. *The union of the crowns*, by the accession of James VI. in 1603, to the English throne, produced a great change, in itself flattering to Scotland, whose race of princes now held sway over all the three kingdoms. As, however, they immediately transferred their residence to the wealthy capital of England, the actual result was to reduce Scotland somewhat to the condition of a province; but these disanvantages were finally incalculably overbalanced by subsequent benefits.

1975. *The struggle between presbytery and prelacy*, which formed the first instance of this interference, gave rise to a conflict which is still deeply remembered, and powerfully influences the temper and character of the Scots. Presbytery, their favourite form of church government, was supported by the nation with an enthusiastic determination which strongly influenced the general destinies of the empire. The efforts of the presbyterians, acting under the bond of their League and Covenant, first enabled the English parliament to rear its head, and had a great effect in turning the scale of contest against the crown. The Scots revolted, however, at the violent excesses of the independents, and endeavoured to rear again, on a covenanted basis, the fallen crown of the Stuarts. These brave but unsuccessful efforts were very ill requited by Charles II., on his restoration, by an embittered persecution against all the adherents of presbytery. They maintained its cause with unequal means, till the Revolution finally fixed that system as the established religion of Scotland.

1976. *The union of the kingdoms*, in 1707, placed Scotland in that political position which she has ever since maintained; and, by allaying internal contest, and opening a free trade with the sister kingdom, this union has produced results highly beneficial. Some clouds still lowered over the political horizon of Scotland. The devoted attachment of her mountain tribes to the exiled Stuarts repeatedly impelled them to make brave though misguided attempts to replace that house on the throne; attempts which, at one critical moment, spread alarm into the heart of England. In other respects, the majority of the nation have been distinguished for their loyalty, and have even been accused by their opponents of an excess of subserviency to the views of the crown. Some temporary effervescence at the commencement of the French revolution, and during the period of manufacturing distress, can scarcely amount to an exception to this general remark.

Sect. IV. *Political Constitution.*

1977. *The political system of Scotland* being now almost completely incorporated with that of England, little is to be added to the statements given under the head of the sister kingdom. A few peculiarities, however, may be deserving of notice.

1978. *The representation allowed to Scotland* at the union was somewhat scanty. It consisted, for the House of Commons, of forty-five members, fifteen from the boroughs, and thirty from the counties. The boroughs, however, amounting by the ancient constitution to sixty-six, were divided into classes of four or five, one member being returned by the majority of each class. Edinburgh alone returned one member. The friends of liberty were the less disposed to murmur at so small an allotment, as the constitution of these boroughs was far from popular. The members were elected, not by the inhabitants as bu magistrates, who themselves were appointed chiefly by their predecessors i stituting close boroughs, in which a party having once obtained a majo *perpetuum*, with little regard to the judgment of their fellow-citizens. I also, there were some anomalies. The right of voting was attached t lands held immediately of the crown, and of the valued rent of 400*l.* Scot superiority which entitles to vote was separable from the actual possessio The original proprietor, who, perhaps, had a number of these *votes* on either sell or distribute them among his friends, so as to multiply his own The freeholders of Scotland amounted to not quite 3000, of whom a certa reason stated, had no actual property in land. The peers of Scotland sixteen of their number, elected at the commencement of each parlia besides, upwards of twenty who are British peers, and sit in their person

1979. By the Reform Bill of 1832, the power of returning member Commons is vested in the following cities and burghs: —

Edinburgh
Glasgow
Aberdeen
Paisley
Dundee
Greenock
Perth
Leith, Portobello, Musselburgh
Kirkwall, Wick, Dornoch, Dingwall, Tain, Cromarty
Fortrose, Inverness, Nairn, Forres
Elgin, Cullen, Banff, Inverary, Kintore, Peterhead
Inverbervie, Montrose, Arbroath, Brechin, Forfar
Cupar, St. Andrew's, Anstruther Easter and Wester, Crail, Ki
Pittenween
Dysart, Kirkaldy, Kingborn, Burntisland
Inverkeithing, Dumfermline, Kinross, Queensferry, Culross, Stirlin
Renfrew, Rutherglen, Dumbarton, Kilmarnock, Port Glasgow
Haddington, Dunbar, North Berwick, Lauder, Jedburgh
Linlithgow, Lanark, Falkirk, Airdrie, Hamilton
Ayr, Irvine, Campbellton, Inverary, Oban
Dumfries, Sanquhar, Annan, Lochmaben, Kirkcudbright
Wigton, New Galloway, Stranraer, Whithorn

These members are returned, not, as formerly, by the town councils of the but by every inhabitant paying rent to the value of 10*l.* and upwards. tinue each to elect a member, except that only one in conjunction is retur Nairn, one by Ross and Cromarty; and one by Clackmannan and Kin of voting, too, is attached not to feudal superiorities, that were often fic possession of actual property yielding 10*l.* of yearly rent.

1980. *The judicial administration of Scotland* has always continued di the sister kingdom. The supreme court, or Court of Session, consisted, un members, sitting together, and deciding in all civil causes, while six of Justiciary Court for the trial of criminal cases. The trial by jury was em Justiciary Court, and in revenue questions, which are tried before the C There lies an appeal, in every civil case, to the House of Lords, whose jud to be almost always guided by the opinion of the Lord Chancellor. W defect in the Scottish system, or from an opinion that causes would be on different legal principles, the number of appeals increased to an occasioning a most inconvenient expense and delay. For the reme as well as with a view to economy, considerable changes have, wi years, been introduced, chiefly tending to assimilate the procedure to th courts.

1981. *The supreme court* was divided into two chambers, one of seve eight members; and these have been recently reduced to six and seven; number thirteen. Trial by jury, in civil cases, was introduced, and c separate court, called the Jury Court, presided by a lord chief commission been recently abolished; and these trials are now carried on, like others, u of the Court of Session. The Court of Exchequer, which consisted once first reduced to three, and is now so far abolished, that, on the death or retirement of the present members, it is no longer to have any judges of its own, but one lord of session is to devote one day of the week to the trial of causes belonging to its jurisdiction. The Consistory and the Admiralty Courts have also been abolished, and their jurisdiction transferred to the Court of Session.

1982. *The revenue of Scotland* has been hitherto collected separately from that of England, and by separate boards for each branch; but, under recent regulations, the whole has been placed under the direction of boards resident in London, and the systems have been in a great measure incorporated together. In the year ending 5th January, 1831 —

	£
The Scottish excise was	2,395,490
Customs	1,357,000
Stamps	526,000
Assessed taxes	292,000
Post-office	201,000
	4,771,490

1983. *The branches of excise duty* were —

	£		£
Auctions	18,400	Malt	466,000
Beer	76,100	Paper	94,000
Candles	9,500	Printed goods	374,000
Glass	123,500	Soap	140,000
Hides	30,000	Spirits, British	1,274,000
Licences	112,000	Starch	10,000

1984 *The principal branches of stamp duty* were —

Newspapers	42,000	Legacies	58,000
Advertisements	28,000	Fire insurances	50,000

1985. *Under the head of taxes* came chiefly —

Windows	68,000	Horses	21,800
Houses	82,000	Dogs	14,000
Servants	25,000	Game duties	12,000
Carriages	25,000	Armorial bearings	2,900

1986. *The chief branches of the customs* will be given under the head of trade.

1987. *The army and navy in Scotland* are entirely under the general system of the United Kingdom. There are, however, a number of regiments bearing Scottish names, as having been originally raised, and usually, though not always, recruited, in Scotland, and officered by Scotsmen. The Highland regiments are even allowed to retain some remnant of their national dress, and fought with signal glory in the British ranks during the late war. Scotland, being little exposed to external danger, has usually stationed within itself only a small proportion of each force, particularly the naval.

Sect. V. *Productive Industry.*

1988. *Scotland has always ranked as a poor country;* and, indeed, our survey of its outline and surface must have shown how very difficult it must be for her to avoid coming under this character. For a long time, unfortunately, natural obstacles were enhanced by moral impediments. The Scots showed an extreme aptitude to embark in all schemes of turbulence and enterprise; but indolence, and dislike of plain hard work, might be recognised as a national characteristic. Since the age arrived, however, when industry came into honour, and when improved processes were studiously applied to all the useful arts, the Scots have entered with peculiar spirit and intelligence into this new career; and in its prosecution have been more successful, in some respects, than their southern neighbours.

1989. *The agriculture of Scotland* has to contend with obstacles which must be manifest, when we look at its rugged aspect, and its vast hills and morasses. Forty years ago, moreover, the progress of Scotland in this primary art was very generally behind that of the rest of the empire. The farms were mostly small, and tilled in a slovenly manner, with half-starved horses, four of which were yoked in the plough; while parts of each farm were alternately cultivated or left waste, upon the rude plan of infield and outfield. As soon, however, as the great system of agricultural improvement was adopted throughout the kingdom, the Scottish farmers not only shared in it, but carried it farther than those of England, who were attached in an almost superstitious degree to that routine which had enriched themselves and their forefathers. The farmers of the Lothians, of the Carse of Gowrie, and even of

the district on the Moray Frith, made a rapid and complete reform in
agricultural operations. They brought extensive tracts of common and w
tion, reduced the number of cattle and improved the breed, cultivated tl
dismissed superfluous hands, and adopted the use of machinery, of wl
portant, the threshing machine, was entirely of Scottish invention. Th
that considerable fortunes were made by successful farmers, and that re
every instance trebled, and in some cases raised to eight or ten times th
In the mountainous districts, also, a new system was introduced, which
fitable to the landlord, and perhaps to the country, but was attended wit
cumstances. The numerous little farms hitherto held by tenants or v
into extensive sheep-walks. Considerable depopulation, in the agricul
the consequence; a great proportion of this brave and warm-hearted r
quit their native glens, to which they were fondly attached, and to seek
the great manufacturing towns, or in settlements formed on the other sid

1990. *The cultivated lands of Scotland,* and the amount of its produce, afte
ments, are still limited. Of the 18,944,000 acres, its computed extent of la
are reported as under regular cultivation. The Board of Agriculture,
not calculate more than 1,800,000 acres actually under grain. Of t
produce wheat, though this is considered the most profitable crop, an
quality, where the soil and climate admit; but it is chiefly on the fine
shores of the eastern friths. It may yield, perhaps, a million of bolls,
bread is not much used by the body of the people, may suffice for inte
Oats, a hardy plant, and adapted to cold climates, is the staple produc
the food of its rural population: it covers 1,260,000 acres. Barley
acres, being raised chiefly for the purpose of distillation; but in the
not barley proper, but that ruder species called *bear* or *big*. Flax is rai
upper districts, but not nearly sufficient for the national manufacture.
able produce consists in cattle and sheep, which are sent in great numb
markets, though large imports from Ireland have lessened the demand fo
the north-western counties. The sheep are not equal to the fine Engli
fleeces of Scotland are not peculiarly valuable; but the mutton produced
of the Grampians and Cheviots is of exquisite flavour.

1991. *The manufacturing industry of Scotland* has also, within the last hal
with prodigious rapidity, being quite equal, compared with the extent
the country, to that of England. The Scots, indeed, never showed any
in fabricating their national stuffs; but the means used were chiefly the
plements, the spindle, distaff, and single loom of the village weaver.
use of skilfully constructed and extensive machinery, and the division
by assembling the working classes in large factories, have immensely incre
powers of industry.

1992. *Woollen,* in the form of cloth, the grand original staple of Engl
tained more than a very partial footing in Scotland. The knitting of
however, for domestic use, has generally supplied the nation with
which in Aberdeen and Shetland became an object of trade. But nov
looms produce that article so cheap, this branch of labour scarcely fin
the exception, perhaps, of the Shetland hose, whose fine and peculia
rivalled.

1993. *Linen, with other products of flax,* is the old original staple of
throughout the country a household manufacture, and for household use
every family, was diligently spun into yarn, which was then sent out
bleached. In Forfarshire, and other northern lowland counties, the c
cloth, sackcloth, canvass, &c., have always been produced in great q
Glasgow and Paisley, the material was wrought into the finer ornament
cambrics, &c. This last manufacture, however, has now entirely given pla
which is almost exclusively carried on in the west of Scotland. The co
still form the staple of the eastern counties, though Dunfermline excels i
diaper. The average value is not supposed to exceed one shilling per ya
board has been established at Edinburgh for the encouragement of this
and formerly all the cloth made for sale was required to be stamped by t
now their functions extend to little more than the granting of premiums.
in Scotland was estimated, in 1730, at 3,755,000 yards, value 131,000*l.*
26,457,000 yards, value 1,265,000*l.* The increase in the manufacture
great, that in 1831, Dundee alone exported more than 57,000,000 yards!
proportion of the raw material is imported, very little hemp or flax bei
Scotland or England; almost all the former, and more than half the latt
Russia, the rest of the flax from Holland, Flanders, and Germany.

1994. *The cotton manufacture,* though of comparatively recent introdu land, no less than in England, risen to be the first in point of magnitude. Glasgow and Paisley produce fabrics highly ornamented, and carried to an extreme degree of fineness. The muslin of Paisley is one of the most delicate fabrics existing. The printing of cottons, particularly shawls, is also carried on to a greater proportional extent in Scotland than in England. According to the best authorities, the total quantity of cotton wool spun in Great Britain, in 1832, amounted to 277,000,000 lbs. Deducting from this sum 30,000,000 lbs. for loss in spinning, there remains 247,000,000 lbs., of which the proportion spun in England is estimated at 222,500,000 lbs., and that spun in Scotland at 24,500,000 lbs. Hence, valuing the whole manufacture at 34,000,000*l.* the proportion belonging to Scotland will be about *one ninth* part, or 3,777,000*l.* These statements have been derived from the article COTTON, in the 2d edition of *M'Culloch's Commercial Dictionary*, and may be regarded as approaching as nearly to accuracy as the subject will admit.

1995. *Distillation of spirits from grain* has been long a characteristic branch of Scottish industry; and in the highland districts, the quality of the article has been carried to very great perfection. It has been much cramped by injudicious fiscal restrictions, compelling the manufacture to be carried on in the mode best suited for raising a revenue. Whiskey was allowed to be made only in large stills. Highland whiskey could not be carried beyond the boundary, neither could that of Scotland, except under most inconvenient limitations, be exported to England. A most extensive and ruinous contraband trade was the inevitable consequence. Government of late have almost entirely abolished these absurd restrictions, and have even reduced the duty, which was once 8*s.*, to 3*s.* 4*d.* a gallon. These measures have had such an effect in increasing the production, and checking contraband trade, that the revenue has scarcely suffered at all, even by the great reduction of duty. In the first seven years of the present century, the quantity paying duty averaged 2,000,000 gallons; it then rose to 3,000,000, and gradually approached to 4,000,000; but in 1824, upon the reduction of the duty, it suddenly increased to above 5,000,000, to which point it has since been fully kept up. In 1829, the produce was 5,777,000 gallons; and in 1830 it rose to 6,070,000.

1996. *Scotland has various other ordinary manufactures*, and generally supplies itself with all the common necessaries of life. In regard to *malt liquors*, it cannot indeed rival London in *porter*; but the ale of Edinburgh and of some Scottish towns enjoys reputation even out of Scotland. In 1829, there were brewed in Scotland 110,000 gallons of strong beer, and 229,000 of table beer. *Glass* is made to the extent of nearly double the consumption of the country; the surplus being exported, chiefly to Ireland. *Salt*, which does not exist in a mineral form, is largely extracted from sea water by boiling; and though not equal in quality to English rock salt, nor fit for use in the fisheries, its cheapness recommends it for common culinary purposes. Candles, soap, starch, leather, paper, are produced in every large town and its neighbourhood in quantity sufficient for the supply of the inhabitants. In 1829, the produce was 5,731,000 lbs. tallow candles; 12,721,000 lbs. hard soap, and 2,332,000 lbs. soft soap; 812,000 lbs. starch; 6,002,000 lbs. hides; 7,162,000 lbs. paper. Bricks are also made; but from the abundance of fine freestone and granite, they are little employed, unless for party walls. In 1829, there were made 25,741,000 common, and 396,000 large bricks; also 2,854,000 pantiles.

1997. *The mineral wealth of Scotland* is chiefly of an humble and useful description. Its mountains are not metalliferous. Throughout the whole of the grand highland range there are scarcely any veins worth working. The less elevated southern ranges have a better reputation. On the high border of the counties of Lanark and Dumfries is a large depository of lead mixed with silver, which, together with some smaller mines in the Hebrides, is supposed to yield 136,000*l.* in the former metal, and 10,000*l.* in the latter. Ironstone occurs extensively in the upper coal districts. In 1825, the annual production of pig iron in Scotland was as follows: —

		Blast Furnaces.	Tons.
At Clyde works,	Lanarkshire	3	4500
At Calder, ditto	ditto	4	4000
At Shotts, ditto	ditto	2	2000
At Wilsontown, ditto	ditto	2	3500
At Omon, ditto	ditto	2	1500
At Muirkirk, ditto	Ayrshire	3	5000
At Devon, ditto	Clackmannanshire	3	3700
At Carron, ditto	Stirlingshire	5	5000
		24	29,200
	Of which in blast	17;	

which is not, however, sufficient to supply the founderies at Carron and elsewhere. Those at Carron are considerable, the casting being chiefly of ordnance, grates, and culinary vessels; but Scotland does not pretend to rival her neighbour in the fine and varied forms of hardware. Coal, lime, and stone compose the solid mineral wealth of Scotland. The great coalfield extends in a diagonal line of 100 miles along the friths of Clyde and Forth; beginning south of the former, and ending north of the latter. It is immensely rich in coal of various kinds, and generally of pretty good quality, though not reckoned equal to the very best English. From the west, a large quantity is exported to Ireland. Lime is furnished abundantly, both for building and manure; the annual value being estimated at 35,000*l.* Freestone, chiefly on both sides of the Forth; granite, in Aberdeenshire; slate, in the Hebrides and Argyleshire, afford copious and excellent materials for building.

1998. *The fisheries* form a considerable branch of industry in Scotland, and one for which her situation is peculiarly favourable. The great extent of the coasts, the deep sounds and bays by which they are every where indented, afford large scope for its exercise. Scotland is not celebrated for any rare or delicate kinds of fish; but the herring, cod, and haddock abound on various parts of its shores. The Dutch long monopolised the great northern herring bank; and, by a superior mode of cure, obtained a preference in all markets. The British government, however, has for some time made great exertions for the promotion of the Scottish fisheries; and there has been a wonderful increase in the quantity caught, and a corresponding improvement in the processes of cure. The former, which in 1815 was only 160,000 barrels, had risen in 1830 to 329,000; of which 336,000 were cured, gutted, and packed within 24 hours after being caught; this despatch being considered essential to their good quality. There were exported to Ireland 115,000 barrels; 40,000 to the continent of Europe; and 82,000 to the West Indies and other places out of Europe. In the same year, 63,500 cwt. of cod were cured in a dried state, and 5400 cwt. in pickle; of the former, 23,000 were exported. Haddocks to the supposed value of 20,000*l.* or 30,000*l.* are taken on the north coast, and slightly cured for the use of the neighbourhood. Salmon taken in the Tweed, the Tay, the Dee, and all the considerable rivers, and kept fresh by being packed in ice, chiefly supplies the London market. The whale fishery in Greenland and Davis's Straits has for some time been prosecuted by Scotland with great and increased activity; while that carried on by England has declined. In the nine years ending in 1818, she sent at an average only 40 ships: in 1830, she sent 47; the produce of which was 5613 tuns of oil. The sea fishing, for the supply of the capital and other towns in the south, is not very active. Kelp, a product obtained by the incineration of common sea-weed, and employed in the manufacture of soap and glass, was in extensive demand during the late war. Its produce in Scotland was estimated at 16,000 tons, worth about 20*l.* a ton. But the repeal of the duty on salt, and the reduction of the duty on barilla, have ruined this branch of industry. The price of kelp has fallen to 4*l.* per ton, and the manufacture has been nearly put an end to.

1999. *Some idea may be formed of the principal foreign articles used in Scotland* by the amount of custom duties levied on each in the year to the 1st January, 1830; though much is imported direct from England: —

Sugar	£501,000	Cotton wool	£11,000
Tobacco	273,000	Seeds	11,000
Wines	98,000	Mahogany	7,500
Rum	64,800	Cheese	8,000
Brandy	34,900	Tallow	7,600
Geneva	12,400	Lemons and oranges	3,000
Timber	130,000	Cork	3,300
Molasses	65,000	Liquorice	2,200
Corn	32,400	Madder	2,800
Coffee	26,000	Pepper	4,500
Hides	16,000		

2000. *The relative foreign commerce of the principal ports of Scotland* is exhibited in the following Table: —

Entered in 1824, at	British.			Foreign.			Belonging to each at Jan. 1. 1830.		Produce of Customs.
	Ships.	Tons.	Men.	Ships.	Tons.	Men.	Ships.	Tonnage.	1829.
									£
Aberdeen	130	21,970	1,942	17	1,023	86	350	46,200	52,400
Ayr	17	1,703	110						
Banff	6	403	29	7	312	29	133	5,800	1,300
Bo'ness	9	1,900	225	22	1,808	112	123	9,100	5,400
Dundee	149	21,348	1,524	11	879	72	263	26,000	68,000
Glasgow	62	5,665	384	15	2,165	122	235	41,100	
Grangemouth	44	9,051	457	49	7,079	376	204	24,300	25,000
Greenock	181	46,494	2,664	19	5,190	229	371	36,200	431,000
Inverness	14	1,261	87	1	140	7	136	7,300	2,000
Irvine	96	4,194	262				135	13,300	4,400
Kirkaldy	41	6,209	477	22	1,561	117			
Leith	222	36,479	2,133	146	16,630	980	192	14,800	6,900
Montrose	92	10,179	756	11	1,411	122	263	26,300	44,400
Perth	13	1,962	108	14	1,449	83	173	16,100	9,000
Port Glasgow	67	21,057	1,047	3	573	25	46	6,800	243,600
Stornaway	3	376	23	2	281	16	74	3,300	440

2001. *Commerce*, till the union of the crowns, and even of the kingdoms, could scarcely be considered as existing in Scotland; but it has since been cultivated with an ardour and enterprise almost excessive. One branch of commercial intercourse from which the country of course derives the greatest advantage, is that with her opulent sister kingdom. In England she finds a market for cattle, her chief agricultural surplus; for her wool, such as it is; for her sail-cloth and other coarse fabrics from flax and hemp; for part of her fine calicoes and muslins; for the salmon of her rivers, and some part of the fish cured on her shores. In return, she receives almost all the woollen cloth, and a great part of the silk consumed by her; hardware and cutlery of every kind; tea and other East India goods; and through this channel a part of all the foreign luxuries which she requires. The trade with Ireland is chiefly supported by the exchange of coal and iron for oats and cattle. That with the Baltic, particularly Russia, is very active; the eastern part of the kingdom deriving thence the hemp and flax, which form the material of her staple manufacture; also timber, iron, and the other bulky and useful staples of that trade. Having few articles of her own with which this market is not already stocked, the payment is made chiefly in bullion and colonial produce. The flourishing trade carried on from the west coast with America and the West Indies, is supported by the export of cottons, linen, wearing apparel, and other commodities; and by the import of cotton, sugar, rum, and the various luxuries of those fertile regions. The Mediterranean trade is not neglected; and since the opening of that to India, Greenock has adventured into it with considerable success.

2002. *The communication by roads and canals*, which half a century ago was remarkably defective in Scotland, is now wonderfully improved. The roads, then almost impassable, are now, through all the Lowlands, conducted upon the turnpike system, and have become very little inferior to those of England.

2003. *Artificial navigation meets with peculiar obstructions*, from the ruggedness of the surface; and hence canals have never become very numerous. At an early period, however, a public work of this class, on a most extensive scale, was undertaken by some citizens of Glasgow and Edinburgh. In 1768, they obtained an act of parliament to form the "Great Canal," by which vessels of considerable size might pass from the Frith of Forth to that of Clyde, and thus unite the German and Atlantic oceans. Like some other Scottish undertakings, it was on a scale rather beyond the means of the spirited speculators; repeated pauses, occasioned by want of funds, interrupted its progress; and the returns were long very scanty. In 1778, government, duly appreciating the value of the undertaking, came forward with a loan of 50,000*l.*, by the aid of which, in 1790, the communication was completed from sea to sea. From this time its revenue advanced rapidly, and now amounts to about 60,000*l.* a year; being 25 per cent. on the original capital. Branches to Glasgow and to the fine coalfield at Monkland were advantageously opened. A grand subsidiary has lately been formed, in the Union Canal, commenced in 1822, and rapidly completed, though at an expense of nearly 400,000*l.* It connects the Great Canal, near its eastern point, with Edinburgh, by a line of thirty miles through a country very rich in coal and lime. A tunnel of about three quarters of a mile, and three large aqueduct bridges, have been required; but, by a somewhat winding route, all lockage has been avoided. The produce, unfortunately, has not fulfilled the hopes of its proprietors, who have not yet received any dividend upon the capital invested in this undertaking.

2004. *Southern Scotland* was thus enabled to supply her own wants; but the *northern communications* leading through a poor country, intersected in almost every direction by mountains, ravines, and torrents, could not be carried to perfection by mere local resources. After the rebellion of 1745, government constructed excellent roads into the heart of the Highlands as far as Inverness; and these, though formed with a military view, served other valuable purposes. In 1803, with exclusive regard to the commercial interests of the Highlands, a body of commissioners was appointed by government, and a considerable sum placed at their disposal, to be employed in improving the roads of the north of Scotland. They proceeded upon the wise principle, that half the expense must in every case be defrayed by the county proprietors. The latter concurred, with great ardour, in the views of administration; and in eighteen years good roads were formed into the remotest tracts of Inverness, Skye, Ross, and even to the farthest point of Caithness. The total sum expended in 1821 was 454,000*l.*, and the length of road thus made was upward of 900 miles; for the completion of which it has been necessary to construct 1117 bridges; most of them, indeed, of only one arch.

2005. *The Caledonian Canal* is a more magnificent but hitherto less useful undertaking. The chain of lakes which crosses Scotland diagonally through the counties of Inverness and Argyle, suggested the idea of a water communication, by which large merchant vessels, and even ships of war, from the east coast, might pass into the Atlantic, without encountering the perils of the Pentland Frith and Cape Wrath. This great work was accordingly begun in 1803, and finished in 1822, at an expense of nearly 1,000,000*l.* sterling, entirely defrayed by government. Very great difficulties occurred in its prosecution, from the nature of the ground, and the different levels and currents of the lakes; but all the resources of art were employed by the engineers. As, from circumstances occasioned by the war, wood of sufficient strength could scarcely be procured for the immense gates of the locks,

iron was substituted with success; though the expense of each lock was th
The locks were twenty-three in all, eight of which, looking down from
opens into the western sea, are called by sailors the "stair of Neptune.'
made fifty feet broad: its length was about twenty-two miles, which, ad
miles of lake navigation, made an entire passage of somewhat more than
fortunately the supposed danger of navigating large vessels through a ch
liar nature has, hitherto, prevented its use from becoming general; bu
means may be found to remove this apprehension.

Sect. VI. *Civil and Social State.*

2006. *Of the population of Scotland* an estimate was first attempted in tl
it was computed to be 1,265,380. The reports of the clergy for the "St
between 1792 and 1798, gave 1,526,492; which was raised by the goverr
of 1801 to 1,599,000. The census of 1811 gave 1,805,000; which was rai
to 2,093,456. In 1831, it was 2,363,842.

2007. *In point of disposition*, the Scots are a grave, serious, and reflecti
neighbours remark, at first view, a certain slowness both in words anc
soon discover the Scots to be bold, enterprising, ambitious, and imbued
determination to pursue the objects of their desire, and repel those of thei
these impulses, they quit, without much regret, a land which affords few n
tinction, and seek, either in the metropolis and commercial towns of Engl
distant transmarine regions, that wealth and fame which they eagerly cov
distance and these eager pursuits, their hopes and affections remain fixed c
nativity; they are never naturalised elsewhere, but usually seek to rett
evening of their days in Scotland. Thus, they do not readily amalgama
favour of, foreigners with whom they reside, but attach themselves zealousl
emigrant countrymen. The Scots appear naturally brave; a quality w
observable among the highland tribes, and by which they rendered them
first under Montrose, and afterwards in the rebellion against the house ol
they were conciliated by the wise measures of Pitt, they have crowded intc
and formed some of its bravest regiments. The sense of moral obligat
whole stronger among the Scots than among the neighbouring nations.
classes, crimes against the order of society are of comparatively rare occ
is less necessity for capital punishment; there is also less of extreme disso
higher ranks. Among the Scottish females, in particular, the obligations
are much more seldom disregarded; and if the other sex too often abuse
public manners are supposed to allow, they are at least obliged to observe
pearances. It must not be denied that the Scots have their faults.
potations of their ancestors be now banished from good society, yet they
than the English, who themselves go farther in this respect than the na
The pride of birth is still very prevalent, particularly among the highl
is accompanied with a general ambition to rise above their original station
with that view, to spend their moderate wealth rather in outward show tha
The sister nations accuse the Scots as selfish, yet what they experience
traced rather to the spirit of nationality; for we do not apprehend that S
power have shown any backwardness, either in the general offices of hu
mote the prosperity of their country and countrymen.

2008. *To their religious duties* the Scots people have always shown an ex
In catholic times, the Romish church in Scotland enjoyed more influence,
a much greater proportion of the national wealth, than in England. But
knowledge, which early dawned upon Scotland, had shown the errors c
Scots entered upon the cause of reform with an ardent and thorough-goi
behind it that of all their neighbours. After a desperate struggle, on v
century, the political destinies of the kingdom depended, they obtained tl
of presbytery, the most remote from that pompous ritual, for which the
the most rooted abhorrence. The principle of presbytery consists in the
of all its clerical members, who have each a separate parish, of which th
ecclesiastical functions. The title of bishop, so long connected with wea
been rejected, and that of *minister* substituted. In the management of t
church functions, the minister is assisted by a body of lay members calle
stitute the *kirk session.* The government of the church consists in *pres*
the meeting of the ministers of a certain district, with lay members fror
last of whom, however, attend only occasionally. A *synod* is formed
several presbyteries; and the *General Assembly* is composed of deputies,
partly lay, from each presbytery and borough. They meet every year, an
them upon every subject; but the laws of the church, though proposed
can be passed only by a majority of presbyteries, after being debated ir

sends a *Commissioner*, who is present at the debates of the Assembly, and seems even to claim a right of constituting and dissolving it; but this is denied by the church itself, which acknowledges no human head, and accounts itself and the state as powers entirely independent.

2009. *The revenues of the Scottish church* were an object of little concern to the nobility, who showed no want of alacrity in drawing their swords for the cause of the Reformation, and even of presbytery. They availed themselves of the downfall of the catholic establishment, to appropriate nearly the whole of the immense income with which it had been endowed. They took at first not only the lands, but the tithes; and even when obliged to make a provision for the presbyterian clergy out of the latter, they retained part, valued often at a very low rate, but subject to be called upon if needed. Thus the Scots clergy have enjoyed only such incomes as enabled them, with strict economy, to maintain their place in the middle rank of society. When even this became impossible under the increased expense of living, augmentations were granted out of the *tiends*, or valued tithes; and where these were exhausted, the legislature have come forward, and raised the lowest stipend to 150*l.* a year. This moderate income, by withdrawing many temptations to indulge in the vices of the rich, has been supposed favourable to the respectability of the clergy, and to their influence with the people at large. It is generally admitted, that no body of clergy have maintained a fairer character, or more efficiently performed their important duties, than those of the Scottish church.

2010. *The dissenters from the Scottish church* consist chiefly of persons zealously attached to presbytery, and who have *seceded* because they considered its principles as not maintained in sufficient purity within the establishment. Their chief complaint is against the system of patronage exercised by the landed interest, who present generally to the vacant parishes. Two great bodies, into which they were formerly divided on the subject of the burgher oath, have, since the abolition of that test, been united into what is called the *Associate Synod*. A considerable proportion, especially of the higher ranks, is attached to episcopacy, either as it was established in Scotland under the Stuarts, or as it now exists in England; indeed, an union has been recently formed between these once separate branches. None of the other sects, independents, baptists, methodists, &c. are numerous; and the Roman catholics consist chiefly of emigrants from Ireland, though their form of religion still prevails in some of the remote highland districts.

2011. *Literature*, soon after its revival in Europe, was cultivated in Scotland with peculiar ardour. Even in the age of scholastic pursuits, Duns Scotus and Crichton were pre-eminently famed throughout the Continent. When the sounder taste for classical knowledge followed, Buchanan acquired the reputation of writing Latin with greater ease and purity than any modern scholar. Letters were almost entirely suppressed during the subsequent period, unfortunately marked by a conflict between a licentious tyranny and an austere religious party, who condemned or despised the exertions of intellect and the creations of fancy. Even after the settlement at the Revolution the same spirit prevailed; and literature lay dormant till the middle of the last century, when it was revived with extraordinary ardour, chiefly by a class of Scottish clergy, who sought to redeem their fraternity from the charge of ignorance and extravagant zeal. This country, far from opulent, with a church and universities alike poorly endowed, produced as illustrious a constellation of writers as had been called forth by the most lavish patronage in the great European capitals. We shall only mention, in history, Robertson and Hume; in moral and political philosophy, Hume, Reid, Smith, Ferguson, Kames, Stewart, Brown; divinity, Blair, Campbell, Macknight; poetry, Home, Thomson, Beattie, Burns; physical science, Gregory, Black, Playfair, Leslie. The distinguishing character was that of a grave, respectable, and dignified literature, in which the lighter branches were overlooked or despised. If this last was a reproach, it has been wholly removed in the present generation, when the most popular of fictitious writing, and one of the most able and widely circulated periodical works known in modern times, have issued from the Edinburgh press. By the authors of these, and by several others, of the first class in the physical and natural sciences, Scotland continues to make herself and her capital be regarded as a species of literary metropolis.

2012. *The universities of Scotland* have been, perhaps, the most powerful instrument in supporting her literary fame. Though not more richly endowed than the church, the fees of well-attended classes afford a more liberal income, and have enabled them to attract the most learned among the clergy; while, in England, a wealthy church draws eminent scholars from the universities. The Scottish colleges present scarcely any traces of that strict and almost monastic discipline which regulates those of the sister kingdom. The students live generally in the towns, without any check on their private conduct, or even any obligation to attendance, except what arises from the dread of the refusal of a certificate at the close. The chief exertion of the professors is bestowed on their lectures, by which they hope to attract students to their class and seminary. The more diligent combine with them examinations and exercises, but not on the same systematic and searching plan as in England; and the degrees are conferred, in many instances, with culpable laxity. A much greater pro-

portion of the people receive a college education than in England. Th
attendance of eight years; four for languages and philosophy, and fou
faculty of medicine requires also several years; and the gentry and hig
middle ranks in general consider an attendance on the elementary classes
of education.

2013. *The public libraries*, when considered in relation to the country,
rich. That belonging to the advocates or barristers of Edinburgh co
100,000 volumes, among which there are ample materials, both pri
nuscript, for elucidating the national history. The university library i
large; and those of Glasgow, King's College Aberdeen, and St. Andre
spectable. Each of these universities can claim a copy of every new wor
Scots are a writing and reading people, they are not the chief buyers
of their native favourites; nor are there many examples of those m
libraries which enrich so many of the English seats.

2014. *To the fine arts* Scotland has been considered unpropitious; y
early boast the respectable names of Runciman and Jamieson. A
elapsed till Raeburn and Nasmyth rose to eminence in portrait and la
branch of historical painting which illustrates the habits and feelings of c
land can boast the greatest name in the present day, that of Wilkie.
branches have found votaries decidedly successful, though few. Two
maintained with some interruptions, at Edinburgh, have continued to pr
opinion of the talents of its artists. With the exception of Hamilton P
seats do not contain grand collections of pictures; yet in this, as in other
for the fine arts is making a somewhat rapid progress.

2015. *Scotland has a native music*, simple and pathetic, expressive of
emotions, to which she is fondly attached. The ardent cultivators of
complain that the passion of the Scots for these national airs shuts their
and more varied beauties in the works of Italian and German comp
musical warfare has been waged; the issue of which has been, that the
their way, though without expelling their domestic rival. The highest
Mozart, and other eminent masters, have been sung to crowded audience
while in concerts and private societies, Scottish songs are still listened
Music, as a branch of education, has certainly been very much extended i
the last twenty or thirty years.

2016. *The Scots are not a people of pastimes*, nor are their sporting an
those of the English. Golf and foot-ball are the only amusements th
strictly national. Skating, and *curling*, or the rolling of smooth stones
also pursued with great ardour during the season that admits of those an
recreations of the higher ranks are nearly the same as in England. Da
with peculiar ardour, especially by the Highlanders, who have favourite
movements.

2017. *The lowland dress* has nothing peculiar; though even the poo
general, decently and substantially clothed. The Highlanders, howev
remnants of a national costume altogether peculiar to themselves; the ta
woollen and linen cloth, adorned with brilliant stripes variously crossin
marking the distinctions of the clans; the kilt, or short petticoat, worn
hose fastened below the knee, which is left bare; and the bonnet, which i
also still worn by the shepherds of the border.

2018. *In regard to food*, the Scots, in general, are temperate. Even t
importance than their southern neighbours to the gratifications of the pala
previously to the rise of wages, which took place about thirty years ago,
the hardest fare. Neither wheaten bread nor animal food formed part
diet. Oatmeal, not accounted in the south of England an article of
beings, was prepared here under the forms of cakes or porridge, and con
means of subsistence. To this was occasionally added barley broth, with
chief produce of their little gardens. The Scots have some dishes which
national enthusiasm, and among which the *haggis* holds the foremost
mixture of oatmeal, fat, liver, and onion, boiled up in the bag which com
of the animal. They have, moreover, hotch-potch, and other soups, the
been acknowledged by English palates.

Sect. VII. *Local Geography.*

2019. *The following is a Table of the extent, population, and rental* in the different counties of Scotland, derived from agricultural reports and parliamentary returns: —

Counties.	Square Miles.	Acres under Cultivation.	Rental in 1812.	Houses in 1821.	Population in 1831.	Towns with Population in 1831.			
			£						
Aberdeen - -	1,960	451,000	301,000	27,579	177,651	Aberdeen -	58,019	Peterhead -	6,698
Argyle - -	3,129	270,000	207,000	16,059	101,425	Campbellton -	9,472	Inverary - -	2,133
Ayr - -	1,039	325,000	369,000	17,842	145,055	Ayr - - Irvine - -	7,606 5,200	Kilmarnock -	18,093
Banff - -	645	123,000	85,000	8,971	48,604	Banff - -	3,711	Cullen - -	1,593
Berwick - -	442	137,000	286,000	5,803	34,048	Dunse - -	3,469	Lauder - -	2,063
Bute - -	161	29,000	20,000	2,205	14,151	Rothesay -	4,819		
Caithness - -	687	92,000	32,000	5,319	34,529	Thurso - -	4,679	Wick - -	9,850
Clackmannan -	48	23,000	39,000	2,145	14,729	Clackmannan -	4,266	Alloa - -	6,379
Dumbarton - -	228	54,000	63,000	3,536	33,211	Dumbarton -	3,623		
Dumfries - -	1,255	232,000	264,000	12,248	73,770	Dumfries -	11,606	Sanquhar -	3,268
Edinburgh - -	354	145,000	713,000	19,077	219,592	Edinburgh Dalkeith -	136,303 5,586	Leith - - Musselburgh -	25,853 8,961
Elgin - -	473	121,000	66,000	6,668	34,231	Elgin - -	6,130	Forres - -	3,895
Fife - -	467	200,000	378,000	18,944	128,839	Cupar - - Kirkaldy -	6,473 5,034	St. Andrew's - Dunfermline -	5,621 17,068
Forfar - -	888	369,000	326,000	16,812	139,606	Dundee - Forfar - -	45,355 7,949	Montrose - - Arbroath -	12,055 6,660
Haddington - -	272	139,000	213,000	6,230	36,145	Haddington -	5,883	Dunbar - -	4,755
Inverness - -	4,054	244,000	172,000	17,055	94,797	Inverness -	15,324		
Kincardine - -	380	92,000	88,000	5,894	31,431	Bervie - -	1,137		
Kinross - -	72	27,000	24,000	- -	9,072	Kinross -	2,917		
Kirkcudbright -	821½	168,000	192,000	6,441	40,599	Kirkcudbright	3,511		
Lanark - -	942	271,000	616,000	47,016	316,819	Glasgow - Lanark - -	202,426 7,672	Hamilton -	9,508
Linlithgow - -	120	57,000	91,000	3,302	23,291	Linlithgow -	4,874		
Nairn - -	195	37,000	12,000	- -	9,354	Nairn - -	3,266		
Orkney and Zetland	1,280	46,000	20,000	9,176	58,239	Kirkwall -	3,065	Lerwick - -	2,750
Peebles - -	319	24,000	60,000	1,750	10,578	Peebles - -	2,750		
Perth - -	2,588	580,000	512,000	26,718	142,894	Perth - -	20,016	Dumblane -	3,228
Renfrew - -	225	72,000	234,000	10,490	133,443	Paisley - - Port Glasgow	57,466 5,192	Greenock - Renfrew - -	27,571 2,133
Ross and Cromarty	2,885	170,000	111,000	13,636	74,820	Dingwall - Cromarty -	2,124 2,901	Tain - -	3,078
Roxburgh - -	715	206,000	242,000	6,587	43,663	Kelso - - Hawick -	4,939 4,970	Jedburgh -	5,647
Selkirk - -	263	10,000	41,000	1,081	6,883	Selkirk - -	2,833		
Stirling - -	489	196,000	207,000	8,984	72,621	Stirling - -	8,340	Falkirk - -	12,743
Sutherland - -	1,754	63,000	28,000	4,654	25,518	Dornoch - -	504		
Wigton - -	451½	101,000	131,000	5,819	36,218	Wigton - Portpatrick -	2,337 2,239	Stranraer -	3,321

2020. *In treating of Scotland in detail,* we shall divide it into its three constituent parts · — 1. The Lowland counties; 2. The Highland counties; 3. The Islands.

Subsect. 1. *The Lowland Counties.*

2021. *The whole of the south of Scotland,* though diversified by elevated ranges of hills, is always considered as belonging to the Lowlands. It presents, however, three districts of opposite character: — 1. The agricultural counties along the German Ocean and the Frith of Forth; 2. The southern pastoral counties; 3. The manufacturing counties of the west.

2022. *The agricultural district of southern Scotland* consists of the counties of Berwick (formerly the Merse), of *Haddington, Edinburgh,* and *Linlithgow* (fully as familiar under the appellations of East, Mid, and West Lothian), and of Stirling, which touches westward on the highland boundary. Even of this range, the cultivated part is closely hemmed in by Lammermoor, a low, broad, moorish ridge, which fills all the eastern interior of this tract. It reaches even a considerable extent along the shore of the German Ocean, to which it presents the bold promontories of St. Abb's Head and Fast Castle. In Mid Lothian, its highest pinnacle of Soutra nearly locks in with the Pentlands, which are succeeded to the westward by a long bleak table land reaching as far as Glasgow, and reducing to the breadth of a few miles the beautiful carses of Falkirk and Stirling.

2023. *The cultivated part of Berwickshire* consists of the Merse, extending chiefly along the Tweed, and reaching to the sea. Its improvement, though scarcely commenced half a century ago, has been carried on with the greatest industry, and there is no part of Scotland which can boast of more skilful and prosperous farmers. Above it is Lauderdale, or the Valley of the Lauder, which is fitted chiefly for grazing, and touches closely on the heaths of Lammermoor.

2024. *Berwick,* by position as well as name, belongs naturally to this county, though after a long series of bloody contests for its possession, James VI. declared it neutral ground, and Great Britain cannot now be fully designated but by calling it England, Scotland, and Berwick upon Tweed. This town has a district attached to it of about 5000 acres, called "Berwick bounds." Though the harbour be indifferent, and liable to frequent injury from the action of the river, yet, as the Tweed here receives large vessels, Berwick is the chief channel for exporting the valuable produce of the Merse, to the annual amount, it is said, of 80,000 bolls of grain. A quantity of the Tweed salmon, preserved in ice, is also sent to the London market. The strong wall and deep ditch, which once defended Berwick, still remain, though neglected; and large barracks have been erected.

2025. *Of the towns in Berwickshire*, Greenlaw is the seat of county business, though it and Lauder, the only borough, are but small places in the upper district. Dunse, in the heart of the agricultural tract, is the most thriving and prosperous. Coldstream, a large pleasant village on the banks of the Tweed, is noted as the scene of Monk's retirement. Eyemouth is a small seaport, where there is some fishery.

2026. *Haddingtonshire, or East Lothian*, runs along the mouth of the Frith of Forth, between which and the range of Lammermoor extends a plain about twenty miles in length and twelve in breadth, perhaps the largest in Scotland, and all under high cultivation. The East Lothian farmers are considered as thoroughly acquainted with the science of agriculture, and practically skilled in its most improved processes. Some of them have made considerable fortunes; though the rise of rents, and subsequently the fall of prices, have caused a certain reverse in this particular. Grain and artificial grasses of every description are raised in perfection; scarcely a spot, unless on pleasure grounds, being left under natural grass. Edinburgh is chiefly supplied with wheat from the market at Haddington, which is considered one of the first in the country.

2027. *The towns in East Lothian*, which is in no degree a manufacturing county, are of secondary importance. Haddington is neat and pleasant, supported only by the market and by its court for legal proceedings. Dunbar has a little trade and fishery. Its castle, the ruins of which extend over a promontory of broken rocks, stretching out into the sea, forms a truly grand object. North Berwick, though a royal burgh, is, in fact, only a pleasant village, near the foot of the insulated eminence, or *law*, which bears its name. Opposite is a range of rocky islets, of which the most remarkable is the Bass, "that sea rock immense," the steep sides of which rise to the height of 400 feet. The side facing the ocean forms a perpendicular precipice, on which build crowds of that rare species of seafowl called Solan goose. Their young, whose down is of some value, are taken by the perilous exertions of fishermen, suspended by ropes from the top of the cliff. There are still some remains of the fortified prison which was in ancient times reserved for state offenders, and in which some of the most eminent covenanters were confined for several years. On the shore immediately opposite, crowning a perpendicular cliff, appears Tantallon, a strong castle of the Douglases, now in a ruinous state, and bearing marks of exchanges of artillery with the Bass, while the latter was in possession of the English. Prestonpans, a long dirty village, has some manufactures of salt and vitriol.

2028. *Mid Lothian*, or *Edinburghshire*, the next in order, is the metropolitan county of Scotland. The same system of agriculture prevails here as in East Lothian; and some of the fields, copiously supplied with manure from the capital, bear very heavy crops. On the whole, however, this county does not afford the same extent of surface fit for the plough. It is penetrated by a branch of the Lammermoor, and by the long range of the Pentlands: and at the distance of a few miles south from Edinburgh, a general high level begins, which is favourable only to the production of oats and barley. A great part of this county is laid out in garden ground for the supply of the metropolis, in nursery grounds, and in potato fields. There are no manufactures of any consequence, the county being entirely supported by the metropolis and its appendages.

2029. *Edinburgh*, the capital of Scotland (*fig.* 189.), is a city of no very high antiquity. The Castle Hill, indeed, whose rocky and precipitous sides support on the summit a level space of some extent, accessible only by a narrow ridge at one point, must always have been of importance in a military age. It is named in the Pictish annals under the title of Castrum Puellarum, which is supposed to have originated from the custom of placing the princesses and ladies of rank to be educated there, as in a place of security. In the tenth century, mention is first made of the town of *Edin*; but David I., in the twelfth century, founded the abbey and palace of Holyrood; and, under the sway of the Stuarts, Edinburgh became gradually the undisputed capital of Scotland.

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EDINBURGH.

2030. *Edinburgh is built upon three ridges*, running from east to west, and separate from each other by deep ravines. The Old Town, which, till the last half century, formed the whole of Edinburgh, is situated on the middle ridge, extending nearly a mile of gradual descent from the Castle to the palace of Holyrood. With a view to secure the protection afforded by this site, the houses have been crowded into the very smallest possible space; they are raised six or seven stories on the side facing the street, which from the acclivity of the ground, gives to that facing the ravine a height of ten or even fourteen stories. From this central street, there descend on each side *closes* or lanes about six feet broad, and sloping often at an angle of forty-five degrees, so that some experience is required to descend with safety. The Cowgate, a poor street, inhabited by small tradesmen, extends along the bottom of the ravine, and terminates in a spacious *Grass-market*, completing old Edinburgh. Although it contains many excellent houses, it is now entirely deserted, unless by the inferior orders of tradesmen, who occupy spacious apartments, at very low rents. All the citizens of better rank have migrated to two towns, built on the opposite sides of the Old Town; one on the south side, or St. Leonard's Hill, occupied by citizens of the middle class, those connected with the university, or such as are fond of retirement: the other, called properly the New Town, is on the north; and at present comprises the residence of almost all the opulent and fashionable classes. Being built on a regular, perhaps somewhat too uniform plan, and of the fine freestone found in Craigleith and other neighbouring quarries, it ranks, generally, as one of the most elegant towns in Britain. Extensive improvements are now in progress; one consisting of a new bridge, between the Old Town and the southern districts, and the other of a south-west approach, carried along the lower declivity of the Castle Hill. The inhabitants, however, who defray the expense by an assessment on the house rents, have begun to complain heavily of the amount far exceeding the estimate of the sum required to complete these works.

2031. *The beauty of Edinburgh* is greatly enhanced by its situation; being overlooked on one side by the proud eminence of the Castle, and its fine ancient towers, though somewhat marred by modern additions; and on the other, by a range of bold hills, the highest of which is called Arthur's Seat. The lowest, the Calton Hill, round which walks of easy access have been formed, commands a view of Edinburgh, the Frith of Forth, and its surrounding shores, which attracts the admiration of every stranger.

2032. *The general effect*, rather than that of any particular edifices, constitutes the merit of Edinburgh. Of antique structures, there is nothing very fine, except the large hospital for boys, erected from the funds bequeathed by George Heriot, the celebrated goldsmith. The great cathedral of St. Giles has been admired almost solely for its spire, and Holyrood Palace, a comparatively modern structure, for its little ancient chapel. The former, however, has been now externally rebuilt on a very handsome plan, and the latter has undergone a thorough repair. Four miles south, in a very commanding situation, are the remains of Queen Mary's pleasant country palace of Craigmillar. The Register Office is an elegant and classic edifice. Forty years ago, a new college was undertaken by national subscription, and a noble front was erected on the design of Mr. Adam; but the funds being exhausted, it remained long in a state almost of ruin, nearly concealed from view by a street of shops run up immediately opposite. In this exigency, government liberally came forward with an annual vote of 10,000*l*., to be continued till its completion, which is now nearly effected, under Mr. Playfair's judicious modification of the original design. The new High School is an extremely elegant structure; but the National Monument, on the Calton Hill, begun on the model of the Parthenon, is stopped for want of funds.

2033. *Few cities have increased more rapidly* than Edinburgh, both in extent and population. Its inhabitants in 1801, including Leith, were 82,560; in 1831, they had increased to 162,156. The principal support is derived from the law, to which belong judges, to the number of about 20; advocates 500; writers to the signet 700; and a variety of inferior practitioners. The professors of the university, and private lecturers, &c. constitute a considerable number; and genteel families are attracted from every part of Scotland by the opportunities of education and agreeable society.

2034. *Edinburgh is a city eminently scientific and literary*, and has even become known under the appellation of the "modern Athens." Connected with these pursuits, an extensive trade in printing and publishing books is carried on by some enterprising individuals.

2035. *There are few manufactures*, with the above exception. A great quantity of ale is brewed, which has attained to a high reputation; and there are in the neighbourhood some considerable distilleries. Shawls are manufactured equal, if not superior, to any in the empire. There are very extensive banking establishments, both public and private, and considerable fortunes have been made in that branch of commerce.

2036. *The University of Edinburgh*, founded in 1581, has risen to great fame, both as an institution for teaching, and a nursery for eminent men. The medical school, in particular, attracts students from all the three kingdoms; and the degree of M. D., bestowed here after strict examination, is reckoned to confer peculiar distinction. Debating societies, formed among the students themselves, have been the means of eliciting much talent. The annual

by Google

number of students at the university now rather exceeds 2000. They a
town, and are not subject to any personal discipline, except that of attendanc
Edinburgh has its Royal Society for physical and literary researches, its
Horticultural Societies, an Institution for the promotion of the Fine Arts,
for Painting.

2037. *Leith is the port of Edinburgh,* and carries on a considerable imp
supply of that capital and of all the interior country. During the last war, t
rose to a high pitch of prosperity; but some unfortunate reverses after its
failure of several of the first houses, and threw the town into a lan
which it is but very gradually reviving. Her trade is chiefly with a vie
of the capital, for which purpose she carries on a constant intercourse v
other ports on the eastern coast. Her intercourse with the Baltic is ver
that with the West Indies considerable, though not equal to what is carried o
The harbour of Leith is formed by the small river of the same name, comin
western side of the Pentlands, passing on the north of Edinburgh, and di
itself into North and South Leith; the latter of which is the larger div
bour is not good; but the town of Edinburgh, which possesses a muni
over Leith, has expended very large sums in the construction of an extensi
for the accommodation of its shipping; and a pier, which, stretching far i
to enable vessels to enter at all times of the tide, with a breakwater opposit
completed. The roads, at the distance of about a mile, afford excellent an
originally a collection of rather ugly and dirty lanes, is now everywhere sk
streets, and ranges of villas, erected by the opulent inhabitants for their p
In 1832 there entered its port 334 vessels, tonnage 46,200.

2038. *Besides these great towns, Mid Lothian contains* only some large pleasant villag
principal bathing place of Edinburgh. Musselburgh, Fisherrow, Inveresk, are clustere
mouth of the Esk, the scene of the battle of Pinkey. Musselburgh has now a good turf, w
Leith sands for the annual Edinburgh races. Dalkeith, an agreeable rural little tow
market in Scotland. The valley of the Esk hence upwards to Roslin contains the fi
Lothians. The lofty banks on each side, either overhung by vast woods, broken into
opening into romantic dells, present continual change of prospect. Roslin chapel, thou
sive scale, exhibits some exquisite specimens of Gothic sculpture; and the ruins of the
great strength. On a precipice, rising above the river, stands Hawthornden, an edifice n
its site; but the votary of the muse, seated in the chair of Drummond, must feel no
beholding the same scene of the Esk rolling through finely wooded banks, on which the
All the south and west of this county consists of wild, hilly, and pastoral scenery, in
a pleasingly retired spot, chosen by Ramsay as the scene of his *Gentle Shepherd.*

2039. *Linlithgow* or *West Lothian* consists, in its upper part, of a bleak
lower, of an extensive plain, beautiful and fertile, which the farmers cult
skill and success peculiar to the best parts of Scotland. It abounds wit
lime, and marl. There are no manufactures of any consequence. T
passing though this county has afforded an improved conveyance for its r
cultural produce.

2040. *The towns in this county* are small; but Linlithgow retains still
aspect of grandeu
royal residence
(*fig.* 190.), sit
behind the town,
a beautiful little
of the grandest a
the kingdom.
Gothic church
Borrowstownnes
Bo'ness, once m
trade of the u
the great canal terminating at Grangemouth has now attracted the larger p
that port. Queensferry is a pleasantly situated village, at which is the ma
the Forth.

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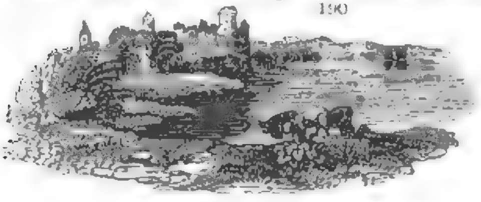

LINLITHGOW PALACE.

2041. *Stirling,* an extensive and beautiful county, the link between the Hig
lands, extends for thirty-five miles along the Forth, which, in the cour
passes from a river into a frith. Few counties present a greater variety of
it encloses several of the richest *carses* in Scotland; but the greater part
toral, while many of the lower grounds consist of fine meadows, adorned
meanderings of the Forth. It even encroaches on the Highlands, since i
mity includes Ben Lomond. This county is traversed by the celebrated
tween the Forth and Clyde, usually ascribed to Antoninus, though from
Tacitus it would appear to have been first formed by Agricola. It seem
from near the church of Old Kilpatrick, about four miles above Dumbar
near Bo'ness, rather more than thirty-six miles. Stirling is also crossed b
as grand, and more useful, — the great canal between the Forth and Clyd

2042. *The town of Stirling* can boast a situation as noble and commanding as any in Scotland. The view from its castle, which includes entire the principal range of the Grampians, the meadows or links through which the Forth winds, and a part of thirteen counties, is generally considered the finest in the country. The main street, like that of Edinburgh, descends gradually down the ridge of the hill on which the castle stands (*fig.* 191.). This fortress, in feudal times, was accounted one of the bulwarks of the kingdom; and Stirling was the frequent seat of royalty, and the scene of many of the most memorable and tragic events in Scottish history. The town has now lost this distinction, and owes its present limited prosperity chiefly to its position on the main land route into the Highlands, and to some spirited attempts to introduce the carpet manufacture and other branches of industry. Falkirk is a larger town, situated in a broad and beautiful *carse*, through which the Forth flows like a broad river, backed by the considerable range of the Ochils. The three great annual *trysts* exhibit an immense show of highland cattle and sheep brought up for the supply of the southern districts. Near Falkirk is Carron, accounted only a village, but the seat of the greatest iron-works in Scotland, in which, during war, 2000 men were employed. It particularly excels in grates, and in that species of artillery first cast here, and hence denominated carronades. Grangemouth, at the connecting point of the great canal with the Frith of Forth, derives from this situation a considerable trade.

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STIRLING CASTLE.

2043. *The seats in the great agricultural district* now surveyed are numerous and handsome, though few are on a very great scale. At the western extremity of Berwick, Lord Buchan has Dryburgh Abbey, a beautiful Gothic edifice, of great antiquity. The late Earl of Wemyss built in East Lothian Amisfield and Gosford, the latter on the coast of the Forth, and of great extent, but now used only as a gallery for containing an extensive collection of pictures, some of which are very fine. In Mid Lothian, Dalkeith House aspires to the name of palace, chiefly in consequence of the great extent of beautiful grounds and lawns that surround it. The Marquess of Lothian's seat of Newbattle Abbey is surrounded by noble trees. The beauty of its site, and its ceilings painted by Runciman, give merited celebrity to Pennycuik House. In West Lothian, Hopetoun House is a truly superb mansion, overlooking a spacious lawn which slopes down to the Forth. Dalmeny Castle has also a great extent of finely wooded grounds extending for several miles along the coast. In Stirlingshire, Callender House is a fine seat, including most of the country round Falkirk. Craigforth is happily situated on a cliff above the river, at the point where its windings are the most varied and beautiful. On the western border, the Duke of Montrose has the beautiful seat of Buchanan, near the banks of Loch Lomond, and on the immediate brink of the Highlands.

2044. *The next district, including the counties of Roxburgh, Selkirk, Peebles, Dumfries, and part of Lanark*, may most properly bear the appellation of pastoral Scotland. It is covered with long ranges of hills, not in general heathy or rugged like those of the Highlands; but from one to two thousand feet high, clothed with pasturage to their summits. This may be justly held the region of Scottish poetry. The events of border war and feud, which kept it for ages in perpetual excitation and alarm, gave birth to strong feelings and passions, and inspired strains which are still fondly recited. To these succeeded love songs dictated by nature, and often inspired by refined feelings. It was amid these scenes that Thomson and Scott caught that inspiration which has rendered their poetry the delight of their country. The chief occupation in all this tract is sheep-farming; only detached districts being fit for the plough, or having meadows sufficiently rich for rearing cattle of a large breed; and there are scarcely any traces of manufacturing industry.

2045. *The towns in this tract* are generally small and agreeable. Kelso is considered one of the most beautiful in Scotland, being surrounded by ornamented villas and extensive woods, which cause it almost to resemble a town in the south of England. The abbey is not without some grandeur; and the ruins of the castle of Roxburgh are striking. Kelso has a gay and literary circle of society. Hawick is a tolerably sized country town, pleasantly surrounded by hills, and has a little carpet manufactory. The village of Melrose is only distinguished by its abbey (*fig.* 192.), founded by David I., in the twelfth century, and the finest edifice ever erected in the south of Scotland. All the elegance of that architecture which we call Gothic has been lavished on this pile, and is displayed in the profusion of the ornaments, and the beauty of the sculptures, which remain nearly entire, and have rendered it the study of the painter and the theme of the poet. Selkirk and Peebles, capitals of their respective little counties, are only pleasant villages, bordering on the great pastoral vales of Etterick and Yarrow. These do not contain even a village; and on the western side of them we enter Dumfries-shire, and find Moffat, a small town in a picturesque site amid rocky hills, and containing a mineral spring of some repute. Proceeding southwards, we discover on the shores of the Solway the principal towns of the county: Dumfries itself, a well-built, gay-looking city, is a sort of southern Scottish capital, and it has been so distinguished from an early period; but no traces remain either of the castle, or of the monastery in which Cumming fell by the hand of Bruce. To the west and south, the country is fine, watered by the Nith and other rivers; but to the east, there are only the vast mosses of the Solway. The town carries on some trade by the Nith, which admits vessels of one hundred and twenty tons, and it has two great annual markets for the cattle from the west; but it is chiefly supported by the many neighbouring gentry who make it their residence. Annan is agreeably situated at the mouth of the river of that name. Lochmaben, ancient, and distinguished by

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MELROSE ABBEY.

the ruins of a strong castle, Thornhill and Sanquhar on the upper course of the Nith
centre of the pastoral vales of the Esk and the Liddle; may all rank as little towns c
small spot, famed in the annals of gallantry, is Gretna Green, close on the English border
a fond matrimonial pair, to escape the jealousy of parents and guardians, and avail themsel
facility of Scottish marriage. On the bleak northern boundary, and on an almost m
Wanlockhead; and nearly contiguous to it Leadhills, in Lanarkshire. Wanlockhead be
Buccleugh, and yields annually lead to the amount of about 15,000 bars, of nine stones eac
belonging to the Earl of Hopetoun, yields about 18,000. The workmen form a litle socie
order and good conduct, and support among themselves a small subscription library.

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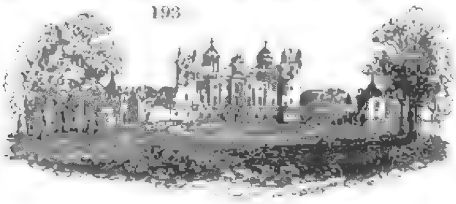

DRUMLANRIG CASTLE.

2046. *Seats.* A va
pastoral regions belor
houses of Buccleugh
The Duke has nun
district, of which the
Castle (*fig.* 193.), a m
an eminence above
rounded by extens
ations. At the mou
Caerlaverock Castle,
Maxwell family, nov
and picturesque ru
others round Kelso,
seat of the Roxbur
House, near Kelso, i
grounds, to which a
pendicular crags give
Abbotsford, from the many additions made by its illustrious proprietor, has become a strik
object.

2047. *The three counties of Ayr, Wigton, and Galloway* compose what ha
called the West of Scotland. Like the southern counties, they are chiefly
but the cultivators are much less occupied in the breeding of sheep than
cattle. The surface is very various. The range of mountains, indeed, wh
and Galloway is almost as elevated as any in Scotland; but the upland cou
is, in general, diversified only with steep rocky eminences of two or thr
high. In Ayr, too, though the southern district of Carrick be very mountai
one of Kyle has a level coast; while Cunningham, the most northerly, consist
of a fertile plain. Both counties, from the boundary line of mountains, ar
rivers; in one, the Ayr, the Doon, and the Irvine; in the other, the D
The Ayrshire breed of horses, called also the Clydesdale, is highly esteemed
supplies the markets in the east of Scotland; but the little active breed
are now become scarce. It is in horned cattle that both districts place
The kine of Ayrshire are valued chiefly for the dairy, which produces the
Scotland that have acquired celebrity. The Galloway bullock without
beef of a peculiar excellence, which often reaches the London market. In
the farmers have quitted their alternation of three arable crops for six of p
adopted some modern improvements, their agriculture is much behind that
the farms are small, and have little capital vested in them. The northern
where it borders on Lanarkshire, participates to a certain extent in the fl
factures of that great county. It has also an extensive iron-work at Mu
mense beds of valuable coal, which not only serve for the supply of the
are exported to Ireland in such quantities as to form the chief trade of t
facilitate the transport, the Duke of Portland has formed a fine harbou
has connected it by a railroad with Kilmarnock. A still grander pro
Lord Eglinton, who undertook to form a harbour at Ardrossan, which
one of the finest in the west of Scotland; and to connect it with Glasgow
drossan, as the port of Glasgow, would then, probably, have superseded G
would have allowed vessels to enter at once upon the open sea without pas
channels of the Frith of Clyde. The difficulties of the times, however, a
blishment of Greenock and Port Glasgow, were unfavourable to this proj
part of the canal was completed, and the whole design is now relinquishe

2048. *There are several considerable towns in Ayrshire.* Ayr, at the point where the r
fall united into the sea, is a gay place, forming a sort of capital for the gentry of a consi
land. In ancient times it was still more important, as the principal scene of some great
the time of Wallace and Bruce; and, at a much later period, as an important military s
carefully fortified by Oliver Cromwell. Its trade, also, was greater, rivalling that of the
but the bar at the mouth of the harbour, completely obstructing the entrance of t
unfavourable to its progress. It exports, however, chiefly to Ireland, a considerable quan
by railways. The town is irregularly built, but has one handsome principal street. Its t
and some charitable institutions, are on a greater scale than the size of the town migh
Proceeding northwards from Ayr, occur the ports of Troon, Irvine, Saltcoats, and Ard
large quantities of coal to Ireland; whence they receive grain for the supply of the g
Saltcoats, which has sprung up within the last century, is also noted for the manufacture
san is now a watering place of increasing resort. The same may be said of Largs, the cel
defeat of Haco, the last Danish invader, after a sanguinary conflict; memorials of which
dug up: though only a village, it attracts many visiters by the extreme beauty of its situa
of Ayrshire is Kilmarnock, its largest and most thriving town. The manufacture of va
carpets, caps, serges, tartans, saddlery, and other fabrics of leather; and latterly branches o
from Glasgow, place it high in the list of Scottish manufacturing towns. Kilwinning,
place, is celebrated in the annals of freemasonry, for the first introduction of that myste
the twelfth century; at which period was erected the extensive monastery, of which o
remain. Cotton spinning is carried on to a considerable extent at Catrine, a large village,

Dunlop is merely a hilly district, with rich pasture, where the cheese of that name, the best in Scotland, is produced. In the south Maybole, Girvan, and Ballintrae are only villages.

2049. *Galloway is almost entirely a rural district.* Its capitals, Wigton and Kirkcudbright, are pleasant country towns, and the latter, having a good harbour, has, of late, considerably increased. Stranraer also is a port of some little consequence. A more conspicuous rank is held by Portpatrick, the nearest point of Great Britain to the Irish coast, whence it is only twenty-one miles distant. It has thus become the main channel of communication between Scotland and Ireland; for which purpose an improved harbour has lately been constructed at a very great expense, and regular packet boats are established. Near Portpatrick, the ruined castle of Dunskye, situated on a high cliff, overlooks the Irish Sea.

2050. *In the counties of Lanark and Renfrew* we contemplate a scene very different from that which has now been surveyed. They constitute the valley of the Clyde, the grand theatre of Scottish commerce and industry. Yet it must be premised that Lanarkshire, or Clydesdale, is divided into three regions, of widely different character. The upper valley, from the place where the Clyde issues out of a steep and high chain of hills to that where it encircles the broad base of Tinto, is altogether a rude pastoral region, similar to the parallel valley of the upper Tweed. Below Tinto, and near Lanark and Hamilton, the banks of the Clyde assume a softer and gayer character. Between these towns they exhibit a variety of beautiful scenery, formed by the falls of the river, and by a succession of gardens and orchards; this being the only part of Scotland where the cultivation of fruit is practised as a branch of husbandry. Below Hamilton comes the district around Glasgow, which is flat, and has not much of variety or beauty, but it supplies that great city with inexhaustible stores of excellent coal. Next to Glasgow is Renfrewshire, in its passage along which the Clyde gradually expands into a broad frith bearing fleets of merchant vessels on its bosom; and at its mouth are the leading and only great ports of the west of Scotland. In the interior are several flourishing manufacturing towns, among which Paisley stands pre-eminent.

2051. *Glasgow is the pride of Lanarkshire,* the commercial capital of Scotland, and in population the third town in the island. It is ancient, tradition ascribing its origin and erection into a bishopric to St. Mungo, in the year 560. The cathedral was then commenced, and, in 1123, assistance towards its erection was obtained from various parts of the country; yet in 1560 the population did not exceed 4500. A century after, it had advanced to 12,000; and in the disturbances during the reign of Charles II. we find it ranking as the capital of the west. Its rapid rise to greatness, however, commenced with the union, which opened to it the trade with America and the West Indies, hitherto monopolised by the English ports. In 1718, for the first time, a vessel from the Clyde sailed across the Atlantic. By the middle of the century, the merchants of Glasgow carried on an active trade with Virginia and Maryland, then the richest of the American colonies. They imported more than half the entire amount of tobacco which came into Great Britain; and to them the French farmers-general chiefly looked for their supply of this important article. The trade of Glasgow appeared likely to suffer from the American war, and the independence of the United States, which enabled the latter to send the produce of their plantations direct to France. The merchants of that town, however, soon showed that they possessed all the energy necessary to redeem these losses. In New England and the other northern states they found an ample vent for their manufactures; for the sale of which commission houses were opened in all the principal towns. Their intercourse also with the West Indies, which had hitherto been very limited, was now carried on to a vast extent. In 1775, there were imported thence 4600 hogsheads of sugar, and 1150 puncheons of rum; in 1814, 40,000 hogsheads and 12,000 puncheons.

2052. *The following is an Account of the principal Imports* into the Clyde, for the years 1831 and 1832: —

Articles.	Packages.	Imports.		Stocks on hand 31st December.	
		1831.	1832.	1831.	1832.
Sugar, British Plantation	hhds.	28,086	28,169	5,338	5,917
	tierces	2,193	2,666	254	595
	brls., &c.	2,949	3,668	449	456
Mauritius, &c.	bags	19,900	28,457	5,503	2,638
Foreign -	bxs., &c.	1,074	16	997	295
Molasses -	casks	14,064	27,782	3,539	5,251
Coffee -	tierces	682	913	136	268
	bags, &c.	1,121	1,763	415	297
Cocoa - -	ditto	58	105	6	5
Pimento -	ditto	219	275	81	240
Ginger - -	ditto	60	74	31	13
Pepper - -	bags	2,411	3,064	923	1,923
Rum, Jamaica	puns.	1,415	1,084	2,227	2,121
	hhds.	552	353	492	330
Leeward -	puns.	1,032	758	887	897
	hhds.	360	195	367	160
Wine - -	pipes, &c	2,950	1,650	1,830	2,183
Brandy - -	ditto	345	1,966	67	750
Geneva - -	ditto	468	400	120	60
Logwood -	tons	716	657	204	135
Fustic - -	tons	147	107	127	none.
Nicaragua Wood	ditto	52	82	none.	
Lignumvitæ -	ditto	- -	40		
Mahogany -	logs	1,278	2,323	571	944
Indigo -	chests	- -	- -	uncer.	
	serons	- -	- -	do.	
Saltpetre -	bags	3,840	5,900	do.	
Tobacco, Virgin.	hhds.	827	701	710	600
Ashes - -	barrels	10,016	5,113	6,574	3,560
Rice - -	tierces	148	233	6	11
East India	bags	1,222	2,098	none.	30
Flour - -	barrels	36,200	6,250	uncer.	uncer.
Tar - -	ditto	9,742	9,600		
Bark, Quercitron	casks	200	55		
Hides - -	number	8,161	4,834		
Madder Roots	bales	5,757	4,098		
Oil, Whale -	casks	1,120	2,580		
Cod and Seal	ditto	5,631	6,500		
Tallow - -	ditto	3,407	3,661	900	900
Shumac - -	bags	5,724	10,350	uncer.	

Import of Cotton Wool into Scotland, in 1831 and 1832.

Years.	United States.			Brazil.	Demerara and Berbice.	West Indies.	East Indies.	Mediterranean.	Total Foreign.	Ireland.
	Charleston and Savannah.	New Orleans.	Other Places.							
1831	21,679	13,880	6,853	456	811	496	13,763	1,050	58,988	1,007
1832	23,856	10,367	4,053	- -	1,908	164	10,277	5,109	55,034	- -

A still greater source of wealth was opened at home. Glasgow had, i
century, become a great manufacturing city, employing her industry
linen of the finer descriptions, as cambrics, lawns, gauzes, also in the
and of shoes for exportation; but its product in these branches never
Affairs were conducted on a very different scale when cotton was extensi
Britain; and Glasgow, soon relinquishing her former occupations, dev
to this new manufacture. She became the rival of Manchester; and, i
not allow her to obtain so great a share of the manufacture, she produce
and was as prompt in availing herself of every improved process.
astonished by the magnitude and power of the machines constructed;
were realised, and an annual value of nearly 4,000,000*l.* sterling produ
one of the first places which adopted the invention of power looms, i
performed by machinery, and she has now 10,000 of these, and 32,000 w
She felt, after the peace of 1815, the effects of a reduced and precarious de
both at home and abroad. But, on the whole, her prosperity and popula
to increase; and it deserves mention, that the consumption of butcher's me
the population, nearly equals that of London; that in 1830 the number
parochial aid was only 5000, not quite one fortieth part of the inhabitant
expended on the poor was only 17,287*l.* Glasgow is now the largest
Scotland, but in Great Britain; London and Manchester excepted. T
Broomielaw, where there is an extensive quay along the Clyde; but so gre
tions to its navigation, that Glasgow, according to Pennant, was "com
its river." From the year 1556, attempts were made to improve it, but w
and means. At length, in 1770, Mr. Golburn, an engineer of Chester,
ing the sand-banks to such an extent that vessels of 150 tons now come
Glasgow suffers from this cause, and depends chiefly for imports on
pool. In 1832 there entered its port only 79 vessels, of 8154 tons. Glas
a handsome and well-built town. Its original streets of Argyle and
and spacious, superior to the Old Town of Edinburgh, though it can
rival the New Town. Several handsome squares have been built w
the city; but the fashionable residences are now almost exclusively
along a range of somewhat elevated ground, a number of most ele
streets have been erected, terminating with Blythswood Square. Gorb
ton, Hutchesontown, Tradeston, and Anderston, are the principal
the manufacturing part
public edifices deserve
cathedral (*fig.* 194.) is
Scotland; not as a speci
ornamental Gothic, but
ture, producing a pov
effect, much heightened
lated situation, with a
adjoining, on the top of
has recently been erecte
John Knox. The mod
handsome, and designe
tects: the Lunatic Asyl
containing the court-ho
Mr. Stark; the Assem
Infirmary, by Mr. Adams; the spacious Roman catholic chapel, a fi
modern Gothic, by Mr. Gillespie. The very elegant theatre was some yea
ground; but the new Exchange Reading-rooms, recently erected, form on
did edifices in the country. The bridewell for the county and city has
most approved principle, and is esteemed the most perfect in Scotland, b
struction and management. Glasgow is not a mere commercial town;
interesting and distinguished establishment. Founded in 1450 by Bish
been adorned by a long succession of illustrious teachers, of whom Simson
Smith, Millar, would be alone sufficient to ensure its celebrity. It is

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GLASGOW CATHEDRAL.

by 1400 students, and its name stands at least as high as at any former period. The edifice has nothing striking; but with the houses of the professors, built in a square attached to it, forms an extensive range. The library contains 30,000 volumes, many of which are valuable, and even rare. A splendid bequest was made some years ago, in the Museum formed by the late Dr. Hunter, particularly rich in anatomical preparations, shells, insects, fossils, as well as in coins and medals, the collection of which is considered the most complete in Europe. An elegant Grecian edifice, designed by Stark, has been erected for their reception. Auxiliary to the University is the Andersonian Institution, founded with the view of communicating to the commercial classes a knowledge of the first elements of physical science; for which purpose it has been found highly efficacious. The intellectual spirit of the citizens is also proved by three libraries, and a botanic garden, all supported by public subscription.

2053. *Paisley*, though in Renfrewshire, may be considered next, in order to connect together the great seats of manufacture. This town is also ancient, deriving its distinction from its ecclesiastical character. The abbey, founded in 1160, was gradually enriched, having much landed property attached to it, and drawing the tithes of twenty-eight different parishes. At the end of the fifteenth century, many ornaments were added; but soon after occurred the Reformation, in consequence of which the edifice was in a great measure demolished, and the revenues converted into a temporal lordship, in favour of a son of the Duke of Chatelherault. Several of the windows, however, still afford fine specimens of the ornamented Gothic; and, at the Reformation, the nave was left so far entire that it has ever since served as a place of worship, and is now called the Abbey Church. Yet, amid the lustre derived from this establishment, Paisley was a very small town until the middle of the last century, when it contained little more than 4000 inhabitants. Soon after, its manufactures, which were already begun, made most rapid advances. Down to the year 1783, they consisted chiefly of linen, fine thread, gauzes, both of linen and silk, and other delicate and elegant fabrics. On the introduction of cotton, the manufacturers of Paisley, like those of Glasgow, cultivated this branch almost exclusively, preferring its most elegant species. Muslin, the finest of all the productions of the loom, became the staple of Paisley. In 1805, there were 20,500 persons employed in weaving muslin, 7000 in spinning, and 2000 in other branches; the entire produce of whose labours was rated, we should suppose, too low at 1,250,000*l*. Since that time, the population having increased one half, the productive industry has not, probably, advanced in a less proportion. By the improved navigation of the river Cart, and by means of a small canal where that improvement was impracticable, this town has now a communication with the Clyde, receiving vessels of forty tons. The canal from Glasgow likewise, destined for Ardrossan, has been carried as far as Paisley. These communications have been of great use for the disposal of its produce; but it has remained always a purely manufacturing town. It is divided into two parts, the old and the new; the former on the western and the other on the eastern side of the river Cart. Yet, even of what is termed the old town, the greater part has been recently built on a regular plan, and contains many good houses. The county gaol and bridewell form one of the finest structures of the kind in the kingdom; the town-hall and several of the churches are very handsome. The operative weavers of Paisley are reported to be equal, if not superior, in intelligence to any class of the same rank elsewhere; and this spirit has led to the formation among them of a number of book societies, reading rooms, and subscription libraries.

2054. *Greenock* is entirely a commercial and maritime station; it is the only great western port of Scotland, and ranks somewhat superior to any on the east coast. At the beginning of the last century it was only an inconsiderable fishing village. The commerce with the colonies, for which alone it was happily situated, was then still monopolised by England. Even after the union had removed this barrier, the commerce of Greenock was connected with and dependent on that of Glasgow, the merchants of which were the proprietors of almost all the vessels in its port. By degrees the energy and enterprise of the natives of Greenock enabled them to form a shipping interest of their own; and the same may be said of their commercial undertakings. Still, by far the larger proportion of the vessels belong to Glasgow. The principal trade consists in importing the produce of the West Indies, to which is added a very extensive herring fishery, and a considerable share of the cod fisheries of Newfoundland and Cape Breton. The sum of 90,000*l*. has been lately expended in the improvement of the harbour, which can now contain 500 sail. A very handsome custom-house, facing the river and the quay, has been lately built by government. In 1832 there entered its port 282 vessels, tonnage 78,131. Greenock is not an elegant town; but the hills behind it command a noble view of the river, the shipping, and the vast range of the mountains of Argyle on the opposite coast.

2055. *Port Glasgow*, about three miles higher than Greenock, and a much smaller port, continues subservient to Glasgow, receiving such vessels belonging to that city as are too bulky to ascend the Clyde: in this capacity, its trade is very considerable. Here was built the first dock in Scotland, in front of which a

ogle

spacious quay extends along the Clyde, for the accommodation of those vessels which do
the basin. The environs of Port Glasgow are singularly picturesque and agreeable. I
Renfrew, the nominal capital of this flourishing county : it [illegible] an old town, which has m
perity of its neighbours. The inhabitants, however, receive a little employment from t
Glasgow.

2056. *The banks of the Clyde above Glasgow*, whose vicinity forms only a small part, [illegible]
the extensive county of Lanark, are still to be surveyed. First occurs Bothwell (*fig.* 195.
seats of the Douglases. Here Edw
garrison, which was intended to
jection. [illegible] is now a bold and
above the river banks. A littl
Bridge, so noted as the disastrou
the covenanting army. Farthe
pleasant handsome town in a fin
ported by the residence of the
and by a branch of the cotton
Hamilton the road leads througl
and the most beautiful scener
town, though bearing the nam
only a large straggling village
distant is New Lanark, noted [illegible]
manufactory established by the
lately conducted by Mr. Owen.
thought of the speculative tenets
man, the attention paid to the be
of those employed presented, certa
a model worthy of imitation. B
greater attraction in the falls of C
Stonebyres, situated above and t
miles' distance from each other
not exceed eighty or ninety feet; but the mass of water, with the grandeur of the rock
woods, render them one of the finest examples of this description of scenery. The
mountainous Clydesdale has already been noticed; as have the lead mines also, on th
point, where it borders on Dumfries.

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BOTHWELL CASTLE.

2057. *The northern Lowlands*, as they may be called, now claim our a
and prominent as is the natural boundary of the Friths of Forth and Clyd
parate the Lowlands and Highlands. The former, beyond the Forth, for
twenty miles in breadth, which reaches to the northern promontory of Abe
along the shores of the Moray Frith. The coast is generally level and fe
part of the interior, though not mountainous, is bleak and moorish. This
however, several cities and seaports of considerable magnitude and importa

2058. *Fife* [illegible] a large county, which, with its appendages of Kinross and Clackmannan, f
between the Friths of Forth and Tay. It was anciently the most flourishing part of the
tected by the Forth from English invasion and border inroad, and secured by its distance
the highland freebooter. Under these circumstances, Fife became distinguished as the cen
one of its cities forms the ecclesiastical capital of Scotland. All the foreign commerce of the
on in its ports; and less than two centuries ago its rental amounted to a tenth part of the
dom. Since Scotland has ceased to be agitated by war, Edinburgh and the opposite sid
attracted all these advantages; and Fife exhibits generally an aspect of decay. In part
seaports which, at short intervals, range along the whole northern coast of the Forth,
fishing villages. Fife is, in general, a level country, yet diversified by ranges of low emi
hills of considerable elevation, as the Lomond Hills, and Largo Law. A great part of the
unproductive; the farms are small, and farming, in general, less advanced than in the Lotl
made considerable progress. In regard to manufactures, this county adheres to the old S
spinning and weaving of flax, carried on chiefly for domestic use, unless at Dunfermli
large fabric of fine sheeting and diaper. The western coast abounds in coal of various
fine limestone, which is worked and exported to a very great extent. The county town
moderate size, neat, with some stir and gaiety. A much greater interest attaches to St
former greatness, from t
there acted, and from [illegible]
which fragments still re
a bold coast, facing a wi
Ocean; and has two
streets, of which one is
The castle and cathe
been completely demo
there remain only some
the other only a high
gable of the chapel of S
the great elegance of
The university consists
of which are now unite
plete school of theology
has no classes in law or
under the auspices of B
many eminent professor
from its almost insula
not attract so great a
burgh. Of the num
Anstruther in the east,
west, are the principal; the latter has even recovered some foreign trade, and has
manufacture. There are two great ferries across the Forth, one at Pettycur, which it is p
Burntisland; the other at North Queensferry, where, alone, cattle are transported acr
from this ferry, is Dunfermline, now the most flourishing town in Fife. In ancient [illegible]
importance, and the frequent residence of royalty. Malcolm Canmore founded here an
one of the richest and most spacious in the kingdom; being, if we may believe Matt
sufficient to contain the retinue of three courts. It was nearly demolished by the barl
ward I., and suffered still more at the Reformation; yet its ruins evince its former

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ST. ANDREW'S CATHEDRAL.

of them has been appropriated as the parish church. On a spot immediately contiguous, while a foundation was digging for a new church, the tomb of Bruce was lately discovered. A single wall is all that remains of this once magnificent palace. Dunfermline, no longer the gay residence of the Scottish court, is more usefully distinguished by a very extensive manufactory of damask, diaper, and other fine linen fabrics, which employ 1500 looms, and yield an estimated annual produce of 120,000*l.*

2059. *Kinross*, almost enclosed by the western boundary of Fife, is scarcely entitled to rank as a separate county. The capital, of the same name, is a pleasant little town, chiefly noted for its situation on the shores of Lochleven. This is a little lake, of considerable beauty, having, on an island in its centre, a castle (*fig.* 197.), anciently of great strength, and noted in history, even before it acquired the romantic interest derived from the imprisonment of Mary, and her adventurous escape. Only a square turreted building and one of the walls of the chapel now remain. On another island are the traces of a very ancient and considerable priory.

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LOCHLEVEN CASTLE.

2060. *Clackmannanshire*, a still smaller appendage to Fife, extends about eight miles along the upper shore of the Forth, reaching almost to Stirling, and backed by the high ridge of the Ochils: it is a pleasant little county, with a considerable extent of fine carse land, and great quantities of coal and lime. The town of Clackmannan is chiefly distinguished for the beauty of its situation on a hill sloping down to the sea. Close to it is an ancient tower, built by Robert the Bruce, which commands a very fine view. Alloa, two miles farther down, is a busy and thriving little place, in whose vicinity are large and well-conducted mines of coal, of which about 35,000 tons are annually exported. In Clackmannanshire are also the villages of Kennet-pans and Kilbagie, which have been long the seat of very extensive distilleries.

2061. *Forfar*, more usually termed *Angus*, is on the northern side of the Tay: it is of somewhat rough aspect, the western border being encroached upon by lower branches of the Grampians, while the Sidlaw Hills, a range of considerable height, traverse the centre. Between these is a portion of the great valley of Strathmore, which is here fertile and beautiful, as is also the plain between Sidlaw and the coast. The agriculture of Angus has made considerable progress, though it is still behind that of the Lothians. Its prosperity depends chiefly upon manufactures, commerce, and fishery. The first is almost entirely employed upon flax, and chiefly in its coarser and bulkier forms, while the fishery, so far as it exceeds the object of home consumption, is chiefly of salmon, taken by stake nets, and sent, packed in ice, to the London market.

2062. *Dundee*, though not the seat of the courts, is undoubtedly the first town in Forfarshire; and, indeed, ranks fourth in Scotland as to population and wealth. It was of early importance and strength, deriving its origin from Malcolm Canmore; and it obtained a fatal celebrity through the sieges to which it was exposed; first, by Edward I., then by the Marquis of Montrose; and, last and most terrible of all, by Monk, who gave it up to indiscriminate pillage; and so great was its wealth, that his army is said to have obtained booty to the amount of 60*l.* a man. Dundee, however, has recovered from all these disasters, and is become one of the most flourishing commercial towns in Scotland. Her staple employment consists in the importation of flax and hemp, and working them into coarse linens, sailcloth, &c.

In the year ended May, 1833, Dundee imported 18,777 tons of flax, and 3380 tons of hemp, which were valued at above 700,000*l.*; and she exported 100,713 pieces of Osnaburg, 148,377 of sheeting, 33,972 of bagging, 81,754 of sailcloth, 57,248 of sacking, 60,774 of dowlas, and 13,374 of other fabrics. The entire value is estimated at about 1,500,000*l.*; four fifths of which were made in Dundee itself. There is also a considerable export of grain, almost exclusively barley, which in the same year amounted to 42,600 quarters. Dundee has belonging to her, 270 vessels of 33,000 tons; and in the above year a tonnage of 212,000 entered the port. Nine vessels, of 3177 tons, are engaged in the Greenland fishery, ten smacks in the Leith and Glasgow, and ten in the London trade; which employs also two magnificent steam vessels of 600 tons burthen each. The harbour, formerly somewhat defective, has, since 1815, been greatly enlarged by wet docks and other additions; which, in May, 1833, had cost 265,000*l.* The ferry has been remarkably improved, particularly by the use of twin steam-boats, in which loaded waggons can be ferried without unyoking the horses. Above forty spinning-mills are driven by steam, and new ones forming. A railway opens a communication into the valley of Strathmore. The population, above stated as exceeding 45,000, shows a remarkable increase since 1821, when it was only 30,500. Dundee is agreeably situated on an eminence above the Tay; the old streets are narrow and steep, but new and handsome ones are built and building in every direction; and the vicinity is adorned with elegant villas. There is an academy, distinguished by the scientific attainments of some of its teachers.

2063. *Angus has other considerable and thriving towns.* Arbroath carries on, upon a smaller scale, the same branches as Dundee; and is adorned with the ruins of a magnificent abbey. Montrose is prettily situated at the mouth of a river, bearing, in common with many others, the name of Esk. Its trade and industry are considerable; and it has a safe harbour. A number of the neighbouring gentry have been attracted by its agreeable situation, which renders it the gayest and most fashionable place in the county. Forfar, the county town, but the smallest yet named, and situated in the interior valley of Strathmore, is chiefly supported by the business of the courts: there is also a manufacture of brown linens. Brechin, another inland town, lies in the midst of a rich country, adorned with fine seats; and its manufactures are considerable. Cupar Angus, so called though partly in Perthshire, is a small town, agreeably situated on the Isla, and is a great thoroughfare for travellers proceeding to and from the north. The village of Glammis is distinguished by the magnificent castle (*fig.* 198.) placed in its immediate vicinity.

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GLAMMIS CASTLE.

2064. *Kincardine*, north of Angus, is a county closely hemmed in by the Gram
tains, however, in its southern district, the termination of the great valley of Strathm
" How of the Mearns;" and, being sheltered by the mountains, forms a tract equally
northern part,
chiefly of mo
most bleak and
is of great ext
ing in many p
covered with
birds; on one
into an island,
the castle of
sidered forme
the regalia of
time deposited
waves of the N
county town, i
besides being
on some trade,
brown linen.
village, but wi
burgh. Laurencekirk is a neatly built village in the interior, created by Lord Ga
with a small public library. It contains a manufacture of fine snuff-boxes. Fi
the coast, are famed for haddocks, cured in a peculiar manner, many of which are

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DUNNOTTAR CASTLE.

2065. *Aberdeen* is a large and important northern county. It
line of coast, both to the east and to the north, and extends, with incre
the interior. There it forms Mar, or Braemar, a highland district, o
in the kingdom, some of the mountains rising to above 4000 feet, an
forests of ancient pines, with large flocks of wild deer, in the deep glen
heights of Braemar descend the Dee and the Don, the first of which
turesque falls in its early course; they afterwards pursue very differen
meet at the town of Aberdeen. Even the Lowland districts are
moorish, adapted only to the cultivation of inferior species of grain, an
Amid these disadvantages, the people of Aberdeenshire are, in gener
trious. The old staple fabric of knitting worsted stockings, which, i
120,000*l.* into the county, has been greatly injured by the cheapness wi
produced elsewhere by the aid of machinery; but in its room other
gether with those of linen and cotton, the latter to a considerable extent
The beautiful rock crystals called *cairngorms*, and also the topaz and
the mountains of Braemar; and the fine granite which abounds near
of which is considered by Dakin as an art peculiarly Scottish, not
material for domestic use, but yields 12,000 tons to be annually sh
elsewhere, for pavement, bridges, and other works which require p
fisheries also constitute a leading occupation. That of salmon in
the whale-fishery, are extensive branches; and from the German Oce
turbot, and shell-fish, are taken in great quantities.

2066. *Aberdeen*, " the queen of the North," and the largest city
situated between the Dee and the Don, where these rivers fall int
miles' distance from each other. Old Aberdeen is situated near the
are highly picturesque; but its entrance is obstructed by a natural ba
harbour inadequate for the town, when it had entered on the car
industry. The mass of population had early settled on the banks o
entrance of which opens into a basin, forming an excellent harbo
the serious disadvantage of a bar at its mouth, liable to continual
blown from the beach which extends along the coast. To obviate th
in length was carried out into the sea, under the direction of Smeato
channel has been formed, by which vessels of 700 tons may enter.
ocean and the current of the Dee produced difficulties which a st
medied. New Aberdeen is a handsome city, especially the princip
a long range of new and good houses, built of its fine granite. Its co
and fishery are those of the county, all these branches centering in A
now the principal ship-building port in Scotland, possessing, in 1832, 3
burden. The old town has rather the aspect of a village, if we exce
of the professors of the university, and a range of villas, the opulent
been attracted by the agreeable situation. It is adorned by the fine
College, from which rises a square tower, with a light and elegant cr
founded in 1494, by Bishop Elphinston, had for its first president
for some time it numbered Dr. Reid among its professors. The sala
the bursaries for poor schools are very extensive. Attached to it is a
value. Marischal College, founded by the Earl Marischal, nearly a c
in the heart of New Aberdeen. It is not so well endowed as Ki
boast the distinguished names of Beattie, Campbell, and Gerard: it h
of natural philosophy, and a well-furnished observatory.

2067. *The other towns of Aberdeen* are neither very large nor very important. Peterhead is an improving place, being much frequented both for sea-bathing and for a mineral water in its vicinity; it has two natural harbours, for the improvement of which government have contributed considerable sums, in consideration of the shelter which they afford to vessels navigating these stormy seas. It sends thirteen ships to the whale fishery, and carries on that of herrings with considerable spirit. To the south is a range of precipitous cliffs, called the Bullers of Buchan, against which the waves dash with perpetual fury. Fraserburgh, near the high promontory of Kinnaird's Head, where the coast turns westward, is a small port with some linen manufacture. Huntly, in the interior, and on the borders of Banff, is a thriving and considerable place. Inverury, though the chief town in the heart of the county, is decayed and poor; but is expected to revive by means of the canal, which connects it with Aberdeen. Kincardine O'Neil is only a pleasant village, looking up toward the mountain district of Mar.

2068. *Three counties, Banff, Moray, and Nairn,* occupy that long range of coast, which, after passing, the limit of Aberdeen, continues to run westward, till it forms, ultimately, the northern shore of the Moray Frith. As in Aberdeenshire, interior districts border on the loftiest highlands; but the coast, only diversified by gentle hills, is extremely agreeable and fertile. The whole of this coast constitutes the ancient province of Moray, which the early Scottish writers describe with admiration as the most fruitful part of Scotland, and as enjoying fifteen days more of summer than any other district. Even now, the climate is extremely mild, and the soil excellent; but being far surpassed in agricultural improvement by the Lothians and other lowland tracts, this province has lost its ancient pre-eminence. Modern improvements, however, are advancing, and will, probably, soon render it equally productive with any other in Scotland. It is watered by the three large rivers, the Deveron, the Spey, and the Findhorn; the two last rising in the distant recesses of Inverness-shire. They do not bring down from these barren tracts any article of trade except timber; but they afford ample fisheries of salmon, which is exported to the computed annual value of 25,000*l.* The herring fishery also is now prosecuted with considerable success. There are no considerable manufactures.

2069. *The towns of this district are not of any great magnitude.* Elgin, the principal, which sometimes gives its name to the county of Moray, is an ancient town, not ill built, situated on the Lossie, and has, at Lossiemouth, a tolerable little harbour; but its chief distinction rests on its cathedral, which, even in ruin, may dispute with Melrose the glory of being the finest Gothic edifice in Scotland. After having been destroyed by Alexander of Badenoch, it was rebuilt with high additional splendour, in 1414; but in 1568 the privy council ordered its leaden roof to be taken off for the payment of the army. From that time it gradually decayed; and in 1711 the great tower fell down. In a deep neighbouring valley are also the remains of the fine priory of Pluscardine. Banff is a somewhat larger and more thriving place, situated at the mouth of the Deveron; carrying on some linen manufactures, and a considerable herring fishery. Portsoy, Cullen, Fochabers, all in Banffshire, are tolerable fishing towns; the last carrying on all the trade of the Spey. The same character may be applied to Findhorn, at the mouth of the river of that name. Nairn is a neat little county town, also at the mouth of a river of its own name, possessing some industry, and frequented for sea-bathing.

Subsect. 2. *The Highland Counties.*

2070. *The Highlands of Scotland* form a very extensive territory, comprising somewhat more than half the surface of Scotland. They include the whole region north of the Forth and Clyde, except the belt on the eastern coast, between the friths of Forth and Moray, which has just been described. The Highlands, in their aspect, differ from the Lowlands; to a greater degree, indeed, than the Lowlands differ from England. This region consists altogether of continuous ranges of lofty mountains, which, on the borders, leave between them some of the fine and broad valleys called *straths*, but in the interior only the deep and often rocky intervals called *glens*. They are peopled by a race totally distinct from the Lowlanders. These mountaineers wear a costume, already described, quite peculiar to themselves; they speak a Celtic dialect, deep, strong, and guttural, bearing no resemblance to the Teutonic speech of the Lowlands and of England. They have ever maintained that valour, which, under Galgacus, set bounds to the career of Roman conquest, and preserved their mountains untouched by the invader; and they have since been converted from formidable foes into gallant defenders of the rest of the empire. Down to the year 1745, they acted in clans, led by hereditary chiefs, to whom they were entirely devoted, and who exercised over them a paternal but absolute sway. This spirit of clanship led them to attach themselves strongly to the hereditary right of the Stuarts, of which, under Montrose, they gave powerful proofs, which had nearly turned the tide of war in its favour. Afterwards, in 1745, they suddenly invaded England; and, in the absence of the army in Flanders, struck alarm into the dynasty of Hanover. The ultimately fatal issue of that contest broke entirely the independence of the highland chiefs. A number were either brought to the scaffold, or sent into exile; military roads were made, and forts erected in the heart of their territory; they were deprived of their heritable jurisdictions, and of all their other feudal privileges; even the national dress was prohibited, on account of the recollections it was calculated to excite. After the first alarms, however, had subsided, the British government wisely adopted the plan of conciliation, in preference to measures of severity. Pitt conceived the happy idea of forming the highlanders into national regiments, allowing even a limited use of the appropriate dress; and they have since ranked with the bravest and most distinguished troops in the British army. Out of the forfeited estates and other funds voted by government, vast sums have been expended on the Caledonian Canal, roads, bridges, and other great works for the improvement of this rude

territory. The *lairds*, deprived of their absolute power, and attract
luxuries of cities, soon accustomed themselves to view their estate
capitals, to be worked according to the great principles of political e
titude of little spots, divided among vassals, in whose numbers they
were thrown into large sheep-farms; and the tenants, whose ancestors
since the days, perhaps, of Agricola, were driven out to seek, wherev
a home, or at least a shelter. Some migrated to the lowland manuf
great proportion went to America; yet it is remarkable that, in conse
of commerce and fisheries, even the highland counties augmented th
this period, though not in the same proportion as the Lowlands. Bet
it increased from 434,000 to 512,000. There is one great manufactu
throughout this region, which, unfortunately, tends rather to distu
improve the condition of the community; this is whiskey, which t
small stills from their *bere*, or coarse barley, and give it a flavour super
made in England or Scotland. But, besides the inflaming quality o
absurd fiscal regulations of the government, rendering it penal to mak
which alone suited the manufacturer, and prohibiting its admission
gave rise to a most extensive system of contraband, carried on sometin
men, in open defiance of the power of government. A more liberal sys
these respects, has now been adopted, and has already been attend
effects.

2071. *The Highlands are composed of two great districts,* — the west
former comprehends the shires of Dumbarton, Argyle, Bute, and part
embraces the counties of Inverness, Ross, Sutherland, &c. The
Isles, belong to the counties of Bute, Argyle, Ross, and Inverness.
tinental district, from Dumbarton to the border of Caithness, is above

2072. *Perth is a noble and extensive county,* forming the link, as
Lowlands and Highlands; in its different parts uniting the utmost
the one with the highest grandeur of the other. The former qualiti
the *carse* of Gowrie; a broad sloping plain, on the north bank of the
with orchards and cultivated fields. The upper part of Strathearn,
and Crieff, varied with gentle hills, cultivated valleys, and the windin
may almost be called the garden of Scotland. As we proceed to the
Grampians, appearing first as blue distant masses, gradually swell,
nificent back-ground to every landscape. At length they are found
interior of the county, in a line from north-east to south-west, an
mighty summits of Ben Lawers, Benmore, Bengloe, Schehallion, B
Benvenue; all from 3000 to upwards of 4000 feet high, and thus
heights of Snowdon and Helvellyn. Within their recesses they en
lochs, Tay, Earn, and Katrine. As these lakes, though hemmed in
boundaries, do not present, generally, a desolate aspect, but are va
verdure, they exhibit in many parts scenes of almost magical gran
the lowlands of Perth, agriculture is carried to great perfection;
carse of Gowrie are higher than in any other merely rural district.
on the contrary, are in general fit only for pasturage, or, in some fav
of bere, oats, and flax. They are, however, covered with the remain
which the great proprietors have been making very extensive addi
Perthshire participate in the different national manufactures: the
fields are numerous; but this can in no view be generally regarded
county.

2073. *Perth is well built,* and, as to situation, one of the most
kingdom. The view of it from the north, in particular, in the bea
plain, with the Tay winding round it, and the Hill of Moncrieff r
without a rival in the kingdom. Perth has always been an importa
for a long time, might claim to be considered the capital of Scotl
quent residence of the kings. Parliaments and General Assemblies
in any other place; and, in the civil contests, the possession of Pe
vital importance by the contending parties. At present it has decline
provincial; and its commerce, once considerable, has been almost
Dundee. Yet Perth is still a thriving and considerable place: it ha
nufactures, which produce an annual value of about 200,000*l.*; while
and the excellent education afforded by the grammar school and acad
of the neighbouring gentry, and render it gay and fashionable,

2074. *The other towns of Perthshire* are small, but distinguished for the grand and
which they are situated. Dunkeld, in this respect, is generally considered the pri
boast highland scenery on its greatest scale; but the various forms of the fine
through which the Tay meanders, with the valleys and glens opening on every side,
scape scarcely equalled elsewhere. The late Duke of Athol, whose spacious domains c

was, indeed, most active in respect to plantations, since those of Dunkeld alone are stated by Dr. Macculloch to cover 11,000 acres; and the whole number of trees planted by his grace to amount to 30,000,000. A route of twenty miles, directly north, passing opposite to the fine mountain village of Logierait, and through the bold pass of Killikrankie, leads to Blair, also part of the Athol territory, and one of the most picturesque spots in Scotland. Its striking features consist in the lofty mountain Bengloe, the glens of the Tilt and the Garry, and the singularly picturesque rocky falls of the Bruar (*fig.* 200.). Westward is Loch Rannoch, surrounded by extensive forests of fir, and overhung by Schehallion, on whose lofty summit Dr. Maskelyne performed some of his operations for the measurement of the earth. Out of it flows the Tumel, a rapid stream, which forms a small lake, and some romantic cascades. From the bridge of the Tumel, a military road leads southward to Loch Tay, the largest of the lakes, and surrounded by the loftiest mountains of Perthshire. Ben Lawers, with a chain, scarcely secondary, of attendant mountains, overhangs it from the north; while Benmore shuts it in on the west; and perhaps there is no lake in Britain enclosed by so grand a circuit. The sides of the mountains are somewhat naked; but the grounds of Taymouth, at the head of the loch, form a rich foreground.

200

FALL OF BRUAR.

2075. *Farther south is the vale of Strathearn*, at one end of which, Crieff, a thriving little town, looks up on the windings of the river, and the vast mountains from amid which it issues. Farther up is the beautiful village of Comrie, presenting some Roman antiquities, and exposed to slight shocks of earthquake. Immediately beyond this, the traveller finds himself enclosed by dark and rocky passes, leading to Loch Earn, a small lake, the waters of which are very clear and transparent, and which is bounded on the south by grand ranges of very lofty mountains.

2076. *The upper valleys of the Forth and the Teith* have some very remarkable scenery, particularly the Forth, which, above Stirling, is the more considerable stream. On its tributary, the Allan, is Dumblane; a pleasantly situated little town, with the remains of a fine cathedral; and now rendered an object of considerable resort by a mineral spring recently discovered at Airthrie in its vicinity. Up the river is Doune, with a cotton manufacture, and the remains of a castle. Callender may be considered a highland village, being overhung by Benledi, along whose side the pass of Lenie leads into the interior highlands: it is chiefly frequented as the key of Loch Katrine, situated about ten miles to the westward, and approached by a narrow road along the small lakes of Venachoir and Achray. The scenes of fairy beauty and grandeur which adorn the eastern extremity of this lake, the mighty cliffs of Benvenue, the wild wooded glen of the Trosachs, and the beautiful little island in the centre of the scene, are now familiar to the eyes of Scotsmen, celebrated as they have been in the verse of their favourite bard. Farther south, the Forth, rising from Ben Lomond, rolls through a pastoral mountain valley, once the seat of the power and the scene of the adventures of the outlaw Macgregor. It forms several little lakes, of which Loch Ard is the largest and most beautiful. On joining the Teith, near Stirling, the Forth, though every way inferior, has the fortune to give its name to the united stream. It may be proper to notice, that Perthshire shoots a narrow stripe between Fife and Clackmannan down to the Forth, on which stands Culross, properly a *Fife town*, near which are considerable mines of coal, not found in any other part of Perthshire.

2077. *The county of Inverness*, to the north of Perth, fills a vast mass of the central highlands, reaching at one point from sea to sea. It nowhere borders on any of the lower parts of the kingdom, but is purely and completely highland, presenting range after range of mountains, of which Ben Nevis, Cairngorm, and several others, are the most elevated in the United Kingdom. The intervals between them are filled either by long lakes, or by narrow glens, the level space of which does not usually exceed a mile in breath. The principal one, that called the Great Caledonian Glen, reaches from Inverness in an oblique direction across the kingdom, filled with an almost unbroken chain of lakes, — Loch Ness, Loch Oich, Loch Lochy, and Loch Linnhe; which last opens by the Sound of Mull into the western sea; a continuity which suggested and facilitated the formation of the grand navigable line of the Caledonian Canal. The tracts reaching westward to the sea are, if possible, still more vast and desolate; glens, which run generally from east to west, are often filled by these long arms of the sea called in Scotland *lochs*. In the east, the most remarkable district is that along the upper course of the Spey, bearing the name of Strathspey, and comprising an unusual extent of level land. In general only about a fortieth part of the county is understood to be capable of cultivation; but that fortieth, composed of *haugh* or alluvial land, on the banks of the rivers, or at the head of the lakes, is extremely fertile. By far the greatest branch of industry consists in the rearing of black cattle, sheep, and goats. Game of all kinds, including deer, abounds so much as to render the county a desirable resort for the adventurous sportsman; and many of this class, even from England, take up their summer residence in its mountain recesses. There are still considerable remains of the great Caledonian forest, composed chiefly of fir; but the greater part is fallen, and its traces are found in the mosses which cover a great part of the county. Unlike most mountain tracts, this district does not yield minerals of any value; and there is little to be said as to manufactures, if we except whiskey, for which some districts are famous.

2078. *Inverness*, the gay capital of the Highlands, is of a very different character from that of the wild region over which it holds a sort of dominion. Seated on a bay, at the head of the Moray Frith, it partakes in a great measure of the mild and fertile character of its shores, and stands at some little distance from the awful ranges of mountains by which it is enclosed. After suffering a considerable decline from its ancient importance, it has, within the last

thirty years, nearly tripled its extent and population. This is owing
the neighbouring gentry, who are more than a hundred miles distant fr
the many tourists, who make this the centre of their excursions ; and to
for education, which cannot elsewhere be found in the Highlands. I
able polish of manners is observable ; and it has been remarked that th
spoken in greater purity than in any other part of Scotland ; a cir
been ascribed to the residence of English officers after the battle c
ness has a town house, infirmary, assembly-rooms, theatre,— all the app
city. Manufactures of hemp, flax, and tartan have been established.
sea and land, in its vicinity, are almost unrivalled.

2079. *Inverness shire has scarcely another place which can make much pretension to*
The most prominent objects consist in the chain of forts which, after the alarm of 17
view of holding the Highla
east of Inverness, on a p
Moray Frith, is of great
constructed. Fort Augu
situated on the chain of l
site end of Loch Ness, and
The garrisons have now
rangements had been m
the forts ; but this last n
The villages formed arou
with imported goods a v
country. Near Fort W
usually considered the h
land and in the United
above the level of the se
ever, though steep and s
in its form ; its summit
with rocks ; but the vie
bracing a great portion
east of Loch Ness, the r
(*fig.* 201.), forms the grea
the lower or principal fa
of 212 feet. The stream
the accompaniment of
or covered with birches, p
the scene highly picture
opposite to Skye, is ind
inlets or lochs, on which villages have been built, and the herring fishery is pro
spirit.

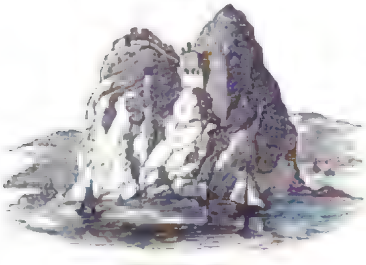
201

FALL OF FYERS.

2080. *Argyle, the next division,* is very commonly called the West
is a wide and irregular territory, stretching into long promontories, a
arms of the sea, so as to form a coast of very great extent. In genera
is bordered by high hills and steeps, and the interior covered with
awful mountains, similar to those of Inverness and the interior of
therefore, is almost entirely pastoral ; herds of black cattle and vast fl
on the sides of its mountains. The manufactures are trifling ; and if A
they have not been worked with any vigour or success. But this county
the opportunities of fishery, which the wide range of its coasts affords.
west coast, and especially of Loch Fyne, enjoys a higher reputation t
of that numerous and valuable species. It has been supposed that th
felt in this county with greater ardour than in any other part even
lands. The county is chiefly tenanted by Campbells, who were wo
Maccallummore, a designation of their chief the duke of Argyle, w
kindred and national attachment ; and several of the house of Arg
peculiarly powerful and auspicious influence on the fortunes of Scotla

2081. *Dumbarton* forms a county which must be mentioned befo
details of Argyle. The
properly a part of the san
a lowland stripe extendin
banks of the Clyde. The
somewhat bleak, is ma
features : the Great Canal,
the village of Dunglass ; a
line of the wall of Anto
Scottish vulgar " Graha
proach to Dumbarton aff
striking prospects in Scotl
of the Clyde covered wit
and its castle (*fig.* 202.), th
hold of the Britons, tow
of a perpendicular rock,
its importance as a fortress. Dumbarton has a large manufactory of

202

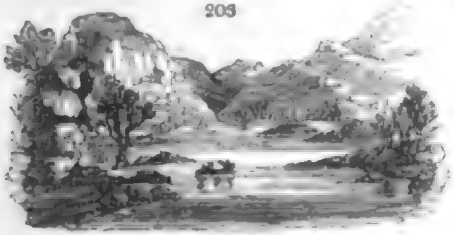


DUMBARTON CASTLE.

is exported to all quarters of the kingdom, as well as to foreign parts; and on the banks of the Leven there are extensive printfields. Here terminates the lowland of Dumbarton, and the rest forms naturally a part of Argyle, or the Western Highlands.

2082. *Loch Lomond* (*fig.* 203.), the first great feature, both by its extent and beauty, forms the pride of Scotland, and is celebrated through Britain. Other lakes may present picturesque objects which it wants, and may have even a grander mountain curtain than that around its head; but in the vast expanse of its waters, and the many beautiful islands with which it is studded, it can have no rival. From its foot, bordered by cultivated hills and ornamented villas, to its mountain head, there is a continued transition from beauty to grandeur, and at the central point of Luss they are remarkably united. The numerous and beautiful islands, and the long wooded promontories stretching into the water, with the majestic form of Ben Lomond in the back ground, produce a combination of landscape which perhaps no other spot in Britain can equal. Luss is a mere village; and there is no other place on Loch Lomond which can deserve even that name, though there are inns at convenient distances.

203



LOCH LOMOND.

2083. *On turning the head of Loch Long at Arrochar*, a fine retired and tranquil scene, the view opens on the romantic valley of Glencroe. On entering it, the traveller is enclosed between two ranges of mountains rising almost perpendicularly to an amazing height, and leaving between them only a narrow vale, through which a rivulet flows. The greatness of all the surrounding objects fills the traveller with sublime emotions, sometimes even mingled with terror; especially when, arrived at the hill which bounds this extraordinary vale, he looks back and sees all its enormous features concentrated round him. The vale of Glenfinglas is then passed, whose high sloping sides covered with innumerable flocks inspire pleasing pastoral images, and at the termination of which appears the grand estuary of Loch Fyne.

2084. *Inverary*, the capital of the Western Highlands, is situated near the head of Loch Fyne. Its environs are not mountainous; but its noble castle (*fig.* 204.), surrounded by wooded hills and wide lawns, the open extent of its prospects, with the lofty mountains which shut in the distant view, render it a magnificent and delightful spot. The other lakes inspire ideas of peace, retirement, and seclusion; this delights by the display of almost regal pomp. The town itself is small and neat, without any employment, except that arising from the herring fishery, and the visits of numerous strangers, who are now conveyed by the steam packets in ten or twelve hours from Glasgow. About ten miles below Inverary, the Crinan Canal joins Loch Fyne to the western sea, and has made Lochgilphead a place of some consequence. Farther down is West Tarbet, a pleasing little town, situated on a rocky isthmus in the route to Islay.

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INVERARY CASTLE.

2085. *The interior and the western coast of Argyleshire* are in many respects interesting. Parallel to Loch Fyne, at the distance of ten or twelve miles, is the long line of Loch Awe; an interior lake, over whose head towers Ben Cruachan, the loftiest summit in Argyle. The castle of Kilchurn, rising on one of the islands, produces a highly picturesque effect. Beyond this, Loch Etive, a narrow arm of the sea, stretches far into the interior. Its head is enclosed by ranges of high and steep mountains, and its lower part displays the phenomenon of a fall, or at least succession of rapids, down which the whole lake throws itself with prodigious noise and a long train of white billows. This fall appears only at low water, when it is six feet high, but is covered over by the sea on the rising of the tide. At a corner of this lake is Bunawe, where a Lancashire company some years ago established an iron foundery, now nearly abandoned. Climbing the high mountains at the head of Loch Etive, we come to an awful recess, Glencoe, which in terrific grandeur surpasses perhaps every other spot in Great Britain. This effect is produced by its bold and broken mountain forms, its spiry rocks, and black precipices; at the bottom of which, in a deep chasm or ravine, flows the rivulet of Coe. This stream is the Cona of Ossian, believed the favourite haunt of that celebrated Caledonian bard. The vale has also a gloomy recollection attached to it, from the massacre of 1691, which was inspired by private vengeance, but to which the sanction of William III. was surreptitiously obtained, but the enquiry into this transaction never satisfied the nation. Emerging from this gloomy scene, the traveller is cheered with the gay aspect of Loch Leven, which presents much pleasing highland scenery, while the hills round the ferry of Balachulish afford valuable quarries of slate.

2086. *The extensive and varied western coast of Argyleshire* next demands notice. From Balachulish, along the broad expanse of the Linnhe Loch with which the great Caledonian chain terminates, extends Appin, a beautiful district, diversified with fine woods, rich pasturage, and more culture than is usual in Argyleshire. On the opposite side of the Linnhe Loch is a wide, triangular, and peninsular district called Ardnamurchan; separated only by a narrow sound from the Island of Mull. It presents the usual highland scenery, without any thing bold or peculiar; but the central district of Strontian, besides the earth bearing its name, contains lead mines of some value. Crossing the Linnhe, and passing Lismore, a long, level, and fertile island, we find Lorne, separated by Loch Creran from Appin, to which it is even superior in beauty and fertility. Near the opening of Loch Etive into the sea, tradition places Beregonium, the reported capital of the Picts in the third century; and near it is found Dunstaffnage (*fig.* 205.), once the scene of Scottish regal pomp, now a ruin, crowning a cliff along the western sea. Here Oban, a thriving little fishing port, forms a sort of capital to this thinly peopled district. Thence extends, parallel to Loch Fyne, a line of coast called Knapdale, devoid of any very striking object. At its termination begins the long peninsula of Cantyre, which stretches far out into the sea, being visible from the Irish coast of Antrim. The Macdonalds, lords of the Isles, long held sway over it, till they were driven out by the earls of Argyle, supported by the royal power; yet the name of Macdonald is still common in the district, though that of Campbell predominates. The hills are not near so lofty as in central Argyle, and there is a greater proportion of level land. Campbelltown, near its southern extremity, is a thriving port, now the largest on this coast, and serving in particular as a general rendezvous for the herring fishery.

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DUNSTAFFNAGE CASTLE.

2087. *The three extreme counties, Ross, Cromarty, and Sutherland,* form the most remote and northerly portion of the Highlands, and, Caithness excepted, of all the mainland. The south-eastern border of the friths of Moray, Cromarty, and Dornoch contains some fine land, and several thriving towns; the rest is a continued range of rock, mountain, heath, forest, and loch, similar to Inverness, but still wilder. The lochs which indent the western coast are large and numerous, particularly Loch Carron, Loch Terridon, and Loch Broom; and they have generally grand mountain boundaries. On these the neighbouring proprietors, or the Board for the Encouragement of the Fisheries, have erected villages, with the view of employing in the herring fishery the natives ejected in consequence of the modern system of sheep-farming; and the success has been very considerable. The principal of these stations is Ullapool on Loch Broom, a considerable village, with an excellent and spacious harbour. The most picturesque of the western lakes is Loch Maree, which is almost enclosed by land, with a fine circuit of mountain, and in the number of its wooded islands resembles Loch Lomond. Cape Wrath, the north-eastern point of Scotland, is a lofty pyramidal rock, standing in front of a vast range of broken cliffs, and breasting the whole wide expanse of the ocean. On the northern coast in Loch Eribol, a wide inlet, bordered by limestone rocks, perforated by caves of great extent and remarkable form. Sutherland presents numerous *Duns,* or ancient forts of peculiar structure, of which the most remarkable is Dun Dornadilla (*fig.* 208.), situated on the lofty sides of Ben Hope, not far from Loch Eribol.

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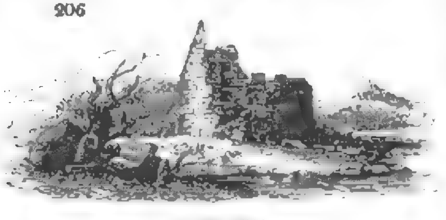

DUN DORNADILLA.

2088. *Of the small towns in this northern region,* Cromarty, the capital of the little county of the same name, stands at the foot of its own frith; while Dingwall, the county town of Ross, is situated at the head. This frith forms a noble and secure bay, which would be of the greatest value in a commercial part of the kingdom. Cromarty is now a very considerable fishing station; and Dingwall has done a good deal to improve its own harbour. On the south side of the Dornoch Frith is Tain, where a good academy has lately been established; and on the north is Dornoch, an ancient town, once the seat of the Bishop of Caithness, of whose cathedral some part still remains.

2089. *Caithness* forms the north-eastern angle of Scotland, connecting it with the northern islands. Though enclosed by the Highlands, it is scarcely a highland county, being traversed indeed by ranges of low hills; but only the Paps of Caithness, as they are called, rise to the character of mountains. Its surface is moist, bleak, and bare, filled with little lakes, and covered with extensive moors. There are, however, about 50,000 acres of arable land, on which are raised oats and bere sufficient for internal consumption. The chief branch of industry is now the herring fishery, upon an immense scale, and on the very ground formerly monopolised by the Dutch. Kelp to a considerable extent is also made from the sea-weed thrown on its shores. Thurso, the county town, is a handsome and improving place, in the midst of a cultivated country. Its bay affords a safe roadstead, peculiarly valuable for ships, which, in rounding the north of Scotland, must pass through the Pentland Frith, rendered dangerous by its violent and rapid currents. Wick, the grand rendezvous of the herring fishery, attracts vessels even from remote parts of Scotland, and owes to this advantage a very rapid increase. The north-eastern point of Caithness and of Scotland bears the familiar appellation of John O'Groat's house; though Dr. Macculloch assures us that there is not even the vestige of a house to correspond to this title, which is founded on a mere traditionary story.

Subsect. 3. *Scottish Islands.*

2090. *The islands appendant on Scotland* form one of its most extensive and conspicuous features. Though neither rich nor fertile in proportion to their extent, they exhibit a great variety of bold and striking scenery, and are peopled by a race whose habits of life and forms of society are peculiar to themselves, and more inartificial than those of perhaps any other people of Europe. They may be divided into the islands at the mouth of the Clyde, the Hebrides, or Western Islands, and the Northern Islands, or those of Orkney and Shetland.

2091. *The islands of the Clyde are chiefly Bute and Arran*, with the smaller ones of the Cumbrays and Ailsa. Bute is of beautiful aspect, green, rocky, and hilly, with a climate accounted the mildest in Scotland, and for that reason resorted to by consumptive and other invalids. It has not within itself any alpine features, yet has in full view the high ranges of Argyleshire and the spiry summits of Arran. Extensive plantations have been formed by the Marquess of Bute; and a considerable part of the surface is arable and well cultivated. Rothsay is a gay pretty town, on the route of all the steam-packets which proceed to the Western Isles, much frequented for sea-bathing, and enriched by a considerable herring fishery. Arran presents much bold alpine scenery, the central mountain of Goatfield rising to nearly the height of 3000 feet, while the glen of Sunox at its base has the highest character of savage and romantic grandeur. The agriculture of Arran, which labours under many obstacles, and was long in a backward state, has lately been much improved. Lamlash, the principal town, possesses an excellent harbour, formed chiefly by the island opposite to it, in which there was once a large monastery, and which is valuable from the safe refuge it affords to the shipping of the Clyde.

2092. *Of smaller islands* may be noticed, almost immediately at the mouth of the frith, the two Cumbrays, the larger of which presents to the sea a sloping and fertile surface; the smaller is rocky, containing only a lighthouse. Ailsa, off the Ayrshire coast, is a rock 1000 feet high; and its lofty basaltic cliffs, formed into columns several hundred feet in height, and covered with clouds of sea fowl, render it a striking and remarkable object.

2093. *The Hebrides, or Western Islands*, are a much more extensive and varied group. From nearly the`southern point of Argyle, they extend along the western coast of Scotland, and stretch pretty far into the Atlantic. Their general aspect is highland in the extreme, with rude rocks and mountains, deep and dark valleys, large expanses of peat moss, hill pastures, and scanty harvests; yet they have some peculiarities. The mountains ascend rather in single peaks than in long ranges; and the rocky cliffs which face the sea assume, in many places, columnar forms of peculiar grandeur. There are none of the extended lochs peculiar to the Highlands; but the little lakes, or large ponds, are almost innumerable. Considerable tracts of sandy soil occur, in some parts tolerably fertile, though liable to be blown by the winds; and several tracts are covered with a profusion of beautiful flowers. The climate is extremely moist; yet it is milder, and the seasons are somewhat earlier, than on the mainland. These islands have passed through several vicissitudes. The earliest possessors seem to have been Celtic. About the eleventh century, they were conquered, along with Orkney, Shetland, and Man, by Harold Harfager, and were governed for several centuries by a Norwegian dynasty, which appears to have included able and enlightened princes. Their power, however, was broken by the battle of Largs; soon after which the Hebrides owned the nominal sovereignty of the Scottish kings, but fell really under the sway of the Macdonalds, lords of the Isles, partly of Norwegian descent. Their territory, including a great part of the west coast of Scotland, formed a considerable power, till the severe check sustained at the battle of Harlaw; after which it fell partly under the dominion of the Scottish crown, and was partly divided among a number of petty chiefs, whose feuds and conflicts deform the subsequent pages of Hebridean history. At present these islands may be considered as retaining more of the spirit of clanship, and of the genuine original highland habits and feelings, than any part of the mainland.

2094. *The Hebrides may be divided into two main ranges.* One of them consists of the large islands of Islay, Jura, Mull, and Skye, with several minor attendants, which are nearly contiguous to the west coast, and separated from it only by narrow straits and sounds; the other is composed of North and South Uist, Harris, Lewis, which are considerably out at sea, and are classed, with no very strict propriety, under the general appellation of Long Island.

2095. *Islay* has an aspect somewhat different from that of the other Hebrides: it contains a good deal of level and fertile territory, with mountains neither very lofty nor very rugged. These advantages, though attended with a diminution of picturesque effect, were sufficient to induce the lords of the Isles to make Islay their residence; so that "the kings that in Islay kept state" are enumerated as at the head of the insular potentates. More recently an active spirit of improvement has visited Islay. Opulent tenants have introduced improved modes of cultivation; good crops of barley, oats, and even wheat, are raised; and the black cattle, which form the main export, are held in great estimation. It has even a manufacture of linens, which are exported to the value of about 5000*l.* and contains lead mines, though of no great value. The ruined churches are pretty numerous; but upon the whole there are no remains to attest the seat of any splendid monarchy. Bowmore is a large village, or even small town, at the extremity of the largest loch, Daal, well frequented by shipping.

2096. *Jura* is separated from Islay only by a sound, the opposite sides of which correspond so exactly as to suggest the idea of their having been disjoined by some violent shock. The island itself, extending twenty-six miles along the parallel coast of Knapdale, is bleak and bare, even beyond most of the Highlands; it is "one continued tract of brown and rocky mountain pasture." Its mountains form a long continuous ridge, which rises at the southern point into three detached and conical summits, called Paps: these make an imposing appearance from a distance; but in the interior no striking object occurs, though the view from the summit is very extensive. The western coast consists of rugged rocks traversed by torrents, and often broken into caves, but has scarcely any inhabitants. The eastern shore, as it slopes down from the mountains, has some level and inhabited tracts; though all the inhabitants, if collected, would scarcely people a large village. In a line with Jura, for several miles, extends Scarba, consisting of a single conical mountain broken into rocky precipices, and forming on the eastern side a very striking and romantic object. Between Jura and Scarba is the perilous strait of Corryvrekan, a whirlpool noted for shipwreck. Colonsay and Oronsay, considerably to the north-west of Jura, form one long small island, the channel between them being passable at low water. The former, in the interior at least, has rather a peculiarly verdant and smiling appearance; while at Oronsay are seen the remains of a priory, ranking as the finest in the Highlands next to that of Iona.

2097. *Mull* is a large, round, rough, stormy island, with winding and deeply indented shores, separated by a long narrow sound from the rudest part of the Argyleshire coast. The interior is a confused troubled heap of mountains, destitute, in general, of any thing striking or picturesque. The shores are almost every where rocky and precipitous, presenting, especially on the western coast, interesting varieties, rocky labyrinths, deep recesses, and ravines clothed with shrubs. The two once mighty holds of Duart and Aros crown rocky cliffs on different points of its eastern shore. The great keep of the former, with its walls nine feet thick, encloses an area of thirty-six feet by twelve. The industry of the people of Mull consists chiefly in rearing a small breed of black cattle, and black-faced sheep, celebrated for their delicate mutton. Of the former about 1300, and of the latter 4500, are exported; also 600 tons of kelp, and a considerable quantity of herrings. The Board of Trustees for Scottish fisheries have built at Tobermory rather a handsome and rapidly increasing little town. But Mull is chiefly remarkable for its small insular appendages on the west, Staffa and Iona.

2098. *Staffa* is a small island, or rather large rock, about a mile and a half round, and encircled by cliffs, which, according to Dr. Macculloch, nowhere exceed in height 144 feet, but contain a wonder of nature, to which she has scarcely produced elsewhere a parallel. This is the Cave of Fingal (*fig.* 207.), as it is called, which remained unobserved, amid its rocky barriers and stormy seas, till 1772, when Mr. Leash, an Irish gentleman, on a fishing excursion, discovered this cave, and gave notice of it to Sir Joseph Banks, who visited Staffa, and made it known to the world. Almost all the rocks of the island are basaltic and columnar; but here they are arranged so as to produce the most singular and magnificent effect. An opening, sixty-six feet high and forty-two wide, formed by perpendicular walls terminated by an arch at the top, admits into a natural hall, more than two hundred feet long, and bounded on each side by basaltic columns rising in regular symmetrical succession. The above dimensions are those given by Dr. Macculloch, and considerably lower than the result of the original measurement by Sir Joseph Banks. Two other caves, the Cormorants' Cave and the Boats' Cave, present similar scenes, but with interesting varieties. Of the columnar rocks, which extend over a great part of the island, many are bent and twisted in a remarkable and very beautiful manner.

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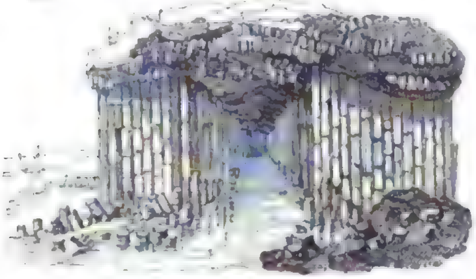

FINGAL'S CAVE.

2099. *Iona* (*fig.* 208.) is a small island near Staffa, of greater extent, with some culture, and a scanty population, but no natural features that deserve notice. Yet it excites the deepest interest by the venerable ruins which attest, in this secluded corner, the early existence of religion and learning, at a time when the rest of the kingdom was buried in barbarism. Amid all the uncertainty of our early history, it appears certain that St. Columba, about the middle of the sixth century, founded here a monastery, and made it a centre whence he endeavoured to diffuse the

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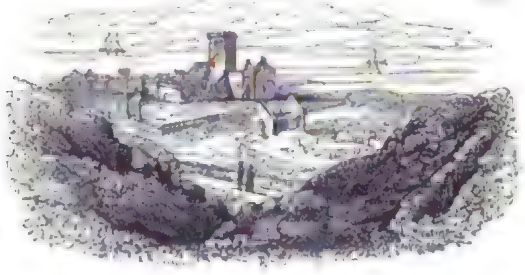


IONA.

light of Christianity. This religious establishment was enriched and extended, and a nunnery was afterwards instituted under the same auspices. The Culdees, or followers of Columba, appear to have rendered very great services to Britain, and even to the whole North. Teachers were often drawn from among them for seminaries in England; and they undertook missionary expeditions to Norway, and even to Russia. They taught, in a great measure, the pure principles of primitive Christianity, rejecting both vows of celibacy, and the pompous ceremonies of the Romish church. By degrees, however, a system expressly formed to dazzle and allure the multitude prevailed over one suited to a pure and primitive people; and Iona itself at length became Roman catholic. It continued, however, to flourish till the Reformation, when its monks were dispersed, and its edifices demolished. The library of Iona was formerly famous, though probably its collection of classic authors, brought by Fergus II. from the sack of Rome, may be ranked as a fable. The cemetery also remains, in which, according to tradition, were buried forty-eight kings of Scotland, eight of Norway, four of Ireland, and one of France. Allowing the scepticism of Dr. Macculloch as to this magnificent list, it appears confirmed, from the ornaments on the tombs, that many of the West-Insular chiefs chose this as a sacred spot, where their ashes might repose. The ruins are extensive. The cathedral is 164 feet long and 34 broad; and near it is a chapel sixty feet long. The style of architecture is early and rude; and the sculptures, though pretty numerous, are, with a few exceptions, grotesque in design and execution. The finest part consists of four crosses, the remnant of the probably much exaggerated number of 360, once belonging to the edifice. The altar, of pure white marble, has entirely disappeared.

2100. *Other small islands occur in the vicinity of Mull.* Ulva and Gometra are rocky and barren, though the former especially has basaltic cliffs; while on the outer border, the Freshinish islets are of the same character, and only remarkable for the rocky site of the ruined castle of Cairnbury. About twenty miles westward of Mull are the two long narrow stripes of Coll and Tiree, separated from each other by one of the usual narrow sounds. Tiree presents a very striking contrast to the other isles, being so low and flat, that it appears as if the waves would sweep across it. The soil is sandy, but in general very fertile in the highland grains, oats and bear: it carries on a considerable fishery; and has veins of fine marble. Coll presents a quite different aspect, being composed of rocky hills, with broad flat tops; so that from a height it appears a mere unvaried plain of rock. Between these hills, however, are green dells; and though it is said that there never was in Coll a plant more than three feet high, yet both it and Tiree yield a profusion of beautiful flowers.

2101. *Skye*, the most northerly of this inner chain, may be ranked also as the largest and most considerable of the whole group. It is forty-five miles long; but its shores are so winding, and so penetrated by lochs, that it may be said to form a cluster of peninsulas. Ranges of rocky mountains, many of them 3000 feet high, cover almost the entire surface. On a first approach, its aspect is only bare, bleak, brown, and dreary; but in sailing round its shores, the high rocks with which they are every where bordered occasionally display objects of striking and romantic grandeur. The north-east shore exhibits an almost continuous range of perpendicular cliffs, about 500 feet high, with only occasional openings. Inland, above this, rises the Storr, consisting of rows of basaltic columns, in many places taller than those of Staffa, though they nowhere form the same regular and majestic dome. Still more marked are the Cuchullin Hills, on the south-eastern coast, which present crowds of rugged and broken summits, more resembling the Alps than those of any other part of Britain. Within their recesses, Dr. Macculloch traced Loch Scavig and Glen Coruisk, which last he considers as superior in gloomy grandeur even to Glencoe. In Strathaird, approaching to the southern point, is the celebrated spar cave; it is about 250 feet from the entrance to the extremity, but a great part of the passage is gloomy and rocky, and only in its most interior part do the stalactites begin to branch out into that variety of intricate and brilliant ornaments which make the cave so beautiful. The great body of the island is described as a hilly moorland, barren, brown, and rugged; the peaks being generally from 500 to 1000 feet high. The eastern coast of Sleat or Slate, the most southern peninsula, and in the north, the shores of Loch Bracadale and Loch Snizort, and the plain of Kilmuir, are level and arable. Almost the sole occupation is the rearing of cattle, which are of good quality, and the exportation of which, with that of a considerable quantity of kelp, forms the chief trade of the island; large quantities of herrings are also taken, and cured by fishermen who carry on this branch of commerce on a small scale. The only places which can be called towns are Broadford and Portree, on the eastern coast, which maintain the communication with the continent. The property of Skye is almost shared between the family of Lord Macdonald, who claims descent from the ancient lords of the Isles, and that of Macleod. Duntulm, the almost ruined seat of the Macdonalds, retains many peculiarities of the ancient feudal castle, among which the pit and gallows are not wanting. The Macleods' castle of Dunvegan, founded in the thirteenth century, is also a magnificent pile: both are on the north-west coast of the island.

2102. *Skye has many attendant islets.* On the east is Rasay, masked by long lofty cliffs of fine sandstone, out of which cities might be built, and which have on their tops green and cultivated farms. It is separated by sounds on the north, from the barren and solitary isle of Rona, and on the south from Scalpa, a long island consisting of a single mountain; and the sound between which and Skye is covered with vessels passing to and from the continent, or engaged in the fishery. To the south-west is Rum, a wild and rugged mass of mountains, surrounded by shores scarcely accessible, and involved in almost perpetual tempest. The mountains, however, being lofty, and in general but partially visible through clouds, render Rum a magnificent object when seen from the sea. On the west is Canna, a small island surrounded by ridges of columnar rocks, rising in successive stages, but with rich verdant vales on their tops. On the east of Rum is Egg or Eigg, also surrounded with bold cliffs, particularly the Scuir, which extends about a mile in length, presenting a perpendicular face of nearly 500 feet, with a flat summit. Eigg contains also several large and remarkable caves: this isle, with Skye and its appendages, terminates the interior chain of the Hebrides.

2103. *Long Island* is the general name given to the exterior chain of the Hebrides, with no strict propriety, since the tract consists of five large, and many smaller islands; but these, forming a line of nearly 150 miles, are so closely contiguous, separated only by narrow sounds filled with islets, that the whole may, without any extreme licence, be considered as one island. Though as rude as the eastern range, it is not so generally mountainous; it is a strange mixture of bogs, rocks, lochs, and sands. Owing to the difficulty of conveying sheep by sea, its pastures are chiefly occupied with cattle destined for the markets of the mainland; and from the abundance of sea-weed on its winding and extensive shores, large quantities of kelp are produced, which yield considerable profit.

2104. *Lewis* is the largest of all the Hebrides, being upwards of eighty miles from north-west to south-east, and at some points more than twenty in breadth. It is not, however, favoured by nature, but presents the general bleak aspect of the western Hebrides, with only a green belt along the coast. Of its inhabitants, those occupying its most northern point, called the Butt of Lewis, appear to be Danish; the remnant of that colony who once ruled the island. The people are industrious in cultivating their rude soil, and in the fisheries, which have rendered Stornoway, the capital of Lewis, a place of some consideration, even in this remote region. It

was made a borough by James VI., and its present prosperity is marked by the
lowland aspect.

2105. *Lewis has some small but striking appendages.* To the east are the Shian
Gariveilan, presents to the sea a range of columnar cliffs more than half a mi
from 300 to 400 feet, one of the most magnificent colonnades to be found in the \
the Flannan Islands, seven in number, with some rich verdure, but chiefly rema
fowl which fill the air with multitudinous clamour. About sixteen miles to th
extreme north-west point of Britain. It is about a mile long, and, in high s
sweeps entirely over it. Yet it has green and fertile land, occupied and cultivat

2106. *Harris*, a peninsula on the southern point of Lewis, and almost ranked
different aspect, consisting of a mass of rugged rocks, which project in long pro
to the shore a very picturesque aspect. The arable patches are small, and in su
cannot in general be reached without great labour, and can be cultivated only
numerous than black cattle, being better adapted to this rugged surface.

2107. *North and South Uist, with Benbecula, exhibit the general aspect of L*
they compose about eighty miles. The western shore, for a mile or two in breadt
in summer tolerable crops of oats and bear, but wearing in winter a most dreary
peat-mosses, lakes, and ponds, without number; on the east, a rude and rocky
lochs. The cattle are small, and not exported in very large quantities. Th
industry is kelp, for which the shores of these islands afford ample materials. T
annually about 2500 tons, for the fabrication of which about 60,000 tons of
Benbecula, intermediate between the two Uists, is of a similar character, but mo
waste of waters, rocks, and sand.

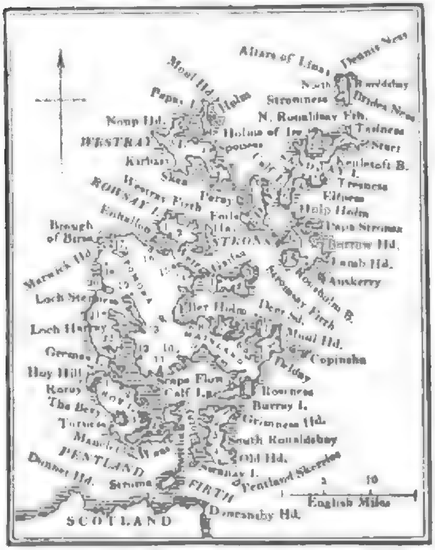
2108. *Barra, the most southern branch of Long Island*, is small, but disting
fishermen, who, in large boats, carry their cargoes through the Crinan Canal to
half a mile from the northern shore is Chisamil, the castle of the Macleans, no
extent as to have been capable of containing 500 men. From Barra, southwar
terminating with Bernera, commonly called Barra Head.

2109. *We must not leave the Hebrides without commemorating St. Kilda*,
solitary, far out in the Atlantic, whose waves dash continually against its per
three miles long, girt on all sides by a wall of rock, which at one point is abou
the loftiest hill on the island, being there cut down perpendicularly from the
heights, from which the eye looks down over jutting crags; a boiling sea belo
cliffs beaten by a foaming surge, and lost in the gloom of involving clouds;
ocean, and sky," are the scenes which characterise St. Kilda. On the top of
what fertile surface, on which are fed sheep of the Norwegian breed, with sh
whose mutton
cows; and a li
But the favourit
from the face of
in fearful and c
shores. Suspen
point to point,
of the solan goo
and others of t
breed on their
Martin calculate
to Dr. Macculloc
tion has ascribe
the golden age;
harmless, quiet,
repeated interco
much assimilat
Hebrideans. T
great want of l
could either re
guage; but of l
some Lowland sc
sent and a schoo

2110. *Only t*
remain now to
from the nort
towards the Pol
and Shetland Isl

2111. *The*
about thirty i
or Mainland
ground as al
Nothing can
their form; t
they are pen
straits which
other, cause
of land and sea. These straits are rendered dangerous by nume
from the two oceans which rush in from opposite sides. T
particular, between Orkney and the Mainland, is a most formidable

Fig. 209. Map of the Orkney Islands.



References to the Map of the Orkney Islands.

NORTH RONALDSHAY.
1. Holland.

SANDAY.
1. Taftsness
2. Savil
3. Haykirk
4. Cross and Burness
5. Stove.

WESTRAY.
1. Newark
2. Spoonsay
3. Pyrawall.

ROUSAY.
1. Sevenkeel
2. Westside.

SHAPINSHAY.
1. Wallness.

2. Kirkbuster
3. Holland.

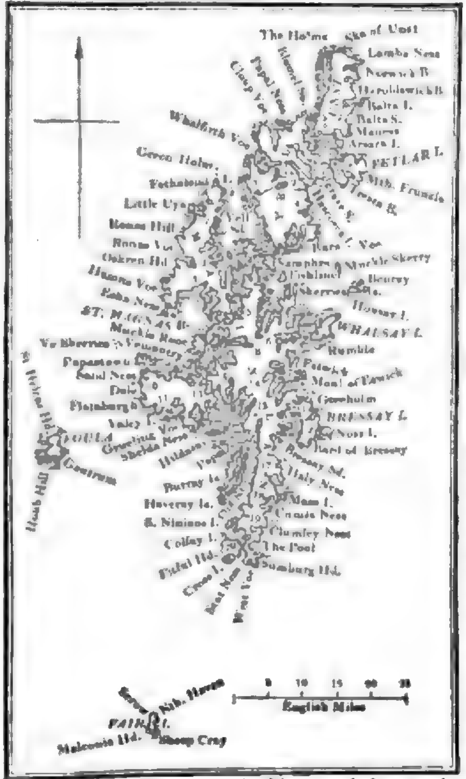
POMONA or MAINLAND.
1. St. Andrew's
2. Sandside
3. Holm
4. Papley
5. Galnip
6. Sabo
7. Kirkwall
8. Firth
9. Scapa
10. Wank
11. Orphir
12. Clestron
13. Turmaton
14. Rendall
15. Woodwick
16. Bur
17. Bir
18. Mar
19. Kirk
20. Hol
21. San
22. Str

1. Hoy

currents keep the channel in a state of perpetual ebullition, and produce, at several points, violent whirlpools; among which the Wells of Swinna, the Seralchie of Stroma, and the Merrymen of Mey, are named with particular dread. Orkney has not an inviting aspect. It is in general low, bleak, boggy, and bare; though its western islands face the Atlantic with some very bold and rugged cliffs. About a twelfth part is cultivated in a rude manner with the plough; a somewhat larger portion is under regular pasture; the rest is moor and waste. The cattle, though small, are of a good breed, and about 50,000 sheep, almost in a wild state, roam through the commons. The fisheries are not extensive, but sea-fowl, as well as moor-game, are pursued with activity. Kelp is the staple commodity for export: it has averaged annually 2500 tons, employing 3000 men. There is some coarse woollen, and of late there has been some linen manufacture. As most of the vessels destined for Hudson's Bay and the whale fishery, and many of those which, from the east coast, sail to all parts of the world, pass by the north of Scotland, the ports of the Orkneys are frequented, and a market is afforded for their provisions. Many also of their active young men, bred to the sea, go out on board of these vessels, and make up any deficiency in the crews, especially of those destined for the northern fisheries.

2112. *The topographical details of Orkney* do not possess any peculiar attraction. Kirkwall, however, bears marks of the periods when it was a Danish capital, and a residence of the sovereign Earls of Orkney. There is a large and massive cathedral, in some parts very elegantly ornamented; also ruins of a king's castle, an earl's palace, and a bishop's palace. The town is ill built, but has of late been considerably extended and improved. It has a good natural harbour, unimproved however by art. Stromness has one of the best harbours in the kingdom, and since it was emancipated from the thraldom in which it had been held by Kirkwall, it has rapidly extended, and become the favourite resort of vessels which seek on this coast for shelter and refreshment. Near Stromness is that remarkable piece of antiquity the "standing stones of Stennis," which in magnitude and singular character almost rivals Stonehenge. Shapinshay, Stronsay, Rousay, Eday, Westray, Papa, and Sanday, are small islands stretching to the north-east. Barra and South Ronaldshay are towards Caithness; and to the west the long island of Hoy, which, differing from the rest, presents a series of bold and rugged promontories to the mariner who has passed through the Pentland Frith, and who, in quitting Hoyhead, plunges into the boundless waste of the Atlantic.

Fig. 210. Map of the Shetland Islands.



2113. *The Zetland or Shetland Islands*, called by the natives Hialtland, must close our survey of Britain. Though not, as imagined by the ancients, the remotest boundary of the habitable world, yet they form one of the boldest extremities of Europe, encircled by the illimitable extent of the Arctic and Atlantic oceans. Placed thus far north, and amid so wide a waste of waters, the climate of Zetland is cold, bleak, swept by furious winds, and deluged by torrents of rain. The surface is rugged, without being mountainous; it is every where penetrated, not by the mountain lakes of the Highlands and Isles, but by long lagoons with flat shores, called *voes*, by which even the largest islands are so intersected, that there is scarcely a spot in them two miles distant from the sea. The extensive mosses, and the trunks of trees dug out of them, prove that a vast expanse was once covered with natural forests; but these are now totally eradicated, and the violence of the winds and sea-spray has rendered abortive every attempt to replace them,

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References to the Map of the Shetland Islands.

UNST.
1. Norwick
2. Vaagarth
3. New Kirk.

YELL.
1. Windhouse
2. Manse
3. Sandwick
4. Queys.

MAINLAND.
1. Shea
2. Olaberry
3. Urbusta
4. Stenness
5. Sutherhouse
6. Deal
7. Brough
8. Japon
9. Reawick
10. Melby
11. Muckhove
12. Culswick
13. Sandsting
14. Brak
15. Dingwall
16. Lerwick
17. St. Paul's
18. Meywick
19. Bigtown
20. Quendal.

BRESSAY.
1. Gardie
2. St. Andrew's.

so that the aspect of the country is now completely naked,
shrub. The coasts are peculiarly steep, rocky, and bold, the ro
caverns, and broken into precipices and cliffs of the most varied
shores, against which the waves of the great surrounding ocean
fury, is equally grand and terrible. The author of "The P
picture of these "deep and dangerous seas of the north, their
many hundred feet in height — their perilous straits, and current
reefs of rock, over which the vivid ocean foams and boils,
extremities neither man nor skiff has ever ventured, — lonely and
occasionally the ruins of ancient northern fastnesses, dimly see
arctic winter." The dangers of the navigation, however, are
spacious and commodious havens, formed by the deep bays and
channels, between different islands.

2114. *As to industry and produce*, the Shetland Islands remain in a low s
acres of arable land, and nearly as many of good meadow; but this comprises
of the surface, all the rest consisting of waste or common, on which the ho
out, to find pastures as best they may. The horses are of a very small size, v
hardy. The cows are equally diminutive, and give very little milk, but both
quality. The sheep are most numerous of all, being reckoned at seventy or ei
like the other animals, and their wool very scanty; but some of it is peculia
almost the only manufacture of Shetland, and one of the finest in the world, —
so close, soft, and warm, as to render its use quite a luxury. The greatest
ever, is the fishery; not of herrings, but of cod and ling for salting and dry
these fish; and, within the last few years, a peculiarly rich and extensive ban
ward. At the proper season, fleets of boats issue from all the bays and cre
which is carried on, not without peril, at the distance of from twenty to t
fishermen are supplied by the landlords with boats and implements, on condit
at a stipulated rate; and as their farms are held at will, they are, from thi
stances, placed in a state of vassalage more complete, perhaps, than any other

2115. *The annals of Shetland* are Norwegian. Those islands, according to th
from Norway. In the ninth century they were conquered by Harold Harfa
powerful and formidable of all the sea-kings of the north. The Norwegian sw
over all the Scottish islands; but in the Shetlands it was undisputed, till the
of Orkney, as the dowry of a princess of Norway married to James III., in th

2116. *The topographical details of Shetland* are not of great magnitude. L
Lowlands be considered rather a thriving village, ill and irregularly built
island of Bressay forms Bressay Sound, one of the finest harbours in the worl
vessels destined for the north and the whale fishery. Off Bressay is the mos
mena of Shetlar
island, with a fl
pendicular wal
with the coast
strong ropes s
cradle is run,
The promonto
at the souther
also distinguis
and the perils
mariner. Sca
cellent harbou
times, has dwi
village. The
variously estim
of islets and roc
are inhabited.
ing northward
of any magnit
northerly, is
and distinguis
jacent to Yell
Mainland are
Burra, Housa, Frondray, Papa Stour, Mickle and Little Rhoe, all so close as
Considerably out at sea, Foula, a small rocky islet, faces the Atlantic, with
flocks of sea-fowl.

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NOSS HOLM, SHETLAND.

CHAP. IV.

IRELAND.

2117. *Ireland is a fine and extensive island*, situated to the wes
one of the three grand portions of the United Kingdom.

SECT. 1. *General Outline and Aspect*

2118. *The greatest dimension of Ireland* is from Cape Clear,
in 55° 23′ N. latitude; making 4° 4′, or about 280 miles. The
from the most easterly point of the county of Down (opposit
Head in Kerry, will be 5° 9′, or 218 miles; but it is nowhere
parallel of latitude. The island, according to Beaufort, contain

square miles, or nearly 30,000,000 acres; but, till the survey be completed, precision on this subject cannot be attained.

2119. *The surface of Ireland cannot on the whole be called mountainous*; its central districts composing one vast plain, which crosses the kingdom from east to west. It is, however, diversified by ranges of mountains, superior in extent, and, with the exception of those of Wales, equal in elevation, to any in England. Wicklow, in the vicinity of Dublin, may be classed as an alpine region. On the borders of Leinster and Munster, the Slieve-Bloom, the Knockmele Down, and the Galties, form long and lofty ranges, commanding an extensive view over the wide plains that stretch beneath them. All these, however, are much surpassed by the extreme south-west county of Kerry, which presents a complete chaos of lofty and rocky summits. The most elevated are those which enclose the beautiful and finely wooded lakes of Killarney, Mangerton and Macgillicuddy's Reeks, the last of which is considerably more than 3000 feet high. At the opposite or north-eastern extremity of Ireland, Antrim presents to the Scottish seas a barrier of rocky cliffs, less lofty, but of a very bold and peculiar character; precipitous, and formed into long columnar ranges; a phenomenon which the Giant's Causeway exhibits on a greater scale than any other spot in the known world. The Mourne mountains, a lofty granite range in the south of the county of Down; those of Carlingford, which extend into the county of Armagh; with considerable ranges in Tyrone, Derry, and Donegal, may dispute the pre-eminence with those of the south. In Connaught there are also some considerable detached mountains, of which Croagh-patrick in Mayo has been reckoned by some to exceed even Macgillicuddy's Reeks; but Ireland has no extended table lands like those which cover a considerable part of England. The most elevated part of the Bog of Allen, in that central point where the rivers divide, is not more than 270 feet above the level of the sea.

2120. *The rivers and bays of Ireland form a noble feature*, and would be the theatre of a most extensive commerce, did the regions through which they flow afford more ample materials. The Shannon is without a rival in the three kingdoms. It rises far in the north, from Lough Allen in the province of Connaught, and has a course of 170 miles, throughout the whole of which it is more or less navigable, the only obstruction which existed having been removed. Below Limerick it expands into an estuary about sixty miles in length, by which the largest vessels have access to that city. The Barrow is also an important river, which runs southward through the greater part of Leinster, receives from the west the Nore and the Suire, and finally forms the harbour of Waterford. The Boyne, so celebrated for the victory gained on its banks; the Foyle, which, after passing Londonderry, forms Lough Foyle; the Bann, which passes through Lough Neagh, and affords a flourishing salmon fishery; and the Blackwater, which terminates in the bay and port of Youghal, are also deserving of mention. The other rivers are rather numerous than of long course; but they almost all terminate in wide estuaries and *loughs*, which diffuse through Ireland the means of water communication, and afford a multiplicity of spacious and secure harbours. The western coast, in particular, exposed to the perpetual action of the waves of the Atlantic, has, according to Mr. Young's expression, been completely sawn into bays; which, if the country were in a more advanced state of improvement, would afford ample facilities to its commerce.

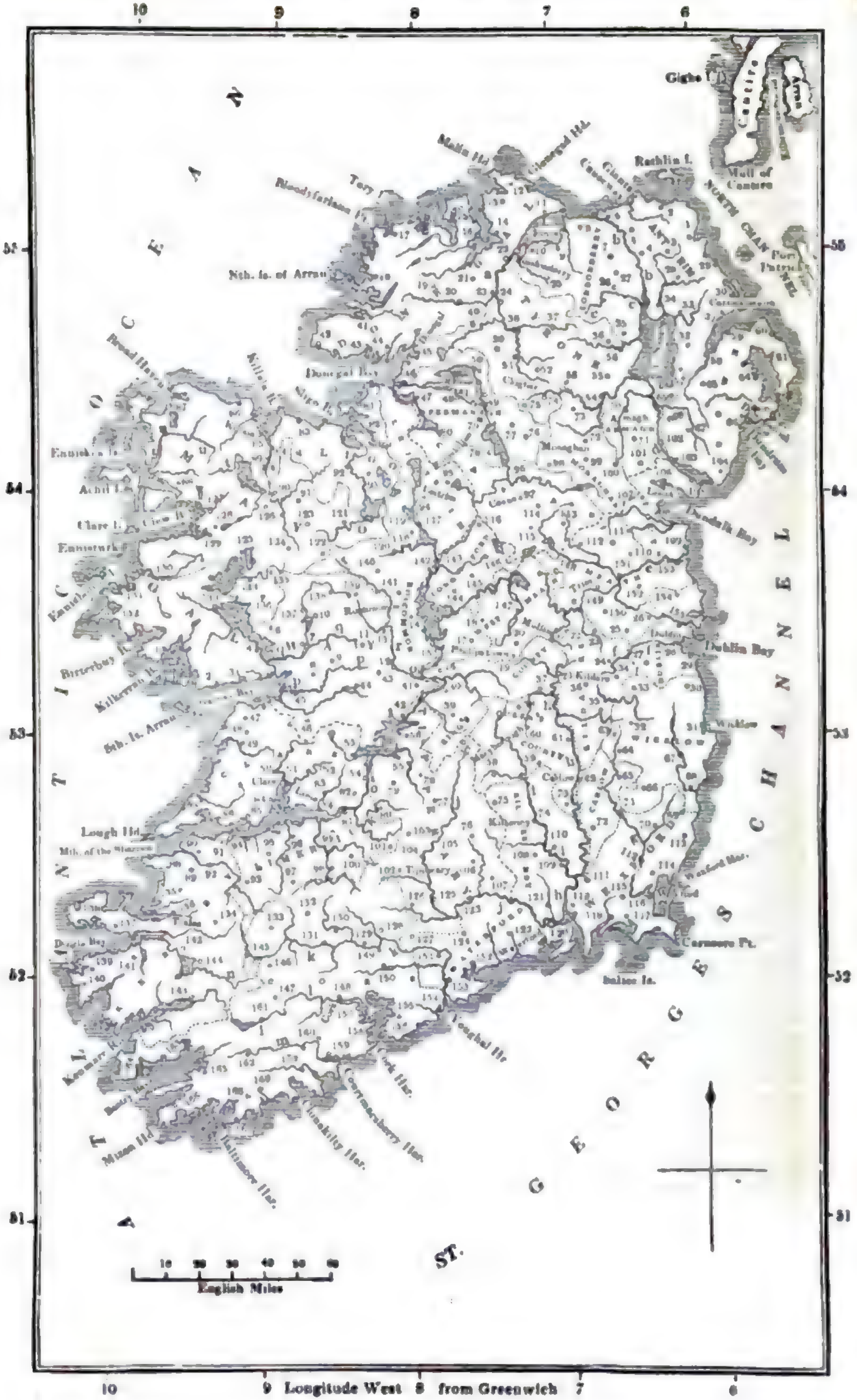
2121. *Lakes or loughs are a conspicuous feature in Ireland*, where this last name, like the similar one used in Scotland, is in many instances applied to arms of the sea. Lough Neagh is the largest lake in the United Kingdom, covering nearly 100,000 acres. Its banks are flat, tame, and in many places marshy and inundated. Lough Erne, also in Ulster, is divided into two reaches, the united length of which is about thirty miles, while its circuit includes a great variety of rich and ornamented scenery. Lough Foyle, Lough Swilly, and Belfast Lough, are properly bays. The Shannon forms several lakes, of which Lough Ree is the principal; and the whole of its course downwards from Limerick resembles more a lough or bay than a river. Connaught has several extensive lakes. That of Killarney, in the south, is famed, not for its extent, but for the singular grandeur and beauty of its shores. A fuller description of this and some others now mentioned will be found under the local section.

Sect. II. *Natural Geography.*

2122. *The Botany and Zoology of Ireland*, as connected with that of the United Kingdom, having been treated of under the head of England, the subdivisions of this section will be confined to Geology.

Subsect. 1. *Geology of Ireland.*

2123. *The geology of this important part of the British empire* is not so well known as that of Great Britain. To a distinguished scholar of the Freyberg school, Mr. Weaver, we are indebted for the most interesting series of geological observations; Hamilton, Richardson, Stephens, Berger, Griffith, Sir Charles Giesecké, Buckland, Conybeare, and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6
55
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51
ATLANTIC OCEAN
ST. GEORGE'S CHANNEL
NORTH CHANNEL
Gigha I.
Cantire
Arran
Mull of Cantire
Rathlin I.
Port Patrick
Malin Hd.
Tory
Bloodyforland
Nth. Is. of Arran
Donegal Bay
Broad Haven
Killala B.
Sligo B.
Enniskea Is.
Achil I.
Clare I.
Clew B.
Innisturk
Innisbofin
Bitterbuy B.
Kilkerran B.
Galway Bay
Sth. Is. Arran
Lough Hd.
Mth. of the Shannon
Dingle Bay
Kenmare R.
Bantry B.
Mizen Hd.
Baltimore Har.
Clonakilty Har.
Courtmacsherry Har.
Cork Har.
Youghal Hr.
Saltee Is.
Carnsore Pt.
Wexford Har.
Wicklow
Dublin Bay
Dundalk Bay
Fermanagh
Monaghan
Armagh
Cavan
Dublin
Kildare
Kilkenny
Carlow
Tipperary
Clare
Longford
Roscommon
English Miles
10
20
30
40
50
60
Longitude West from Greenwich

Fitton have also communicated much that is important in regard to the geology of the sister isle. For full and detailed accounts of the geognosy, we refer to the authors just mentioned, our space allowing only of such a sketch as will enable our readers to form a general conception of the geognostical structure of those parts of the island which have been already surveyed; viz. — 1. North of Ireland; 2. Connaught coal district; 3. East of Ireland; 4. South, and part of the west of Ireland.

2124. (1.) *North of Ireland.* This district may be described as limited by Dundalk Bay on the south-east, and by Lough Foyle on the north-west, including towards the south the counties of Down, Armagh, and the north-east angle of Louth, lying between Dundalk and Carlingford Bay; and on the north Antrim and Derry; that portion of Tyrone which extends along the north-west shore of Lough Neagh, between Derry and Armagh, being also comprehended as falling within the same general outline. This district is marked by three distinct systems or groups of mountains, one of which occupies the more southern counties; while the more northern are divided between the two others.

2125. 1st system. The *Mourne mountains.* The Mourne mountains form a well-defined group, extending from Dundrum Bay to Carlingford Bay, in the southern extremity of Down. Slieve Donard is the highest summit of this group, and rises about 2654 feet above the level of the sea. The north-west of the main group, the Fathom Hill, Slieve Girken, or the Newry mountains, and Slieve Gullen, are situated in the south-east of Armagh; and the Ravensdale and Carlingford mountains, in the north of Louth, may be considered as its appendages. Granite, which is the prevailing rock of these mountains, contains beautiful rock crystals, also felspar and mica crystals, and in the cavities that afford these topaz and beryl in fine crystals also occur. To the north of the Mourne mountains Slieve Croob, composed of syenite, and Slieve Anisky, of hornblende rock, both situated in the county of Down and barony of Lower Iveagh, form an elevated tract, dependent upon, but placed at some distance from, the main group. Hornblende rock, greenstone, and porphyry are said to be abundant on the skirts of this granite district. These Plutonian granite and syenite hills rise through strata of transition rocks, which are greywacke, greywacke slate, transition clay slate, and transition limestone. The Plutonian rocks bear but a small proportion in superficial extent to those of the transition class, these latter advancing far to the west and

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References to the Map of Ireland.

NORTH PART.
1. Newtonglens
2. Ballycastle
3. Clough
4. Rasharkin
5. Ballymoney
6. Coleraine
7. Garvagh
8. Glaud's Square
9. Ballykelly
10. Muff
11. Ballynedly
12. Malin
13. Carn
14. Burnfoot
15. Cenahill
16. Rathmullin
17. Gortahork
18. Dungloe
19. Convoy
20. Stranorlan
21. Raphoe
22. Londonderry
23. Lifford
24. Strabane
25. Claudy
26. Maghera
27. Swatteragh
28. Kells
29. Glenarm
30. Ballycorry
31. Carrickfergus
32. Crumlin
33. Antrim
34. Randalstown
35. Moneymore
36. Cookstown
37. Fredericktown
38. Newton Stewart
39. Beetoll
40. Derg Bridge
41. Antrea
42. Tilien
43. Killybegs
44. Inver
45. Donegal
46. Ballyshannon
47. Garrison
48. Churchhill
49. Cassely
50. Kesh
51. Omagh
52. Glogherny
53. Ballygawley
54. Blackwater
55. Dungannon
56. Kingsmills
57. Moss
58. Belfast
59. Holywood
60. Donaghadee
61. Gray Abbey
62. Portaferry
63. Downpatrick
64. Killinchy
65. Hillsborough
66. Dundrum
67. Rathfriland
68. Loughbrickland
69. Lurgan
70. Armagh
71. Newtown Hamilton
72. Monaghan
73. Augher
74. Clogher
75. Five Mile Town
76. Donagh
77. Lisnaskea
78. Callowhill
79. Enniskillen
80. Largay
81. Stralach
82. Sligo
83. Dunatte
84. Burro
85. Killala
86. Hattigins
87. Inver
88. Clogan
89. Ballina
90. Foxford
91. Swineford
92. Balcarra
93. Ballymote
94. Lowran
95. Ballinamore
96. Belturbet
97. Cavan
98. Drum
99. Ballybay
100. Castle Blaney
101. Jonesboro
102. Newry
103. Narrow Water
104. Kilkeel
105. Carlingford
106. Dundalk
107. Louth
108. Lurgan
109. Clogher
110. Ladyrath
111. Nobber
112. Moynalty
113. Ballyborough
114. Stradone
115. Bally Jamesduff
116. Rosnduff
117. Jamestown
118. Elphin
119. Carrick on Shannon
120. Tulsk
121. Ballyhaderreen
122. Ballihaunis
123. Kilkelly
124. Kilcolman
125. Beartree
126. Ballinvary
127. Newport
128. Castlebar
129. Westport
130. Killery
131. Claggan
132. Bunowen
133. Cong
134. Ballinrobe
135. Ballymount
136. Kilmainmore
137. Bonwell
138. Dunmore
139. Glanamoddy
140. Ballintober
141. Roscommon
142. Tarmanbarry
143. Longford
144. Kenagh
145. Edgeworthstown
146. Johnstown
147. Mullingar
148. Clonmellon
149. Trim
150. Summerhill
151. Navan
152. Slane
153. Drogheda
154. Naul
155. Swords

SOUTH PART.
1. Kilkerran
2. Inveran
3. Seana
4. Killannin
5. Galway
6. Headford
7. Belclare
8. Athenry
9. Monivea
10. Tuam
11. Castle Blakeney
12. Ballinasloe
13. Ballinamore
14. Knockcroghery
15. Athlone
16. Moyvore
17. Moat a Grenogue
18. Ballimore
19. Philipstown
20. Tyrrel's Pass
21. Ballydermot
22. Longwood
23. Cloncurry
24. Clane
25. Maynooth
26. Ratoath
27. Rathcoole
28. Dublin
29. Kilgobbin
30. Enniskerry
31. Wicklow
32. Donard
33. Blessington
34. Naas
35. Old Kilcullen
36. Kildare
37. Portarlington
38. Mountmellick
39. Birr
40. Banagher
41. Eyre Court
42. Portumna
43. Aughrim
44. Loughrea
45. Carnamart
46. Gort
47. Killany
48. Kilfenora
49. Innistymon
50. Ennis
51. Clare
52. Tulla
53. Scarriff
54. Killaloe
55. Nenagh
56. Burrisokane
57. Roscrea
58. Rathdowney
59. Ballyraskill
60. Maryborough
61. Athy
62. Carlow
63. Stratford
64. Baltinglass
65. Rathvilly
66. Tinehely
67. Rathdrum
68. Arklow
69. Gorey
70. Ferns
71. Clonegall
72. Borris
73. Old Leighlin
74. Kilkenny
75. Urlingford
76. Killenaule
77. Borrisleagh
78. Toomavara
79. Silver Mine
80. Newport
81. Limerick
82. Bridgetown
83. Six Mile Bridge
84. Paradise
85. Clonderlagh
86. Kilrush
87. Dunbegg
88. Ballyheigh
89. Lixnaw
90. Milstreet
91. Ballylongford
92. Listowel
93. Abbyfeale
94. Glynn
95. Ardagh
96. Askeaton
97. Kildagh
98. Bruree
99. Patrick's Well
100. Bruff
101. Cullen
102. Tipperary
103. Cappagh
104. Golden Bridge
105. Cashel
106. Fethard
107. Ballypatrick
108. Knocktopher
109. Inistiogue
110. Thomastown
111. New Ross
112. Enniscorthy
113. Killane
114. Ballymurtin
115. Taghmon
116. Wexford
117. Duncormuck
118. Clonmines
119. Whitechurch
120. Waterford
121. Kilmacow
122. Kilmacthomas
123. Clonmel
124. Ballynamult
125. Cahir
126. Ballyporeen
127. Araglin
128. Kilworth
129. Ballyhooly
130. Doneraile
131. Mallow
132. Liscarrol
133. Newmarket
134. Cas Island
135. Abbey Oderne
136. Tralee
137. Lispole
138. Dingle
139. Cahir
140. Aghert
141. Glanbagh
142. Milltown
143. Kenmare
144. Killarney
145. Shinagh
146. Mill Street
147. Macroom
148. Cork
149. Fermoy
150. Rathcormuck
151. Lismore
152. Dungarvan
153. Aglish
154. Youghal
155. Cloyne
156. Carlisle Fort
157. Passage
158. Camden Fort
159. Kinsale
160. Innishannon
161. Inchigeelagh
162. Dunmanway
163. Glengarry
164. [illegible]
165. Bantry
166. Dunmanus
167. Baltimore
168. Skibbereen
169. Leap
170. Timoleague

Rivers, &c.
a Foyle, R.
b Bann, R.
c Mayola, R.
d Newry Canal
e Boyne, R.
f Liffey, R.
g Slaney, R.
h Barrow, R.
i Nore, R.
j Suire, R.
k Blackwater, R.
l Lee, R.
m Bandon, R.
n Fleak, R.
o Shannon, R.
p Carnamart, R.
q Moyne, R.
r Suck, R.
s Moy, R.
t Deel, R.
u Mourne, R.

north of them, extending westward across Monaghan into C
the southern cape of Belfast Lough and the peninsula of
that the points of the coast of Scotland, directly opposite the
greywacke terminates on the Irish side of the north channel
of Portpatrick, and through the great alpine band which t
and terminates on the east coast at St. Abb's Head, the san
is probable that the great southern high land of Scotland
transition hills of the Mourne mountain group by a ridge
Channel from Scotland to Ireland. In this district there
limestone and of old red sandstone; at Newton Ards, at
there is a deposit of old red sandstone.

2126. 2d system. *Primitive chain of Londonderry.* This
distance of about 30 miles to the north-north-west of the ext
It forms a large tract, bounded on the east by the river R
tending from Tubermore by Omagh to Ballentra, and on the
thus including the counties of Londonderry and Donegal. C
district is Sawell, said to be 2257 feet above the level of the se
is principally composed of mica slate, with various subordinate
On the eastern bank of the Roe, these mica slate hills and
range of secondary hills covered by a great platform of seco
of the third system of hills, afterwards to be described. Th
and conceal the mica slate in the eastern part of Derry, but
from beneath this covering, after an interval of about 30 mi
Antrim, and rises into hills, which break down abruptly t
Point and Cushenden Bay. The mica slate rocks on this
considered a continuation of those that occur on the opposite
of Cantyre, or, on a more general view, as a continuation
which may, in this way, be said to extend from the north
western shores of Ireland, on the coasts of Donegal. In
which intervenes between the transition mountains and the
formation occurs associated with that kind of limestone whic
in Great Britain. The position of this coalfield offers an
where the space between the southern and northern mounta
rocks of the coal formation.

2127. 3d system of mountains. *The Trap group.* Thi
separated into two chains, bounding on the east and west
which the river Bann flows from Lough Neagh to the ocean.
county of Antrim, being comprehended between the valley
channel. It presents an abrupt declivity towards the sea
towards the west, in which direction the beds composing i
which it is composed are generally detached and distinct, ye
that there can be no impropriety in considering them as parts
to Dr. Berger, Knock-lead, in the northern extremity of the
it rises 1820 feet above the level of the sea; but the basis
height of 500 feet by primitive mica slate rock, leaving only
the secondary strata peculiar to this system. Diris Hill, nea
chain, is wholly composed of secondary strata, and attains a
the level of the sea; it is situated about two miles to the west
of the chain included between the Roe and the Bann form
former; but the strata here dip nearly in a contrary direction
the fall of the hills being gradually in this direction, while
with abrupt and precipitous cliffs. Cragnashoack, at the sout
above the sea, and is the highest summit of the group. The
system is very different from that of the two former; all the
to the secondary class of rocks. These rocks are partly Plutoni
Neptunian rocks are generally covered with an enormous ma
pears to attain its greatest thickness on the north; the trap c
northern summit of the western chain, measuring more tha
of this superimposed mass may therefore be estimated at 545
at 800 square miles. The trap rocks are greenstone, basalt
bole; occasionally associated with them, forming isolated t
trict, there are porphyries of different kinds, as pitchston
The amygdaloid and also some of the other rocks of this seri
calcedony, semiopal, felspar, and steatite, or serpentine. Th
pyrites is a mineral frequently disseminated in the greenstone
varying from two inches to four or five feet in thickness, al

Ballentoy; also in the cliffs of Portnoffer on the east of the Giant's Causeway, at Killymoris near the centre of the trap area, and at Portmaoc, and other places on the eastern shore of Lough Neagh.

2128. *Veins of trap.* Trap veins exhibit many interesting phenomena, particularly in their passage through chalk, which they sometimes convert into a kind of marble. They traverse not only the Neptunian strata, as chalk, lias, and coal formation, but also trap itself. The most interesting and splendid displays of the trap rocks occur at the Giant's Causeway and Fairhead, so well known to travellers; and the cliffs of Kenbaan exhibit very interesting displays of the commingling of the trap and chalk.

2129. *Underneath and sometimes intermingled with this vast mass of trap* are the following Neptunian formations: — *Chalk*, which is frequently very compact, and sometimes, as where in immediate contact with the Plutonian rocks, changed into a granular limestone resembling marble: the average thickness does not amount to more than 200 feet. Underneath the chalk occurs the deposit known under the name *mulatto stone*, the *green sand* of English geologists, which is a calcareous sandstone with disseminated spots of green earth. The next member of the secondary series is the oolite, which, however, does not appear any where in this district; for the green sand is found lying upon the *lias limestone*. Underneath the lias occur beds of *red and variegated marl, variegated sandstone* with gypsum, and from these issue *salt springs*. These four formations, which, together with the trap, form the whole mass of the hills belonging to the third system, cannot be estimated as possessing a less average thickness than from 800 to 1000 feet. The whole system appears at the north-eastern and south-western extremities to repose upon the *coal formation* and its accompanying rocks, and these on the transition or primitive rocks.* Coal occurs in Tyrone, at Coal Island and Dungannon, and in Antrim, near Ballycastle. Of these, the collieries at Ballycastle, which occupy an extent of not less than one English mile along the coast, are the most considerable. They have been long wrought, and were once in a more prosperous state than at present, as they used formerly to send from 10,000 to 15,000 tons of coal to the market yearly; whereas now the quantity exported does not amount to more than 1500 or 2000 tons. The coal of these districts is almost entirely what Berger calls slate coal. In one of the works, however, in Coal Island, a bed of cannel coal, six feet thick, is said to have been wrought.

2130. *The most remarkable minerals* of the alluvial kind found in this part of Ireland are the fossil woods of Lough Neagh, a sheet of water 132 feet above the level of the sea, about nineteen miles six furlongs long from N.W. to S.E., and forty-five feet deep at its centre. The wood is silicified, and in some specimens one extremity will be petrified, while the other remains in a ligneous state. The oak, the holly, and the hazel appear to have been the trees thus affected. It occurs in alluvium in the neighbourhood of the lake.

2131. (3.) *Connaught Coal District.* This district occupies a portion of the counties of Roscommon, Sligo and Leitrim, in the province of Connaught, and part of the county Cavan in the province of Ulster. Lough Allen, situated near the head of the river Shannon, forms a basin in the centre of the district.

2132. *A range of primary mountains*, varying in breadth from three miles to a quarter of a mile, extends from Foxford in the county of Mayo, to Colooney in the county of Sligo, and terminates two miles to the north-east of Manor-Hamilton, which may be viewed as the base on which the newer formation of this part of Ireland rests. This range of country is principally composed of mica slate, with some subordinate rocks. Benbo Mountain, near Manor-Hamilton, 1403 feet above the sea, may be cited as exhibiting an interesting display of the various primitive rocks. The summit, and about 800 feet immediately below it, are composed of a fine granular granite: the granite is covered on both sides of the mountain with gneiss, dipping in the direction of its declivity at an angle of 50°. At the base of the mountain, mica slate, with garnets, hornblende rock and hornblende slate, are seen. Large blocks of beautiful syenite, also of serpentine with embedded garnets, were found in a stream at the base of the mountain near Lurganboy. The western side of Benbo is traversed by a vein of copper pyrites, which was formerly wrought, but apparently to no great extent. Veins of iron pyrites also occur there.

2133. *Resting upon these old rocks in many places*, we observe the first or old red sandstone formation. A tract of this sandstone extends in Roscommon from west to east, from Derrynaslieve to Cashcarrigans, and in greatest breadth in a southerly and northerly direction, from Leitrim to the neighbourhood of Drumshambo. Resting upon this sandstone, forming the base of the coal district, and encircling it, is the mountain or carboniferous limestone. This limestone exhibits the usual character of the formations. The coal formations rests upon the limestone, and is the uppermost or newest of the secondary deposits met with in this part of Ireland. The external aspect of this coal district is described as being hilly and druary, and as extending in greatest length in a north and south direction, from Down Mountain to Keddue,

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* Patches *of old red sandstone* occur on the east coast between Ballygelly and Glenarm Bay; and also on the same coast to the southward of Gerron Point.

about sixteen miles, and in greatest breadth from the hills ab
teen miles. The area of the whole coal country within the
114,000 Irish acres; exclusive of Slieve Russel, which is d
by the limestone valley of Swadlinbar. The centre of the co
Allen, and different tributary streams besides the Shannon, w
straight but deep valleys, and divide the district into *four*
the coal series in the Connaught coal district are similar to
fields. Besides coal, which is the *black bituminous species,* th
flag, slate clay, bituminous slate, clay ironstone, and fire clay.
in the 100 parts, 71·42 carbon, 23·37 bitumen, and 5·21 gr
per annum of the collieries of the southern and western di
district is about 1300 tons. In these divisions there are but
which is worth working. Yet this single bed, though but thr
great superficial extent, sufficient to supply the county with
estimated quantity of coal in the southern and western division
tons.

2134. *The coal in the northern and eastern divisions of the*
occurs in beds which are by no means so considerable, nor
western and southern divisions.

2135. *Iron-works.* The beds of clay ironstone that occur
coal district appear, at an early period, to have attracted the at
on a very small scale, called *bloomeries,* were carried on in
country, as long as any wood remained to supply them with c
not been discovered. The iron-works of Drumshambo we
be worked; they were given up about the year 1766. T
was chiefly collected from the eastern shore of Lough All
veyed by boats to the works; and charcoal, from the extens
flourished in all the valleys, was conveyed by the same means.
iron was quarried close to the works. The smelted iron
carried to the neighbouring village, where it was forged into
established at Avigna. At that time the practicability of s
coal, or coke, instead of wood charcoal, was well known in
Avigna iron-works, being the only ones ever erected in Irela
attracted great attention; and their want of success has in cons
a minute examination made on the spot, the quality of a
found excellent of their kind; and, although the cost of each
was greater than might have been by better management,
quality could have been manufactured at Avigna for 3*l.* 4*s.* p
pig-iron, greatly inferior in quality, sells in Dublin at the ra
times these mines will be resumed.

2136. (8.) *East of Ireland.* This district extends nearly
and between sixty and ninety miles from east to west, compr
the island. It is bounded on the east by the Irish Channel,
mountains which confine the Suire and the Shannon, and on th
Louth and the mountain limestone hills of Meath, the clay slat
tain limestone of Longford, and by a line produced from thenc
landscape of Ireland there is one very remarkable feature, w
observer: in traversing most parts of the island, we meet w
mountainous and hilly tracts, in some degree isolated, while
generally occupied by a surface that appears nearly level, wh
but which is found, on a nearer view, to present a gently
expansion of the plain occupies the central counties of Irelan
from Dublin Bay on the east, to Galway Bay on the west; a
plain surface occurs, the immediately subjacent rock is mou
ance of which mineral, next to the mild temperature and g
the soil of Ireland is probably more indebted for its superior f
It is a fact deserving of notice, that, with the solitary exce
county in the island in which limestone rock, either secondary,
be found; but the primary limestone appears in a great meas
ties of Sligo and Galway on the west, and to Donegal, Der
north.

2137. *In this district* mountainous and hilly tracts arise ab
plain, on the east, the south, the west, the centre, and the nor
from the north side of Dublin Bay to the confluence of the
south. The highest point is Lugnaquilla, which is 3070
Dublin Bay. It consists almost wholly of primitive and transi

ing species occur: granite, mica slate, quartz rock, clay slate, greywacke, trap and porphyry. Metalliferous minerals are wanting on the west side of the granite chain, but abound on the east side. In the granite and mica slate districts there are veins of galena or lead glance; of these the most considerable are in Glenmalur; in the clay slate tract eleven different metallic substances have been met with, viz. gold, silver, copper, iron, lead, zinc, tin, tungsten, manganese, arsenic, and antimony.

2138. *Native gold* occurs in the Ballinvalley streams at Croghan Kinshela: it was accidentally discovered, and at first was kept secret; but being divulged, almost the whole population of the immediate neighbourhood flocked in to gather the precious metal, actually neglecting, at the time, the produce of their own fields: this happened about the autumn of the year 1796, when several hundreds of people might be seen daily assembled, digging and searching for gold in the bank and bed of the stream. Considerable quantities were thus collected, this being, as it afterwards proved, the most productive spot; and the country people remained in the undisturbed possession of the place for nearly six weeks, when government determined to commence operations. Regular steam-works were soon established; and up to the period of the rebellion in May, 1798, when the works were destroyed, government had been fully reimbursed its outlay, and left a surplus in hand. In the year 1801, regular mining was commenced, but which, on the whole, did not lead to any important results; and after a time, as no gold was found in the solid strata, and as the alluvial deposits afforded no return sufficient to defray expenses, the working was given up. The gold of Croghan Kinshela occurred in grains and masses from the smallest size to lumps of considerable weight; one piece weighed twenty-two ounces, another eighteen ounces, a third nine ounces, and a fourth seven ounces. The gold was found in alluvium, accompanied with other metallic substances, as magnetic iron ore, iron glance, red iron ore, brown iron ore, iron pyrites, *tinstone*, wolfram, grey manganese ore, and fragments of quartz and chlorite. In some specimens the gold was observed ramified in slender threads through the wolfram, and in others incorporated with iron ochre: some of the gold was crystallised in octahedrons, and also in the elongated garnet dodecahedral form.

2139. *The total amount of gold* collected by government amounted to 944 ounces, 4 pennyweights, and 15 grains; of which 58 ounces, 16 pennyweights, and 1 grain were sold at 4*l.* per ounce, amounting in value to 236*l.* 16*s.* 8*d.* The remaining 885 ounces 8 pennyweights, 14 grains was melted into ingots, which weighed 848 ounces, 18 pennyweights, 5 grains: hence the loss in melting was 36 ounces, 10 pennyweights, 9 grains; or nearly 4¼ per cent., which arose from the disseminated particles of grain. The ingots produced from 21⅝ to 21¾ carats of fine gold, the alloy being silver; and they were bought by the Bank of Ireland at prices varying from 4*l.* 0*s.* 6*d.* per ounce to 4*l.* 2*s.* per ounce, amounting in value to 3438*l.* 17*s.* 3½*d.* Hence the aggregate value of the native and ingot gold was 3675*l.* 7*s.* 11½*d.* Native gold was also found in Croghan Moira mine, about seven miles distant from the former mountain, but in small quantity.

2140. *The copper mines of Cronbane and Tigrony*, in this district, are situated in clay slate and quartzose clay slate. The ores, which are copper pyrites and black copper ore, are associated with iron pyrites, and rarely with galena; and auriferous silver occurs in beds in the slaty strata. In the twelve years ending in 1799 the mines of Cronbane had yielded 7533 tons of ore, which produced 670 tons 11 cwt of copper. In the next twelve years, ending in 1811, the produce was 19,342 tons 13 cwt. of ore; yielding 1046 tons 10 cwt. of copper. The mineral waters flowing from the mines are impregnated with blue vitriol or sulphate of copper. These waters are received into tanks, in which the muddy particles are allowed to subside. The clear waters are then passed into pits filled with plate and scrap iron, which occasions a precipitation of the copper. In this way 442 tons 11 cwt. of this precipitated copper (mixed with oxide of iron) have been obtained, which sold on an average for 27*l.* 8*s.* 9*d.* per ton, being in aggregate value 12,126*l.* 18*s.* 1½*d.*; while the consumption of iron was only 429 tons 14 cwt., or less than one ton of iron to the ton of precipitate; being in aggregate value 2620*l.* 18*s.* 2*d.* Sulphur was extracted on the spot from the copper pyrites, and during the war sold at the rate of between 20*l.* and 30*l.* per ton.

2141. *The other tracts of this district* are composed of secondary rocks, more or less deeply covered with diluvial and alluvial deposits. The secondary rocks are *old red sandstone*, *mountain limestone*, (or, as it is called in Ireland, Irish limestone,) and the *coal formation*. Of these formations the mountain limestone is by far the most abundant; indeed, with the exception of the counties of Derry and Antrim in the north, and Wicklow in the east, there is no county in the island in which it does not prevail more or less. The coal formation, the most interesting of the secondary deposits, occurs in what is called the *Leinster coal district*. The sandstone, slate, ironstone, clay, and coal, which constitute the series, alternate with each other, and the whole rests on the mountain limestone, and is frequently disposed in the basin shape. The coal of this district is *glance coal*, the blind coal of miners, the anthracite of French geologists, the Kilkenny coal of some authors (so named because the

town of Kilkenny is situated in this coalfield). Fire-dan
Leinster coal tract.

2142. *The most interesting alluvial phenomena* are those exhil
granite blocks, and the vast peat bogs. The great limeston
ridges of limestone gravel. Sometimes these ridges appear like
forming a continued line of several miles in extent. That w
the Queen's County, is a remarkable instance of this kind; ar
ridges occur also in the counties of Meath, Westmeath, Kildar
the limestone field, in which the limestone gravel and sanc
arrangement, the alternate beds being very distinct from
surface thus produced, as Mr. Weaver remarks, seems to h
those extensive tracts of peat bog which cover so considerabl
of Ireland.[*] The natural course of springs and streams b
and pools of water were formed; thus promoting the growth
and rushes, which, by their constant increase and decay, app
bogs of Ireland. In this manner it is conceivable that
time have become entirely filled with peat; and that peat
acquired a convexity of surface, or at least that greater decl
distinguished. The average depth of these bogs is commo
feet, but some reach from thirty to thirty-five feet, and the
seven feet. In the same manner we may conceive the grad
successively extended from the higher regions to the flanks, a
tains. That fallen forests were not the primary origin of the
the circumstance that two and even three successive growths
different depths in a section of the same bog. In these insta
frequently crossing each other, and either attached to their r
latter case the stumps usually stand erect where they grew.
ever, may to a certain extent have acted as an auxiliary in
bogs; and this prostration appears in general to have take
cay, or from trees possessing little hold of a wet spongy
storms. This may partly account for trees of all ages being
whether these bogs be situated in plains, or form the imn
tracts. That Ireland was once covered by extensive fores
chains, can scarcely be doubted; for, independently of the
bogs themselves of the growth of trees, numerous stools
yet remain in most of the mountain districts, which requir
produce vigorous shoots. The universal destruction of the
to be attributed to the general introduction of iron furnace
of consuming the timber, then a material esteemed of litt
total neglect of copsing those tracts in which the woods had
ancient charcoal hearths are still plainly to be distinguished
cular surface, scattered over the rapidly shelving sides of
other glens, when we look down upon them from a consider
so frequently met with in these peat bogs are curious in a s
sionally containing remains of that splendid animal the fos
extinct species are not, according to Mr. Hart, confined to
gravel; and the late Mr. Edgeworth observed the remains
marl as that which contained the extinct species.

2143. (4.) *South of Ireland.* Under this division we c
Kerry, Clare, Waterford, Tipperary, and part of Galway.

2144. *This mountainous, hilly, and diversified region* is
ing generally a direction from east to west, and attaining
mountains of Kerry, where Gurrane Tual, one of Macgill
(the highest land in Ireland), is 3410 feet above the sea. T
are chiefly of the transition class: they decline gradually
pass under the old red sandstone and mountain limestone
following may be considered a general estimate of the geog
of Ireland: —

2145. *Transition rocks.* In Kerry, the transition strata r
to the north and south, with vertical beds in the axes of the
minish in inclination on each side, form a succession of
Neptunian, the Plutonian being comparatively rare. The
compound; the simple are *clay slate, quartz rock, hornston*
the compound are, *greywacke, greywacke slate, sandstone.*
stone and *porphyry.* Organic remains occur in the limest
more frequently and abundantly in the limestone than in

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[*] Peat is estimated to extend over a tenth of th

these fossils consist of a few bivalves, and some crinoidal remains; and these also are most numerous in the Mucruss and Killarney limestones. At the foot of the Slievemeesh range this limestone includes asaphus caudatus, calamine macrophthalma, with orthoceratites, ellipsolites ovatus, ammonites, euomphalites, turbinites, neritites, melanites, and several species of terebratula, spirifer, and producta. Near Smerwick harbour similar organic remains are abundant in slate and greywacke, together with hysterolites, and many genera of polyparia.

2146. *Transition coal.* All the coal of the province of Munster, except that of the county of Clare, is referable to the transition class. At Knockasartnet, near Killarney, and on the north of Tralee, there are three beds of glance coal, alternating with strata of greywacke and slate. In the county of Cork this glance coal is more abundant, particularly near Kanturk, extending from the north of the Blackwater to the Allord. The ravines of the latter river, and various other defiles, expose clay slate, greywacke, talc, and sandstone, in nearly vertical strata, ranging from west to east. This transition tract extends to the river Shannon on the north-west. As the strata range from west to east, in a series of parallel narrow troughs, the strata exhibit great variety of inclination, dipping rapidly either to the north or south, and becoming horizontal between the ridges. The glance coal is raised in sufficient quantities for the purpose of burning the limestone of the adjacent districts; the most considerable collieries, those of Dromagh, have yielded 25,000 tons yearly, at from 10*s.* to 15*s.* per ton.

2147. *The coal and the strata* with which it is accompanied abound with impressions of equisetæ and calamites, and afford some traces of fucoides. Beds of glance coal also occur in the county of Limerick, on the left bank of the Shannon, north of Abbeyfeale, and at Longhill; and on the right bank of the river at Labbasheada. The transition rocks of Kerry and Limerick extend into Cork and Waterford.

2148. *Mines.* Copper mines occur in limestone in Ross Island in the lake of Killarney. In the county of Cork, there are copper mines at Allihies, Audley, and Ballydehol; and others, producing lead, at Doneen and Rinabelly. The mine at Allihies is one of the richest mines in Ireland; it was discovered only in 1812, and has already yielded more than 2000 tons of copper ore annually. The ore occurs in a large quartz vein, which generally intersects the slaty rocks of the country from north to south, but in some places runs parallel to the strata. It is remarked that all this portion of the county of Cork indicates a very general diffusion of cupreous particles, so much so that, in the year 1812, there existed a cupriferous peat-bog on the east side of Glandore harbour, forty or fifty tons of the dried peat producing when burnt one ton of ashes, containing from ten to fifteen per cent. of copper. The lead mines of Doneen and Rinabelly are in slate.

2149. *Coal formation of Clare.* The transition clay slate of this county is bordered by a zone of old red sandstone, to which succeeds, in ascending order and conformable position, the mountain limestone and coal formation, both of which occupy flat and undulating hills, and the strata are nearly horizontal. The best sections are seen in the cliffs on the west coast, where bituminous shale, slate clay, sandstone, and sandstone flag rest upon limestone. Coal, however, is of rare occurrence, and when found is of indifferent quality.

2150. *As in every other part of Ireland, the district abounds with alluvial deposits.* In regard to the distribution of the older of these, or the diluvium in the south of Ireland, it is remarked, — 1. That boulders, gravel, and sand, derived from the transition rocks, are distributed along the borders and sides of the mountains in Kerry. 2. In a small district of Limerick and Tipperary, situated between the Gaultees and Slieve-na-muck, the rolled masses consist not only of portions of contiguous rocks, but contain also porphyry, which is not to be found *in situ* near the vicinity of Pallis Hill. 3. In the peninsula of Nenville, near Galway, the surface of the mountain limestone is strewed over with numerous boulders of red and grey granite, syenite, greenstone, and sandstone, which must apparently have been conveyed from the opposite side of the bay of Galway.

Sect. III. *Historical Geography.*

2151. *The earliest inhabitants* of Ireland may undoubtedly be regarded as the original stock from which the native race now existing has sprung; for that country, though subdued, has never been exposed to those desolating migratory inroads which have changed the face of the rest of Europe. This race, by the language still spoken, appears to have been Celtic. It is highly probable that the Carthaginians may have founded colonies there; this conjecture being much supported by the remarkable circumstance, that a fragment of the Punic language preserved in Plautus coincides almost exactly with the modern Irish dialect.

2152. *The Romans,* in occupying all Britain, could not fail to acquire much information relative to Ireland; and accordingly we find that the map of that country by Ptolemy is less defective than the one which he gives of Scotland. Tacitus even mentions the scheme

formed by Agricola to conquer Ireland, that every temp
removed from the view of the Britons. The pressure of u
the execution of this sweeping scheme of subjection; and
in Ireland give intimation that their mighty empire ever ext
of *Ierne*. About the fourth century, we find Ireland bear
the leading people on its eastern shore, who, afterwards p
themselves masters of all Caledonia, communicated to it
withdrawn from the country to which it originally belonged

2153. *The Danes*, during the height of their power, fr
turies, not only ravaged but possessed almost the whole e
Dublin their capital. Before this time Ireland had been
number of celebrated monasteries had been founded, the tens
even over Europe, for their piety and learning.

2154. *The English sway* commenced in 1170. Richard
as a private individual formed the first settlement; but Her
"lord of Ireland." The range of dominion was long res
dom enclosed within what is called the English pale, wit
still under the rule of their native chieftains. Henry VII
Ireland," but without any material extension of his authorit

2155. *The Irish massacre* was a dreadful outrage, to whic
for national independence united in impelling a proud and
English settlers are supposed to have perished, and the
Cromwell, however, afterwards crossed the Channel, and m
principal fortified towns, and reduced Ireland under more fu
disposition of the people remained the same; and when James
throne, he was received with enthusiasm in Ireland, and b
The battle of the Boyne, followed next year by that of Aug
pire, and more especially of Ireland, which then felt for the
quered country. The estates of many principal native p
William, who introduced into Britain the system of full tole
with respect to Ireland. The Catholics were deprived of all
rendered incapable of holding any office or employment i
even from holding land, from devising property, and from
tions of civil society. Under these severities they pertin
attachments together with their religious creed; and a con
broke out from time to time into partial rebellions.

2156. *The gradual emancipation of Ireland* commenced
war. Till that era England had denied to her the right of
nation; and had compelled her to export and import every
of Great Britain. The extremity, however, to which Br
leading powers of Europe leagued with America against
themselves in a formidable attitude; and by forming armed
threatening measures, they induced parliament to grant t
From this time also the most obnoxious of the restrictions
repealed, or fell into disuse; and before the end of last ce
every political privilege, except that of sitting in parlia
highest offices of state. The propriety of conceding these
questions which long divided the public mind.

2157. *A very formidable rebellion* broke forth, in spite of
revolution, which caused a general ferment in Europe,
Ireland. A society was formed of "United Irishmen;"
having in view the entire separation from England, and the
an independent republic. The vigilance of government,
their attempts to land a force of any magnitude, prevented
extremity, till 1798, when a violent insurrection arose i
Dublin. The rebels, though zealous and brave, being w
successive encounters with much inferior bodies of regulars
ported by French aid, were completely put down in a fe
however, produced by the tragical events of this short pe
in the minds of the Irish, and to aggravate the evils u
soothe this irritation, another expedient was employed, which
of Ireland.

2158. The difficult and reluctant *union of the two kin*
Mr. Pitt. Ireland gained thus considerable commercial adv
of Scotland, it was hoped that a gradual tranquillity would
has not yet been fulfilled. The peasantry of the south, in
religious animosity, and by the severe privations under whi

if not in open rebellion, at least in a state of turbulence constantly tending towards it; and their discontents have been increased by the indiscreet zeal of the Protestant party.

2159. *The bill for Catholic emancipation*, so unexpectedly introduced, in 1828, by the Duke of Wellington, and carried after such a violent ferment of parties, has made a remarkable change in the political constitution of Ireland. The political disabilities under which the Catholics had hitherto laboured have been finally removed. They are made admissible to the highest offices of state, with the exception of that of lord chancellor; an exclusion decided upon, not so much on account of the dignity of that office, as the extensive church patronage attached to it. Roman Catholics are also made admissible to sit in both houses of parliament, and to every other political privilege enjoyed by their fellow countrymen.

Sect. IV. *Political Geography.*

2160. *The political evils* under which Ireland labours will sufficiently appear from the foregoing survey of her history. From the earliest times she has been in the situation of a conquered country, without ever becoming reconciled to the yoke, or assimilated to the ruling nation. Within the last two centuries, her devoted adherence to a religion which had been renounced by her rulers, has had a most fatal tendency, which we may however hope to see much mitigated by the healing measures that have now been adopted. In consequence, also, of repeated scenes of rebellion and forfeiture, by much the greater part of the lands are in the possession of English and Protestant proprietors, who, having no natural influence over the occupiers of their estates, hold their place only by the hated tenure of dominion and law. Being connected with the country by no natural ties, and attracted by the superior brilliancy of the English and French capitals, most of them quit Ireland, and become habitual *absentees*. When the Scottish Highlanders arrayed themselves against the government, they acted under the influence of a few leading chiefs, whose interests and passions afforded a lever by which the people could be moved. But the Irish people, deprived of any such guidance, chose their leaders from among themselves, or from those who courted their favour by fostering all their national propensities. Secret associations, party badges, mysterious names, have exerted an influence over their minds, the extent and nature of which it is impossible to calculate.

2161. *Ireland, like Scotland, has been united to England*; yet it retains somewhat more of the aspect of a separate kingdom. A lord lieutenant still displays a portion of the state and exercises some of the functions of royalty. He has not only a household establishment, but a chancellor, a secretary, and other ministers of state. The courts of justice, and the different orders of magistracy, are nearly on the same footing as in England; yet they have not the reputation of exercising their functions with quite the same dignity and impartiality. The violence of party spirit acts upon judges, and still more upon juries; and in the country, the absence of great proprietors, and the want of any middling class, render it difficult to find materials for a respectable and effective magistracy. Ireland sent to the Imperial parliament 100 members of the House of Commons, of whom 36 were for cities and boroughs, and 64 for counties, which latter sent two members each. The large proportion of this latter class was expected to render the representation more respectable; but, unfortunately, the low qualification required, amounting only to 40s., enabled the great proprietors to split votes among their numerous little tenantry to such an extent as almost to produce universal suffrage. The very system of letting farms on leases for lives, which confers the right of voting, extended that right to almost every tenant. This could scarcely be said to confer the real right of suffrage, as the dependence of the tenants was almost always such as to enable the landlord to dictate their vote; though in late elections, the influence of the priests was in several counties successfully exerted. To remedy these evils, the same act which removed the disabilities of the Catholics, raised the qualification of freeholders in Ireland from 40s. to 10*l.* a year, and thus reduced them to less than a third of their former number. Many also of the principal boroughs, as Belfast, Wexford, Cashel, Sligo, Dundalk, Enniskillen, were entirely close, the members being chosen by twelve self-elected burgesses; while, in others, the whole ground on which a borough stood belonged to the nearest great proprietor. The consequence was, that an oligarchy, formed by the possessors of those vast properties into which the greater part of Ireland is divided, held an almost unlimited sway over the country. Previous to the union, the influence of the three houses of Beresford, Ponsonby, and Foster was such, that the aid of one, and, if possible, two of them, was necessary for carrying on the measures of government. That influence, however, has been on the decline, and there is no prospect of its renewal.

2162. *The Reform Bill* gave to Ireland only five additional members, and it made no material change in the returning boroughs; but, by placing the election in the hands of all householders paying 10*l.* annually, it rendered those nominations open which had formerly been made by the small number of individuals composing the corporation.

2163. *The naval and military force* of the empire in general defends Ireland. There is a commander of the forces resident in Dublin; acting, however, under the orders, not of the lord

lieutenant, but of the British commander-in-chief. The
tioned at different points varies according to political circu
always be considerable.

2164. *The revenue* levied in Ireland, notwithstanding
some respects been treated, has never borne the same propo
that of England. The rates in all the principal articles
The tax on hearths, however, was found very oppress
visits, and affected the lowest of the people. This and all
irregularly levied, that, notwithstanding the discontent
more than cover the expenses of collection. For this re
cellor of the exchequer, they were entirely remitted.
vember, 1657, the revenue amounted to 137,558*l.* In 17
nine months, to 805,015*l.*, and continued to increase; but
greater proportion, so that, in 1715, it became necessary
This was at first to the extent of only 50,000*l.*: in 1731,
in 1763, it was still only 521,000*l.*, nor did even the An
3,186,000*l.* The revenue after this period was greatly in
956,000*l.*, and on the 25th March, 1800, having risen to 2,
last date was 25,662,000*l.* At the union, the stipulation was
seventeenths of the whole expenditure of the empire. Un
since occurred, this arrangement has led to a continual inc
In 1811, the former amounted to 77,382,000*l.*, and the la
gross receipt was 4,298,154*l.*, the net receipt (deducting
The charges of collection, however, were 603,690*l.*, which
net payments into the exchequer to 3,515,296*l.*

2165. *The particulars of this revenue were*: —

	£	
Customs	1,579,183	Post Offic
Excise	1,975,867	Fees, &c.
Stamps	488,296	

The following were the leading articles: —

	£	
Ashes	6,540	Coals
Auctions	10,883	Salt
Barilla	13,746	Spirits
Cocoa and coffee	18,500	Leather
Hemp	5,949	Malt
Bar iron	3,894	Paper
Glass	18,421	Licences
Hides	25,524	Quit rents
Pepper	13,570	Deeds and
Salt	12,411	Bills and
Seeds	13,936	Newspape
Foreign spirits	7,500	Advertise
Home-made spirits	1,481,206	Insurance
Sugar	418,704	Legacies
Tea	445,271	Game cert
Tobacco	750,500	Law fund
Wine	185,158	Chancery
Wood	144,700	

In the last finance account the heads of customs not being distinguishe
are those of the preceding year.

The debt on the 5th January, 1831, amounted to 32,131,424*l.*, the cl
wards its extinction there was a sinking fund of 183,000*l.*

2166. *The expense of collecting the Irish revenue* is very large: in 18
the produce; the rate being, on the Customs, 19*l.* 17*s.*; on the Excis
on the Post Office, 49*l.* 12*s.* per cent. As most strict investigation, how
have been incorporated with those of England, and a variety of chang
The expense of collecting the Customs has thus been reduced, in 183
Stamps to 5*l.* 14*s.*; and the Post Office to 40*l.* 6*s.* per cent.

2167. *For local and patriotic objects* in Ireland, very considerable sum
Of these, for the year 1832, there appear the following: —

	£	
Schools and Education	30,000	Female Orp
Protestant Charity Schools	3,000	Roman Cat
Foundling Hospital	26,314	Royal Dubl
Four other Hospitals	10,045	Belfast Aca
House of Industry	21,192	Nonconfor
Richmond Lunatic Asylum	1,588	Public Wor
Hibernian Marine Society	960	Dunmore

SECT. V. *Productive Indus*

2168. *Ireland, in this respect, has long presented* a pain
of her people being involved in extreme and squalid
enterprise, or even industry; but various causes have
the scale of improvement. Among these we are mort

long held by Britain must be considered as prominent. Mr. Newenham has given a sad catalogue of the measures taken to suppress the rising industry of the sister country. In 1698, on a petition of parliament, King William was pleased to say:— "Gentlemen, I will do all in my power to discourage the woollen manufacture of Ireland." Accordingly, after several milder expedients had proved ineffectual, it was absolutely prohibited, under the penalty of 500*l.*, and forfeiture of the ship and cargo, to export woollens to foreign countries. Similar measures were taken with regard to glass, hops, and every branch in respect to which any rivalry was apprehended. There was one article, however, the production of a large surplus of which could by no means be avoided. This was black cattle and sheep; but the value of these was effectually cut down by the prohibition to import them into England, the only accessible market. Under these regulations, all the exertions of Ireland to better her condition were cramped, and while Britain was making the most rapid advances, Ireland continued in the same state of depression. However, in consequence of her spirited efforts at the end of the American war, and of the embarrassments of the British government, the most odious and pernicious of these restrictions were repealed. Further advantages were obtained at the time of the Union; and at present, when just and liberal principles on this subject have gained a full ascendency, every exertion is making to place the two countries in a state of perfect reciprocity. The consequence has been, that in the course of forty years, Ireland has made a rapid progress in industry and commerce; yet some of her greatest evils are so deeply seated, that they have scarcely yet begun to give way to the influence of a more auspicious system.

2169. *Agriculture*, that primary art, has been long in a backward and very depressed state. The farms were, for the most part, small, managed by the farmer himself and his family, destitute of capital, with wretched implements, and with a pertinacious adherence to all the obsolete practices of a rude age. The plough was generally of the most imperfect construction; the mould-board straight, the coulter blunt; in its movement it raised continual obstructions to itself, to remove which required the incessant labour of the ploughman and of one or even two assistants. It is mentioned as the mark of a peculiarly inartificial state of things, that all over Ireland there was only one description of plough, while in England a great variety had been invented to suit the different species of soil. Four horses or bullocks were employed in some districts; but the animals were of deficient strength. The best soils exhausted a great portion of their strength in throwing up weeds, which no effective measures were taken to extirpate. The system also of infield and outfield was strictly adhered to, the ground being heavily cropped as long as it would yield any thing, and afterwards of necessity allowed two or three years to recruit. Although these defects still exist to a considerable extent, yet in all parts of the country, but particularly in the east and north, improved practices and implements are beginning to be introduced. The only obstacles, in fact, to the rapid improvement of Irish agriculture, are the disturbed state of the country, and the habits, so general amongst the occupiers of land, of subdividing their farms into minute portions. But there is reason to hope that the foundations of good order have been laid; and the landlords seem at length to have opened their eyes to the destructive consequences of the continued subdivision of the land, and are exerting themselves to counteract the practice.

2170. *The Irish tenures* are long, some of them perpetual, in which case they may be considered as property, the rent being a mere trifle; a lease of thirty-one years and three lives is very common. These long leases are attended with scarcely any of the benefits which might be naturally expected. As the farmer commences usually without any capital, trusting for the payment of the first year's rent to the produce of his farm, he almost always falls more or less into arrear, and thus lies at the mercy of his landlord. This would be less pernicious, were it the landlord himself with whom he had to deal; but the landlords of Ireland, holding usually properties of immense extent, and being mostly resident out of the country, cannot or will not undertake the task of dealing with this impoverished multitude of small tenants. They devolve it upon the intermediate agents and *middlemen*. The latter, a class peculiar to Ireland, take a large extent of ground, which they let out in small portions to the real cultivator. They grant leases, indeed; but as the tenant, from the circumstances above mentioned, soon comes under their power, they and the agents treat him with the greatest harshness, exact personal services, presents, bribes; and draw from the land as much as they possibly can, without the least regard to its permanent welfare. This system, while it crushes the tenant, is not less injurious to the landlord, into whose coffers there often passes less than one half of the sum paid by the tenant. The only use to which the latter turns his long lease is to divide and subdivide the lands among his children, till the share of each affords only the most miserable aliment, and an overgrown population is fixed upon the farm. An attempt to let land on a different footing can only be effected by the ejection of more than half its existing occupants, who in that case are apt to fly to violent and revengeful courses, so that even a partial endeavour to introduce such improvements has been a main cause of the existing disturbed state. Another injurious mode is that of partnership leases, in which a number of persons take a farm jointly, and make it

a sort of common property. Each is allowed to put upon it
collop consisting of one horse, two cows, or twelve goats.
introduced into leases, by which the occupant is bound t
without wages, or at a rate lower than ordinary.

2171. *Tithe* is one of the evils of which the Irish cultiva
Although it must in all cases fall ultimately on the landlor
the peasant the pig which he has reared, or the handful of
the support of his family, is an act peculiarly discouraging a
grass lands tends also to discourage tillage. Measures we
mote the commutation of tithes, and were attended with
late act arrangements are made by which this change m
the church rates, instead of being taken out of the farme
landlord out of his rent.

2172. *The extent of country, and the objects of culture* in
those of the sister kingdom. Its superficial extent is co
19,278,760 English acres. Of this, notwithstanding the com
for mountain, lakes, and bogs, Mr. Young calculates that
productive land than in England. The soil of Ireland is sh
of a thin sprinkling of earth over a rocky ground; but th
the sea, by which it is every where surrounded, produces a
in particular a brilliancy of verdure, not equalled perhaps
Such a country is of course highly favourable to pasturage;
the imperfect stages of culture, the rearing of live stock h
Irish husbandry. Its luxuriant plains are depastured by
from this source is derived the very large quantity of salt
southern ports. The number of oxen and cows annually k
oned at 18,000. This trade has considerably decreased sin
live cattle is extensively carried on. Great facilities have b
steam packets. The dairy is also a great branch of ind
cheeses, indeed, have acquired a reputation; but butter of exc
exported. Another species of live stock is an essential art
cultivator. The pig usually shares his cabin, and is fed, li
too great a luxury to be killed for his own consumption; bu
to be salted for exportation. Sheep are bred extensively o
unfit for rearing any other stock. In many places they are t
this last respect, however, goats are more productive; and th
tities in the mountain districts in the north. The Irish kno
horses of England, and do not esteem them equal to their o
and capable of doing much work upon little food. Poult
and round all the cabins, the interior of which they are ad
tremely favourable to their increase. Great quantities of ge
feathers, which are cruelly plucked from the animals alive.
large, notwithstanding the imperfect processes employed
barley were little raised till of late, when both the culture
been greatly extended. Still the main objects are oats and p
ject of a large export, the latter as the staple food of a consid
Irish boast of the potato, as if it were nowhere else produ
pared with grain of any kind, it certainly affords the means
lation upon a given extent of ground. The scope, however
plication of the people in miserable circumstances, is gene
economist as one of the causes of the present distress in I
product of Irish husbandry, affording the material of the
to a return made to the trustees in 1809, the extent sown w
which, the various little scattered patches raise the num
acres, supposed to produce at an average about 30 stones
stone, would make the entire value about 1,500,000*l*.

2173. *There is a want of trees in Ireland.* The immen
ago covered a great proportion of its surface, have fallen,
measure into moss or bog. The first step to improveme
away of its primeval forests; but in this instance, as in m
mitted of sweeping them away entirely. The peasantry w
steal the timber, which gave occasion to a very severe law,
vidual to have a stick in his possession for which he could
found around the mansions of the great proprietors; but,
too little attention has been paid to the rearing of wood as a

2174. *The bogs of Ireland present an extensive obstacle to c* by the parliamentary commissioners at 2,330,000 English acres. From them, indeed, fuel is supplied to many districts which would otherwise be destitute of that accommodation; and many have no other timber than that which is dug entire out of the mosses: yet the draining of a large portion would be certainly desirable; and the commissioners seem to think that, from their generally elevated position, this might be done with great facility and advantage. They estimate that 36,000 acres of the Bog of Allen might be drained for 147,000*l.* Mr. Wakefield seems somewhat sceptical upon this point, and observes that, the vegetable substance of the English fens being entirely decomposed, the moment a fen is drained it yields the most luxuriant crops; but that of the Irish mosses, being in an elevated position, retains its component parts in a great measure unchanged, and could with greater difficulty be converted into soil. The great quantity of water beneath these bogs causes often a singular phenomenon, that of moving bogs. Bursting the surface, the bog inundates the surrounding lands, spreading desolation and barrenness through its whole course, which in one instance extended no less than twenty miles.

2175. *In respect to manufactures*, the state of Ireland cannot be described as flourishing; a misfortune for which it has appeared that she may justly accuse the oppressive policy of England. One species of fabric, however, she has been allowed and even encouraged to cultivate, and it has attained to a very considerable magnitude.

2176. *The linen manufacture was first introduced by the Earl of Strafford*, who brought flax-seed from Holland, and workmen from France and the Netherlands. He expended 30,000*l.* of his private fortune in this patriotic object. His attainder, and the subsequent troubles, suspended the undertaking; but it was revived by the Duke of Ormond, who established near Dublin a colony from Brussels, Jersey, and Rochelle; gave lands on advantageous terms to those willing to embark in the business; and, though he had to struggle against indolence and inveterate prejudice, had the satisfaction to leave it in a promising state. After the Revolution, the English parliament, as linen was not supposed to interfere with any branch of English industry, created a board for its promotion; they also, in conformity with the spirit of the times, granted bounties both on the raising of flax and the export of linen. These exertions have met with great success; and the manufacture has become general throughout Ireland, and particularly in Ulster. The following, according to a late parliamentary report, was the reputed value of brown or unbleached linens sold in the markets of Ireland in the year 1824: —

Ulster	£2,109,309
Leinster	192,888
Munster	110,421
Connaught	168,090
Total	£2,580,708

2177. *The mode of conducting this manufacture* is, however, in several respects, very rude and imperfect. It is generally practised by individuals holding little spots of ground, the culture of which they combine with that of weaving. The same person, or at least the same family, in many cases raises the flax, dresses it, spins it into yarn, and weaves it into cloth. There is too much anxiety to obtain the greatest possible quantity of yarn out of a given quantity of flax, without regard to the quality; and the sorting of the yarn, so that it may be of an uniform texture, suited to the kind of linen intended to be woven, is almost wholly neglected. In some instances, however, it is worked to a most extraordinary degree of fineness. Anne M'Quillin, in the county of Down, could spin 105 hanks to the pound, which would reach 214 English miles. Exertions have lately been made to introduce mill-spinning, which, it is supposed, would generally improve the quality of the yarn, though it could not produce it of such extreme fineness as some of that spun by the hand. Twenty years ago the mill could not produce above fifteen cuts to a pound; now it can make nearly fifty.

2178. *The export of linen from Ireland*, in the year 1824, amounted in all to 49,491,037 yards, of which 46,466,950 were to Great Britain; and 3,024,087 to foreign parts. The real value of the whole was 2,412,858*l.* Of that sent to Great Britain, 31,314,533 yards were retained for home consumption; the rest were re-exported to the same quarters as Scotch linen. This great manufacture is chiefly supported by its own growth of flax. Ireland, however, imports 25,000 tons of hemp from abroad, and 3300 from Britain; also about 7500 tons and 1000 tons of linen yarn; of all which materials the value falls short of 45,000*l.*

2179. *Distillation* is another branch of industry characteristic of Ireland, but by no means attended with the same happy effects. It has hitherto been carried on chiefly in defiance of the revenue and government, and has given birth to a vast system of contraband, equally destructive of morals and of public order. All the mountains, bogs, and deep valleys of the north and west abound with illicit stills, in spots where the most diligent search can scarcely discover them; and where detected, they can scarcely be seized without the aid of an armed force. When the troops are seen advancing, concerted signals are made, and the small light stills are soon conveyed to a distant quarter. The farmers and proprietors encourage illicit distillation as the most ready mode of affording a market for their grain.

The quality of the spirit was long much superior to that pro
owing to the injudicious restrictions imposed on the latter ; s
sidered the highest possible recommendation to give assuranc
Even in the regular distilleries established in the great cities,
think that, through a purchased collusion on the part of the
the produce paid duty. He calculates the entire loss on them
the illicit distillation nearly as much ; so that, instead of a r
ought to have entered into the treasury, the amount was only
laws were enacted in vain, for they only rendered the people co
desperate and determined. Of late, however, the system has
the duty, as in Scotland, has been reduced to 2s. a gallon, and
and the strictest measures have been taken to put a stop t
the revenue. The effect has been remarkable ; the quantity c
from 1818 to 1822 varied from 3,000,000 to 4,000,000, ro
in 1832 to 8,657,000 ; thus warranting a presumption, tha
of this article has been greatly diminished ; yet doubts may
ness of a commodity of which the excess is so pernicious be c
country.

2180. *The killing and salting of beef and pork for sale* forms
merce. During the American war, the number of oxen and
to about 50,000 annually ; but Mr. Wakefield supposes ther
18,000 ; partly owing to the extended tillage, and partly to th
of live cattle. Each animal is found to produce upwards
stones of tallow, and nearly one cwt. of hide. The despatc
slaughtered, the meat cut up and salted, and afterwards pack
is packed in three different forms, called planter's beef, Ind
the first two, having the coarse pieces taken out, and cha
While the export of salt beef has diminished, that of pork has

2181. *The cotton manufacture*, since 1822, has spread th
prising manner, particularly in the counties of Antrim, Down,
The coarser linen fabrics are disappearing before it, and pr
southward, retaining still an equal hold of the kingdom in
fabric has rather declined, and linen has regained the ascenden

2182. *The other manufactures* are not of primary importanc
is, indeed, worked up by the peasantry into frieze, linseys, an
use ; but the only fabrics on a great scale, which are those
Shannon, and of flannels at Kilkenny, are on the decline. Br
in the principal towns, and are rather in a flourishing state.
surplus of hides, the want of bark and of skill prevents tanni
great extent, and they are chiefly exported raw.

2183. In the *distribution of minerals*, Ireland has by no mea
unpropitious circumstances have prevented any of them from b
Of these impediments the most material is the want of a su
The most extensive depository is that of Kilkenny, which exten
but, besides the great expense of working, the sulphureous
evolved during ignition render it both disagreeable and unw
fuel only by the peasantry. It is fitted, however, for the use
The principal work is at Castle-Comer, where about 40,000 to
coal of Leitrim has absorbed a large capital, but does not p
The fuel of Ireland is in general either coal imported from E
turf dug out of its immense bogs ; but the latter has not yet
fusion of metals. From these causes the veins of iron ore, w
fused through the island, have not yet been turned to any impo
of fine quality, which is found in the counties of Wicklow and
Swansea to be smelted. The lead, however, of Wicklow is wo
with imported coal.

2184. *Fishery* is a branch of industry for which the exten
Ireland would be peculiarly adapted. Nor do the inland wat
abound in the species of fish appropriate to them. The diliger
for immediate consumption is considerable, being urged on by
other food which their Catholic profession enjoins. Their t
guished both for size and taste : the salmon are caught by
contrivances, but with so little precaution that their number
The eels also are delicate, and attain a great size ; and the us
partially known on this side of the Channel, is very general.
considerable injury by flooding the adjoining lands. Dublin

obtain a regular supply of sea-fish, though at prices so high as to place the consumption beyond the reach of the lower orders. The curing of fish has made very little progress, when compared with the opportunities which the coasts of Ireland afford. In 1809, Parliament appointed a Board of Commissioners for the promotion of Irish fisheries, placing at their disposal a sum of 5000*l.* to be employed in erecting small piers, fitting out commodious boats, and providing other facilities. Since that time, the curing of fish has made considerable progress, though Ireland still cannot come into any sort of competition with Scotland. In 1824, the herrings produced by the coast fishery amounted to 34,201, on which was allowed a bounty of 6726*l.* The open sea fishery produced 7638 barrels, on which a bounty was given of 17,300*l.* There were also cured 2934 cwt. cod, 2645 cwt. ling, 9500 cwt. hake. The last is chiefly caught on the coasts of Waterford and Cork. There is supposed to be a most extensive bank, extending from its western coast as far as Newfoundland.

9185. *Commerce.* — With the exception of the linen manufacture, which has never been in a sound or healthy state, and which is now far surpassed by that of Scotland, the manufactured products of Ireland are quite inconsiderable. She has, however, very great facilities for the production of raw materials; and it is in all respects more suitable for her, as well as for England, that she should direct her efforts to this department, and import manufactured articles from Britain, than that she should attempt to enter into an unequal competition with the latter in manufacturing industry. Previously to 1806, there were several restrictions on the importation of corn from Ireland into England; but these were wholly abolished, and since that epoch her exports of corn to this country have increased from less than 400,000 to above 2,000,000 quarters! In 1825 the other restraints on the intercourse between Ireland and Great Britain were mostly abolished; and owing to this circumstance, and to the establishment of a regular intercourse by steam packets between Liverpool, Glasgow, Bristol, and the principal towns on the east and south coasts of Ireland, the trade between the two countries has been vastly increased. This has been productive of much advantage to both parties, but principally to Ireland; and, notwithstanding the agitation of which she is the prey, it is not to be doubted that she has made very considerable advances in the way of improvement within the last half dozen years. Owing to the trade between the two countries being now placed on the footing of a coasting trade, no account has been kept, later than 1825, of the reciprocal imports and exports of each, except in the case of corn. The following table gives, however, a sufficiently clear idea of the nature, extent, and progress of this great internal trade.

TRADE OF IRELAND.

9186. Imports into Ireland. — (From *Papers published by Board of Trade*, Part I.)

FROM ALL PARTS.	1801.	1805.	1809.	1813.	1817.	1821.	1825.
Ashes, pearl and pot, barilla cwt.	75,914	132,412	214,291	87,712	100,276	132,516	112,836
Flaxseed - - bushels	376,965	234,104	[illegible]	292,313	237,[illegible]	375,346	535,[illegible]
Timber, deal and deal ends gt. hund.	14,461	22,169	3,976	12,679	4,592	4,155	9,559
staves - —	31,213	41,979	56,327	20,581	43,041	24,611	43,457
eight inches square and upwards - loads	13,487	21,[illegible]	18,692	29,478	19,945	30,955	76,049
Iron, unwrought - tons	7,464	15,140	14,149	23,251	12,457	16,016	17,962
wrought, hardware and cutlery - value	£ 144,812	195,348	266,447	337,735	175,355	231,012	264,944
Haberdashery - - —	£ 57,[illegible]	83,255	130,339	155,119	77,497	95,550	337,218
Woollen manufactures, entered by the yard - - yards	2,096,959	2,489,516	3,426,859	4,498,431	2,315,556	2,070,770	3,384,918
of other descriptions value	£ 41,144	85,704	72,092	118,600	49,218	131,910	[illegible]
Woollen and worsted yarn, lbs.	17,181	46,628	533,906	1,342,935	653,948	777,717	579,061
Cotton manufactures, entered by the yard - yards	44,314	59,904	205,110	214,783	541,900	968,909	4,096,895
of other descriptions value	£ 152,496	211,782	238,101	254,719	176,072	234,482	30,932
Cotton yarn - lbs.	575,567	1,459,105	1,114,879	1,684,828	813,875	2,136,206	2,702,523
wool - - —	1,904,192	1,874,536	5,576,088	3,378,144	2,472,[illegible]	3,967,[illegible]	4,065,[illegible]
Silk, raw and thrown - —	60,034	88,457	82,415	104,186	60,009	58,[illegible]	62,138
Coffee - - —	983,780	203,957	680,316	991,144	739,506	245,425	335,981
Spirits, brandy and geneva Imp. gals.	379,439	96,000	184,218	34,670	4,154	21,749	9,108
rum - —	1,152,825	138,780	1,196,044	487,747	124,456	35,105	33,262
Sugar, raw - - cwt.	296,358	253,462	309,040	318,151	247,612	307,943	280,644
refined - - —	4,999	23,231	18,510	20,106	28,994	48,139	66,996
Tea - - - lbs.	3,495,801	3,267,712	3,291,093	3,522,942	3,141,665	3,466,999	3,589,[illegible]
Tobacco - - - —	6,941,946	5,480,122	8,047,052	2,520,555	4,465,790	2,714,[illegible]	3,[illegible]
Wines of all sorts Imp. gals.	1,172,166	962,464	1,316,104	941,431	386,456	548,579	918,940
Tallow - - - cwt.	21,188	39,444	5,391	19,514	13,307	20,243	186,147
Coals - - - tons	315,315	412,515	402,040	517,047	712,988	651,909	758,453
Other articles - value	£ 1,169,767	1,182,866	1,709,059	1,903,441	1,644,072	1,571,925	2,141,973
Aggregate official value of imports into Ireland from *all* parts - - -	£ 4,621,314	5,994,067	6,896,821	7,797,286	5,646,563	6,407,427	8,596,785
Aggregate official value of imports into Ireland from *foreign* parts - -	£ 1,350,964	1,927,250	1,580,264	1,050,932	923,797	1,068,590	1,547,849
Aggregate official value of imports into Ireland from *Great Britain* - - -	£ 3,270,350	4,067,717	5,316,557	6,746,354	4,722,766	5,339,836	7,048,936

2187. Exports from Ireland.

Articles being the Produce or Manufactures of the United Kingdom.			1801.	1805.	1809.	1
To all Parts.						
Corn and meal, viz.: —						
Barley	qrs.		-	17,229	26,588	19
Oats	—		129	223,234	828,458	8
Wheat	—		-	82,815	85,599	9
Other grain	—		1	5,302	3,023	
Wheat flour	cwt.		902	22,774	18,087	26
Oatmeal, &c.	—		2,524	34,297	90,948	10
Cattle and live stock —						
Cows and oxen	No.		31,664	21,941	18,335	4
Sheep	—		2,891	10,988	7,596	
Swine	—		1,968	6,383	4,712	1
Horses	—		818	4,186	3,441	
Bacon and hams	cwt.		21,161	95,073	167,192	23
Beef and pork	barrels		160,840	222,098	262,744	28
Butter	cwt.		304,686	294,415	385,953	46
Lard	—		2,049	6,333	16,282	2
Soap and candles	—		15,537	17,713	30,810	4
Flax, undressed	—		1,620	278	6,507	6
Spirits, Irish	Imp. gals.		178,092	819,970	60,457	11
Cotton manufactures, — entered by the yard	yards		1,256	8,956	34,998	9
of other descriptions	value	£	4,924	3,281	31,923	5
Linen manufactures	yards		37,911,602	43,683,533	37,166,399	39,02
yarn	lbs.		2,631,152	792,400	1,534,512	2,14
Other articles	value	£	192,259	211,184	302,843	28
Value exported to *all* parts		£	3,778,145	4,670,647	4,992,840	6,29
Value exported to *foreign* parts		£	426,076	469,569	625,415	1,13
Value exported to *Great Britain*		£	3,352,069	4,201,078	4,367,425	5,16

From the cause above stated, the subsequent accounts have been very
foreign parts were valued at 1,669,406l.; in 1831, they were 1,552,228l.
exports in 1831 were 608,936l.; in 1832, they were 452,775l. Within th
extraordinary increase in the quantity of grain and live stock imported f
former, on an average of 1830 and 1831, amounted to 545,618 quarters of w
oatmeal. In 1832, there were imported into Liverpool alone, 358,649 quar
quarters of oats, 309,434l.; 14,486 quarters of barley, 24,026l.; 69,024 co
74,290 sheep, 129,955l.; 24,077 lambs, 24,077l.; 169,817 loads of meal, 203,
10,771 bales of bacon, 64,626l.; 292,830 firkins, 15,861 half firkins, and 10,
with some minor articles, made up a value of 4,444,500l. The imports i
may be presumed to be as much more, and perhaps the whole may not f

2188. *The following table* exhibits the relative foreign commerce of
year 1824. We add the ships and tonnage belonging to and the amount
report enables us to bring down to 1829: —

Entered at	British.			Foreign	
	Ships.	Tons.	Men.	Ships.	Tons.
Belfast	100	19,123	1090	66	11,99
Cork	86	15,025	723	89	15,97
Donaghadee	5	229	24		
Drogheda	9	890	54	3	49
Dublin	198	24,306	1530	53	10,46
Dundalk	11	1,532	88	6	67
Galway	4	546	33	11	2,0
Kinsale	4	778	40	1	14
Limerick	29	5,223	269	16	3,4
Londonderry	23	3,293	183	32	5,47
Newry	40	6,705	367	43	7,61
Sligo	10	1,065	80	16	2,46
Tralee	3	490	27	2	38
Waterford	48	7,600	430	15	3,15
Wexford	11	1,409	77	1	23
Youghal	5	1,045	51	2	19

2189. *The shipping interest* of Ireland is on a very small
of the sister island. On the 31st December, 1830, she ha
which was 101,820, navigated by 7794 men and boys. In
five ships, of 1909 tons. There were entered inwards, in 1
tons; outwards, 9801 ships, 1,073,545 tons. Of this were
Britain, 13,584 ships, and 1,262,221 tons, inwards; 9029
in foreign trade, 915 ships, 158,161 tons, inwards; 772 shi

2190. *Canals*, so instrumental to the prosperity of England, have bee
extensive scale, but with only a small portion of the expected benefit. T
magnitude of the plans, and partly to the prevalence of jobbing. Mr. Yo
works in Ireland would be a history of jobs;" and the observation
3,000,000l. which have since been expended in this manner. The two chi
Royal canals, both proceeding from Dublin into the interior. The form
advances from government, been completed, at an expense of upwar

Kildare and King's County to the Shannon, which it joins near Clonfert, about sixty miles above Limerick. This distance is eighty-seven miles, which with a branch to the Barrow at Athy, one westward to Ballinasloe, and several others, makes an entire length of 156 miles. It is forty feet wide at the surface, and has six feet of water. In 1831, commodities were conveyed to and from Dublin, to the amount of 237,809 tons, yielding 36,738*l.* of tolls; which, with somewhat above 10,000*l.* for passengers, afforded a very inadequate return. The Royal Canal, of nearly the same dimensions, reaches from Dublin through the counties of Meath and Longford, nearly eighty-three miles to Tarmonbarry, on the Shannon, about forty miles above the junction of the other canal. The expense was 1,420,000*l.*, while the tolls, in 1831, amounted only to 12,700*l.*, on 150,000 tons, a sum insufficient to defray the annual expenses. The other Irish canals are small and of little importance.

2191. *The roads of Ireland* are and have long been excellent. They are not supported in general by tolls, and those which are so appeared to Mr. Young by no means the best. Any person may present a memorial to the grand jury of the county, showing the necessity of a new road, and if this presentment be approved, the work immediately proceeds. Government have established mail coaches to all the principal towns, and since the rebellion have made fine military roads into the interior of Wicklow; but stage coaches and other means of conveyance, though daily increasing in number, are still indifferent.

Sect. VI. *Civil and Social State.*

2192. *The population* of Ireland, from its great amount and rapid increase, is considered as one of the chief causes of the severe poverty which presses upon the body of the people. Till the census of 1821, the data upon which it was calculated appear to have been somewhat conjectural. In 1672, Sir William Petty, who had been employed on a survey of the country, estimated it at 1,100,000. Mr. Dobbs, between 1712 and 1726, upon a calculation from the number of houses, at six to a house, represented it as varying from 2,000,000 to 2,300,000. Calculations founded on the produce of the hearth duty gave, in 1754, 2,372,000; in 1785, 2,845,000; and in 1788, 4,040,040. In 1812, a census was instituted, but could not, from various obstacles, be made complete; however, by calculating what was deficient, it was estimated at 5,937,000. In 1821, a more complete and effective census gave 6,801,000. That of 1831 amounted to 7,767,401, of whom 3,794,880 are male, and 3,972,521 female.

2193. *The Irish character* presents very marked features, many of which are amiable, and even admirable. They are brave; hospitable to such a degree, that in some counties the door is regularly kept open during meals. "Hospitality is an universal trait, and exists in the north as well as in the south; in the mountain and in the dale." It is much enhanced by the scantiness of the portion which is thus liberally shared with the passing stranger. The Irish are lively, merry, and witty; and even the lowest ranks have a courteous and polite address. They are celebrated for warmth of heart, and for strong attachments of kindred and friendship, which leads them, out of their scanty means, to support their aged relations with the purest kindness. Benevolence is a distinguishing feature of the higher ranks. They are curious, intelligent, and eager for information. With so many good qualities, it were too much to expect that there should not be some faults. They are deficient in cleanliness; have little taste for conveniences or luxuries; and are destitute of that sober and steady spirit of enterprise which distinguishes the English. The love of fighting seems a rooted infirmity. Among all nations not wholly civilised, this is, indeed, a favourite mode of terminating differences; but the Irish may be said to surpass every other people in the extreme promptitude with which they resort to it. Fighting appears their native element, into which they plunge whenever their spirits are roused. It would seem, indeed, to have been formerly almost a regular termination of the social board. The fairs, which, in every town and village of Ireland, are regular and of long duration, afford the grand theatres, first of unbounded mirth, and ultimately of bloody conflict. The Irish do not fight single-handed, but in bands, and on a great scale. On receiving a supposed injury, they go round to their companions, friends, and townsmen, and collect a multitude, with which they make a joint attack on the objects of their wrath. It need scarcely be added, that they show no reluctance to engage in schemes of general and national conflict; and it is remarked that, when these are in contemplation, there is a pause of casual and private battle. The other blemishes of the Irish are rather frailties than sins. They are represented as vain, talkative, prompt to speak as well as act without deliberation: this disposition, with their thoughtless gaiety, betrays them into that peculiar blunder called a *bull*, which their neighbours have so long held forth as a national characteristic.

2194. *The ecclesiastical state* of Ireland is well known as having been one of the chief causes of its unsettled condition. The native Irish did not share in any degree the reformation so unanimously adopted in England and Scotland. When, therefore, the English church was introduced as the established religion, it threw out, as dissenters, the bulk of the Irish population. Even of the protestant part, a large proportion, introduced as colonists from Scotland, were attached to the presbyterian form. The discussions as to the relative number of each seem to be set at rest by the official statements in the Lords' report of June, 1825. It there appears that, of the 6,801,000 which constituted, in 1821, the entire population, 4,980,000 were catholic, and 1,769,000 protestant; of which last there were 1,135,000 belonging to the established church; 577,000 presbyterians (with the exception of about 10,000, all in Ulster); 57,000 of other denominations, chiefly in the same province. The proportion of Protestants to Catholics is, in Ulster, as 1 to 1; in Leinster, as 1 to 4½; in Munster, as 1 to 9½; in Connaught, as 1 to 7¾: over all Ireland, as 1 to 2¾.

2195. *The Roman Catholic clergy* receive no stipend
supported by their flocks. They are formed, however, i
of which are four archbishops; Armagh (the primate), T
them are twenty-two bishops, with a vicar-general, des
The number of catholic priests has been stated at 14
Their income arises less from any fixed allowance, than
and the bishops, to make up their incomes, receive fr
what they have collected. Mr. Wakefield has attempte
Christmas and Easter offerings amount to 337,000*l.*; m
and collections, 78,500*l.*; christenings, 12,500*l.*; burials,
ing to Archbishop Curteis, the income of a bishop is
varies from 100*l* to 400*l.* Although a *congé* is asked
vacant places rests with the clergy themselves; but as th
favour of their hearers, they are subject to a necessity of
not felt by the established catholic churches. Hence th
remarkable under the catholic system, exists in Ireland
On the other hand, many, especially among the bishops
life, and for the diligent discharge of their functions.
mental in preventing riot, in discovering theft, and proc
mission of Roman catholics to all political privileges, th
in the condition of the clergy, has been hailed by the bod
tion. It is hoped that it will either make them more frie
or diminish their influence in estranging from it the min

2196. *The Presbyterians,* as already observed, are nea
are the most numerous sect. The synod of Ulster is fo
consisting of 201 congregations, besides which there ar
with the Scottish seceders. The ministers receive a roy
affords from 50*l.* to 100*l.* to each. The Presbyterians f
and intelligent portion of the people; yet a great propor
and they emigrate to America more readily than any oth

2197. *The Established Church* of Ireland is in unio
way similar. It consists of four archbishoprics and twe
recently passed, two archbishoprics are to be converted i
are to be abolished. The entire revenue of the Irish
exceed 130,000*l.* for the bishoprics, and 602,200*l.* for oth
to the bishops are of far greater value; but, in conseque
newed from time to time on payment of fines, and neve
derived from them was greatly under the real value. It i
to the present incumbent, in perpetuity, on payment of si
value, which, it is calculated, will produce about 3,000,00
cording to the amount of income, from five to fifteen p
above 200*l.*; and its produce to be applied to the aug
the building of glebe houses and of new churches. H
vestry cess, or church rate, amounting to about 90,000*l.*

2198. *The literature* of Ireland, in modern times, ca
pre-eminence; yet she has maintained her station in th
quence, indeed, she has excelled both the sister kingd
and Sheridan shine unrivalled; and in the latter, Burke,
daring and brilliant flights. In her graver pursuits, Irela
Usher attained the first eminence in theological learnin
a highly ingenious system of philosophy.

2199. *The Irish establishments for education* are scarce
country. There is only one university, that of Dublin,
of those of England, but not on so great a scale. Of it
tions, an account will be found under the head of Du
university is strictly protestant, and does not allow the
students of that faith must have been all educated abroa
their use the College of Maynooth. It is supported by
and contains a president, vice-president, and eleven pro
ments. The students receive board and education; and
is not supposed to exceed 20*l.* The students of the n
theology, and to Edinburgh for medicine; though there
necessity by the formation of an institution at Belfast.

2200. *The education of the poor in Ireland* is a subjec
in all the friends of that country. It appears that, by the
man, on his induction, becomes bound to keep or cau
This act, however, is either obsolete, or so far evaded

taught in these parochial schools. The greatest effort at Irish education, however, is that made by the Charter Schools, instituted in 1733, which by parliamentary grants and private benefactions have enjoyed an income of 30,000*l.* a year. But this sum, which might almost furnish schools to the half of Ireland, is spent upon 2000 boys, who receive board as well as instruction. Although the act recites no other object than instruction in the English tongue, proselytism has become almost the sole aim. The Hibernian Society, the Baptist Society, and that for discountenancing vice, support schools to a very considerable extent. The Kildare Street Society, founded in 1812, founded numerous schools, in which they endeavoured to induce the Catholics to attend by renouncing all attempts to gain proselytes; but from the entire Scriptures being read in these schools, and other alleged causes, the Catholics were supposed to view them with jealousy. The allowance made to this society was, therefore, withdrawn, and a new plan instituted, in which the moral and literary is separated from the religious education, and is communicated to the youth of both religions during four or five days of the week, while, in the remaining period, religious instruction is expected to be administered by the clergy of the respective churches. Extracts only from the Scripture, approved by the leading catholic clergy, are read in the common school. Local funds, to a certain extent, are required to be contributed. Although this system has met with many opponents, yet, in the beginning of 1833 there had been established under it between 500 and 600 schools, calculated for the education of about 90,000 scholars. In 1824, the number of schools in Ireland was 11,823, and scholars 560,549. Of these scholars 394,742 paid for their own instruction, and among this number were 307,000 Catholics, who thus showed no small ardour in obtaining the benefits of knowledge.

2201. *The fine arts* do not appear to have attained any great excellence in Ireland. Her best painters have sought for patronage in the British metropolis; and the attempts to establish an annual exhibition in Dublin have not succeeded. The Irish harp and native Irish melodies enjoy considerable reputation. The ecclesiastical structures have not that splendour and richness which so strongly mark many of those in England; but the modern edifices, especially in Dublin, display a taste as well as magnificence which render that capital almost pre-eminent.

2202. *In funerals, marriages, and similar solemnities*, the Irish retain several old national customs. The practice of hired howling women at funerals, called *ululates*, is very prevalent; a considerable sum is paid to those employed, though, in cases of necessity, they howl gratis. A still more unfortunate custom is that of the wakes, where thirty or forty neighbours assemble, are entertained with meat and drink, and indulge in every sort of *fun*. Marriages in many parts of the country are marked by some real, or at least apparent, violence; the bridegroom collects a large party of friends, seizes and carries off the seemingly reluctant bride. Alluding to this custom, her going to her husband's house, even in ordinary cases, is called the "hauling home." This is not prompted by any peculiar shyness on the part of the fair sex; on the contrary, the mothers, with whom the affair chiefly rests, display even a feverish anxiety that their offspring should not remain long in a state of single blessedness. The fair sex are treated among the higher ranks with a gay and romantic gallantry; among the lower almost as slaves, being subjected to the most degrading labour. Notwithstanding this circumstance, and although improvident marriages are general among all ranks, while those of affection are deemed by Mr. Wakefield to be very uncommon, Irish wives are said to be extremely faithful; and the sex, amid all its frankness, to maintain a character for chastity.

2203. *Amusement* forms a copious element in the existence of an Irishman. Ample scope is afforded to the Catholics by their numerous holidays, in which diversion and devotion are considered as quite consistent; and the Protestants, however contrary their views in other respects may be, vie with them in this particular. The fairs afford a grand and unlicensed theatre for fun of every description. The chief bodily exercise is hurling, which consists in driving a ball to opposite goals, the same known in Scotland by the name of *shinny* or *shinty*. To this amusement they add horse-racing, cock-fighting, cudgelling, leaping, and dancing; to say nothing of drinking and fighting. Their conversation also affords them much amusement; it is distinguished by loud mirth, seasoned often with a good deal of humour, by singing, and telling long stories. Thus employed, even the poor will often sit up to a late hour.

2204. *The houses of the Irish*, if we except those of the rich, or in towns, which are formed after the English model, are such that hovels, cabins, the humblest terms which can be applied to human habitation, are appropriate to them. They are formed of earth, taken out of the ground on which they stand; whence the floor is reduced at least a foot below the outer level, and becomes a receptacle for all the superfluous moisture. This is the more incommodious as it has no boards, and the bed no frame; nor is the latter raised from the ground, being merely straw spread upon the floor. This humble mansion is shared by all the living creatures, whether with four legs or two, which the family are able to muster; cows, pigs, geese, and fowls: these it is rarely deemed needful to separate by any partition from the other tenants.

2205. *No compulsory provision exists in Ireland for the support of the poor*; a circumstance to which we are inclined to ascribe much of their distressed state, as well as of the backward state of the country in general. Not being obliged to contribute any thing to their support, the landlords and occupiers, have, generally speaking, manifested great indifference to the condition of the peasantry. Few among them have hesitated to allow their estates to be subdivided into minute portions to advance their political interests, or to obtain an increase of rent. But it is abundantly certain that they would have paused before venturing on such a course of proceeding had they been made responsible, in all time to come, for the paupers they were thus introducing upon their properties. The question as to the institution of a compulsory provision is now freely agitated. That it is attended with difficulties no one can doubt. On the whole, however, we are firmly convinced it would be attended by the best effects; and we hope that it may speedily be established.

2206. *The dress of the Irish peasantry* consists chiefly of the native wool, worked rudely up into frieze or linsey; for they seldom can afford to wear the fine linen which they fabricate. But the most prominent feature of this attire among the lowest class, is its lamentable deficiency; in many instances it covers little more than half of the person, and, being defaced by rueful and unseemly gaps, presents an image of extreme poverty. When this deficiency does not exist, the Irishman loves to display the extent of his wardrobe; when going to a fair, he puts on all the coats he has, though the season be midsummer.

2207. *The food* of the Irish peasant is no less scanty than his dress and habitation. It is almost wholly comprised in the potato, without any other vegetable (for he is a stranger to the luxury of a garden), and only in favourable circumstances is it accompanied with milk. As this food, however, according to the observation

long ago made by Smith, is sufficient to preserve him in full health a
perhaps, been carried too far. In the north, the use of oatmeal in t
derived from Scotland.

SECT. VII. *Local Geogra*

2208. *Ireland is divided into four great provinces*, or rat
Munster in the south, Connaught in the west, and Ulster
of the minuter English division into counties, a number
the four provinces. These last, indeed, when Irela
ments, formed separate kingdoms. They are still disting
different aspect of nature, and by a considerable variation

2209. The following Table exhibits the leading provincial statistics
differ considerably from those hitherto published; but they have beer
of the Board of Trade, as the result of the latest and most accurate

Provinces and Counties.	Square Miles.	Improved Acres.	Unimproved Acres.	Estimated Annual Value.	Houses 1821.	Population, 1831.
Leinster.				£		
Dublin -	221	237,819	10,812	250,211	35,740	380,167
Louth -	173	191,315	14,916	164,765	21,302	124,846
Meath -	512	561,527	5,600	510,414	27,942	176,826
Wicklow -	496	400,704	94,000	226,822	17,289	121,557
Wexford -	535	545,079	18,500	395,134	29,159	182,713
Longford -	209	192,506	55,247	151,595	18,987	112,558
Westmeath	361	313,935	56,982	251,063	23,015	136,872
King's Co.	440	394,569	133,349	317,019	22,564	144,225
Queen's Co.	367	335,838	60,972	277,767	23,109	145,851
Kildare -	369	325,988	66,447	255,082	16,478	108,424
Kilkenny -	469	417,117	96,569	437,693	29,789	193,686
Carlow -	214	196,833	23,030	164,895	13,028	81,988
	4,356	4,113,260	635,424	3,472,460	278,398	1,909,713
Ulster.						
Down -	544	502,677	108,569	489,123	59,747	352,012
Antrim -	605	483,106	225,970	569,150	48,028	325,615
Londonderr.	479	372,667	136,098	310,962	34,691	222,012
Donegal -	1,051	520,736	644,371	349,501	44,800	289,149
Fermanagh	440	320,528	101,952	259,291	22,585	149,763
Cavan -	478	421,462	30,000	307,741	34,148	227,933
Monaghan	280	309,968	9,236	212,581	32,378	195,536
Armagh -	283	267,317	42,472	178,965	36,260	220,134
Tyrone -	724	550,820	171,314	528,065	47,164	304,468
	4,894	3,749,352	1,469,922	3,205,378	359,801	2,286,622
Munster.						
Clare -	744	524,113	259,584	441,293	35,373	258,322
Kerry -	1,012	581,189	552,862	344,616	35,597	263,126
Cork -	1,638	1,068,803	700,760	1,203,926	114,459	810,732
Waterford	410	353,247	118,034	295,364	23,860	177,054
Tipperary -	867	819,658	182,147	886,539	55,297	402,563
Limerick -	604	588,842	91,961	629,932	42,409	315,355
	5,275	3,935,852	1,905,368	3,801,670	306,995	2,227,152
Connaught.						
Leitrim -	400	266,640	128,167	210,187	21,762	141,524
Sligo - -	386	257,217	168,711	227,443	27,069	171,765
Mayo - -	1,235	871,984	425,124	550,018	53,051	366,328
Galway -	1,546	955,713	476,957	868,794	58,137	414,684
Roscommon	541	453,455	131,063	379,628	37,399	249,613
	4,108	2,905,009	1,330,022	2,236,070	197,408	1,343,914
	18,633	14,603,473	5,340,736	12,715,578	1,142,602	7,767,401

SUBSECT. 1. *Leinster.*

2210. *Leinster* is the richest and most cultivated of th
taining the capital and the seat of government, the most in
Though the surface be level to a great extent, it is by no r
important ranges of mountains. These include almost th
bold and picturesque summits are seen even from Dublin
of Slieve-Bloom stretches towards the borders of Munster
midland counties is covered by the great bog, which cr

After all deductions, however, there remains a large extent of level land, fit either for tillage or pasturage, and employed with some diligence in both these modes of production. This is the part of Ireland where wheat is grown to the greatest extent, oats being elsewhere almost the only grain; and its rich pastures abundantly supply the capital both with cattle and the products of the dairy. Leinster is not a manufacturing region, having the national staple of linen only in some of its northern borders, though that of cotton has been lately introduced from England to a considerable extent.

2211. *Leinster is divided into the counties* of Dublin, Kildare, King's County, Queen's County, Wicklow, Carlow, Kilkenny, Wexford, Meath, Westmeath, Longford, and Louth.

2212. *The county of Dublin* is not indebted for its importance to any superiority of soil and climate. It is in general cold, moist, and marshy; and, unless where stimulated by the immediate vicinity of the capital, its agriculture has no claim to pre-eminence, and the condition of the peasantry is not superior to that of their brethren in other counties. It owes its distinction almost exclusively to its containing the capital of Ireland.

2213. *The city of Dublin* presents an aspect scarcely indicative of the ills under which the nation labours. It disputes with Edinburgh and Bath the reputation of being the most beautiful city in the empire. If the brick of which the houses are built impair the effect of the general range of its streets and squares, its public buildings, composed of stone, surpass in grandeur and taste those of any of its rivals. There is no period of Irish record in which Dublin was not an important place. It is mentioned by Ptolemy under the name of Eblana. The Danes, in the ninth century, made it their capital, and enclosed it with a wall about a mile in length, the course of which may still be traced. As soon as the English began to establish themselves in Ireland, its proximity and convenient approach induced them to make it their head-quarters; it grew with the improvement of Ireland and the extension of the English sway. Henry III. granted a charter to Dublin; its privileges were enlarged by successive monarchs; and George II. placed the corporation on its present footing. All its splendour has arisen within the last sixty or seventy years. The numerous streets and squares formed during that period have been built on a regular plan, and contain several superb mansions, which once belonged to the principal nobles. The squares are particularly admired; that of St. Stephen's Green is nearly seven furlongs in circuit; and even the want of regularity in the form and size of the fine houses that surround it, heightens the picturesque effect. Merrion Square, which contains the splendid mansion of Leinster House; Rutland Square, in the interior of which are the gardens of the Lying-in Hospital; and Mountjoy Square, are also spacious and finely laid out. Of the streets, the finest is Sackville Street, 170 feet wide, and adorned with many splendid mansions. To the west, farther up the river, is the old town, originally much inferior to the streets above described, and now bearing marks of decay. Still farther west is the tract called "the Liberty," as being out of the jurisdiction of the magistrates. It is inhabited only by the lowest orders, and exhibits scenes of filth and wretchedness not to be paralleled in any city of the sister island. A room fifteen feet square is frequently let to three or four families; and one house was ascertained to have lodged 108 persons. It is complained that Dublin has been "shorn of its beams" since the Union; when the nobles and gentry, no longer called to attend parliament, transferred their town residence to the more splendid metropolis of the empire. Their Dublin mansions have been converted to humbler purposes: that of the Duke of Leinster, the most splendid of all, is occupied by the Royal Dublin Society; the Powerscourt mansion is now the Stamp Office; that of the Earl of Aldborough is a school; and the house where the parliament held its sittings has been altered for the accommodation of the national bank.

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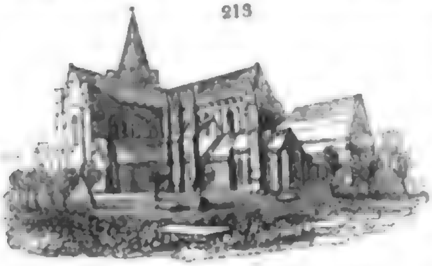

ST. PATRICK'S CATHEDRAL, DUBLIN.

Dublin, however, can never be deprived of the public buildings, which form its chief ornament. Among these, indeed, its ancient structures do not stand foremost. The Castle, the residence of the lord lieutenant, is extensive; but its architectural beauty is almost confined to a modern Gothic chapel, erected from the design of Mr. Johnstone, an eminent architect. The cathedral of St. Patrick (*fig.* 213.), and Christ Church have a venerable aspect; but they can rank only secondary to those fine specimens of the Gothic found in the metropolis and other large cities of England: they seem even eclipsed by Mr. Johnstone's modern edifice of St. George's church. The splendid structure, formerly the parliament-house of Ireland, and now the national bank (*fig.* 214.), was built between 1729 and 1739, from a design of Cussels; but an eastern front was added in 1785, from a design of Gandon; and a western front, from one of Parke, shortly after: the whole costing 95,000*l.* The portico is 147 feet in length, supported by very lofty Ionic columns; the whole covering an acre and a half of ground. The directors of the bank purchased it for 40,000*l.*; and have since, under Mr. Johnstone's directions, expended a considerable sum in alterations and additions. The Royal Exchange (*fig.* 215.), situated almost in the highest part of the city, was built by the merchants, assisted with 13,000*l.* from government. It forms a square of 100 feet, and its principal front has a richly decorated portico of six Corinthian columns.

As the business transacted there, however, is, seemingly without any very good reason, limited to the purchase of bills on London, extensive "Commercial Buildings" have been erected elsewhere for general transactions. The Four Law Courts, situated on the north bank of the river (*fig.* 216.), form also one of the noblest structures in Dublin: it was constructed between 1786 and 1800, at an expense of 200,000*l.*, and consists of a square of 140 feet, presenting a front of six Corinthian pillars, supporting a circular lantern and magnificent dome. The quay is ornamented by the Custom-house, commenced by government in 1781, and completed in 1791, at an expense of 260,000*l.* The front is entirely of Portland stone, embellished with a Doric colonnade, and extends 375 feet. The Post Office, in Sackville Street, is extensive and magnificent, with a front of 223 feet, adorned with an Ionic portico, the pillars composing which are the highest in the metropolis: it is of Portland stone, while the main structure is of fine mountain granite. At no great distance, in the centre of Sackville Street, is the monument erected to Nelson; an object by no means ornamental. The inns of court, the theatre, the half-finished Roman catholic metropolitan chapel, and several other churches and chapels, with many of the hospitals, may be mentioned as adding to the architectural splendour of Dublin. The citizens display rather a peculiar zeal in forwarding patriotic and benevolent objects. All the usual associations for the relief of distress are supported on a liberal scale. The Incorporated Society for Charter Schools, and the Kildare Street Society for general education, have both their central boards in this city. The Bible and Missionary societies are chiefly branches of those in London. Great zeal is shown in favour of all institutions for the promotion of knowledge. Trinity College was founded in 1593; and its students, who, thirty years ago, did not exceed 500, now amount to 1600. There are seven senior and eighteen junior fellowships, which are said to be bestowed after very strict examination; and the livings in the gift of the university, which are considerable in number and value, are offered to the fellows in the order of seniority. The general constitution seems to be on the English model; though the fellows are less numerous, and the lecturing is more frequent. There are gradations of rank, indicated by a different dress and table; which, though they accommodate in some sense the poorer students, seem contrary to the genuine academic principle. The library contains 100,000 volumes; but its other collections are not equal to those of the Dublin Society. Usher, Swift, Berkeley, Chandler, Leland, Parnell, Burke, Grattan, Curran, with other distinguished characters, are mentioned as pupils of this seminary. The buildings of the College are on a large scale, divided into three quadrangles, for the accommodation of the fellows and pupils. The front towards College Green extends 300 feet, and is adorned with columns of the Corinthian order. The library forms a fourth quadrangle, built of hewn stone, with a rich entablature; and the principal room, 210 feet long and 41 feet broad, is elegantly and conveniently fitted up. At a short distance from town is a well laid out botanic garden. The Royal Dublin Society, incorporated in 1749, for the promotion of husbandry and the useful arts, have enlarged their sphere by a most extensive botanic garden; by purchasing and extending the Leckean museum of natural history; by instituting a school of drawing, with models; and by appointing teachers in all these departments. The Royal Irish Academy, incorporated in 1782, have published many estimable volumes of Transactions. The Dublin Institution has been formed on the model of that of London, and a city library established, on which 8000*l.* has been expended. Although a great literary spirit prevails in Dublin, there are few books printed there, and the art of printing is in a backward state. The works of Irish authors issue from the London presses.

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BANK OF IRELAND, DUBLIN.

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EXCHANGE, DUBLIN.

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FOUR COURTS, DUBLIN.

2214. *Dublin, unlike London, has very little foreign trade;* but she has a considerable trade with England, particularly with Liverpool. The bay is spacious, and has good anchorage; but the entrance is beset with formidable sand-banks, particularly those called the North and South Bulls, threatening continually to encroach on the channel of the river, which is, strictly speaking, the harbour. It is a still more serious evil that these banks cannot be passed by large vessels at low water; so that vessels embayed at that time of the tide, and attacked by strong easterly gales, can scarcely escape being driven upon one of them; and many have consequently perished. To avert these evils, works have been undertaken, the magnitude of which is scarcely paralleled in the United Kingdom or any part of the world. After having in vain endeavoured to form a bulwark of frames and piles, which could not be kept in repair without constant expense, a double wall has been constructed three miles in length, composed of enormous blocks of granite, dovetailed into each other, the interval filled with gravel; and a light-house erected at the end. Another pier, also of great extent, has been built at Dunleary, now Kingstown, on the opposite or southern side of the bay, which is in progress of being connected by a railway with the capital. To these advantages Dublin unites that of being placed at the termination of the two principal Irish canals, the Grand Canal on the south, and the Royal Canal on the north, which penetrate by different lines to the Shannon and the interior of Ireland. In 1829, Dublin paid the sum of 660,000*l.* of duty on imported goods, while that paid at all the other ports of Ireland amounted only to 910,000*l.* The environs are celebrated for their beauty. The vast number of villas and villages which cover the adjacent districts, and are rendered conspicuous by the ground sloping down to the bay; the foreground of the Dublin mountains, and the peculiarly picturesque summits of those of Wicklow in the background, render the situation striking and delightful. To the west, Phœnix Park, a royal demesne of several miles in circumference, affords an agreeable promenade, and has lately been adorned with an obelisk, 210 feet high, in honour of the Duke of Wellington.

2215. *The rest of the county of Dublin* contains only villages, and the interior possesses few interesting objects. The shores of the bay, however, stretching toward Wicklow, include many striking sites; and the view from the Hill of Killiney is almost matchless. On this coast Kingston and Blackrock form agreeable bathing-places; and the former, from the great recent improvements, is likely to increase rapidly. On the border of Wicklow the Dublin mountains are rent by a very singular chasm, called the Scalp. An immense granite rock being here riven asunder, its internal structure is disclosed in a manner almost appalling; and the enormous and irregular masses on each side approach each other so closely as to leave only space for a narrow road.

2216. *Wicklow*, though it contains some stripes of fertile territory, is in general composed of bog, forest, and mountain, and contributes little to the wealth of Ireland. It is, however, one of the spots in the three kingdoms most celebrated for picturesque beauty. This consists not in lakes, like Cumberland or Scotland; for those which it contains are only tarns or lakelets; nor in rivers, though it gives rise to the Liffey and the Ovoca. Its coast, diversified by hills, broken into glens, and richly wooded, is almost covered with the seats of the gentry and opulent citizens of Dublin. These varigated and embellished grounds, having on one side the expanse of the Irish Channel, and on the other the lofty mountains in the interior, produce a number of picturesque and beautiful sites peculiar to itself. The demesne of Powerscourt is pre-eminent. The waterfall (*fig.* 217.), descending 360 feet down a steep hill, amid vast hanging woods; and the Dargle, a deep, dark, narrow and wooded glen, through which there is scarcely room for a torrent to struggle, are among the most striking scenes in Ireland. The interior of the county presents features of a very different description; glens between lofty mountains, naked and desolate. Among these are noted Glenmalure, running along the foot of Lugnaquilla, the loftiest mountain of Wicklow, above 3000 feet high; and still more Glendalough (*fig.* 218.), which is surrounded by a most majestic circuit of mountains, and contains some remarkable ecclesiastical monuments attributed to St. Kevin, a great patron saint of Ireland in the seventh century. One of his disciples had founded at Glendalough a little city, long celebrated as a seat of religion and learning. Only its site can now be traced; but there are distinct remains of seven churches, among which the cathedral and St. Kevin's kitchen are the most entire. They are small and rude; but their high antiquity, and the character of the surrounding scenery, produce a deep and solemn impression. Loughs Dan and Bray, situated in the bosom of the wildest mountains, and enclosed by dark and lofty rocks, present nature under an aspect the most rudely sublime. Wicklow has veins of copper, lead, and even of gold, which was collected in one year to the value of 10,000*l.*; but the vein was soon exhausted. The towns of Wicklow and Arklow, though well built, are

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POWERSCOURT WATERFALL.

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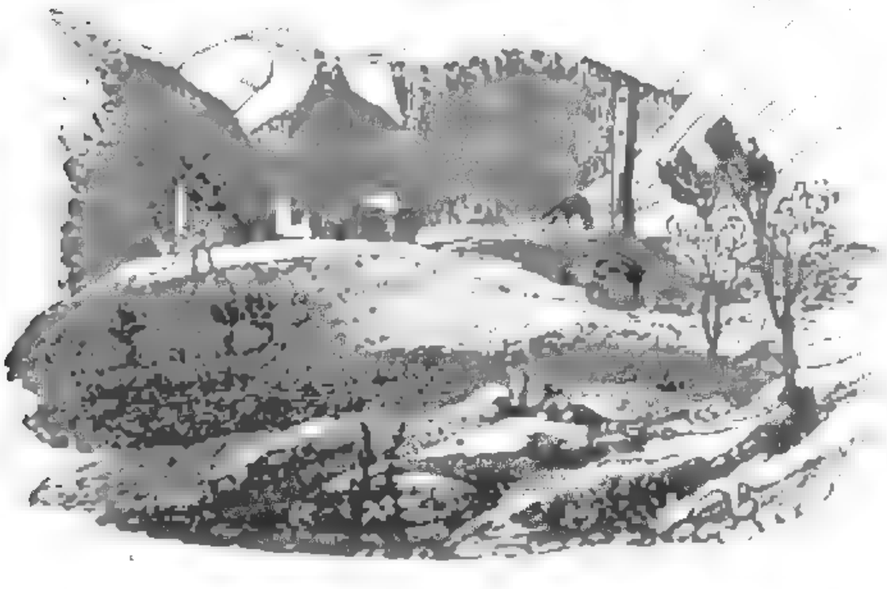


GLENDALOUGH.

inconsiderable; yet the latter, at the mouth of the Ovoc
the residence of the kings of Ireland. It was the scene
when the insurgents, above 30,000 strong, were defeated

2217. *Wexford*, to the south of Wicklow, is separated from it by
interior contains only detached hills, with a great deal of level lan
greater diligence, and the tenantry are more comfortable, than in m
prevailing crop. The woodlands also are extensive and valuable. Th
bay of Wexford is much admired, though not comparable to that of
consequence, with a large harbour, but much obstructed by sand; ye
of linen is scarcely known in this county; but some woollens are ma
New Ross, in the western part of the county, is a populous and flou
which admits of large ships coming up to its quay.

2218. *Kilkenny*, a fine and extensive county, separated from Wexf
by that river, but by its large tributaries the Nore and the Suire. Th
moisture, and prevent the formation of bog or marsh to any extent.
sected only by hills of moderate height, is composed almost entirely eit
latter is employed in extensive dairies, but the system of cultivati
county exports a coal well suited for kilns and forges, but not for dom
considerable value. Kilkenny, the capital, finely and advantageously
the marble of the surrounding quarries. Its monuments, ecclesiastical
ance to have been still greater. The cathedral is one of the finest in Ire
gates and bastions, exhibits indications of that strength which enabled
than any other city in Ireland. At present it flourishes by inland trade
other woollens. The foreign trade of the county is carried on by W.
which belongs to Munster.

2219. *Carlow*, a small county placed between Kilkenny and Wicklow
which however enclose a champaign tract of great beauty and fertility,
producing the best butter in Ireland. It derives great advantage fr
western border. The town of Carlow is a considerable place, distingui
great antiquity; but the latter sunk lately under the attempts to repa
coarse woollens, and carries on a considerable trade down the Barrow.
lately been founded here.

2220. *Queen's County and King's County* extend north-west from
Though bordered by the range of hills called Slieve-Bloom, their genera
very moderate elevation. Part of the great chain of bogs crosses these c
of them unproductive, though it supplies them with cheap and abun
highly fertile. Queen's County is situated along the heads of the B
reaches to the Shannon; and both communicate by canals with Dublin.
manufactures except distillery, and no trade besides the exportation of
of much importance; Maryborough, the shire town of Queen's Count
King's County, still smaller. The most prominent place is Portarlingto
though chiefly belonging to the first; a well-built place, with good schoo
number of gentry. Tullamore, on the great canal, and Birr or Pars
thriving towns in King's County.

2221. *Kildare* forms a long stripe from north to south, separating the
of Dublin. With the exception of about a sixth part of bog, it forms a
tivated, and whence the capital is chiefly supplied with grain. The Gran
its northern border, afford the means of ready conveyance to Dublin. Ki
round tower and some other vestiges of past importance, has dwindl
supported by the races held on the curragh of Kildare, an expanse of se
turf. Naas and Athy, both larger towns, and the alternate seat of the a
though the lofty castle of the former bears testimony to the period whe
Leinster. In this county is Maynooth, a small town containing the coll
education of the Roman catholics.

2222. *Meath*, a maritime county to the north of that of Dublin, is one
in respect to soil. Its pastures are peculiarly rich, and support vast he
markets of the capital, and are even exported to England. The produc
not of very superior quality. Of late a spirit of tillage has gained groun
been brought under cultivation. It is quite a rural district. Trim, whe
town; Navan and Kells are larger, and pleasantly situated. Tara Hill
has been more recently distinguished by a signal victory which Lo
numerous band of rebels.

2223. *Louth*, stretching over a long narrow extent of coast to the no
area of any Irish county, is one of the first in point of natural and acq
improvement has brought almost every part of its excellent soil under
has made its way from the bordering territory of Ulster; its produce
with some cambric. Louth presents many samples of the earthen mo
regular fortifications; it was one of the most central points of the
character, and the extent of the coasts, which include the mouth of the
able trade.

2224. *Louth contains the important towns of Dundalk and Drogheda.*
the county, is ancient, populous, and flourishing. It was strongly f
important historical events; but its lofty towers and castles are now dem
humble and comfortable dwellings. The town consists chiefly of one l
lanes are seen diverging. It is the only place in Ireland where the camb
and continues to flourish. Drogheda, at the mouth of the Boyne, was
station, being considered one of the keys of Ireland. In the time of the
siege against Sir Phelim O'Neil, but was afterwards taken by Cromwell,
barbarous massacre of the garrison. In 1690, two miles above Droghed
that memorable field which established the civil and religious libertie
Drogheda still remain; but, being of obsolete structure, and commanded
effectual resistance to modern artillery. The place has now a better d
and extensive commerce in grain brought down the river in considerabl
for which, coals and other commodities are imported.

2225. *Westmeath and Longford* occupy the interior from the two coun
as far as the Shannon. They consist chiefly of a very extensive plain
bogs, and morasses, and subject in part to the overflowing of the Shanno
that are extremely fertile, particularly in oats. The northern boundary
mountainous. Athlone, the largest inland town of Ireland, is situate
Roscommon. It is memorable for its resistance to General Ginkle in 16
and is still considered an important military station. It is divided by th
bridge. With this exception, these provinces contain only small country

in Westmeath, is situated on the Royal Canal, and has a considerable trade. Longford, capital of the county of that name, and Granard, are comfortable little towns; a considerable village bears the classic name of Edgeworthstown.

Subsect. 2. *Munster.*

2226. *Munster* includes the south and south-west of Ireland, and, though not the most extensive division of the kingdom, is one of those which presents the boldest and most striking features. Most of the great mountain chains of Ireland traverse Munster; among which are conspicuous the Galties and the mountains of Kerry, which encircle Killarney; so that, notwithstanding the almost boundless plains of Limerick and Tipperary, and the level character of a great part of Cork, it may be considered as a mountainous region. It has manufactures, though not on so great a scale as those of the north; and its commerce is very considerable, chiefly in that grand staple of Ireland, the export of salted provisions. The catholic religion prevails, with little intermixture of that of the English church. Munster is divided into larger and less numerous portions than Leinster; its six extensive counties are Tipperary, Waterford, Cork, Kerry, Limerick, and Clare.

2227. *Tipperary* is a large county, of irregular form, extending over almost the whole frontier of Leinster. It is crossed obliquely by a long chain of mountains called variously Slieve-Bloom, the Devil's Bit, and other uncouth names; and on the south it includes part of the Galties. On the north a small portion of the great central bog extends across the county; but one district, along the upper course of the Suire, bears the appellation of the Golden Vale. Tillage has been introduced, but not to any great extent; but both the sheep and horned cattle are of excellent quality. There are manufactures, chiefly for domestic use; and some coal, similar to that of Kilkenny. Clonmel, the county town, is one of the most considerable in the interior of Ireland: it stood a long siege against Cromwell, who after its reduction demolished the very strong walls and castles by which it was defended, and of which only a few vestiges are now left. Clonmel is a well-built town, with four streets crossing each other, and carries on a brisk inland trade. Cashel is a large and handsome city, the seat of an archbishop, to whose residence a considerable library is attached. It was much more important in ancient times, when it was the capital of the kings of Munster, of whose palace some remnants may still be traced. Noble fragments remain of the ancient cathedral, majestically seated on the summit of a precipitous rock. The choir and nave, 210 feet long, are strewed with the mutilated remains of its former rich ornaments. Here was deposited the Lia Fale, or fatal stone, on which the kings of Munster were crowned. The structure is now abandoned to decay, and a modern cathedral of fine Grecian architecture has been substituted. Cashel contains remains of other monastic edifices, of which Hore Abbey, on the same rock with the cathedral, is a magnificent specimen, still almost entire. The country round Cashel and down the river is peculiarly rich, adorned with a great number of fine seats. Carrick, Cahir, Roscrea, and Nenagh are rather thriving towns, of some extent; but Tipperary itself no longer retains any trace of that importance which must have once enabled it to give name to the county. Near the small hamlet of Holy Cross is the abbey of that name, built in the twelfth century, of black marble, with peculiarly light and elegant decorations.

2228. *Waterford*, reaching from the southern limit of Tipperary to the sea, is a very mountainous county, and only a small portion under cultivation; the chief branch of rural industry is the dairy, and very great quantities of butter are salted for exportation. There is some fine woodland scenery along the banks of its rivers; but the chief importance of the county is derived from Waterford its capital, one of the principal seaports of Ireland, and indeed of the empire. Being placed at the confluence of the Barrow and the Suire, the second and third rivers of Ireland, it enjoys a most extensive intercourse with the interior. The quantity of beef, pork, butter, and grain exported to England is immense. In 1831–2, it was valued at 2,065,861*l.*; of which bacon was 547,000*l.*; butter, 538,000*l.*; wheat and flour, 566,000*l.*; oats, 128,000*l.*; live pigs, 117,000*l.* The southern packet communication with England is carried on from Waterford to Milford Haven. Within these few years, seventy vessels have been fitted out for the Newfoundland fishery. Waterford enjoys the benefit of a deep and spacious harbour, and a quay half a mile long, which has been reckoned the finest in Europe. It is an ancient city, regarded as very strong, till taken by Cromwell: its ecclesiastical monuments are of considerable magnitude, and it has an elegant modern cathedral, with other fine public edifices. Twenty miles to the west, on a small bay, is Dungarvan, reckoned the largest fishing town in Ireland; and its antiquity is attested by a castle and several monastic remains. Lismore, on the Blackwater, said to have been once a rich city, is now forlorn and deserted; but its castle, erected by King John, in 1185, on the verge of a perpendicular rock, still presents marks of ancient grandeur, and has been lately repaired by its owner, the Duke of Devonshire.

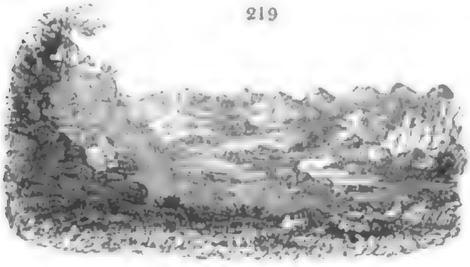
2229. *Cork*, to the east of Waterford, is the largest county of Ireland: its surface is extremely varied. On the northern border is the lofty range of the Galties, which present many picturesque features, and command extensive and beautiful prospects; its eastern border partakes of the mountainous character of the neighbouring districts of Kerry; and the rocky shores and headlands washed by the waves of the Atlantic, are of an awful and terrific character. About a fifth of the county consists of mountain and bog; the rest is only traversed by hills of moderate elevation, enclosing fertile and often beautiful valleys, especially that along the river and bay. The style of culture is altogether Irish; in small farms, by poor tenants, chiefly by the spade, and potatoes the prevailing crop. The manufactures are not on a very great scale,—consisting of sailcloth, coarse linens and woollens. There are also some very extensive distilleries.

2230. *Cork*, the great southern emporium of Ireland, has a population of 107,000; being, in point of wealth and magnitude, the second city in the island. Its monastic structures, once considerable, have almost entirely disappeared; their materials having, it is supposed, been employed in modern edifices. The great prosperity of Cork is modern, in consequence of the provision trade, of which it has become the chief mart. The river Lee, at its junction with the sea, forms the spacious enclosed bay, called the Cove of Cork, surrounded by highly picturesque scenery, and composing one of the finest harbours in the world. In consequence of this excellence, and of its convenient situation, the West India bound fleets usually touch there, and take in provisions. The export of salted beef and pork has somewhat diminished since the peace; but that of provisions in general, and particularly grain, has been greatly augmented; and Cork, on the whole, is in a very flourishing and prosperous state. A great part of the old town consists of miserable and crowded alleys; but a number of handsome new streets have been built, and several channels branching from the Lee, which flowed through the city, and were in some degree serviceable to trade, but detrimental to the health of the inhabitants, have been filled up. Cork has a literary institution, with the usual appendages of library, lectures, and botanic garden; and it supports the charitable establishments usual in great cities on a liberal scale.

2231. *Other important towns* are contained in this county. Kinsale, on a fine bay at the mouth of the Bandon, was much more frequented than Cork by the early English monarchs, who bestowed on the place extensive privileges, and viewed it as the key of southern Ireland. It has now, however, sunk under the superior importance of its neighbour; its port is comparatively little frequented except as a watering-place; and it is chiefly supported by a fishery. Youghal, at the mouth of the Blackwater, the largest river of the county, has a good harbour, though obstructed by a bar; and carries on some trade and manufacture. Fermoy, farther up the river, has, through the patriotic exertions of one individual, become thriving and prosperous. Mallow contains a mineral spring, which attracts numerous invalids.

2232. *Kerry*, west of Cork, is also an extensive county, but very different in aspect from the rest of Ireland: instead of the usual verdant level, it presents an assemblage of mountains wild, rocky, and desolate. These are interspersed with valleys and narrow plains which might even be subjected to the plough, but are almost wholly employed in pasturage; and Kerry, like other highland districts, has a small breed of cows, which yield plenty of excellent milk. Its coast is broken into several very deep bays, particularly those of Dingle, Kenmare, and Tralee. There are also numerous islands, most of them covered with immense flights of sea-fowl, which the natives take by the usual adventurous practice of descending the precipices by a rope. A considerable quantity of herrings is caught in these bays. Tralee, the county town, could not in this barren region rise to much importance; it exhibits, however, the remains of a very strong castle, once the proud residence of the Earls of Desmond, when, under the title of Palatine, they exercised the real sovereignty over this part of Ireland, a sway which terminated with their attainder under the reign of Elizabeth.

219



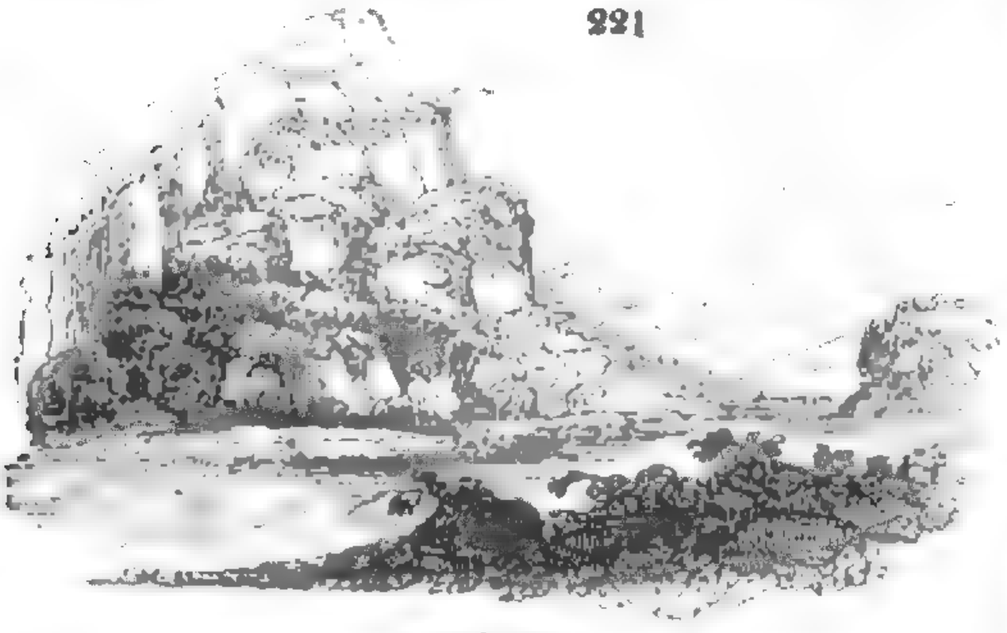
LAKES OF KILLARNEY.

220

MUCRUSS ABBEY.

2233. *Killarney and its lakes* form the pride of Kerry, and, indeed, as to scenery, have no rival in Ireland, scarcely in the British islands. Both England and Scotland possess numerous lakes and of varied beauty; the mountains that enclose them, however, have in general been stripped of the ancient forests which once crowned them, and only detached trees and brushwood now grow along their sides. But in Killarney the mountains of Tomies and Glena are covered to a vast height with the most majestic woods; while the arbutus and other shrubs display a bright verdure peculiar to western Ireland. This feature, however, has of late somewhat suffered from the ravages committed by the axe. Killarney presents, at the same time, all the usual accompaniments of precipices, cascades, deep rocky glens, and long ranges of varied summits. There is only one body of water, to which, however, the term *lakes* is usually applied; so completely is it divided into three bays united only by narrow straits, and presenting each a different aspect. The lower lake, immediately adjoining Killarney (*fig.* 219.), forms the main expanse of water, and presents all the features on the greatest scale. On the eastern shore rise the mountains known by the uncouth Irish name of Macgillicuddy's Reeks, the highest of which rises to 3400 feet, the most elevated point in Ireland. On this side also are the mountains of Tomies and Glena, with their immense forests. Near the western bank is Innisfallen, usually reckoned the most beautiful island in Europe. At the most southern point of the lower lake a much smaller bay branches off from it, through channels formed by Dinis Island. This bay, called Turk Lake, is overhung on one side by the precipitous sides of the lofty mountain of that name, and bordered on the other by the long wooded and winding peninsula of Mucruss. The venerable ruin of Mucruss Abbey (*fig.* 220.) adds greatly to the interest of this part of the scenery. From Dinis Island, a long winding channel of more than two miles leads to the Upper Lake. The scenery seen in this passage is of surpassing grandeur and beauty. The most striking spot is at the Eagle's Crag (*fig.* 221.), a stupendous and rugged cliff, which bursts suddenly on the view, rising in a pyramidal form from the water. Throughout all the rocks of Killarney, but here most particularly, the effect of echoes is most powerful and striking. The Upper Lake, the least extensive but the most sublime, exhibits all the loftiest mountains under the most imposing point of view. Its shores are winding and varied with numerous islands, whose rocky sides contrast with the brilliant green of the arbutus. The ascent of the highest mountains, Mangerton to the north, and Gheran Tual, the highest of the *reeks* to the south-east, discloses awful ranges of rugged precipices and of dark and rocky ravines; and their summits command an astonishing view of the mountain glens and rocky shores of Kerry, the expanse of the Atlantic, and the distant plains of Cork and Limerick.

221



EAGLE'S CRAG.

2234. *Limerick*, to the north of Cork and Kerry, is one of the largest and finest counties of Ireland. Its borders include some branches from the high mountains of Kerry and Tipperary; but the main body of the county consists of a vast plain, of peculiar fertility. An alluvial tract, two or three miles broad, along the Shannon, is quite exuberant. That noble river, now expanded into an estuary or bay sixty miles in length, runs along the whole northern border of Limerick.

2235. *The city of Limerick*, till it was outstripped by Cork, was considered the second in Ireland, and is now the third. Its situation, in the centre of the grand internal navigation of the kingdom, must always secure to it an extensive trade; and, notwithstanding its distance from the sea, the largest vessels can ascend to the harbour. Limerick is one of the great marts for the export of grain and provisions; the value of those shipped from it in 1831, having been estimated at 854,600*l*. It was anciently considered the strongest fortress in Ireland, and has always stood out to the last extremity for the Catholic cause. Ireton, Cromwell's lieutenant, reduced it only after a long siege, aided by a party within the place. In 1690–1, it stood two long sieges, and yielded only upon those advantageous terms called the "capitulation of Limerick." Its capture was considered as closing the contest in support of the Stuarts. At this day, not more than a twelfth part of the population of Limerick is protestant. The spacious monasteries are almost entirelly demolished, nor does the city present any monument commensurate with its grandeur or religious character. The streets, as in most ancient towns, especially in fortified cities, are narrow, crowded, and gloomy; but since the fortifications were demolished, half a century ago, they have been carefully widened, and the new streets laid out on quite a different plan. In a large quarter built by Lord Perry, and bearing his name, they are spacious and regular; and the houses, though only of brick, built in the most handsome modern style. The assembly rooms, theatre, and other modern structures, are elegant and commodious.

2236. *Clare* county, to the north and west of Limerick, completes the circuit of Munster. The Shannon, on the south, and the bay of Galway on the north, form it into a species of peninsula: it is a wild, hilly, romantic district, abounding with fine creeks and harbours, but without any commerce to make them important. It has mines of lead, iron and coal, which have not hitherto been turned to any account. More than half the surface consists of mountain, bog, and waste; its hills, however, are depastured by numerous flocks of sheep, the wool of which is of superior quality. The plains immediately on the banks of the Shannon and the Fergus vie in fertility with any in the kingdom. Ennis, the capital, is situated on the banks of the last mentioned river, by which it communicates with the Shannon. It is considerable, though irregularly built; and its abbey, in the purest style of Gothic architecture, is considered the finest in Ireland.

Subsect. 3. *Connaught.*

2237. *Connaught* forms a great peninsula, the most westerly part of Ireland, extending from the Shannon to the Atlantic. This division is of all others the most decidedly Irish, having continued unsubdued long after the English kings claimed the proud title of lords of the island. It still contains fewer English inhabitants; the religion is more universally catholic; industry and manufactures have made less progress, and all the imperfect agricultural implements and processes are in more general use. A Connaught man is said to be considered by the other Irish as of a somewhat inferior class. Disturbances, however, have never taken place here to so great an extent as in the more populous districts of Munster and Leinster. Its shores are penetrated by deep and extensive bays, forming some of the finest harbours in the world; but this boon is of little avail to a region which has nothing to export, and no means of paying for what might be imported. These bays, however, may, and it is hoped will, ultimately afford ample opportunities for the herring and other fisheries, which are yet in their infancy. The counties in Connaught,—Galway, Mayo, Sligo, Roscommon, and Leitrim,—are of great extent.

2238. *Galway* is the largest county of Connaught, occupying the whole of its southern shores, bordering partly on the bay of the same name. The coast presents great ranges of steep and lofty cliffs, which, with the waves of the Atlantic dashing against them, present a grand spectacle. The interior contains two extensive lakes, and is much diversified with

hills, though there are few which are not fit at least for pasturage. The cat
quality, and the flocks of sheep, in this as in other parts of Connaught, are
than in other parts of Ireland. The fisheries of herring and salmon are co
though interrupted by the late disturbed state of the county, are reviving.
only a small share of the linen manufacture, and much complaint is made o
state of all the agricultural processes and implements. Galway, however, ha
considerable town, and is still supported by some inland and foreign comm
siderable fishery, by the resort of the gentry to it for sea-bathing, and as th
gay society to be found in Connaught. It was once very strongly fortified
and art; and to obtain the protection of the walls, the streets were made
houses high, massive, and gloomy; but they have of late been considerab
suburbs built, of a more gay and elegant description.

2239. *Tuam* is an ancient, handsome town, of considerable extent, the seat of an archbisho
on the eastern border, holds the greatest cattle fair in Ireland, where the oxen and sheep of
ties of Galway and Mayo are mustered for the capital. At the mouth of the bay of Galway
rocky islands of Arran, inhabited by a hardy race, who seek their food by tilling the rude s
by descending, fastened to the top by ropes, the precipitous sides of the cliffs, in search of
fowl which there build their nests.

2240. *Mayo* is also a very extensive county, occupying most of the northern coasts of the
sula. A great part is elevated and rugged; some of the mountains rising to upwards of 26
of their sides are verdant, and the valleys rich and well watered; so that Mayo is a fine past
and potatoes are raised for immediate consumption, but chiefly with the spade; or if the pl
drawn by four horses. The estates are large, but the farms small, and much subdivide
which produces the usual effect of great poverty. Mayo contains no town reckoned of suf
to return a member to the imperial parliament. Castlebar, however, the county town,
linen hall; and the linen manufacture flourishes, being chiefly indebted to the patriotic ex
Lord Lucan. Killala, a pleasant straggling village, on a bay of the same name, is chiefly not
effected in 1798 by a body of French troops under General Humbert, who penetra
defeating a British corps assembled to oppose them; but were finally obliged to surrender t
wallis.

2241. *Sligo* occupies a remaining portion of the Connaught coast, chiefly round a bay of
contains a considerable quantity of bog; but the remainder consists of a sandy gravelly soil,
production of barley and oats; so that pasturage is not so exclusively the employment here
mentioned counties. There are a number of lakes, some surrounded by hills, and very pictu
caught in large quantities. The linen manufacture has made considerable progress, and is
the capital, at the mouth of the river and the head of the bay of the same name, was in earl
able place; it has suffered severely in civil contention; yet, by the advantage of a good situ
it has attained considerable importance and trade. In the vicinity is a remarkable circle of
Giant's Grave, somewhat resembling Stonehenge.

2242. *Roscommon* is a long inland county, extending from south to north, chiefly enc
Shannon and its tributary the Suck. It is mostly level, presenting only occasional hills,
celebrated for its rich pastures; but the increase of population and manufactures has cau
them to be lately brought into tillage; it contains some pretty little lakes, among which
ticularly admired. Roscommon is ancient, and marked by some ecclesiastical antiquities, b
important as Boyle, pleasantly situated on a river of the same name, over which there are
and in its neighbourhood are the ruins of a stately abbey, founded in 1512, the arches of wh
in height, are deemed models of Gothic architectural grandeur. Elphin, the seat of a very
see, is only a village.

2243. *Leitrim* extends through the interior northward from Roscommon; it is filled wit
presenting nature under bold features, often heightened by the ruined castles which cro
There are extensive veins of iron, lead, copper, and coal, the last of which only has bee
extent; but Mr. Wakefield does not think they will ever supply the wants of Ireland in this
are good pastures in the valleys, and on the sides of the hills; and pretty large quantities
The linen manufacture is extending, and there are some considerable potteries. Ca
which ranks as the county town, and Leitrim, which gives name to it, are both, howe
villages.

SUBSECT. 4. *Ulster.*

2244. *This fourth part of Ireland* presents in many respects a superior
other three. It is not indeed so fertile as Leinster, nor derives, like it,
being the seat of government; but its population is more industrious, better
every way in more comfortable circumstances. The presbyterian form of
duced by the Scottish settlers under the reign of James I., is the prevailing o
accompanied with the same beneficial effects as in the country from which
linen manufacture, the staple of the country, has here its chief seat, and is ca
in every village. If Ulster has not the numberless bays and fine harbours
upon Connaught, those of Belfast, Londonderry, and Lough Swilly are su
wants of commerce. Its scenery cannot indeed rival the peculiar charms of
Lough Erne has high beauties, though of a different character; and the co
in the boldness and peculiar character of its rock scenery, is without a mat
part of the world. The counties of this province, which are numerous, wi
in the following order: Fermanagh, Donegal, Londonderry, Antrim, D
Tyrone, Monaghan, Cavan.

2245. *Fermanagh* is a somewhat rough county, comprising a large proportion of mountain
fertile valleys, in which, besides the usual products of oats and potatoes, flax is cultivate
about 5000 acres. It affords the material for the manufacture of linen, which is very gener
territory contains much more wood than is usual in Ireland. The waters of all the high
into Lough Erne, a noble lake, forming the pride of Fermanagh. It extends upwards of t
the whole length of the county, and is divided into two parts, connected by a long narr
portions are studded with numerous islands, covered with fine woods, which seem to dip in
in sailing through them the lake continually changes its aspect, assuming successively th
river and of a bay. At other places, long wooded promontories are seen stretching far int

though the immediate borders of the lake are not mountainous, lofty distant eminences form the general background to its prospects. Castle Caldwell, Belturbet, and Belleisle are the spots in which its beauties are peculiarly concentrated. The latter is an island of 200 acres, adorned with every variety of hill, dale, and wood. The chief and almost only town is Enniskillen, delightfully situated on an island in the channel that connects the two lakes. This site, accessible only by two opposite bridges, renders it very defensible, and enabled it to make its noble stand against the army of James II. This led to the formation of the regiment of cavalry celebrated in our military annals by the appellation of the Enniskillen dragoons.

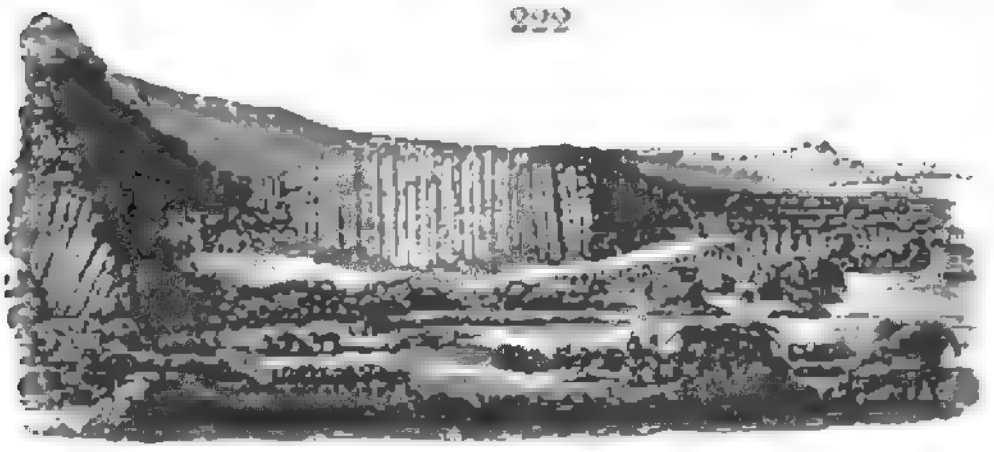
2246. *Donegal* includes a great extent of the north-western coast of Ireland, full of deep bays and fine harbours. In its interior, however, it is the least favoured of the Ulster provinces, and consists almost entirely of mountain, moss, and moor, with only a few productive valleys. It is often called, with some adjoining districts, "the black north of Ireland." It abounds in the bold and rude features of nature. This county is tolerably inhabited and cultivated, considering its natural disadvantages; but distillation on an illicit basis forms too active a branch of its industry. There are great opportunities for fishery; and considerable efforts have been made, with some success, to promote that employment. Lifford, its very small county town, stands on the Foyle, upon the borders of Derry. Ballyshannon, almost at the opposite extremity, is a thriving town, beautifully situated on the channel by which Lough Erne pours its waters into the Atlantic. Raphoe is a celebrated episcopal see, but now only a decayed village. The place bearing the name of Donegal is no longer of any importance.

2247. *Derry, or Londonderry*, is a large and fine county, one of the most northerly in Ireland. It is crossed by a long range of mountains, whose principal peaks are from 1000 to 1500 feet high, and a considerable part of whose surface consists of heath and bog. There are, however, fine valleys, and even extensive plains, which are cultivated with some diligence, but according to that system of minute subdivision which is the bane of Irish agriculture. The linen manufacture flourishes in full vigour, chiefly, according to the Irish system, among the little farmers and cotters, who combine it with the cultivation of a few acres. The county abounds with granite, basalt, freestone, and lime; it has some fine rock crystal, and veins of coal, but they are not worked to any extent. Londonderry is a fine city, situated at the point where the broad river Foyle, after traversing a great part of this county and that of Tyrone, falls into the broad basin of Lough Foyle. It is ancient, being the theatre of remarkable events even in the time of the Danes. In 1608, after the attainder of O'Neale, it was granted by James I. to the citizens of London, whence it derived the first part of its name. But its chief distinction was from the siege sustained by the city in 1690-1, against the united forces of Ireland under James II., when, after being given up by the regular commanders, the defence was taken up and nobly maintained by a clergyman of the established church, of the name of Walker. Londonderry is now a handsome town, composed of four main streets crossing each other at right angles, and surrounded still by its old walls in full repair, serving rather for ornament than defence. It has an ancient Gothic cathedral, and some handsome modern edifices. It is now supported by an extensive commerce, for which Lough Foyle, though its entrance is somewhat impeded by a bar, affords a spacious and secure harbour. Its chief intercourse is with America and the West Indies, to which it exports the linen manufacture in this part of the country. Coleraine is a well-built agreeable town on the Bann, which flows from Lough Neagh, and on which is the most extensive salmon fishery in the island; but the rapidity of the stream obstructs the navigation upwards.

2248. *Antrim*, occupying the north-eastern corner of the kingdom, opposite the coast of Scotland, is one of the most remarkable districts of Ireland, in regard to natural features as well as to commerce and industry. It is not, indeed, peculiarly favourable to agriculture. A great part of the surface is composed of mountains, not very lofty, but rugged, composed chiefly of rock and moss, and even its best soils are scarcely available for agricultural purposes till improved by the use of the lime with which the country abounds. In the interior the mountains have nothing peculiar in form or aspect; but where they face the waves of the ocean, they are broken into vast perpendicular precipices, exhibiting the basaltic columnar form on a grander scale than exists in any other part of the world.

2249. *Of these objects, the Giant's Causeway* (*fig.* 222.) is beyond comparison the most celebrated and magnificent. Three natural piers or moles, 400 feet in height, here stretch out into the sea, and are visible above the water for about 300 yards. The walls are composed of dark basaltic columns, of the most regular form, and so closely united, that only the blade of a knife can be thrust between them. Each column is distinct from the others, and divided into jointed portions, as perfect as if art had formed them; there being in each part a projection, which is lodged in a corresponding concavity or socket of the one contiguous. The coast eastward of the causeway is composed of a succession of capes, presenting the most sublime scenery; dark precipitous cliffs, rising regularly in gradually retiring strata, and formed into various broken colonnades which might suggest the idea of palaces overwhelmed in ruins.

222



THE GIANT'S CAUSEWAY.

2250. *Other striking features* distinguish the coast of Antrim. Conspicuous above all others is Fairhead, called also Benmore; a promontory which forms nearly the north-eastern point of Ireland. It consists of a vast mass of columnar greenstone, composing a mural precipice, rudely columnar, and 250 feet high. At its feet lies a chaos of huge masses of rock, heaped together in the wildest confusion, and forming a scene of ruin the awful grandeur of which has scarcely a parallel. Against this the sea heaves in a solemn majestic swell, the peculiar attribute of the Atlantic waters. Carrick-a-Rede (*fig.* 223.) is a small island composed of a mass of basalt, imperfectly formed into columns, separated from the continent by a chasm of sixty feet. The fishermen, however, have occasion to resort to it with the view of placing nets to intercept the salmon; to reach it, therefore, they have constructed a daring and singular bridge, formed of two strong parallel cables fixed to each side, with planks inserted between them. This slight pontage is subject to violent movements, and, if not judiciously trodden, may precipitate the passenger into the abyss; but the fishermen, accustomed to tread it, carry great loads across without the slightest apprepension. Several of the precipitous cliffs are adorned with the ruins of ancient castles, the grandest of which is Dunluce (*fig.* 224.), whose extensive area covers the long ridge of an almost insulated rock, which presents its perpendicular face to the ocean. The walls enclose the entire surface of the rock, and rise up as a continuation of its precipitous sides. In one place, the rocky base having given way, the apartment above actually overhangs the sea. But leaving these wild and romantic scenes of nature, let us proceed to the towns of Antrim, which are no less remarkable as the scenes of busy industry and crowded population.

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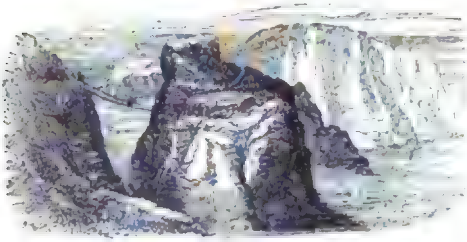
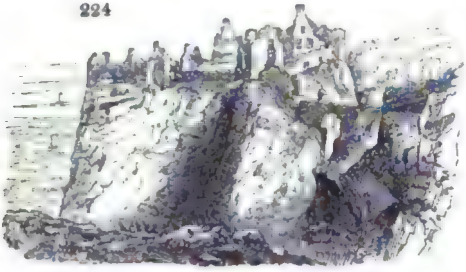


CARRICK-A-REDE.

224



DUNLUCE CASTLE.

2251. *Belfast,* the grand emporium of the north of Ireland, has risen to greatness by recent and very rapid steps. It is scarcely mentioned before the beginning of the sixteenth century. It was made a borough in the fifth of James I., when a castle had been built, which gave it some consequence in the subsequent civil wars; but it was burnt in the year 1708. Carrickfergus, by means of peculiar privileges, was then enabled to monopolise all the trade of this part of Ireland, till these privileges were bought up by the Earl of Strafford. The career of competition was then opened to Belfast, and she gradually outstripped all her rivals. In 1660, the town contained five streets; and, as is supposed, about 6500 inhabitants. At present there are considerably above 100 streets, and the population in 1831 was about 53,000, exclusive of a large suburb in the county of Down. The linen manufacture is very flourishing at Belfast, and that of cotton is rapidly extending; besides which there are various minor fabrics. Commerce, however, is the main source of its wealth. The linen fabrics of the north are largely exported, along with oats, oatmeal, and salted provisions; the entire value of which, in 1810, amounted to 2,900,000*l.* The duties of customs, which in 1801 were 182,314*l.*, had risen in 1829 to 259,000*l.* Belfast Lough forms a noble and secure bay, and though the channel at the mouth of the Lagan was originally rather shallow, it has been so deepened by art that vessels drawing thirteen feet water can come close to the wharfs. Belfast is mostly built of brick; but several public edifices, recently erected, the Commercial Buildings, the Museum, St. George's Church, &c., are handsomely ornamented with pillars of freestone. The bridge over the Lagan, remarkable for its length, is otherwise defective; but a new one is erecting. Belfast has several commercial and literary institutions; and in 1810, the Royal Academical College, a seminary on an extensive scale, was founded.

2252. *The other towns of Antrim* can boast little more than names known in history. Antrim itself has lost its former importance, though beautifully situated near the great body of water called Lough Neagh, which covers about 100,000 English acres, and borders on five counties, — Armagh, Tyrone, Londonderry, Down, and Antrim. Its flat shores possess little of interest or beauty; and its overflowings have converted into bog about 60,000 acres round it. This lake abounds in fish, among which are char, shad, and other rare species. Carrickfergus, at the mouth of Belfast Lough, is a very ancient town, once the emporium and key of northern Ireland. It was here, in particular, that the Scots made their inroads; and in 1316, after a very long and obstinate defence, it was taken by Robert Bruce. In 1689, after all Ireland had embraced the cause of James, Marshal Schomberg landed with a force of 10,000 men, destined to re-establish the English and protestant supremacy. Since that time, Carrickfergus has yielded the palm of commerce entirely to Belfast, and is supported only by being the county town and resorted to as a watering-place. Lisburn is a prosperous town, with a manufacture of damask. Ballycastle is a small town in the north of Antrim, distinguished by the vicinity of coal mines so extensive that it has been supposed they might supply a great part of Ireland, if a safe harbour could be formed at which to ship them; but the dreadful swell which the north-west winds bring in between the continent and the opposite island of Raghery baffles such an attempt. Mr. Boyd, the proprietor, obtained 23,000*l.* from government for the erection of a pier; but it was overthrown by the waves, and lies now in ruins. Ballymena, in the heart of the county, is a thriving place, with a good linen market.

2253. *Down* is a fine county, commencing on the south bank of Belfast Lough, and penetrated by several large lakes, as those of Strangford and Carlingford. The last of these receives the Newry, which communicates by a canal with Lough Neagh. The Mourne mountains, on the southern border, exceed 2000 feet in height, and form a conspicuous object; and there are a number of detached hills; but a large extent of the county is level, and a greater proportion is under tillage than pasturage. The combination of farming and weaving exists in a remarkable degree; and the linen fabrics are not only extensive, but some of them very fine. Of late, however, those of cotton have gained a preference in many districts. Down, or Downpatrick, celebrated in tradition as the burial-place of the patron saint, is of moderate dimensions, and its public buildings respectable. Newry is larger and more flourishing. These advantages are owing to its situation in the bay of Carlingford, and its canal communication with Lough Neagh, which enable it to export the linen manufactures and provisions produced in an extensive district. It is ancient, but has been repeatedly destroyed, and in 1689 was reduced to ashes by Marshal Berwick; so that it is now quite a new town. Donaghadee, a considerable port, with a large substantial quay, is chiefly remarkable for the ferry between it and Portpatrick, the shortest sea communication with Britain, and by which packets are despatched and live stock in very great quantities conveyed over.

2254. *Armagh* immediately in the *interior from Down* is also a fine and agreeable county. A range of high mountains runs through it, but in general it is only pleasingly diversified with little hills, the bogs are no more than requisite for supplying fuel, and only a small part is left unproductive. Both culture and manufacture are prosecuted with great activity. The linens produced in 1824 were reputed at 568,000*l.*, being more than those in any other county, and exceeding a fifth of the produce of the whole kingdom. Armagh, the capital, was celebrated in the early history of Ireland as one of its most extensive and populous cities, and has always been the ecclesiastical metropolis of the kingdom. The Augustine monastery, and the college attached to it, ranked for a long time among the most celebrated institutions in Europe for religion and learning; the latter, it is said, could once boast of 7000 students. It sunk, however, under successive ravages by the Danes, the English, and, finally, the Irish insurgents under O'Neale, and not being supported either by foreign commerce or the residence of a government, it fell into great decay; but by good fortune had for its primate Dr. Richard Robinson, to whose munificent exertions is ascribed its revival and its having become one of the prettiest little cities in Ireland. To him Armagh is indebted for the repair of its large ancient cathedral, for a library, and an observatory. The linen market is well supported by the flourishing state of the manufacture in Armagh. The only other place of consequence is Lurgan, near Lough Neagh, a very thriving manufacturing town.

2255. *The three counties of Tyrone, Monaghan, and Cavan* occupy a great proportion of the interior of Ulster, and present a very uniform aspect; a considerable extent of mountain and bog, fertile plains, rude cultivation, and the linen manufacture. O'Neale, Earl of Tyrone, was long one of the most formidable enemies of the English power; but being attainted and vanquished, the title and estates were forfeited, and belong now to the house of Beresford. Omagh is the county town of Tyrone, but is not so considerable as Dungannon, a large, populous, and handsome place, once the chief seat of the O'Neales; but this powerful castle was demolished by the parliamentary forces. Strabane is also a populous place, finely situated on the Foyle. Monaghan and Cavan are both tolerable county towns, which alone possess any importance in their respective shires.

CHAP. V.

FRANCE.

2256. *France is a great and powerful kingdom*, placed, as it were, in the centre of the civilised world, and for several centuries distinguished by the conspicuous part which it has acted on the theatre of Europe. Its contiguity to Britain, and even the jealousy and enmity which have so long subsisted between these mighty rivals, renders it peculiarly deserving of an attentive survey.

SECT. I. *General Outline and Aspect.*

2257. *France is bounded* on the north by the Channel, which separates it from England, and by part of the frontier of the Netherlands. On the east it is bounded by Germany, from which it is divided by the Rhine, and by Switzerland and Italy, which lie on the other side of the mighty barrier of the Alps. Its southern limits are the Mediterranean and the broad isthmus filled by the Pyrenees, on the other side of which extends the Spanish peninsula. On the west is the Atlantic, and more especially that vast gulf called the Bay of Biscay. The southern extremity, on the line of the Pyrenees, falls in 42° 4′ N. lat., the northern beyond Dunkirk in 51° 10′, making in length eight and a half degrees of latitude. The breadth may be from 8° 2′ E. long., to 4° 4′ W. long. making thirteen degrees of longitude. This will give dimensions nearly square of 595 miles from north to south, and 550 from east to west. The superficial extent according to a report presented to the minister of finance by the royal commission appointed to survey the kingdom, is 26,218 square leagues, or about 209,000 square English miles, containing 51,910,062 hectares (about 129,000,000 acres).

2258. *The surface of this very extensive territory* is in general level, although it borders and is encroached upon by the greatest mountain ranges of Europe. The Alps cover the full half of its eastern frontier, and their branches extending into Dauphiné and Provence, render them very rugged and romantic regions. The Pyrenees, which rank second among the chains of the Continent, range along the southern border, and cover with their branches Roussillon and Gascony. On the east, where France reaches to the Rhine, are the Vosges and other chains of moderate height, parallel to that river. The only range exclusively French, is that of Auvergne, in the centre of the kingdom, which not only includes all that province where it rises to the height of 5000 or 6000 feet, but stretches by a winding line along the left bank of the Allier to Languedoc, parallel to the coast of the Mediterranean, where it is called the Cevennes. But by far the greater part of France, including the whole north and the whole east, is one widely extended plain, which yields in very high perfection all the fruits and products of the temperate zone.

2259. *The rivers of France*, though not of the first magnitude, are noble and commodious. Traversing almost every part of the kingdom, they afford ample means of internal navigation; and the broad plains which border on them yield the most luxuriant harvests. The Loire, MAP OF FRANCE — WEST PART.

Fig. 225.

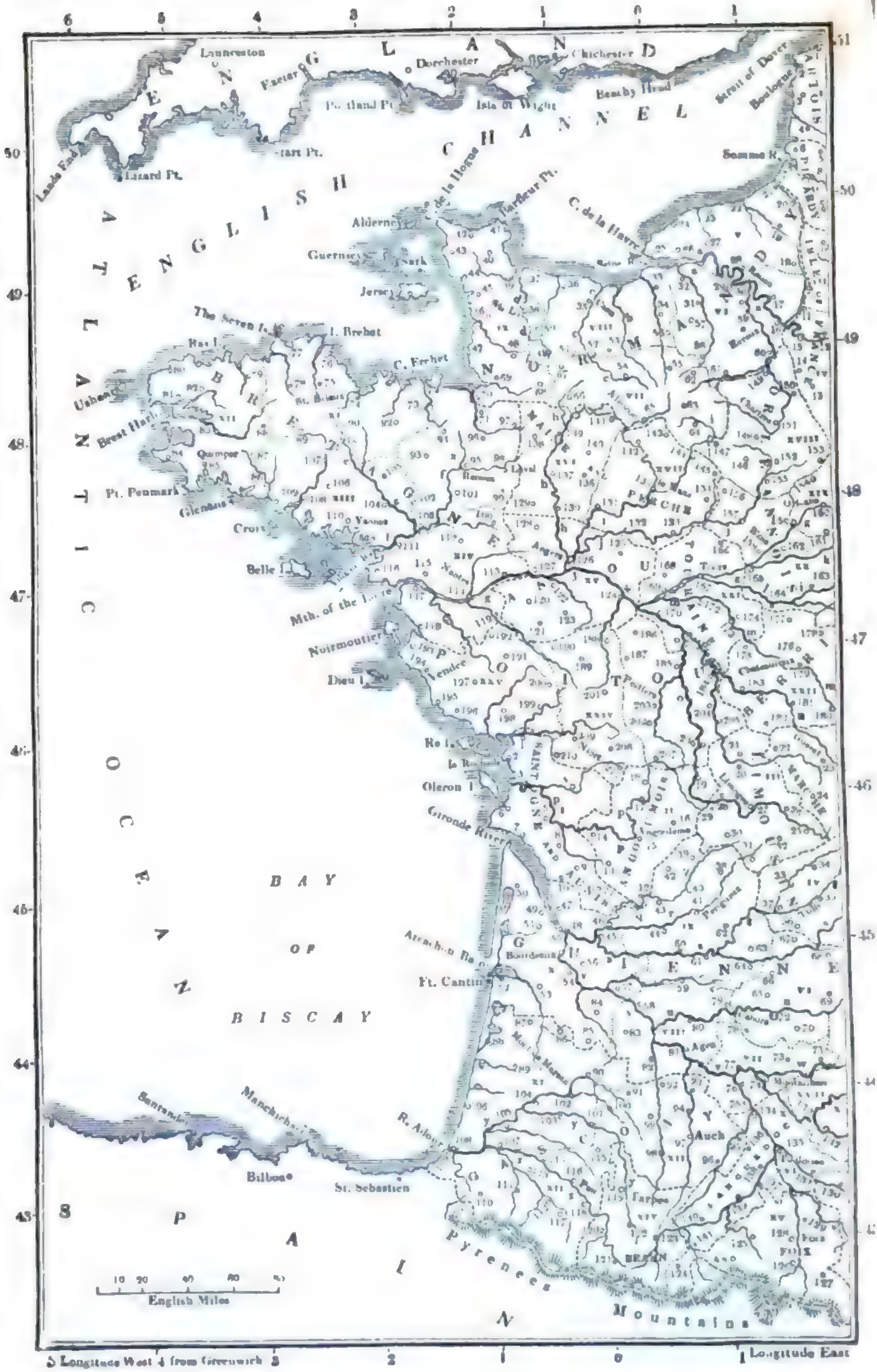
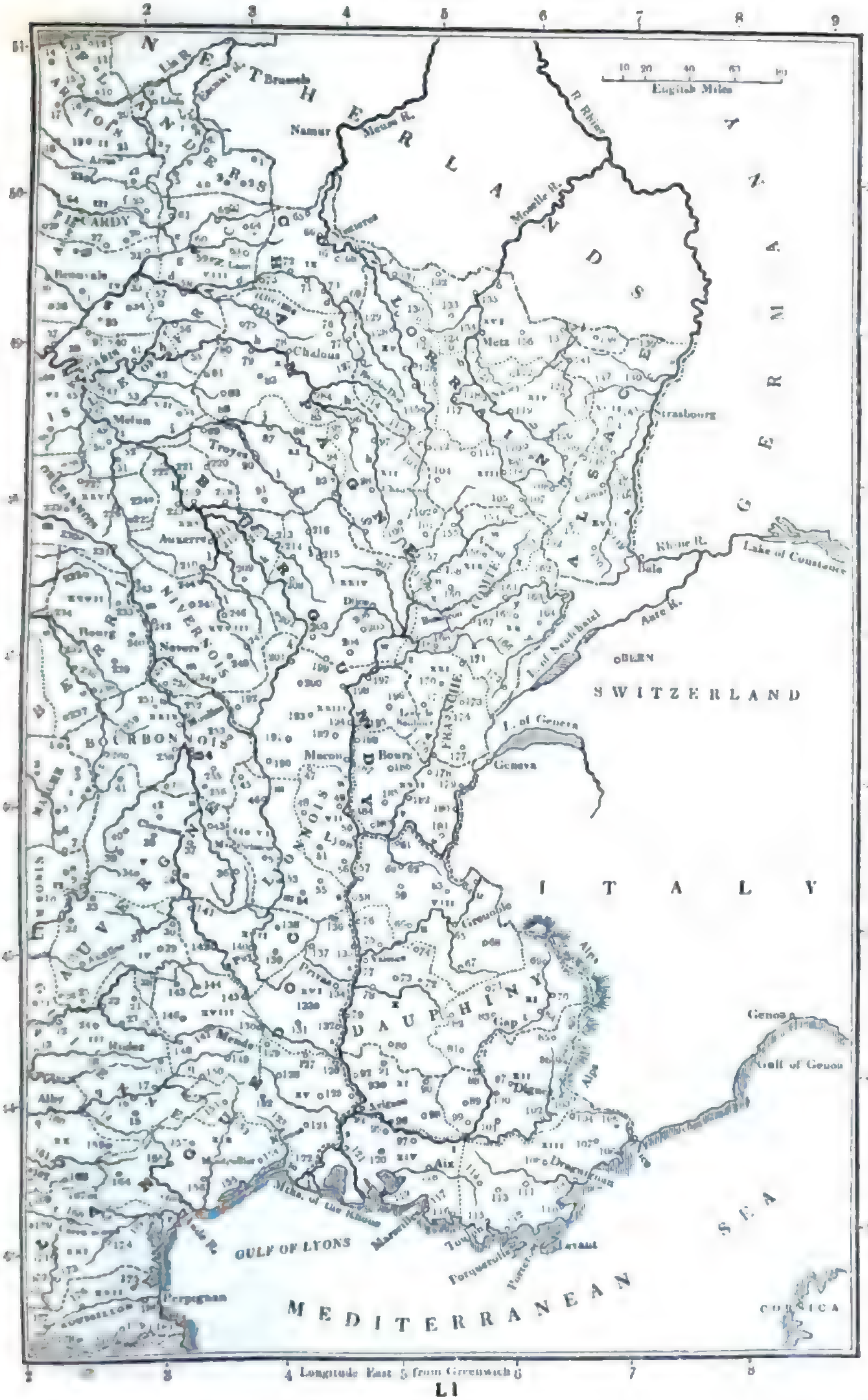


Fig. 226.

MAP OF FRANCE—EAST PART.



which is the principal, rises in the south, on the borders of Provence, and flows for some time nearly north, parallel to the course of the Rhone and the Saône, though in an opposite direction. Near Nevers it receives the Allier, which in a parallel and nearly equal stream has hitherto accompanied it; it now gradually bends round into a westerly course, which it follows through the plains of Orleannois and Touraine, the garden of France, till, after a course of 700 miles, it falls into the sea a little below the great commercial city of Nantes. The Rhone is not at first a French river: it rises in the heart of Switzerland, amid the eternal snows and glaciers of the Grimsel and the Schreckhorn, and rolls its earliest course beneath the mighty mountain walls of St. Gothard, Monte Rosa, and the Simplon. It now expands into the Leman lake, from which it emerges near Geneva, when it soon enters France, and rolls direct towards Lyons. At that great city it receives the Saône, bringing down an ample stream from the Vosges, swelled by that of the Doubs from the Jura. The Rhone now, following the direction of its tributary, turns directly south, and, after a rapid course through Dauphiné and Provence, enters the Mediterranean by several mouths. In this course, the

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References to the Map of France.— West Part.

NORTH PART.
Province of
ARTOIS.
Department of
I. Strait of Calais.

1. Calais
2. Boulogne
3. Samer
4. Montreuil.

Province of
PICARDY.
Department of
II. Somme.

5. Cressy
6. Rue
7. St. Vallery
8. Abbeville
9. Airaines.

Province of the
ISLE OF FRANCE.
Departments.
III. Oise
IV. Seine and Oise.

10. Grandvillers
11. St. Clair
12. Meulan
13. Rambouillet
14. Houdan
15. Mantes.

Province of
NORMANDY.
Departments.
V. Lower Seine
VI. Eure
VII. Orne
VIII. Calvados
IX. The Channel.

16. Vernon
17. Andeleys
18. Gournay
19. Neufchâtel
20. Blangis
21. Eu
22. Dieppe
23. St. Vallery
24. Fécamp
25. Havre de Grace
26. Holbec
27. Yvetot
28. Rouen
29. Elbœuf
30. Louviers
31. Brionne
32. Pont Audemer
33. Pont l'Evêque
34. Lisieux
35. Caen
36. Bayeux
37. Isigny
38. St. Lo
39. Carentan
40. Valognes
41. Barfleur
42. Cherbourg
43. Les Pieux
44. Barneville
45. Créance
46. Coutances
47. Granville
48. Villedieu
49. Vire
50. Thorigny
51. St. Germain
52. Pont d'Ouilly
53. Falaise
54. Argentan
55. Gace
56. Orbec
57. Bernay
58. Rugles
59. Evreux
60. Ivry
61. Verneuil
62. L'Aigle
63. Mortagne
64. Belesme
65. Alençon
66. Domfront
67. Tinchebray
68. Mortain
69. Avranches
70. Pontorson.

Province of
BRETAGNE.
Departments.
X. Ille and Vilaine
XI. North Coast
XII. Finisterre
XIII. Morbihan
XIV. Lower Loire.

71. Antrain
72. St. Malo
73. Dinan
74. St. Brieux
75. Guingamp
76. Paimpol
77. Lannion
78. Belle Ile
79. Morlaix
80. Lannilis
81. Brest
82. Landerneau
83. Châteaulin
84. Andierne
85. Quimper
86. Quimperle
87. Gourin
88. Carhaix
89. Rostrenen
90. Uzel
91. Loudeac
92. Broons
93. Montfort
94. Hede
95. Rennes
96. St. Aubin
97. Fougères
98. Vitre
99. La Guerche
100. Châteaubriant
101. Cervin
102. Carentoire
103. Redon
104. Maletroit
105. Ploermel
106. Band
107. Pontivy
108. Hennebon
109. L'Orient
110. Vannes
111. Roche-Bernard
112. Nozay
113. Ancenis
114. Nantes
115. Savenay
116. Guerrande
117. Paimbœuf
118. Bourganeuf
119. Clisson.

Province of
ANJOU.
Department of
XV. Mayenne and Loire.

120. Beaupreau
121. Chollet
122. Chalonne
123. Vihiers
124. Saumur
125. Bauge
126. Angers
127. Ingrande
128. Segre

Province of
MAINE AND
PERCHE.
Departments.
XVI. Mayenne
XVII. Sarthe.

129. Craon
130. Chat Gontier
131. Sable
132. La Flèche
133. Château du Loir
134. St. Calais
135. Le Mans
136. Vaiges
137. Laval
138. Juvigne
139. Mayenne
140. Ebron
141. Prez en Pail
142. Prenay
143. Mamers
144. La Ferte Bernard
145. Montmirail.

Province of
ORLEANNOIS.
Departments.
XVIII. Eure and Loir
XIX. Loiret
XX. Loir and Cher.

146. Bron
147. Nogent le Rotrou
148. Alliers
149. Dreux
150. Maintenon
151. Chartres
152. Bonneval
153. Toury
154. Arlenay
155. Châteaudun
156. Mondoubleau
157. Vendôme
158. Blois
159. Melun
160. Orléans
161. Cosson
162. Chambord
163. Romorantin
164. St. Aignan
165. Chaumont

Province of
TOURAINE.
Department of
XXI. Indre and Loire

166. Chat Regnault
167. Tours
168. Savigné
169. Langeais
170. Chinon
171. La Haye
172. Monthason
173. Loches
174. Beaulieu.

Province of
BERRI.
Department of
XXII. Indre.

175. Châtillon sur Indre
176. Levroux
177. Valençay
178. Valan
179. Châteauroux
180. La Châtre
181. Argenton
182. St. Benoît
183. Le Blanc

Province of
POITOU.
Departments.
XXIII. Vienne
XXIV. Two Sèvres
XXV. Vendée

184. La Roche Posay
185. Chatellerault
186. Loudun
187. Moncontour
188. Thouars
189. Bressure
190. Châtillon sur Sèvre
191. Pouzange
192. Montaigu
193. Beauvoir
194. St. Gilles sur Vie
195. Sables d'Olonne
196. Talmont
197. Bourbon-Vendée
198. Luçon
199. Fontenay
200. Chataigneraye
201. Parthenay
202. Vivonne
203. Poitiers
204. St. Savin
205. Montmorillon
206. L'Isle Jourdain
207. Chivray
208. Melle
209. Niort
210. Mauze
211. Sauze.

SOUTH PART.
Province of
SAINTONGE AND
AUNIS.
Department of
I. Inferior Charente.

1. Marans
2. La Rochelle
3. Rochefort
4. St. Jean d'Angely
5. Saintes
6. Marennes
7. Royan
8. Pons
9. Jonzac
10. Mirambeau
11. Moulieu.

Province of
ANGOUMOIS.
Department of
II. Charente.

12. Aubeterre
13. Barbezieux
14. Cognac
15. Angoulême
16. La Rochefoucauld
17. Marale
18. Ruffec
19. Confolens.

Provinces of
MARCHE AND
LIMOUSIN.
Departments.
III. Upper Vienne
IV. Corrèze
V. Creuse.

20. Bellac
21. Le Dorat
22. Souterraine
23. Gueret
24. Bourganeuf
25. Eymontiers
26. St. Leonard
27. Limoges
28. St. Junien
29. Rochechouart
30. Chalus
31. St. Yrieux
32. Pierre Buffière
33. Uzerche
34. Treignac
35. Tulle
36. Turenne
37. Donzenac.

Province of
GUIENNE.
Departments.
VI. Lot
VII. Tarn and Garonne
VIII. Lot and Garonne
IX. Dordogne
X. Bordeaux.

38. Thiviers
39. Nontron
40. Brantôme
41. Périgueux
42. Mareuil
43. Riberac
44. Mucidan
45. Libourne
46. Coutras
47. Blaye
48. Bourg
49. Medoc
50. Lesparre
51. Casteinau
52. La Tête de Buch
53. Le Barp
54. Castres
55. Bordeaux
56. Creon
57. La Reolle
58. Marmande
59. Castillonez
60. Bergerac
61. La Linde
62. Miremont
63. Sarlat
64. Domme
65. Catus
66. Gourdon
67. Martel
68. St. Cere
69. Figeac
70. Concots
71. St. Antonin
72. Cahors
73. Caussade
74. Montauban
75. Verdun
76. Castelsarrasin
77. Moissac
78. Moncuq
79. Fumel
80. Villeneuve-d'Agen
81. Agen
82. Nérac
83. Castel-Geloux
84. Bazas
85. Captieux.

Province of
GASCONY.
Departments.
XI. Landes
XII. Lower Pyrenees
XIII. Gers.

86. Sore
87. Murat
88. Mimizan
89. La Boulière
90. Roquefort
91. Eauze
92. Condom
93. Lectoure
94. Fleurance
95. Isle en Jourdain
96. Lombez
97. Auch
98. Mirande
99. Vic Fezensac
100. Nogaro
101. Aire
102. Mont de Marsan
103. St. Sever
104. Monfort
105. Dax
106. St. Vincent
107. Peyrehorade
108. St. Esprit
109. Bayonne
110. St. Jean Pied de Port
111. Mauleon
112. Oleron
113. Navarreins
114. Orthes
115. Garlin
116. Pau
117. Arudi
118. Nai.

Province of
BEARN AND
FOIX.
Departments.
XIV. Upper Pyrenees
XV. Arriège

119. Tarbes
120. Argelles
121. Luz
122. Bagnères
123. Sarranc lin
124. Bagnères de Luchon
125. St. Girons
126. Tarascon
127. Ax
128. Foix
129. Pamiers.

Province of
LANGUEDOC.
Departments.
XVI. Upper Garonne
XVII. Tarn.

130. Castelnaudary
131. Villefranche
132. Lavaur
133. St. Sulpice
134. Grenade
135. Toulouse
136. St. Lys
137. Muret
138. Rieux
139. Cazères
140. St. Gaudens
141. St. Béat.

Rivers
a Seine
b Dives
c Oure
d Vire
e Oust
f Vilaine
g Loire
h Mayenne
i Sarthe
j Loire
k Beauvron
l Le Cher
m Indre
n Creuse
o Vienne
p Charente
q Dronne
r Isle
s Dordogne
t Vezère
u Lot
v Garonne
w Aveyron
x Tarn
y Adour
z Gave de Pau.

Alps transmit to it the Isère, and the classical stream of the Durance: its entire length may be 500 miles. The Seine, though of inferior magnitude, claims distinction, as flowing by the metropolis: it rises on the frontier of Burgundy, and runs almost due north till it re-

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References to the Map of France. — East Part.

NORTH PART.
Province of
FLANDERS.
Department of
I. The North.

1. Maubeuge
2. Avesnes
3. Landrecy
4. Le Câteau
5. Cambrai
6. Valenciennes
7. Douay
8. St. Amand
9. Lille
10. Hazebrouck
11. Cassel
12. Dunkirk
13. Gravelines.

Province of
ARTOIS.
Department of the
II. Strait of Calais.

14. Ardres
15. St. Omer
16. Aire
17. Fauquemberg
18. Hesdin
19. St. Pol
20. Bethune
21. Arras
22. Bapaume.

Province of
PICARDY.
Department of
III. Somme.
23. Doulens
24. Amiens
25. Péronne
26. Roye
27. Montdidier
28. Poix.

Province of
THE ISLE OF
FRANCE.
Departments.
IV. Oise
V. Seine
VI. Seine and Oise
VII. Seine and Marne
VIII. Aisne.

29. Breteuil
30. Beauvais
31. Clermont
32. Noyon
33. Compiègne
34. Crespy
35. Senlis
36. Meru
37. Pontoise
38. St. Dénis
39. Luzarches
40. Dammartin
41. Meaux
42. Coulommier
43. Marolles
44. Paris
45. Sceaux
46. Versailles
47. Corbeil
48. Etampes
49. Melun
50. Fontainebleau
51. Nemours
52. Montereau Fault Yonne
53. Rosoy
54. Provins
55. Château Thierry
56. La Ferte Milon
57. Villers Cotterets
58. Soissons
59. Laon
60. La Fère
61. St. Quentin
62. Guise
63. Sissonne
64. Vervins.

Province of
CHAMPAGNE.
Departments.
IX. Ardennes
X. Marne
XI. Aube
XII. Upper Marne.

65. Rocroy
66. Charleville
67. Mezières
68. Sedan
69. Grand Pré
70. Vouziers
71. Attigny
72. Rethel
73. Asfeld
74. Rheims
75. Courtagnon
76. Valmy
77. St. Ménéhoud
78. Châlons
79. Epernay
80. Dormans
81. Montmirail
82. Sezanne
83. Vertus
84. Vitry sur Marne
85. St. Remy
86. Ramaru
87. Arcis sur Aube
88. Marailly
89. Nogent sur Seine
90. Troyes
91. Chaource
92. Bar sur Seine
93. Clairvaux
94. Bar sur Aube
95. Montierender
96. Vassy
97. Joinville
98. Chaumont
99. Auberive
100. Langres
101. Fay le Billot
102. Bourbonne les Bains
103. Bourmont.

Province of
LORRAINE.
Departments.
XIII. Vosges
XIV. Meurthe
XV. Meuse
XVII. Moselle.

104. Signeville
105. Plombières
106. Epinal
107. Remiremont
108. Gerardmer
109. St. Die
110. Remberviller
111. Mirecourt
112. Neufchâteau
113. Gondrecourt
114. Bar le Duc
115. Vaucouleurs
116. Commercy
117. Toul
118. Nancy
119. Luneville
120. Raon
121. Sarrebourg
122. Chat Salins
123. Nomeny
124. Gorze
125. Fresnes
126. St. Mihiel
127. Vaubecourt
128. Verdun
129. Varennes
130. Estain
131. Montmedy
132. Longwy
133. Briey
134. Metz
135. Thionville
136. St. Avold
137. Sarreguemines
138. Bitche.

Province of
ALSACE.
Departments.
VII. Lower Rhine
VIII. Upper Rhine.

139. Weissemburg
140. Haguenau
141. Bouquenon
142. Saverne
143. Strasburg
144. Molsheim
145. Schelstat
146. St. Marie aux Mines
147. Colmar
148. Neuf Brisach
149. Mulhausen
150. Altkirch
151. Thann
152. Giromagny.

Province of
FRANCHE-COMTE.
Departments.
XIX. Upper Saône
XX. Doubs
XXI. Jura
153. Lure
154. Luxeuil
155. Jussey
156. Vesoul
157. Champlitte
158. Dampierre
159. Gray
160. Gy
161. Baume
162. Montbéliard
163. St. Hypolite
164. Le Russey
165. Passavant
166. Ornans
167. Besançon
168. Quingey
169. Dôle
170. Poligny
171. Salins
172. Rochejean
173. Neuve
174. Clairevaux
175. Lons le Saulnier
176. Dortan
177. St. Claude.

Province of
BURGUNDY.
Departments.
XXII. Ain
XXIII. Saône and Loire
XXIV. Côte d'Or
XXV. Yonne
178. Nantua
179. Fort de l'Ecluse
180. Seyssel
181. Belley
182. Poncin
183. Mount Luel
184. Trévoux
185. Chalamont
186. Bourg
187. Maçon
188. Port de Vaux
189. Cluny
190. Semur en Brionnois
191. Corolles
192. Bourbon-Lancy
193. M. St. Vincent
194. Tournus
195. Romenay
196. Louhans
197. Châlonne
198. Châlons
199. Nolay
200. Montcenis
201. Autun
202. Saulieu
203. Arnay le Duc
204. Beaune
205. Nuits
206. Dijon
207. Issur Til
208. Semur
209. Avalon
210. Coulange les Vinces
211. Auxerre
212. Vermanton
213. Ravières
214. Montbard
215. Baigneux
216. Châtillon sur Seine
217. Tonnerre
218. St. Florentin
219. Joigny
220. Villeneuve l'Archévêque
221. Sens
222. Pont sur Yonne
223. St. Julien.

Province of
ORLEANNOIS.
Department of
XXVI. Loiret
224. Courtenay
225. Châtillon
226. Montargis
227. Boyne
228. Pithiviers
229. Combreux
230. Sully
231. Gien.

Province of
BERRI.
Department of
XXVII. Cher.
232. Aubigny
233. Sancerre
234. Vierzon
235. Bourges
236. Châteauneuf
237. Chat Meillant
238. St. Amand
239. Blet
240. Sancergues.

Province of
NIVERNOIS.
Department of
XXVIII. Nièvre.

241. Nevers
242. La Charité
243. Cosne
244. Clamecy
245. Champlemi
246. Corbigny
247. Château Chinon
248. Moulins en Gilbert
249. Decize
250. St. Pierre le Mont.

Province of
BOURBONNOIS.
Department of
XXIX. Allier.

251. Bourbon-l'Archambault
252. Moulins
253. Donjon
254. Varennes
255. La Palisse
256. Cusset
257. Gannat
258. St. Pourcain
259. Herisson
260. Mont Luçon

SOUTH PART.
Province of
MARCHE.
Department of
I. Creuse.

1. Boussac
2. Jarnage
3. Chambon
4. Auzance
5. Aubusson
6. Felletin
7. Courtine.

Province of
LIMOUSIN.
Department of
II. Corrèze.

8. Ussel
9. Bort
10. Egletons.

Province of
GUIENNE.
Department of
III. Aveyron.

11. Figéac
12. Livignac
13. Villefranche
14. St. Sernin
15. St. Afrique
16. St. Rome
17. Milhau
18. Rodez
19. Severac
20. St. Genies
21. Gniolle
22. Entraigues
23. Espalion
24. Ville Comtal.

Province of
AUVERGNE.
Departments.
IV. Cantal
V. Dôme.

25. Mount Salvy
26. Maurs
27. Aurillac
28. Chaudes Aigues
29. St. Flour
30. Massiac
31. Murat
32. Muriac
33. Seignes
34. Bosse
35. Issoire
36. Ambert
37. Billom
38. Clermont
39. Rochefort
40. Pont Gibaud
41. Montaigu
42. Riom
43. Thiers.

Province of
LYONNOIS.
Departments.
VI. Loire
VII. Rhone.

44. L'Hôpital
45. Pacudière
46. Roanne
47. Aigueperse
48. Thizy
49. Villefranche
50. Lyons
51. Isseron
52. Montbrisson
53. St. Rambert
54. St. Etienne
55. St. Chamond
56. Brignais.

Province of
DAUPHINE.
Department of
VIII. Isère
IX. Upper Alps
X. Drôme.

57. Vienne
58. Peage
59. Côte St. André
60. Bourgoin
61. Cremieu
62. La Tour du Pin
63. Voiron
64. St. Barraux
65. Grenoble
66. Marcellin
67. La Mure
68. Bourg d'Ayssans
69. Briançon
70. Montdauphin
71. St. Bonnet
72. Die
73. Beaufort
74. St. Jean de Rol
75. Isère
76. St. Vallier
77. Valence
78. Crest
79. Montelimart
80. Nions
81. Largu
82. Argençon
83. Gap
84. Embrun.

Province of
PROVENCE.
Departments.
XI. Vaucluse
XII. Lower Alps
XIII. Var
XIV. Mouths of the Rhone.

85. Barcelonnette
86. Colmar
87. Digne
88. Sisteron
89. Forcalquier
90. Jault
91. Vaison
92. Orange
93. Carpentras
94. Avignon
95. Orgon
96. Cavaillon
97. Lambesc
98. Apt
99. Manosque
100. Les Mees
101. Riez
102. Castellane
103. Entrevaux
104. St. Auban
105. Vence
106. Antibes
107. Grasse
108. Draguignan
109. Fréjus
110. St. Tropez
111. Le Luc
112. Hières
113. Brignolle
114. St. Maximin
115. Toulon
116. La Ciotat
117. Marseilles
118. Aix
119. Martigues
120. Salon
121. Arles.

Province of
LANGUEDOC.
Departments.
XV. Gard
XVI. Ardèche
XVII. Upper Loire
XVIII. Lozère
XIX. Hérault
XX. Tarn
XXI. Aude.

122. Aigues-mortes
123. Sommières
124. Nismes
125. Uzes
126. Pont St. Esprit
127. Barjac
128. Alais
129. Genoilhac
130. Villefort
131. L'Argentière
132. Viviers
133. Aubenas
134. Privas
135. Tournon
136. Annonay
137. St. Agrève
138. Yssingeaux
139. St. Julien de Chap
140. Le Puy
141. Brioude
142. Langeac
143. Chely d'Ap
144. Jovols
145. Langogne
146. Marvejols
147. Mende
148. Canourgue
149. Florac
150. Meyrueis
151. Le Vigan
152. Anduze
153. Ganges
154. Montpéllier
155. Balaruc
156. Pezenas
157. Lodève
158. Bedarrieux
159. La Caune
160. Alby
161. Castres
162. Puis Laurens
163. Mazamet
164. St. Pons
165. Beziers
166. Narbonne
167. Caunes
168. Carcassonne
169. St. Papoul
170. Fanjeaux
171. Alet
172. Rodôme
173. Quillan
174. La Grasse.

Province of
ROUSSILLON.
Department of
XXII. Eastern Pyrenees.

175. Rivesaltes
176. Prades
177. Mt. Louis
178. Prats de Molo
179. Ceret
180. Perpignan.

Rivers.
a Rhine
b Moselle
c Meuse
d Aisne
e Escaut
f Somme
g Oise
h Marne
i Seine
j Aube
k Serain
l Yonne
m Loire
n Allier
o Le Cher
p Lot
q Tarn
r Aude
s Rhône
t Durance
u Isère
v Ain
w Saône
x Oignon
y Doubs
z Loue.

ceives the parallel and nearly equal Aube, when their united waters flow west and north-west. Before reaching Paris, it receives from the south the Yonne, and from the north, almost under the walls of the capital, its greatest tributary, the Marne. At Paris it is navigable for vessels of considerable burden. Beyond Paris, the Seine makes some extensive windings, and is augmented from the north by the waters of the Oise bringing those of the Aisne. It then passes the fine and flourishing city of Rouen, and, spreading into an estuary, joins the English Channel at the ancient port of Havre. The Garonne has a course of still less extent, though its broad navigable stream, flowing through a magnificent plain, the most productive in valuable wine of any in France, gives it a high commercial importance. It rises near the eastern Pyrenees, and flows northward to Toulouse, where it assumes a steady north-west course, during which, swelled from the north by the Aveyron, the Lot, and the Dordogne, and passing the great haven of Bordeaux, it becomes an estuary, capable of receiving the largest vessels. The Rhine is to France only a limitary river for somewhat above 100 miles; but its great tributaries the Moselle, and the Meuse rise and have most of their early course within its territory. The important Belgic river, the Scheldt, also rises within the French territory.

2260. *France has no lakes* which, in a general view, seem worthy of mention.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2261. *Primitive and transition districts.* In France there are six districts where the older rocks, or those of the primitive and transition classes, prevail: viz. Western Normandy, with Britany and Anjou; the northern side of the Pyrenees; the provinces of the Lower Alps, Upper Alps, and part of the Isère; Central France, or the table-land of France; central part of the Vosges; and the Ardennes.

2262. (1.) *Western Normandy, Britany, and Anjou.* In this region the rocks are partly Neptunian, partly Plutonian: the Neptunian strata are gneiss, mica slate, clay slate, greywacke, quartz rock, and limestone; the Plutonian rocks are granite, syenite, greenstone, and porphyry.

2263. (2.) *Northern side of the Pyrenees.* On the French side of the Pyrenees the central rocks are of primitive formation, and consist of mica slate, clay slate, limestone, or marble; reposing upon these, and forming the great body of the range, are rocks of the transition class; viz. clay slate, greywacke, and transition limestone.

2264. (3.) *Province of the Lower and Upper Alps, and part of Isère.* In this mountainous region there are magnificent displays of many of the more interesting formations of the primitive and transition classes.

2265. (4.) *Central table-land or plateau of France.* The centre of France is occupied by a vast table-land or plateau of old rocks, in general granite, which forms the mountains of Bourgogne, the Limousin, Aveyron, Ardèche, and the Cevennes. It is more than eighty leagues in breadth from the heights of Limoges; but in proceeding towards the south, it gradually thins off, and terminates in a point which connects it with the Montagne Noire. This latter group of old rocks forms a kind of peninsula, which is separated from the Pyrenees, by a longitudinal basin of secondary and tertiary formations. The acclivities of this central granitic table-land, and some of its hollows, are covered more or less densely with newer rocks of various descriptions. Besides these, there occur on its eastern part a splendid display of volcanic rocks. The primitive and transition rocks of this table-land are the following; viz. granite, porphyry, talc slate, serpentine, gneiss, clay slate, greywacke, and limestone.

2266. (5.) *Central part of the Vosges.* The oldest rocks in this range of mountains, and which are said to belong to the transition class, are the following: granite, syenite, hornblende rocks, greenstone, red quartziferous porphyry, augitic porphyry, dolomite, diallage rock, serpentine, talc slate, clay slate, greywacke, with anthracite, granular and compact marble or limestones.

2267. (6.) *Ardennes.* That part of this range of mountains included within the limits of France, which belongs to the older part of the geognostical series, is composed of various clay slates, with greywacke, all of which seem to belong to the transition class.

2268. *Secondary districts.* The lower and flatter parts of France which extend from the primitive and transition districts, are composed of secondary and tertiary deposits, more or less covered with alluvial matters; and in some quarters intermingled with volcanic rocks. The secondary formations are arranged in the same order, and exhibit similar relations with those already described in our account of Britain. The mountain limestone and coal formations form, when contrasted with their abundance in Britain, but a small portion of the surface of France; while the new red sandstones, with the series of the Jura limestone, including the oolites, form great tracts of country. Chalk, or uppermost rock of the secondary series, occurs in vast abundance, forming two basins, the one the northern, extending in length from the northern extremity of Artois to the southern limit of Touraine, and in breadth from Havre de Grace to near Bar le Duc. The northern side of the southern basin extends from Rochefort to Cahors, and the southern side ranges along the northern face by the Pyrenees.

2269. *Tertiary districts.* France is remarkable on account of the great extent of its tertiary deposits; of these the following may be considered as the principal ones: — 1. That of which Paris forms the central point; which extends towards the north as high as Laon, and southward to Blois; while it stretches across from Pontoise on the west to Epernay on the east. 2. The great southern deposit, which extends from the south side of the river Gironde to the south bank of the river Adour. 3. The south-eastern deposit, which covers part of the provinces of Herault, Gard, Bouches de Rhône, Var, and Vaucluse. 4. The deposit in the valley of the river Allier, and that in the upper part of the course of the Loire. 5. The great deposit in the course of the Rhine and Saône, extending from about Valence to Dijon. 6. The tract along the Rhine, extending from Basle to the neighbourhood of Carlsrhue.

2270. *Volcanic districts.* True volcanic rocks occur in France only in the great central table-land or plateau; in the provinces of Loire, Haut Loire, Cantal, and Puy de Dôme. The volcanic rocks are basalt and basalt tuffa; trachyte with its tuffa; and lava, with its tuffas, scoriæ, &c. The newest of these rocks are the lavas; while the basalt and trachytes appear of more ancient date, although still not very old, as we find them breaking through rocks of the tertiary class.

2271. *Alluvial districts.* Alluvia of every description occur in France. *Diluvium* or the old alluvium forms extensive tracts in many quarters of the kingdom, where it contains remains of extant species of animals, of which the most characteristic are those belonging to the order pachyderma, as the elephant, rhinoceros, &c. Diluvium is also found in caves along with bones of extinct animals, particularly of the carnivorous genera; and rents and fissures in strata are sometimes filled up with a diluvium also containing remains of extinct animals, of which the most characteristic are the small herbivora. Bone caves and bone breccia occur at St. Antonin and St. Julien near Montpelier; at Billargues, Vendargues, and Pezenas-Herault; at Anduze and St. Hippolyte, in Gard; at Aix, in the department of the mouths of the Rhone; at Villefranche and Lauraguais, in the Upper Garonne; and at Perpignan, in the Eastern Pyrenees. This diluvium is covered, to a greater or less depth, with the various well known kinds of modern alluvium and of vegetable soils.

Mines and Quarries.

2272. *Coal mines.* Coal of various descriptions, as glance, bituminous, and brown coal, are mined in the following provinces in France, affording annually but a small return for so vast a country: — Allier, Aveyron, mouths of the Rhone, Calvados, Gard, Herault, Isère, Haut Loire, Loire Inférieure, Mayenne and Loire, Moselle, Nièvre, Nord, Pas de Calais, Puy de Dôme, Haut Rhin, Bas Rhin, Haut Saône, and Tarn.

2273. *Iron mines.* Iron mines, some of them of considerable importance, occur in the following provinces: — Ardennes, Charente, Cher, Côte d'Or, Dordogne, Doubs, Eure, Eure and Loir, Forets, Indre, Indre and Loire, Isère, Jura, Loire Inférieure, Haut Marne, Moselle, Nièvre, Nord, Orne, Ourthe, Haut Rhin, Bas Rhin, Roër, Haut Saône, Saône and Loire, and Vosges.

2274. *Mines of silver and lead.* The principal lead mines and silver mines are the following. —

	Mines of	Quintals of Lead.	Marcs of Silver.
Finisterre	Poullauen	about 8,000	1200
Ditto	Huelgoet	3,000	1600
Roër	Bleyberg, &c.	16,000	—
Lozère	Villefort	18,000	1500
Isère	Vienne	1,500	—

2275. *Copper mines.* These are situated in the following provinces: — High Alps, Rhone, Rhine and Moselle.

2276. *Zinc mines.* Calamine is found in different parts of France, but is only mined in the provinces of Ourthe and Roër.

2277. *Mines of manganese.* This metal is mined at Romanèche and St. Micaud, in the province of the Saône and Loire; at Suquet in Dordogne; in the mountain of Tholey in Moselle; at Laveline, near Saint Dier, in the Vosges; and at Saint Jean de Gardonenque in the Cevennes.

2278. *Mines of antimony.* Antimony occurs in the provinces of Charente, Haut Loire, La Vendée, Cantal, Allier, Gard, and Puy de Dôme.

2279. *Mines of vitriol and alum.* The principal mines of sulphate of iron or vitriol are those of Saint Julien de Valgargue, near Alais, which furnishes annually 30,000 quintals; and that of Becquet and of Goincourt, near Beauvais, which in some years affords 15,000 quintals; that of Ural, in the province of Aisne, and of Gersdorf, in the province of Bas Rhin. The most considerable alum mines are those on the banks of the Meuse, in the province of Ourthe. There are also celebrated manufactories of alum at Montpelier, and at Javelle near Paris. Some considerable beds of rock salt have been discovered at Vic, in the department of Meurthe. One of these is upwards of fourteen yards thick, and another has not as yet been cut through. Although cobalt, arsenic, nickel, and tin also occur in France, no considerable mines of those minerals have been established.

2280. *Quarries.* The most extensive quarries are those of marble, building-stone, slate, gypsum, millstone, and flint. Different kinds of marble are raised at Givet, Brabançon, Mons, Namur, Boulogne sur Mer, Caen, Troyes, Montbar, Cosne, Tournus, Narbonne, Aix, Marseilles, Tarb, and in many valleys in the Pyrenees. There are quarries of excellent building-stone in the departments of La Manche, Calvados, Moselle, Côte d'Or, Yonne, Oise, Seine, Loire, Dordogne, and in many departments in the south. Vast slate quarries are worked in the provinces of La Manche, Meuse, Ardennes, Maine and Loire, and at the foot of the Pyrenees. In many other places, and particularly in Champagne, &c., there are quarries and pits of clay for brick and tile making. The gypsum of the neighbourhood of Paris, the chalk of the departments of Marne and Seine, the talc named *chalk of Briançon*, the millstone or *buhr-stone* of Ferte sous Jouarre, are objects of considerable commercial importance. The departments of Yonne, Cher, and Lower Charente, supply all France and different foreign nations with gun-flints. *Among the clays met with in France*, that of Forges les Eaux, was formerly in great repute in Holland for the manufacture of pipes; the clay or earth of Belbœuf, near Rouen, is considered an excellent material in the purifying of sugar; and the potters' clay of the vicinity of Beauvois and Montereau, and the porcelain earth or kao-lin of Saint Yriex, near Limoges, are highly esteemed.

SUBSECT. 2. *Botany.*

2281. *Having devoted already so great a portion* of our space to preliminary remarks upon vegetable geography on its more extended scale, and to that of Great Britain in particular, we must content ourselves with a more limited account of the plants of other countries, otherwise we should greatly overstep the bounds prescribed to us by the nature of the present work. Following the plan here adopted for the arrangement of the different countries, *France* comes next under our notice; and a more interesting field for the geographical botanist does not exist in Europe; not only because of its extent and vast variety of surface, the great height of its mountains, and its geological structure; but because, by the labours of its naturalists, especially Lamarck and De Candolle, the vegetable productions of France have been better explored than those of almost any other country in the world. All that we can do here, however, is to notice in general those that are the most interesting, from their utility, their beauty, or some circumstances connected with their history; or as showing how vegetable forms or groupes are situated, in regard to their distribution, upon the surface of the earth.

2282. *France*, extending, as it does, from lat. 42° 8′ to 51° N., or nearly to the latitude of London, and from 9° east longitude, to 5° west, is bounded by the Mediterranean, and the great chain of the Pyrenees on the south; by the Atlantic on the west; by the British Channel and the Netherlands on the north; and on the east by Savoy, Switzerland, and Germany, which form, for its entire length, a vast mountain barrier. Such an alpine region cannot fail to exert a manifest influence on the vegetation of a country; not only because of its own peculiar productions, depending in part on their elevation, and in part on their soil and geological structure, but by their exposure, even at the same elevation, on two opposite sides; that of the south will be found to exhibit very different vegetable forms from that of the north; and such mountains often exercise a more powerful influence in limiting the surrounding vegetation, than even seas and rivers.

2283. *Lamarck and De Candolle*, in a very interesting Botanical Map which accompanies their *Flore Française*, 3d edit., have divided France into five regions: —

2284. (1.) *The region of maritime plants*, which of course extends every where along the coast, from Ostend to Bayonne on the north and west, and from Perpignan to Oueille on the Mediterranean; together with the *Salines* in the interior of Dieuse and Château Salins near Nancy, and those of Durkheim and Frankensthal near Mayence. Thus we find that a vegetation similar to that of the sea-shore exists in the interior, whenever that interior yields a sufficient quantity of marine salt. All the maritime plants of the north of France, according to M. de Candolle (and they have the greatest affinity with those of England), are equally found in the south; but the reverse does not hold good; for a very large proportion of the French Mediterranean plants of the sea-shore grow very sparingly, if at all, upon the shores of the Ocean, principally indeed on the coast of Gascony, and reach no higher than the mouth of the Loire, or at most to the middle of Britany.

2285. (2.) *The region of mountain and alpine plants.* When the French, by their conquests, included the Pyrenees, the Alps, and Savoy within the range of the floras of their own country, this region constituted the very richest of any flora in Europe; for it included a country, not only of considerable extent, but mountains, and in very southern latitudes, many of whose crests rise greatly beyond the line of perpetual snow. As France is now limited, the mountains of the Vosges near Strasburg, and of the Cevennes, and those of Auvergne, whose origin is volcanic, exhibit its most alpine scenery: among the latter, the Puy de Sasi, one of the Monts d'Or rises to an elevation of 6300 feet above the level of the sea. The

Plomb du Cantal is estimated at 6200, and the Puy de Dôme at 5000 feet. If the summits of the Pyrenees and of the Jura be considered as forming the natural barrier of France, as constituting her line of separation from the adjacent territories, she will still possess an exceedingly rich alpine flora in the northern side of the former and the western side of the latter mountains. But the line of demarcation of this region is nevertheless not so distinctly marked as in the preceding region. The valleys exposed to the sun often participate in the vegetation of the southern provinces, while the cooler valleys exhibit a growth which has more in common with the vast plain in the north and centre of France. However, it is undeniable that these same districts do contain a very considerable number of plants which are peculiar to them, and found on almost all the more elevated mountains of France; for whatever differences the chain of the Vosges and the Jura may present from those of Auvergne, the Cevennes, and the Pyrenees in the south, it is allowed that the aspect of their vegetation offers considerable traits of similarity, and that the greater part of the mountain plants are alike found on the different chains.

2286. (3.) *A third region,* and a very important and interesting one, is that of the *Mediterranean plants:* this, of course, is bounded on the south by the Mediterranean Sea, and stretches inland till you come to the foot of the mountains, or following the course of the Rhone, extending north as far as Montelimart on that river; or it may be said to occupy or constitute the great basin of the mouth of the Rhone.

2287. (4.) *A vast region is occupied by the plains,* whose vegetation is very uniform. This comprises more than one half of France, and especially all the plain country situated to the north of the chains of mountains. Many of these plants are found in other regions already indicated; but it wants the species which are peculiar to each of those respectively.

2288. (5.) and *lastly — MM. Lamarck and De Candolle* indicate an intermediate region, which includes plants partaking of the nature of the plains of the north and the provinces of the south. This occupies a large portion of the south-west of France, and some districts up the valley of the Rhone between Montelimart and Lyons.

2289. *The map just alluded to* has these different regions represented in different colours, and is attended with this advantage, that, by the slightest inspection, a general idea is conveyed of the prevailing nature of vegetation in any given district. We see that the plants of the southern provinces resemble more those of the north as you advance by the west side of France than by the east; how that the floras of Mans on the border of Normandy, and of Nantes upon the Loire, in lat. 47° and 48°, scarcely differ from those of Dax and Agen, between lat. 43° and 44°; whilst on the east side of France, the productions of Dijon and Strasburg vary considerably from those of Montpelier and Aix, situated at nearly similar relative distances from each other. All this is accounted for on the principles we have already laid down, namely, that the stations of plants are mainly influenced by temperature; and that the mean temperature of a place is greatly determined by distance from the equator, and elevation above the level of the sea. According to M. de Candolle, an altitude of 460 feet above the level of the sea affects the temperature nearly to the same extent as a degree of latitude nearer to the north in our hemisphere.

2290. *By comparing the western provinces of France* with the eastern, we see that the surface of the former is but little raised above the level of the sea; for, even at a considerable distance from the coast, the hills scarcely exceed 300 feet; whilst, on the other hand, upon the western side, in the midst of a mountainous region, the plain has generally an elevation of from 1300 to 1600 feet. This height diminishes, it is true, on the Belgian frontier; but there the temperature is sensibly affected by the second cause adduced, namely, the distance from the equator. Thus, there is nothing but what is conformable to physical laws, in the southern plants having a greater resemblance to those of the north upon the west, than on the east side of France.

2291. *But even where the mean temperature* is the same, the distribution of plants between these two parts of France may yet be very different, on account of the different degrees of temperature at particular seasons of the year. We have already stated that, the latitudes being the same, maritime countries enjoy a more equal temperature than districts removed from the sea; in other words, that the summers are less warm, the winters less cold: thus, the provinces of the west of France, which are all maritime, experience this degree of uniformity; which cannot take place in the east, being far from the sea, and in the vicinity of the mountains.

2292. *Plants now, in what concerns climate,* may be divided into two classes: those which suffer from a severe winter cold, but which, during summer, do not require an excess of heat; and those which can endure great severity of cold in winter, but, during summer, require a great proportion of heat. In the first class, M. de Candolle places all those trees which, without being resinous, preserve their leaves, and consequently their sap, through the winter; in fact, the greater proportion of the trees of the south being found, whether indigenous or naturalised, towards the north in the maritime provinces; such as the Live Oak, the Cork Tree, the Kermes Oak, the Strawberry Tree (*Arbutus*), the Bay, the Fig, the Phillyrea, &c. On the other hand, in the second class, that is to say, among such as can brave a great degree of cold, and do so because the movement of the sap is interrupted by the fall of the foliage, is the Vine, &c., and those that avoid cold because the plants, or at least their stems, are annual, such as Maize. It may be readily supposed that the individuals belonging to the second class will flourish better, and become more easily naturalised on the east than on the west coast of France.

2293. *Let us apply this law* to a peculiarity in regard to the cultivation of those most precious vegetable productions of France, namely, the Olive (*fig.* 227.), the Maize, and the Vine (*fig.* 228.). Mr. Arthur Young, during his travels in France, paid great attention to agriculture and the mode of cultivation adopted there, and published a map of the country, in which he represented, by three nearly parallel lines, the northern limits of the three plants just alluded to, the Olive, the Maize, and the Vine. It excited the surprise of many, that the lines should ascend most to the north on the east side of the country, or, in other words, that the plants in question should grow farther north in the eastern than in the western districts; directly the reverse of what takes place in regard to the aboriginal native productions of the soil. This apparent contradiction is reconciled by the twofold comparison of the physical nature of the east and west of France, and of the character of the plants cultivated, as compared with the wild species.

227

THE OLIVE

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THE VINE.

2294. *The nature of the cultivated productions in question* forms a striking feature, which cannot fail to arrest the attention of a traveller while journeying through the districts thus appropriated, and forcibly to exhibit their agricultural riches. In the extreme south of France, between a line drawn from Narbonne, in lat. 43° N. and in the meridian of Paris, to a little below Grenoble, he will find the plains, parched and dry as they naturally are, rendered still more melancholy by the lurid green of the olive-groves. Between that line and another drawn from the mouth of the Garonne rather below 46°, to near Strasburg, in the north-west, he will observe, together with the vine, which is by no means wanting in all the southern provinces, fields where the gigantic maize (*fig.* 229.) takes the place of what we usually term bread-corn; again, between it and a line extending from the mouth of the Loire to the Rhine, passing at about an equal distance between the Meuse and the Moselle, he will find, intermingled with vineyards, fertile fields of corn, wheat (*fig.* 260. *a*), oats (*b*); and barley (*c*), whilst, north of that line, there exists a most perfect similarity in agriculture with that which prevails throughout the greater part of England. Fruit trees of all the kinds that are grown with us, there attain a much greater degree of perfection than in our country, because of the increased heat of the summers.

2295. *Thus, in what concerns* a great portion of the territory of France, its vegetable productions much resemble those of the southern parts of Great Britain.

2296. *It is not, perhaps, generally known* that that most useful root, the Potato, was cultivated in almost every part of Europe before its value was appreciated, and its culture became general, near the capital of France. To England is due the credit of first growing it upon a large scale. Upon the Continent it was introduced between the years 1714 and 1724 into Swabia, Alsace, and the Palatinate; and in 1730 to the vicinity of Berne. In 1774, potatoes were known on the mountains of the Cevennes, where they now constitute a main portion of the food of the people: but it is principally to the famous M. Parmentier that France owes the general use of potatoes. The following anecdote may give some idea of the assiduity with which this philanthropic individual laboured to generalise their culture: it is well attested that he farmed some spots of ground in the vicinity of Paris for this sole purpose, though the prejudice against potatoes was then so strong, that few of the poor persons to whom he offered the roots would accept of them. However, M. Parmentier soon suspected that people occasionally stole his potatoes to eat them: he was well pleased at this, and continued to plant what he hoped would be purloined, rightly concluding that the experience of the thieves would contribute to diminish the established prejudice. After much trouble and many years, he had succeeded in propagating potatoes in several situations, when the dreadful scarcity, the consequence and effect of the revolutionary disturbances, suddenly rendered their cultivation universal; and now they form so constant an article of food, that the common people generally believe them to be aboriginal natives of the country.

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THE MAIZE.

2297. *The mountains of France* exhibit our alpine plants, with many others that are peculiar to themselves, and which they possess in common with the higher Alps of Switzerland, Savoy, Germany, and the Pyrenees.

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WHEAT, OATS, AND BARLEY

2298. *Of the intermediate region*, as De Candolle terms it, a great portion lying in the south-west of France, embraces a country called the *Landes*, where the shepherd-peasantry, whether walking, or at rest during the day, live upon stilts (*xcangues*, in the language of the country): this custom gives them the opportunity of viewing the land around in search of their sheep, for a great extent, of wading through the numerous shallow lakes of water; and by these means it is said they can traverse triple the space of ground they could do by the ordinary mode of walking; when they stop, they support themselves by a long stick behind. In this same district a vast extent of flat land near the ocean, and extending from Bayonne in the south to the Tête de Buch in the north, and for a distance of from four to twelve leagues inland, is occupied by forests of Pine (*Pinus maritima*) (*fig.* 231.): these are called *Pignadas*, and they give a remarkable feature to the Landes, in conjunction with the habits of the people and their dress, the latter consisting entirely of sheep-skins with the hair outwards, little different in outward appearance from the flocks which it is the great object of their lives to tend. The resinous substances of the pine are extracted in immense quantities; in doing which, one man takes care of 3000 trees. The country being so dry, these pignadas are liable to alarming conflagrations; one of them that took place in 1803, continued burning for two months. The mode adopted for extinguishing them is remarkable: when one part of the forest is in flames, it is customary to set fire to another spot, at a greater or less distance, according to the magnitude of the evil; a current of air soon takes place between the burning masses, which drives the conflagration from both sides on the intermediate trees; these are shortly consumed, the fire dies out for want of fuel, and the rest of the forest is preserved.

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THE PINE.

2299. *But the Mediterranean region,* which we have already mentioned, and whose vegetation partakes of what is found to characterise the whole shores of that vast inland sea, has many plants so different from those of the rest of France, that it would be unpardonable did we not particularise some of them.

2300. *Almost every where in this region,* the soil is described as consisting of the secondary limestone of the Jura, extending to the very brink of the sea, forming arid coasts, often utterly destitute of vegetation, or clothed with Wild Olives and the Aleppo Pine (*Pinus halepensis*), with Evergreen Oak, Pistachio-Nut, Myrtles, and numerous species of Cistus. Here too, is found one species of Palm, the Chamærops humilis (*Palmetto* or *Dwarf Palm*); but it grows principally in the environs of Nice. At the opposite extremity of the Mediterranean region, namely, about Roussillon and Provence, and there only in the hotter parts, are seen Indian Fig (*Cactus Tuna*), and the American Aloe (*Agave americana*): the introduction of these is due to the Spaniards, who brought them to Europe from the New World. Schouw regards the Mediterranean shores in general as the kingdom of the Caryophylleæ and Labiatæ; this latter family especially abounds in the south of France, and particularly the genera Phlomis, Teucrium, Thymus, Lavandula, and others, remarkable for their aromatic qualities. In the same places, and always on very stony ground, the elegant Coris monspeliensis excels the heaths of our own country in beauty. The mulberry is cultivated throughout this territory; and among other useful fruits, the Fig, the Jujube, the Pomegranate, the Date, and the Pistachio, all arrive at great perfection. The Orange can scarcely be said to be cultivated without shelter in any part of France. It is grown, however, and somewhat extensively, at the Isles d'Hières, and in the vicinity of Nice, that happy climate which is probably unequalled by any part of Europe: —

> "There summer reigns with one eternal smile,
> Succeeding harvests bless the happy soil;
> Fair, fertile fields, to whom indulgent Heaven
> Has every charm of every season given.
> No killing cold deforms the beauteous year;
> The springing flowers no coming winter fear:
> But, as the parent rose decays and dies,
> The infant buds with livelier colours rise,
> And with fresh sweets the mother's scent supplies."

Corn, which is but a secondary article of culture, ripens at a very early period; so much so that it is not unfrequent to carry barley which has been reaped on the coast into the mountains, where the seed is sown, and a second crop is produced the same year. Many plants may be here enumerated which this country possesses in common with Greece and Italy, and even the Spanish peninsula, and which seem to accompany the Olive. Mirbel has drawn up the following list of woody kinds, which inhabit these provinces:—Pinus Pinaster and Pinea, Juniperus phœnicea and Oxycedrus, Quercus Ilex, Suber and coccifera, Celtis australis, Ficus Carica, Osyris alba, Laurus nobilis, Fraxinus Ornus, Phillyrea latifolia and angustifolia, Jasminum fruticans, Vitex Agnus-castus, Nerium Oleander, Diospyros Lotos, Styrax officinale, Arbutus Unedo, Viburnum Tinus, Tamarix gallica and africana, Myrtus communis, Punica Granatum, Philadelphus coronarius, Cratægus Azarolus, Mespilus pyracantha, Ceratonia siliqua, Cercis Siliquastrum, Rhus Cotinus and Coriaria; Pistacia Lentiscus, Terebinthus, and vera; Rhamnus Alaternus, oleoides, and infectoria; Zizyphus vulgaris, Paliurus australis, Capparis spinosa, Melia Azedarach, Acer monspessulanum, &c.

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ULVÆ AND FUCI.

2301. *Hitherto the attention of naturalists* in the study of vegetable geography has been directed to those plants that grow upon the surface of the earth: Humboldt alone, in his *Carte Géographique des Plantes*, has indicated the station of some subterranean Fungi, and in a general way has marked the ocean as the habitat of Ulvæ and Fuci (*fig.* 232.). It remained for M. d'Orbigny to describe, to a certain extent at least, the Zones and Bands inhabited by the marine Algæ (Sea-Weeds). This he accomplished upon the coasts in the Gulf of Gascony, and particularly on the shores of La Vendée and the Charente Inférieure, partly by diving to considerable depths in the sea, and partly by means by drag-nets fixed to graduated cords; and the result of his observations are given in the *Mémoires du Muséum d'Histoire Naturelle*, vol. vi. With extracts from this, as we shall scarcely have again the opportunity of touching on this beautiful and interesting tribe of plants, we shall conclude this sketch, already too much extended, of the vegetable geography of France. Maritime plants, says M. d'Orbigny, grow in the most opposite temperatures: every country, every latitude, and every situation possessing some which are peculiar to itself. Still, climate and temperature appear almost alike to many of these productions, which are found by voyagers in every different ocean, while others require particular spots and climes: some few preferring the mouths of rivers, and the brackish waters of salt marshes, where the bitterness of the sea is modified by the admixture of fresh water, and in such situations attaining to an enormous size, as Ulva lactuca var. altissima, while to the greater number of these plants, fresh water proves absolutely destructive.

2302. *As for those kinds* which grow indifferently every where in the sea, they seem to be increased without any attachment to solid bodies, as Fucus natans, &c. Banks of great extent formed by this plant, are often found within the tropics, of such dimensions as to retard the progress of navigation. Some individuals among these groupes may frequently be seen which bear the appearance of having been originally fixed to rocks, their flattened, disc-like stem yet retaining a portion of such substance. There seems to be ground for the supposition that, though these sea-weeds are capable of living and growing in the water, unattached to any soil, yet that they must primarily spring from some solid body, as no young plants of this kind are ever found between the tropics.

2303. *Some of the Algæ* prefer the southern sides of rocks, others affect an eastern western, or northern exposure; but they change their position according to the difference of latitude: those which are found on the southern side in cold climates, being generally seen on the northern in the warm or temperate regions. Certain species live near the surface, and close to the sea-beach: others, at various degrees of depth: the first would seem to enjoy the regular exposure to light and heat which they experience during the turnings of the tide; the second, on the contrary, shun the influences of the atmosphere; and, growing and fructifying in depths where the light can scarcely ever penetrate, they bear, without receiving any injury, both the enormous column of water which constantly presses upon them, and the severe cold which exists in those regions. There are even parasitical *Algæ*, which grow indifferently upon all the others, and some which only affect peculiar species.

2304. *Many sea-weeds* prefer such spots as are exposed to the fury of the waves and the action of the currents, where they are perpetually floating in an agitated medium: others dwell in the hollows of rocks, or in marine gulfs, where the water is generally calm. The lapse of a few days puts a period to the existence of some kinds, whilst the tempests of successive winters fail to destroy others. The general aspect is apt to change in several individuals, so that, were it not for more stable characters, derivable from their fructification, texture, &c. they might be mistaken for novel species.

2305. *A number of the more delicate marine plants* are quickly destroyed by a removal from their native place of growth; but the greater proportion, being coriaceous, and insoluble in salt-water, live for a length of time in different situations; and it is not uncommon to find, upon our own shores, the *Algæ* of the most distant regions, which have traversed the ocean, and yet remain unchanged in their general appearance. From these circumstances it becomes a necessary inference, that it is not all the *Algæ* that are found in any country which may be said to belong to that country.

2306. *The proportions of marine plants are as variable as those of terrestrial ones.* Some are barely discoverable with the highest magnifiers; while others rise from the various depths of the mighty ocean, and, forming at its surface an angle of greater or less acuteness according to the force and velocity of the currents and the tides, then suffer their long summits to float upon the waves, and receive the benign influences of atmospheric light and heat. During the great equinoctial floods, the sea often forsakes, periodically, certain rocks, which are only uncovered at such times. If, during that interval, the sun shines forth, or the north wind blows, many of the minute and delicate *Algæ*, thus exposed, dry up and die; while others, though equally circumstanced, revive immediately upon the return of the genial fluid.

2307. *A certain proportion of marine plants are natives of our own seas,* while we only owe the accession of many species to the force of the winds, waves, and currents, especially to that which generally goes under the name of *Gulf Stream*, and is called by the French the *Mexican Current*. Almost all the northern *Algæ* grow in the Gulf of Gascony. It is not so with those from the Mediterranean and Southern Ocean; a very small number of them are there seen in a living state, and their almost northern limit never exceeds the mouth of the Loire, or at farthest the rock of Morbihan. Independently of the influence of temperature, this circumstance may be attributed in a measure to the current, which, generally setting in on our shores from north to south, brings the seeds and plants themselves, of northern seas to our rocks, while those of southern growth are wafted by the same current to Africa and the Atlantic.

2308. *But few are the kinds of sea-weed which prefer any peculiar spot,* or show a predilection for one substance, above another whereon to fix. Deriving no nutriment from their roots or points of attachment, they need nothing farther than a temporary support; thus, they cling indiscriminately to any solid marine body, equally to granitic and calcareous rocks, to floating or sunken pieces of wood, to the bones of terrestrial or marine animals, to shells, polypi, &c.

2309. *Notwithstanding that many highly respectable naturalists* have averred that the growth of these plants proceeds with most vigour on such and such substances, on some or other peculiar rock, in the vicinity of rivers, or in the open sea; it has been fully ascertained, by a great number of observations, that marine weeds do grow with equal vigour, though planted upon rocks or substances of very different natures; and that, if we except some few *Ulvæ*, which affect brackish water, those which vegetate in situations where fresh water mingles with the salt, are generally bleached, produce little or no fructification, have a thin and weak texture, and contain but little soda. The qualities requisite for the different uses of which I shall treat hereafter, are only found united in such sea-weeds as grow in pure sea-water, where they have found a spot which is sufficiently tenacious to fix them in that zone of habitation which they prefer.

2310. *Some kinds certainly prefer sand or mud;* but then their roots become elongated, and strike deep, till they meet with some stone or shell or other body which may serve them as a point of attachment, and offer the requisite degree of resistance.

2311. *If the nature of the bottom appears indifferent, in a great measure, to marine plants;* it is not so with the level which they select in the ocean, or with the distance of their birthplace from the surface. Every species of maritime vegetable appears to affect, to as great an extent as the terrestrial kinds, certain zones or regions of different depths in the sea; places where the superincumbent weight of water, and the relative proportion of light and caloric, are adapted to its peculiar organs. Those individuals which are found towards the centre of their proper zone contain all the elements requisite for their perfect developement, and generally show an active state of vegetation; they are vigorous, they fructify at the season suitable to their degree of immersion, while those which grow at the extreme limit, or out of the bounds, of this same zone, prove languishing, fructify imperfectly, are always covered with marine animals which destroy them, and live but a short time in comparison with their well-situated congeners. The seeds which escape from these plants would appear, by their various specific weights, to gain an equilibrium equivalent to the column of water which they displace, or, in other words, to float in that peculiar zone which the future *Algæ* would prefer to inhabit. Those which become developed either above or below it, are inevitably driven from their spot of nature or of election, by the agitation in the waves at the vicinity of the coasts.

2312. *Lower down than a hundred feet from the surface of the sea* (taking a medium between the high and low tides) it is rare to find living sea-weeds in the Gulf of Gascony, and even these are attached to portions of rock severed from more elevated rocks, and before long they inevitably perish.

2313. *It may be observed, that, the lower we investigate the sea,* the fewer will the number of plants appear, and the more numerous the polypi. For instance, below forty feet from the surface of the water, but very few *Ulvæ* are found; beyond sixty feet no living *Ceramium;* and after having descended to the depth of a hundred feet, not a *Fucus* is to be seen, and the vegetable kingdom wholly ends.

1st Zone, extending from one foot above the medium height of the sea to twenty feet below, is inhabited by Ulva compressa var. β; U. intestinalis, ventricosa, Lactuca var. α; Fucus pygmæus, amphibius, &c.

2d Zone, from five feet below the medium height to thirty feet: — Ulva articulata, Nostoc, bullata, fistulosa, Lactuca var. β, umbilicalis, lanceolata, purpurea, Linza, contorta, serrata, dichotoma, crispa, pavonia, atomaria (?); Fucus vesiculosus, spiralis, ceranoides, serratus, canaliculatus, cæspitosus, laceratus, hybridus, longissimus, pinnatifidus, viridis, arbuscula, fastigiatus, tenuissimus (?), confervoides; Ceramium spongiosum, rupestre, Mertensii, penicillatum, fucoides, nodulosum, gracile, linum; Zostera marina and mediterranea; Diatoma rigidum, flocculosum, &c.

3d Zone, from fifteen to thirty-five feet below the medium surface. Ulva ocellata, palmata, lingulata, polypodioides, caulescens; Fucus longifructus, lumbricalis, bifurcatus, ericoides, barbatus, abrotanifolius, vermicularis, norvegicus, obtusus, asparagoides, Wigghii, verrucosus, helminthocortos; Ceramium simplicifolium, casuarina, cancellatum, coccineum, incurvum, elongatum, polymorphum, forcipatum, filum, capillare, glomeratum, elegans, &c.

4th Zone, from twenty to forty feet below the medium surface: — Ulva Phyllitis, saccharina, digitata, bulbosa, ciliata, edulis; Fucus nodosus, uvarius, furcatus, ciliatus, alatus, plocamium, plumosus, corneus, gigartinus, aculeatus, plicatus; Ceramium verticillatum, equisetifolium, sericeum, scoparium, &c.

5th Zone, from thirty to sixty feet: — Fucus siliquosus var. α, purpurascens, ligulatus, pistillatus; Ceramium coccineum, ægagropilum, &c.

6th Zone, from forty to a hundred feet: — The flattened Fuci; F. siliquosus var. β, loreus, sanguineus, fibrosus, coronopifolius, &c., and Ulva tomentosa, which is, in fact, a polypus.

Subsect. 3. *Zoology.*

2314. *The zoology of France* assimilates less to that of central than of southern Europe. Notwithstanding the narrowness of its separation from Great Britain, it possesses many animals unknown as natives, or even as visiters, of our island. With regard to quadrupeds this circumstance is not surprising; for any channel of the sea, however narrow, forms an insurmountable obstacle to the wanderings or migration of purely terrestrial species: while others, of a semiaquatic nature, are too small and feeble to effect the passage. These considerations, however, are insufficient to explain the limited range of the smaller birds, hitherto found only upon the Continent. The distribution of insects is dependent, in a great degree, upon that of plants; and the numbers of both common in France, but unknown in Britain, are nearly proportionate; on the calculation that has been made of six species of insects to one of plants.

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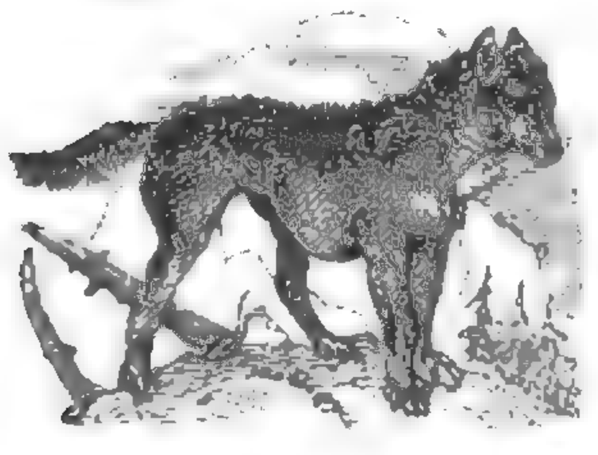

The Wolf.

2315. *Among the wild quadrupeds of France* is the wolf (*fig.* 233.), which is still not uncommon in the wooded and mountainous districts: when pressed by hunger, it descends to the farms, and even attacks the inhabitants. The beaver is said still to exist in the southern parts; and, probably, the wild boar may not be wholly extirpated from the existing forests. Bears were once common, while three or four of the smaller quadrupeds appear peculiar to France.

2316. *Several interesting and beautiful birds* unknown, or but rarely met with, in Britain, are here not uncommon; such as the wood-chat (*fig.* 234.), shrike (*Lanius rufus* T.), the grosbeak or hawfinch, the blue-throated warbler, and several others of the same family. In short, from the connection of this country with the central and southern kingdoms of Europe, the ornithologist might, probably, discover in France more than three fourths of all the continental birds.

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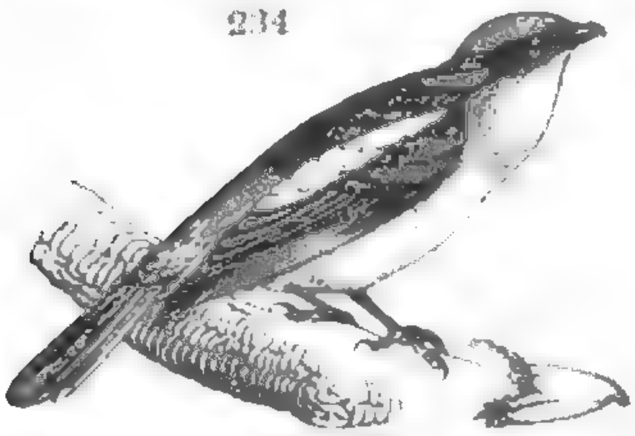

THE WOOD-CHAT.

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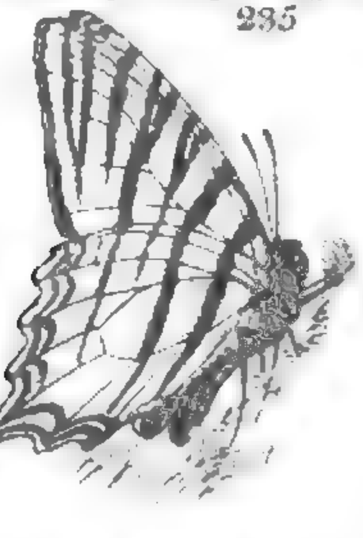

PAPILIO PODALIRIUS.

2317. *The marine productions* of those provinces bordering on the Channel, as may be expected, do not offer any marked difference from those of our own coasts; but on the warm shores of Nice and Marseilles the naturalist meets with numerous productions, indicative of the rich stores of the Mediterranean Sea. The entomology of these southern provinces, in like manner, presents us with many of those more striking insects which properly belong to the fauna of Italy. The beautiful *Papilio Podalirius* (*fig.* 235.) so rare in England that its existence with us is still doubted, is here a common insect. France has long stood foremost in promoting and illustrating the study of nature; and a society comprising some of her most able zoologists are at this moment engaged in publishing a *Fauna Gallica*. An able and indefatigable naturalist, M. Risso, has particularly illustrated the fishes and crustacea of Nice. It was near this place that one of the rarest and most beautiful shells of Europe, the *Mitra zonata* (*fig.* 236.), was fished up by the anchor of a vessel: only one specimen is known to exist in collections.

2318. *Among the domestic animals*, the French horses are not very excellent; yet those used in the public stages are strong, active, and compactly made; nor have their masters copied our ridiculous and barbarous custom of disfiguring these animals, by cutting off their tails or ears. The stallions of England are much prized, and have been judiciously used to improve the native breeds.

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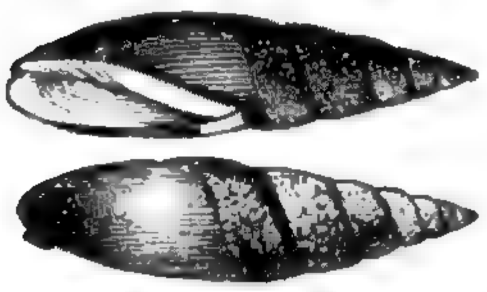

MITRA ZONATA.

2319. *The oxen are of two races*; the one called *bœufs de haut crû* are of a middle or small size, with a fierce look, thick hide, and coarse hair; they are principally bred on the mountainous provinces of Gascony, Auvergne, &c. The others are called *bœufs de nature*, and are larger, with a mild aspect, thin hide, and soft hair: they fatten easily, and belong to the plains.

2320. *The native breeds of sheep*, not in themselves good, have been of late sedulously and successfully improved. The Flemish breed, common both to France and the Netherlands, is generally hornless, with long legs, and is derived from an intermixture with those of Barbary. The *Solognot* are mostly without horns, and the wool is curled only at the ends. The *Berichonne* are likewise hornless, but are known by their long neck: the face is covered with wool; that on the body being fine, white, close, short, and curled. The *Roussillonne* is derived from the merino race; and has very fine wool, the filaments of the piles being twisted spirally. Lastly, the *Ardennoise* is horned, and bears a very fine fleece: this breed likewise extends over part of the Netherlands. (*Ham. Smith.*)

2321. *A large and elegant variety of the Domestic Cat* is very common in some parts of France; it is nearly double the size of ours, and is bearded much in the same manner as the lynx.

SECT. III. *Historical Geography.*

2322. *The Gauls*, the ancient inhabitants of France, and the chief among the Celtic nations, were an active, powerful, and ambitious people. Their emigrant hordes repeatedly crossed the Alps, possessed the whole north of Italy, once sacked the imperial city, and even penetrated into Greece and Asia Minor. Both Switzerland and Belgium were then included as part of Gaul. The people, though still barbarous, had made some steps towards civilisation. The nobles and Druids enjoyed high power and influence, and had reduced the body of the nation almost to a state of vassalage. They combated with obstinacy, and made a long resistance to the progress of the Roman arms; but being opposed to Cæsar, the greatest of the Roman captains, after a war of twenty years, they were entirely and permanently subjected.

2323. *The conversion of Gaul into a Roman province*, though it humbled the chiefs and quelled the martial spirit of the people, was attended with many beneficial changes. Peace was established; cultivation and industry promoted; Roman and even Greek literature introduced; and the people finally converted to the Christian faith.

2324. *The irruption of the Teutonic tribes*, on the decline of the Roman empire, was early felt in Gaul, where the Goths, the Heruli, the Burgundians, and the confederacy called the Franks, overwhelmed and ravaged the whole kingdom, and drove the Celtic population and language into its remote and mountainous corners. From amid a chaos of convulsions, the vigorous hand of Clovis established the undisputed supremacy of the Franks, and founded the monarchy of France.

2325. *The reign of Charlemagne*, son and successor to Pepin, who from mayor of the palace had occupied the throne, formed the most brilliant period in French history. That eminent and powerful prince not only placed on his head the iron crown of Lombardy, but reduced to his dominion, after a long and obstinate resistance, the intractable tribes of Germany, who had defied the utmost efforts of the Roman eagle. He penetrated also into Spain; but the fierce encounter of the Saracens, and the disastrous adventure of Roncesvalles on his return, completely stopped his career in that direction. Charlemagne, though himself illiterate, made some efforts to rekindle the declining light of science and letters in Europe.

2326. *The contests among the successors of Charlemagne* were attended with the most violent and bloody convulsions, and with continual changes in the position of the three great kingdoms which composed his empire. At length it fell entirely to pieces. Germany retained the title of empire, and the claim to the dominion of Italy; and in France the Carlovingian dynasty, or that of Charlemagne, having become extinct under Louis Outremer, the throne was seized by the Capets, the most powerful among the noble French families.

2327. *Hugh Capet*, having in 987 assumed the title of king, the real power attached to which had already been exercised by his father, Hugh the Great, founded the present dynasty. The administration, however, was long marked by a strong feudal character, and a high spirit of independence among the great nobles, of whom the counts of Provence and Britany, and the dukes of Burgundy, ranked altogether as separate and often hostile princes. The feudal age of France was also marked by chivalric and eventful wars with England, which long held several of the finest provinces, and whose king, Henry V., was crowned at Paris; but from that seemingly approaching downfall, the monarchy, through the romantic exploits of the Maid of Orleans, suddenly revived, and became more mighty than before.

2328. *The establishment of monarchical power* in its plenitude was chiefly effected by the profound and insidious policy of Louis XI., favoured by the circumstances of the age. All France was united under the sway of the kings, who were thus enabled to form great armies, which, under Charles VIII. and Louis XII., over-ran nearly the whole of Italy. But it was under the gay and enterprising reign of Francis I. that its energies were fully developed. It then, however, came into collision with the house of Austria, whose extensive possessions in Germany, Spain, the Netherlands, and Italy, wielded by a powerful hand, secured to it during this period a decided, though not overwhelming, ascendant.

2329. *The civil wars* arising out of the persecution of the protestants agitated France for a very long time, and produced scenes of the most bloody and calamitous description. They lasted for a hundred years; for the popular reign of Henry IV. could scarcely be considered as more than a truce. At length Richelieu, by the reduction of Rochelle, terminated the long struggle of the protestants for religious liberty, which in France alone, of all the countries where it was maintained upon a great scale, had this fatal issue. At the same time, this daring and despotic minister finally crushed the power and pretensions of the nobles, and formed France into a simple monarchy.

2330. *The reign of Louis XIV.*, during which a single hand wielded all the energies called forth during the prior struggles, exhibited France more powerful than she had been since Charlemagne. The house of Austria, now divided into the German and Spanish branches, of which the latter had become weak and inert, was humbled by repeated blows, which at length almost threatened her existence. France seemed advancing in the career of universal monarchy, when the interposition of England and the victories of Marlborough turned the tide of success, and rendered the last days of Louis humiliating and disastrous. The final issue, however, by which a Bourbon was placed on the throne of Spain, and the consequent family alliance, gave to France an increased weight, especially in the maritime concerns of Europe.

2331. *The French revolution* was an event attended with awful and mighty vicissitudes, so fresh in the memory of the world, that it would be quite superfluous to attempt to enumerate them. After tearing up France by the roots, and holding all Europe in chains; after exhibiting during twenty years the vicissitudes of republicanism, total anarchy, and pure despotism; at length, by a mighty re-action, it terminated nearly at the point from which it commenced. France, however, obtained checks on the arbitrary power of her monarchs, which, notwithstanding their opposition, she rendered more and more effective. At length Charles X., having rashly attempted to break through all the limits placed on his authority, was driven from his throne, which was filled by Louis-Philippe, head of the collateral line of Orleans, under the title of King of the French.

Sect. IV. *Political Geography.*

2332. *The political constitution of France*, prior to the Revolution, was almost purely despotic. The privileges of the nobles consisted nearly altogether in unjust exemptions from taxation, and in *corvées*, or iniquitous and oppressive claims upon the labour of the peasantry. The only very salutary limit to the royal authority consisted in the parliaments, hereditary bodies, by whom the laws were very fairly and honourably administered; and the parliament of Paris had even the important privilege of registering every new tax before it could become legal. The exorbitant powers vested in the sovereign being however inconsistent with the growth of national intelligence and the augmented force of the *tiers état*, a collision took place, the most terrible on record, which ended in the temporary subversion of the throne. When the Bourbons were restored by foreign victories, they felt, and were warned, that France could no longer be governed by the former absolute system; and they bestowed by charter a representative government formed on the admired model of England. The nobles and parliaments, however, had been entirely swept away in the late convulsions, and left no hereditary aristocracy out of which an upper house could be composed. A Chamber of Peers was however formed, by the royal appointment, of a body of individuals, many distinguished rather by talents and influence than by birth; and in the number were included some of the most distinguished of Napoleon's generals. Pensions were assigned to support the dignity of the peers, which was at first hereditary, but by a recent enactment is to continue only for life. The Chamber of Deputies, corresponding to our House of Commons, is chosen by electors united in certain bodies called electoral colleges. These include all persons paying a certain amount of direct taxes; which limits the right of voting to the middling class, and to an entire number throughout France scarcely exceeding 130,000. The number of deputies is 430. The functions of the French chambers are high. Their annual vote grants all the supplies of the year, and all the expenditure of the preceding one is submitted to their rigorous examination. No taxes can be imposed, or loans contracted for, without their concurrence. Their debates are regularly made public, and an arrangement is enacted by law for the convenience of the reporters. Yet the chambers want some of the functions of a British parliament. They cannot fix the amount of the army, unless by limiting the funds to be employed in its maintenance; nor can they call in question the engagements held by government with foreign powers, unless by withholding the funds necessary to fulfil them. The liberty of the press was professedly granted by the charter; but there has been much fluctuation in its exercise; it was even repeatedly made subject to a censorship: but since the last great change, its freedom has been established on as ample a basis as in Britain.

2333. *The administration of justice in France*, which, before the Revolution, was still more complicated than in England, has been simplified in a very remarkable degree. The National Assembly early applied themselves to form a new series of codes, which might supersede those vast and voluminous records in which the law was formerly contained. They projected five codes, respectively referring to civil law, civil procedure, commerce, criminal law, and penal infliction. These were completed under Bonaparte, who gave to the whole the name of *Code Napoléon*: it is comprised in a moderate volume, sold for a few shillings. All the ancient parliaments and seignorial authorities being swept away, a new system of jurisdiction has been formed. Of the judicial authorities, the lowest class are the *juges de paix*, who amount to nearly 3000. They have salaries of 30*l.* or 40*l.*, and decide finally on all cases where the question at issue does not exceed fifty francs. Immediately above them are the tribunals *de première instance*, before whom all questions and charges come in the first instance, and who judge finally respecting any property not exceeding 40*l.* There are 360 of these courts, and the judges are supposed little short of 3000. To them are attached the tribunal of correctional police, which has cognizance of all minor offences. Above these rank the *cours royales*, sometimes called *cours d'appel*, because an appeal lies to them from the inferior courts. They are twenty-seven in number, attached to the chief cities in the kingdom. They consist, in populous towns, of twenty, thirty, and in Paris of fifty members; who, in that case, are divided into several chambers. Attached to them are the *cours d'assise*, or, as we would call them, jury courts, to which all criminal cases of importance are referred by the *cours royales*. A French jury consists of twelve, and a simple majority decides. From the decisions of the cours royales an appeal lies to the *court of cassation*, the highest tribunal, which also exercises a general jurisdiction over the other judicial bodies. All the judges are appointed by the crown, but hold their offices for life.

2334. *The results of criminal procedure* in the year 1829 were as follows: — There were accused, 8119 persons; of whom 7373 were present, and 746 absent. Of the former, 1971 were for crimes against persons, and 5582 for crimes against property. Of the present, there were condemned 5475; of the absent, 729. Sentence of death was pronounced upon 135; that of perpetual labour upon 346. Of the accused, 1442 were females; of whom 616 were acquitted, 10 were condemned to death, and 15 to perpetual hard labour. Of the 135 condemned to death, 46 had fled, leaving 89 liable to execution. Of these, 40 were for assassination; 8 for attempts to assassinate; 7 for poisoning; 3 for parricide; 7 for murder accompanied with another crime; 2 for attempts to murder; 6 for coining; 15 for fire-raising; 1 for robbery with violence. Of the 89, 60 were executed. The others had their sentence commuted. Of the 4475, 2827 could neither read nor write; 1160 could read and write imperfectly; 404 could read and write well; 81 had superior information; 3 unknown.

2335. *Financial system.* During the period of the Revolution, *France* shook off the heavy burden of debt which had been a main instrument in bringing on that catastrophe. Yet the amount of taxes had not exceeded 22,000,000*l.*, and the nation was crushed rather by the arbitrary and injudicious modes of levying the imposts, than by their actual amount. Napoleon, to support his continual wars, laid on large additional taxes, chiefly in the form of land assessment, and contracted, besides, 123,000,000*l.* sterling of debt. This was augmented by the events of 1815, and the occupation of the French territory by the allied armies at the expense of France. The debt is now expressed in the form of *rentes* or annuities, which in the budget of 1830 amounted to 249,496,000 livres (about 10,812,000*l.* sterling): this, with some other funds for which government were responsible, was considered as representing a capital of 4,988,738,000 livres (about 207,864,000*l.*).

2336. *The statement of receipt and expenditure* for the year 1830 is as follows: —

Receipt.	Francs.	Expenditure.	Francs.
Direct Taxes, chiefly on Land	290,265,819	Civil List	27,666,666
Registration Stamps, and Domains	187,225,038	Chamber of Peers	799,999
Custom-houses and Salt	154,231,103	Chamber of Deputies	600,000
Liquors, Sundry Duties, Tobacco, and Gunpowder	193,081,582	Legion of Honour	3,635,209
Post Office	33,429,030	Sinking Fund	41,665,050
Falls of Timber	24,000,097	Funded Debt	276,356,668
Salt-works	1,200,000	Justice	19,566,020
Gaming-houses	4,338,888	Foreign Affairs	8,778,000
Royal Lottery	10,042,799	Religion and Public Instruction	38,961,500
Coinage	141,381	Interior	126,122,716
Sundry proceeds	11,585,418	War	233,363,817
Extraordinary resources	48,402,241	Marine	38,527,474
Deductions on Receipts	25,900,000	Finance	22,877,167
	983,944,066	Administration of Revenue	129,072,351
		Repayments	46,300,808
			1,064,288,445

2337. *The army of France* is no longer that vast and terrible mass, which for so many years held the whole of continental Europe in thrall. The events of 1815 having proved too clearly the attachment of the old troops to their former master, they were nearly all disbanded, and their place supplied by fresh conscription. The government has the power of levying 60,000 men in the year. By a regulation, breathing still the republican spirit, one third of the officers must be raised from the ranks. The army in the year 1832 was on a very formidable footing. It amounted in all, including 19,036 officers, and 3794 children of soldiers, to 411,816 men. Of these, the infantry consisted of 9505 officers and 264,141 men; the cavalry of 2805 officers and 51,335 men; the artillery of 1190 officers and 32,594 men, besides gendarmerie, engineers, &c.

2338. *The French navy,* which, in 1791, amounted to seventy-four sail of the line and sixty-two frigates, lost half during the war; and those which remained, having never ventured for many years to stir out of port, lost all their experience and efficiency. At present, they have a show of thirty-four ships of the line, thirty-nine frigates, and fourteen corvettes; but it would probably be very difficult to fit out for sea any considerable part of this force. The boasted flotilla of Napoleon does not seem to have left a shadow of its existence. In 1830, the entire number of persons employed in the navy amounted to 42,250; but of these 13,702 were labourers partly composed of criminals doomed to compulsory toil.

Sect. V *Productive Industry.*

2339. *France, with regard to internal economy,* is one of the richest and most flourishing countries in the world. In point of industry she ranks third after Britain and the Netherlands; while she possesses a greater extent and more natural advantages than either of those great seats of commerce and manufacture.

2340. *Agriculture* is the most flourishing branch, yet is not in so advanced a state as in Great Britain. It has gained greatly by the French revolution, in consequence of the abolition of feudal rights, *corvées,* and tithes. The great possessions of the nobility were then broken up, and during the grand emigration, the farmers, or neighbouring little proprietors and capitalists, were able to purchase at a very cheap rate portions of the forfeited domains. It has become a rage in France for every one to possess a little spot of land; and the division of a man's property among his children, which the law enforces, tends to split it perpetually more and more into minute portions. Travellers have even observed three or four proprietors obliged to join in keeping a common plough. In vineyards and other garden cultures, where nice care and diligence are chiefly requisite, this minute partition seems advantageous. Chaptal even calculates, that a small vineyard cultivated by the proprietor's own hand will yield double the quantity of that which is leased out by a large proprietor. But in corn lands, where a considerable capital, good machinery, strong and well-fed cattle are necessary, the cultivation is thus kept down to a much lower standard than it would otherwise reach. The little occupants, also, are by no means prompt in discovering any improved processes, or in adopting those discovered elsewhere. Artificial grasses, and the rotation of crops which they facilitate, are by no means generally diffused; and an old vicious circle, of wheat, oats, and fallow, is still very generally adhered to. In short, all operations on a great scale, and requiring a considerable outlay, are deficient in France. M. Dupin, in a discourse on the effects of public instruction, in the introduction to his normal course of lectures on geometry, has drawn a striking contrast between northern and southern France. Although the former produces neither the olive, the vine, nor any of the finer fruits, yet it pays of taxes 127,630,000 francs on a surface of 18,690,000 hectares; while the south pays only 125,410,000 francs upon 34,840,000 hectares. Even in the south, the districts least favoured by nature are both the most enlightened and the most industrious; the high Alps, the high Pyrenees, and the departments immediately adjoining to them.

2341. *Grain*, notwithstanding the imperfections in its cultivation, is produced with such diligence as to yield enough in ordinary years to supply the extensive population of France with food. The only exception is in part of its southern coast, which, when permitted, draws a supply from Odessa. France is not distinguished for any very superior quality of grain, nor is it an exporting country. It seems to have attended less than most other countries of Europe to the culture of potatoes, which are still planted only in gardens, along borders, or in tracts unfit for grain. Maize is mixed with wheat in the southern departments. Chaptal has given the following statement, calculated on an average of twelve years, from 1800 to 1812, of the entire products of this branch of French agriculture: —

	Hectolitres.
Wheat	51,500,200
Rye	30,290,161
Maize	6,302,316
Buck-wheat	8,409,473
Barley	12,576,603
Potatoes	19,800,741
Oats	32,066,587
	160,946,081

2342. *A more recent estimate*, in a memoir read to the Society of Statistics in 1830, makes the average produce of the years 1825 to 1828 amount to 60,553,000 hectolitres of wheat; 114,733,000 of other grains; 46,238,000 of potatoes and chestnuts.

2343. *Wine* ranks next in importance to grain, and forms a most valuable part of French industry. The wines of France, though not so strong as those of more southern climates, are generally accounted the most delicate in the world. Those of Burgundy and Champagne are without a rival, if we except a few rare specimens of Tokay. The wines of the Garonne do not rank quite so high; but, from their light, safe, and agreeable qualities, are drank more freely, and exported on a larger scale. The finest and strongest of these wines are cultivated chiefly to supply the consumption of Britain and the other northern nations. The interior consumption of France consists chiefly of the light wines, drank at table, nearly as our beer. Two elaborate attempts have been made to estimate the produce of the French vineyards; one by Chaptal, in his "General Treatise on French Industry," and the other in the report of a committee of the Chamber of Peers, presented in 1824 by the Duc de Dodeauville. They differ pretty considerably. Chaptal supposes that 1,631,000 hectares are employed in producing wine to the average annual amount of 35,500,000 hectolitres. The table, however, given by the duke, of the produce of each department does not exceed 31,630,000 hectolitres. The difference as to value is still more remarkable. Chaptal, after leaving out a sixth, as made into brandy, estimates the remainder at 678,000,000 francs (28,000,000*l.* sterling): he supposes that there are 800,000 worth each 200 francs; 1,600,000 worth 50; gradually descending till he comes to 10,500,000 worth only 7½ francs. Dodeauville does not bring the amount to more than 480,000,000 (20,000,000*l.* sterling). The highest average value he assigns to the wines of any department is to those of the Oise (champagne), 36 francs; those of the Marne, Yonne, and Côte d'Or (burgundy), 26 to 24; of the Gironde, and Lot et Garonne (claret), 19 to 21; the rest from 17 to 9. His estimate, however, seems too low; since M. Dupin (*Forces Productives, &c. de la France*) calculates the value, according to the tax paid to government, at 543,155,078 francs (about 23,000,000*l.* sterling). The brandy into which one sixth of the above produce is made, is, like the wine, the finest in the world, and a grand staple of French trade. Chaptal estimates the value distilled at 40,000,000 francs (1,750,000*l.*). M. Dupin states the quantity at 469,817 hectolitres; that of other spirits at 90,000. He calculates also 8,868,218 hectolitres of cider, worth 2,760,000*l.*, and 2,965,022 hectolitres of strong beer.

2344. *Live stock* does not form the most approved part of French husbandry. Chaptal considers that the animals are too few, whether for culture, for use, or for the production of manure; and also that the measures taken to improve the breed have been very partial and defective. The number of horses, including mules, in 1827, was 2,550,000. Of these it was reckoned that 300,000 were employed in riding, posting, the artillery, &c. The stock requires to be kept up by an importation, which in 1809 to 1812 was valued at 3,541,000 francs annually, but according to M. Senac had risen, in 1822 to 1825, to 7,500,000. In return, there is an extensive breeding of mules on the Pyrenean frontier, and they are exported to Spain to the value of 1,400,000 francs. France had in 1812, 214,000 bulls, 1,701,000 oxen, 3,909,000 cows, 856,000 heifers. The importation at that time amounted to only 2,360,000 francs, but in 1825 it was 7,680,000. The exportation is, however, considerable. Sheep are a species of stock very considerable in amount, particularly in the departments bordering on the Alps and Pyrenees, in those which compose the mountain district of Auvergne, and on the pastoral banks of the Eure and the Cher. The number of sheep in 1812 was 766,310 merinos, 3,578,000 mixed, and 30,843,000 native or unimproved. The first introduction of merinos was in consequence of the treaty of Basle, which stipulated that 4000 of these highly prized animals should pass into France. An experience of thirty years has shown that the breed might be preserved and extended in full perfection; but the above statement will show that the diffusion of it is, as yet, very partial. Pure merinos are valued at thirty francs, mixed at twelve francs, and native sheep at only five francs. The number of swine in France is estimated by Balbi, in 1826, at 4,000,000. The ass is considered by M. Senac to be, from the poverty of his owners, in an almost hopeless state of degradation; and the fowls, the bees, and the pigeons to demand a thoroughly improved system of rearing. Chaptal has not attempted to estimate the winged species, but has guessed their entire value at above 2,000,000*l.* sterling.

2345. *Among the materials of manufacture*, the most important is silk, which was at first introduced near Tours, but was soon found to be well suited only to the most southern districts. The amount, according to Chaptal, is about 11,400,000 lbs., and the value 15,440,000 francs; but this is only about two fifths of the quantity consumed in the manufactures, so that a large importation is necessary from Lombardy. Hemp and flax are cultivated universally, but always on a small scale, every farmer having his little patch for domestic use. It is difficult to estimate these; but Chaptal guesses the value of hemp at 1,250,000*l.*, and flax at 800,000*l.* Vegetable oils are produced to the supposed extent of 1,300,000 quintals, worth about three millions sterling; yet so great is the quantity consumed in domestic use, and in the different manufactures, that they are imported to the value of nearly a million.

2346. *There are certain tropical and colonial productions* which it was the eager wish of Napoleon that France should cultivate, in order that she might be independent of commerce. One of his favourite projects was the culture of the beet root, for the extraction of sugar, an article of consumption with which Europeans can least dispense. The admission of colonial and foreign sugars, under reasonable duties, after the overthrow of the continental system, gave a severe check to this spurious branch of industry. To prevent its decline, heavy additional duties were laid on colonial and foreign sugars in 1816 and 1822; and, in consequence of this encouragement, the production of beet root sugar has been rapidly increasing during the last five years, and is now supposed to amount to about 8000 tons, or 8,960,000 lbs. The art has been a good deal improved; and it is supposed by many that it will, at no distant period, be so much ameliorated that the beet growers will be able to withstand the competition of the West India planters under the same duties: but any such expectation seems to us to be quite visionary. The entire consumption of sugar in France amounts, at present, inclusive of that from the beet root, to about 72,000 tons a year; being not much more than a third part of the consumption of Great Britain and Ireland, which amounts to about 190,000 tons. Tobacco, after the removal of the *régie* or royal monopoly, rose to 50,000,000 lbs.; but since the restoration of the régie in 1812, it has fallen to 5,000,000.

2347. *Wood* is an important article, especially in a country which is nearly destitute of any other fuel. Chaptal estimated the woodlands at 7,072,000 hectares (about 17,500,000 acres); but according to a more recent memorial in 1824, by M. Herbin de Halle, sub-administrator of the forests, it is only 6,521,000 hectares (about 16,000,000 acres). Of this, 1,122,000 hectares belong to the state, 1,896,000 to the communes, 65,969 to the crown, 192,000 to princes of the royal family, and 3,248,000 to private individuals. Woods thus occupy a little more than an eighth part of the soil. The greatest proportion exists in the departments bordering on the Alps and the Pyrenees, and along the Rhine, the Moselle, the Saône, the Marne, and other eastern rivers. Chaptal estimates the value of the annual cuttings at about 6,000,000*l.* sterling; but if this be reduced according to M. de Halle's estimate, it will give only five and a half. Fruit trees are also of importance, especially chestnuts, cultivated on a large scale in several provinces, and valued by Chaptal at about 400,000*l.* He estimates the fruit growing open in orchards at 900,000*l.*, and that on walls, or in rows as single trees, at 2,750,000*l.* He is afraid that this last will be thought too low; we should rather apprehend an opposite error in this instance, as well as in that of reckoning the herbs which grow in 328,000 hectares of garden ground, at 8,000,000*l.* sterling.

2348. *On the whole, Chaptal calculates* that in the 52,000,000 hectares of which France consists, twenty-three are arable; ten woods, vines, fruit trees; seven pasturage; the rest waters, roads, buildings, waste. He makes the annual average produce of an acre 28 francs (1*l.* 3*s.* 4*d.*). By this and other estimates, the annual territorial produce comes to very nearly 60,000,000*l.* sterling. In estimating the entire agricultural capital, he considers the land itself with the wood upon it to be worth 1,386,000,000*l.*, the live stock 66,000,000*l.*; agricultural implements, machinery, and farm houses, 126,000,000*l.*: in all, 1,578,000,000*l.* M. Dupin, in 1827, reckons the territorial revenue at 1,626,000,000 francs (67,750,000*l.*).

2349. *The manufactures of France*, though they do not present the immense results of those of England, are considerably more productive than those of almost any other nation. Colbert, the celebrated minister of Louis XIV., finding this branch in a very depressed state, compared with its prosperous condition in some neighbouring countries, bestowed on it almost an exclusive attention. Chaptal calculates, that during the Revolution it made still greater progress than agriculture. He regards as almost miraculous the advance made in the cotton and other fabrics. The miracle, however, was wrought solely by the rigid exclusion of British goods; and amid all the boasted proofs of French ingenuity, he is obliged to confess, that when, as minister of the interior, he sought eagerly the means of introducing new manufactures, he could find no effectual expedient, except that of alluring English manufacturers into France, and of copying their processes. However, these prohibitions, which have been continued to a great extent under the royal system, have in fact forced a number of manufactures which could not otherwise have withstood British competition.

2350. *Silk* has been long one of the most prominent objects of French manufacture. Even the revocation of the edict of Nantes, though it drove many of the most industrious citizens out of the kingdom, left that branch of industry still very flourishing. It suffered more from the dreadful calamities which befell Lyons, its chief seat, during the height of revolutionary mania. The 15,000 establishments that existed in 1788 for the manufacture of silk, were reduced in 1800 to 3500; but amounted, in 1831, to about 15,000, employing above 21,000 workmen. It is chiefly in cloths that this city excels all others, both as to the brilliancy of the dyes, and the richness and beauty of the stuffs. Nismes excels in taffetas, mixed silk and cotton stuffs, gauzes, and crapes; Tours in furniture stuffs; Avignon in satins, levantines, &c. The Cevennes are famous for bonnets, while almost all the silk ribands are fabricated in the department of the Loire. The entire value of the manufacture is estimated at 5,000,000*l.* sterling, of which 1,250,000*l.* is exported.

2351. *The woollen manufacture* is still more extensive and valuable than that of silk. The woollens of France are either very coarse or very fine; the former are established chiefly in the hilly tracts of the southern border, where the sheep yield abundance of coarse wool, and the shepherds spend the leisure of winter in working it up into serges, friezes, and similar stuffs. On the other hand, at Sedan, Louviers, Abbeville, are manufactured finer cloths than any of those of Britain, though we produce a much larger quantity of good and substantial cloth. Although France produces 84,000,000 lbs. of wool, she yet imports to the value of 12,000,000 or 14,000,000 of francs: Chaptal estimates the whole unmanufactured wool at 93,000,000 francs, and the finished work at 238,000,000, or nearly 10,000,000*l.* sterling, of which the exports amount to about 1,000,000*l.*

2352. *The making of linen* is as widely scattered as the culture of hemp and flax. The coarse cloths are chiefly fabricated by the peasantry, each out of the produce of his own little patch of land. There are, however, large manufactures of plain useful cloth in Normandy and Dauphiné, the latter from hemp; and great quantities of sailcloth are made in the maritime counties. In the departments along the Belgic border there are extensive fabrics of lawns, cambrics, and lace; which last, though not of equal reputation with that of Brussels and Mechlin, forms yet an important object of trade. Chaptal reckons the raw material of hemp at 1,500,000*l.* sterling; the finished manufacture at nearly 4,500,000*l.*; flax, raw material, 850,000*l.*, the finished fabric, 3,100,000*l.* The exportation is about 1,500,000*l.*, almost wholly of the finest kinds of the manufacture.

2353. *The cotton manufacture* was established in France during the continental system; and has been propped up since the restoration of the Bourbons by the prohibition of importation from abroad. In 1810 the imports of raw cotton amounted to above 25,000,000 lbs., and during the next ten years they were more than doubled. But the high price of machinery in France, the scarcity of coal, and the want of skill on the part of the workmen, seem to oppose almost insuperable obstacles to the further progress of the manufacture. It is at present in a very depressed state, and the following account shows that it has been nearly stationary during the last ten years: —

Imports of Cotton Wool into France: —

	lbs.		lbs.
1822	61,758,300	1827	87,185,100
1823	50,953,500	1828	61,839,600
1824	75,322,200	1829	72,669,000
1825	61,371,600	1830	84,825,600
1826	96,052,200	1831	65,517,900

2354. *Of the secondary objects of manufacture,* that of leather is perhaps the most extensive, though not peculiarly French. It is supposed that in France the annual product amounts to 857,000 cow-hides; 110,000 horse-hides, and 2,032,000 calf-skins. There are 31,000 shoemakers in Paris, who make upwards of eight millions of pairs of shoes yearly, not only for the city itself, but the provinces, and even foreign countries. Chaptal reckons the whole produce of tanning, currying, shoemaking, and all processes connected with leather, at 6,000,000*l.* Hard soap was formerly supplied by Marseilles to all France and the colonies, but its produce of 225,000 quintals is now reduced by a third; owing partly to the reduction of the colonial demand, and partly to the more general diffusion of the manufacture. It is thought still to amount to 1,250,000*l.*, with 120,000*l.* value of soft soap made in the northern departments. Starch, including hair-powder, may amount to 18,000,000 pounds, and its value to 250,000*l.* There are sundry little matters of jewellery, trinkets, furniture, perfumery, scented waters, volatile salts, which elsewhere are only petty trades, but which taste and fashion in France raise to the dignity of manufactures, the whole produce of which is reckoned at upwards of 4,000,000*l.* sterling. Crystal, glass, and pottery are branches in which the French have recently made great progress; and, from being dependent on foreigners for these articles, are now able to export them. The first two branches are estimated at 850,000*l.*; porcelain made at Sèvres and other places at 200,000*l.*; pottery in imitation of English a little more; coarse pottery for the lower ranks, 600,000*l.*

2355. *Mineral kingdom.* France yields in abundance the most solid and useful of all metals, iron. There are about 400 forges in the kingdom, chiefly in the Pyrenean and Alpine departments, and along the heads of the Marne, the Moselle, and the Saône.

2356. *The produce* which M. Chaptal reckoned only 81,000,000 kilogrammes, had, according to M. Dupin, risen in 1825 to 161,000,000 (about 161,000 tons), the value of which would be above 3,000,000*l.* sterling. Chaptal supposed the workmanship bestowed even on the smaller quantity produced in his time sufficient to raise the value to 8,000,000*l.* Nearly all the copper and lead employed in France is imported from abroad. Salt is extracted on the southern coast from sea-water evaporated by the heat of the sun, and in the north from brine-springs artificially evaporated. During the period when salt, relieved from the old oppressive monopoly, was left entirely free, its production and use rose to the extraordinary height of upwards of 20 millions of quintals. Since the re-establishment of the tax, it has fallen to not quite two millions; upon which there is paid a duty of 1,800,000*l.* This astonishing diminution seems chiefly owing to the disuse of it in agriculture; a circumstance however very injurious to that branch of industry. Other mineral products, with their supposed value, are, alum, 100,000*l.*; saltpetre, 120,000*l.*; nitric acid, 240,000*l.*; muriatic acid, 10,000*l.*

2357. *The total value of the products of the mines and manufactures* of France is estimated by Chaptal at 75,835,000*l.* sterling. The particulars are, about 17 millions of home raw materials; 8 millions of foreign raw materials; 35 millions of workmanship; 8 millions of general expenses, as implements, repairs, lighting, interest of fixed capital; 7½ millions for the profit of the manufacturer.

2358. *The commerce* of France, while all the other branches of industry were thus advancing, has perceptibly declined. It was reduced, indeed, to a state of temporary annihilation by the violent policy of Napoleon, who absolutely lined the coast with troops, that not a single vessel might enter. Thus all the commercial ties of France were broken, every channel closed by which she was accustomed to exchange her commodities with those of foreign countries. Indeed, the anti-commercial spirit seems to have become rooted in the mind of the nation; and when we find even the enlightened mind of Chaptal extolling the prohibitory system, and considering every thing as a source of loss to France which she imports from abroad, there can appear little prospect of any amendment. That writer considers the year 1789 as the most flourishing period of French commerce; when the exports amounted to 18,200,000*l.* sterling, and the imports to 26,500,000*l.* This extraordinary excess of imports, a result, according to old ideas, considered so disastrous, he explains by observing, that the imports include ten millions from the colonies, while the exports thither were only four, and also two millions and a half in gold and silver. Whether this explanation be sound or otherwise, we have no idea that there could be any permanent or extensive difference between the two branches. Chaptal has, with grief, declined to give any record of the feeble efforts at revival made by the French commerce. Since the appearance of Chaptal's work, however, it has considerably improved. In 1827, the import trade was carried out by 3350 vessels under the French flag, tonnage 353,000, value of cargoes 230,140,000 francs; and by 4439 foreign vessels, tonnage 474,000, value of cargoes 136,041,000 francs. There were, besides, imported by land, goods to the value of 199,621,000 francs; making the imports in all, 565,802,000 francs (23,500,000*l.*).

2359. *In the same year* the export trade was carried on by 3522 French vessels, tonnage 346,000, value of cargoes 235,120,000 francs; and 4141 foreign vessels, tonnage also 346,000, value of cargoes 167,728,000 francs. The exports by land amounted to 156,767,000 francs; making in all, 559,615,000 francs (23,300,000*l.*).

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2360. *The following was the value* of the leading articles of import and export: —

Imports.	Francs.
Raw hides	8,700,000
Wools	11,140,000
Feathers	1,580,000
Silks	32,270,000
Tallow	2,500,000
Fruits, to plant	1,220,000
Tobacco	7,650,000
Vegetable juices	2,270,000
Oils, not for food	21,430,000
Medicines	2,130,000
Wood	17,000,000
——, ornamental	2,900,000
Hemp	4,210,000
Flax	56,000
Cotton	51,910,000
Gems	8,200,000
Sulphur	1,290,000
Coal	8,080,000
Cast-iron	1,170,000
Copper	9,110,000
Tin	2,130,000
Potash	3,420,000
Indigo	14,880,000
Horses	3,360,000
Sheep	6,400,000
Horned cattle	2,520,000
Butter	1,960,000
Eggs	3,830,000
Grain	7,150,000
Cheese	3,140,000
Fruits	16,200,000
Sugar	36,000,000
Coffee	10,000,000
Straw-hats	4,550,000
Linen, or hemp stuffs,	15,880,000
Mercery	2,170,000

Exports.	Francs.
Dye stuffs	8,300,000
Gems	2,120,006
Horses	1,290,000
Mules	4,840,000
Sheep	1,420,000
Horned cattle	2,520,000
Refined sugar	4,550,000
Wine, ordinary	41,510,000
——, liqueurs	5,720,000
Brandies	22,070,000
Strawhats	2,090,000
Porcelain	3,680,000
Glass	2,600,000
French books	3,140,000
Paper	3,960,000
Perfumery	5,390,000
Cloths, wool	26,920,000
——, silk	90,860,000
——, ribands	24,380,000
——, cotton	46,020,000
——, linen	17,370,000
Cambric and lawn	16,580,000
Plaqué	3,170,000
Clock and watch-work	4,240,000
Tabletterie	3,790,000
Mercery	6,880,000
Modes	2,300,000
Made clothes	6,480,000
Parisian articles	5,690,000

2361. *Mercantile navy.* In 1827, the mercantile navy of France consisted of 14,530 vessels, of the burden of 700,000 tons. Of these there belonged to —

	Ships.	Tons.		Ships.	Tons.
Bordeaux	431	77,000	Nantes	537	56,000
Marseilles	711	65,000	Rouen	254	28,000
Havre	359	62,000	Dunkirk	229	17,500

2362. *The interior commerce* must be very extensive, though it is difficult to estimate its amount, as, notwithstanding considerable advantages for navigation, the bulk of it is carried on by land. The old medium of *fairs* has been not only preserved, but greatly extended. M. Bottin, upon documents furnished by the minister of the interior, calculates that there are 26,314 fairs in France. Some of these are held on the frontier of a province or kingdom, others round a great cathedral or noted place of pilgrimage; some at the foot of high mountains on the melting of the snows, which have kept the inhabitants imprisoned for several months. Sometimes they open with burlesque representations, as processions of giants, of flying dragons, or monstrous fishes. The fair of Longchamps, held in spring at Paris, those of Beaucaire in Languedoc, and of Guibray in Normandy, are the most extensive.

2363. *The canals of France* were long entirely undertaken by the government, which carried on these works with some spirit. The earliest was the Canal of Briare, to unite the Seine and the Loire. It is about 18 miles long, 4 feet deep, has 40 locks, and cost 400,000*l.* The canal of Languedoc is on a much greater scale, and was considered in its day a stupendous undertaking. It was intended to unite the Mediterranean with the Atlantic, and is 130 miles long, 6½ feet deep, with 100 locks. The cost was 750,000*l.*, which would have been, at least, doubled had the work been executed in the present day. It was considered the largest canal in Europe, till it was eclipsed by the Caledonian, which is three times as deep, and admits ships of war; whereas the canal of Languedoc has afforded a mere inland navigation, along which pass 1900 vessels of 100 to 120 tons; but it has not, for the most common merchant vessels, superseded the necessity of going round by the Straits of Gibraltar. The Canal of the Centre, joining the Saône and the Loire by a line of 70 miles, was completed in 1793, at an expense of 410,000*l.*; but only 5 feet deep. The Canal of Picardy, from the Oise towards Lille, remarkable for its long tunnel near St. Quentin, was completed in 1810, at an expense of 475,000*l.* Still, France, in this grand national improvement, remained far behind England, which, by M. Dupin's estimate, made a few years ago, had more than four and a half times as much canalisation in proportion to its surface. Very recently, however, France has displayed an extraordinary activity in planning, and a considerable diligence in executing, designs of this nature. This too has been displayed not by government only, but by private associations, asking only aid and advances from the state. Independent of the finished works above stated, twelve great new canals are in progress. These are, — 1. The Canal

Monsieur, joining the Rhine and the Rhone by the Saône and the Doubs; length 180 miles. 2. Of Burgundy, joining the Saône to the Loire by the Yonne, 145 miles. 3. Of Angoulême, making the Somme navigable to Amiens. 4. A lateral canal along the Loire, to avoid the difficulties of its navigation, from Dijon to Briare, 120 miles. 5. From Nantes to Brest, with a view of provisioning the ports of Britany, 220 miles. 6. Of Ille et Rance, joining Nantes to Brest and St. Malo. 7. Of Nivernois, joining the Yonne to the Loire. 8. Of the Duke of Berri, joining the Cher to the Upper Loire. 9. Ardennes. 10. Blanet. 11. Arles. 12. Oise. The estimates for completing these twelve canals were within a trifle of 10 millions sterling, of which, in March, 1829, there had been expended 6 millions. Several canals, on a still more magnificent scale, have been recently contemplated, and what the French call the *studies* of them are even far advanced; but no part of the works has yet been commenced. Doubts are even entertained if they will repay the immense expense required for their completion. The principal of these are, — 1. A maritime canal from Paris to the sea, avoiding the circuitous navigation of the Seine, and admitting ships of large burden to that capital. The estimate is 6,000,000*l.* sterling, and 600,000*l.* for a harbour at Paris. 2. A canal from Paris to Strasburg; which would become, as it were, the French Grand Trunk, and might easily be extended to the Danube. The length would exceed 300 miles, and the estimate is nearly 3,000,000*l.* sterling. 3. The Pyrenean Canal, from Toulouse to Bayonne, forming a more direct communication from sea to sea than at present. Length, 210 miles; estimate, 2,400,000*l.*

2364. *The roads of France*, at least the high roads, have been chiefly supported by government. They are broader, more spacious, more direct, and on the whole of grander aspect, than the English roads; but they have not been kept in such good condition for travelling. Roads have been made and repaired rather for political and military purposes, from solicitation and favour, than for objects of real utility. The system seems to have been, to neglect them as long as possible, till the clamour of the district became irresistible, and then to give them a thorough repair; to which Dupin justly prefers our system, of keeping roads constantly in a good state by small repairs as the necessity arises. The French roads, however, have been greatly improved since 1810, and the maintenance of a great proportion of them has been undertaken by the departments; so that they are now divided into royal and departmental. The royal roads, in 1828, extended 8631 leagues, and there was expended on them 199,000,000 francs, or upwards of 8,000,000*l.* sterling; but this was chiefly on repairing and extending different parts of them. It was thus divided: —

			Francs.
To maintain	4205	leagues, cost	9,349,000
To repair	3166	ditto	61,051,000
To complete	814	ditto	43,403,000
To open	446	ditto	34,964,000
Works of art			50,696,600
			199,463,000

2365. *The departmental roads*, in 1828, extended 7704 leagues, of which 6040 had been opened, and to complete the remaining 1664 would require an expenditure of 4,500,000*l.*

2366. *Of the bridges of France* several are handsome, as those over the Loire at Orleans, Tours, and Nantes; over the Seine at Paris, Neuilly, and Rouen; over the Rhone and Saône at Lyons; and over the Garonne at Bordeaux. Bridges of suspension have been commenced at Paris in front of the Hôtel des Invalides, and over the Rhone, between Tain and Tournon. These operations have been entirely in the hands of government. According to the report of M. Regnay, the support of bridges and aqueducts constructed would be 260,000*l.*; that of repairs, 340,000*l.*; completion, 300,000*l.*; new works contemplated, 1,650,000*l.*

Sect. VI. *Civil and Social State.*

2367. *The population of France*, which in 1780, by the enquiries of Necker, appeared to be 24,800,000, was found by the census of 1791 to amount to 26,363,000; by that of 1817, to upwards of 29,000,000; and by that of 1820–21, to 30,616,000, including Corsica and the army. According to the royal ordonnance of March 15th, 1827, it amounted to 31,851,545. There were in that year 965,634 births; of which 898,329 were legitimate, and 67,305 illegitimate. The births consisted of 498,177 boys, and 467,457 girls. The marriages were 229,613, the deaths 772,428. At an average the proportion of male births in France to female births is as 16 to 15; the marriages are to the population as 1 to 133; the births are to the marriages nearly as 4 to 1; and to the population as 1 to 31·53; the deaths are to the population as 1 to 39·4. The extraordinay improvement since 1780 in the condition of the people is obvious from the fact that at the last-mentioned period the deaths were to the whole population as 1 to 30·2: so that while, in 1780, one individual died annually out of every 30 individuals, in 1832 one only died out of about 39.

2368. *The French national character* has very marked features, and has been the object of mingled admiration and contempt to the neighbouring nations. In the eyes of Frenchmen, especially of the old school, *la belle France* is the centre of all that is refined and polished in human existence, and whatever lies beyond its sphere is marked with a deep taint of barbarism; while their rougher neighbours brand them as artificial, effeminate, and fantastic. The art of living in society seems certainly carried to greater perfection than in any other country; and the manners are characterised by a peculiar gaiety, amenity, and courtesy. The polish of the higher ranks seems to have descended even to the lowest circles. "The man who breaks stones upon the road takes off his hat to the woman that leads her cow in a string; the tinker and the shoeblack whip off their hats to each other." A certain openness and kindness of disposition, called *bonhommie*, is certainly evinced in the custom of whole families, with married sons and daughters, continuing to dwell under the paternal roof. The Frenchman lives as it were in public: his house, for a part of the day, is open to a large circle of acquaintance. He enjoys society without expense and ceremony. He resorts habitually to the theatre, spectacles, and scenes of public amusement. In more serious points of view, the French possess estimable qualities. Intoxication is a vice confined to the lowest ranks; and swearing is repelled at least as a mark of barbarism. The French are ingenious, acute, active, and intelligent. If they have not what can strictly be called patriotism, they have at least a very strong national feeling. To exalt the glory and promote the influence of *la grande nation*, is the prevailing impulse which actuates the mind of almost every Frenchman. After all, we on this side of the Channel allege, that there is a want of that sterling principle, that openness and integrity, which forms the boast of the English character. Dissimulation and insincerity seem widely diffused through the intercourse of the higher circles. The honesty of the lower classes is, however, remarkable; and that system of higgling in shops, so offensive to an Englishman, is a consequence of the contracted state of commerce; and was, at no distant period, quite as common in Scotland. The deportment of the female sex, however embellished by *tournure* and the graces, does not accord with our ideas of social and domestic propriety. The young ladies are strictly watched, and held in almost monastic seclusion; but the era of marriage is the signal, if not of positive irregularity, at least of a system of regular flirtation, which we cannot reconcile to the conjugal and matronly character. It is probable, however, that the impression of the general dissoluteness of French manners has been chiefly derived from the opulent circles of the capital; while, as a late writer has observed, Paris and the provinces form entirely separate worlds. Among the peasantry, and even among the trading class in the cities, there appears to be much that is respectable and amiable. The great activity and prominent station of the female sex is every where conspicuous: they are seen managing the shops, carrying on great manufactories, and joining in the hardest toils of the loom and the field. It is not at all uncommon upon a farm to see the master sowing, his wife guiding the plough, and a fine girl filling the dung cart. Such avocations divest the fair sex in the provinces of any great portion of beauty. Indeed, the gay hilarity of the French character does not seem quite so universal as is generally supposed in England. Travellers in the south, from Arthur Young to those of later date, complain rather of a singular gravity and taciturnity. Mr. Matthews remarks, in his "Diary of an Invalid," that a very considerable change of manners has taken place since the Revolution. All the distinctions of rank have been cut down like the old trees of the forest, and the new generation, like the coppice, are all on a level. "You will seek in vain," he says, "for that high-bred polish of manners which has been so much boasted as peculiar to the *haut-ton* of France. A republican spirit prevails, and shows itself in an independent roughness of manner, savouring of sans-culottism." The tone of society among the body of the people has even been compared to that in the United States of America.

2369. *The Roman catholic has been the ruling religion in France*, ever since the fatal issue of the long struggle for religious liberty. Previously to the Revolution, however, a general scepticism pervaded all the well-informed classes, both as to the catholic tenets, and as to religion in general. This was doubtless one great cause both of the Revolution and of many of the fatal and disastrous aspects which it assumed. A furious anti-religious fanaticism reigned; all form of public worship was suspended, and even prohibited; the churches were rifled and defaced in a barbarous manner. At this time, the vast domains of the church, by which so many dignitaries and so many convents were supported in splendour, were voted the property of the nation, and sold at a low price to supply its necessities. Napoleon had the merit of re-establishing religious worship, and on a very liberal footing; an allowance being made for the support of the protestant clergy, proportioned to the number who still hold that faith, and who amount to about 1,500,000. As all the former funds however had disappeared, the establishment is supported out of the public revenue, and is frugal, and even scanty, both as to numbers and salary. There are five cardinals, with 1300*l.* a year; eighteen archbishops, with an annual income of 800*l.*; seventy-four bishops, 600*l.* After the intermediate classes of vicars and canons come the *curés*, or parish priests, amounting to 3000, with incomes of 40*l.* to 60*l.*; but the chief labour devolves upon 23,000 *desservans*, or acting curates, who starve upon 20*l.* or 30*l.* a year, with the addition of only some small fees. The whole church expenditure, in 1823, amounted to 1,575,000 livres; but in 1832 was reduced by a third; and the church has been in a somewhat unsettled state. The Bourbons were supposed to aim at restoring it to all its former power, splendour, and privilege; a course viewed with extreme jealousy by the republican party, who are imbued with a considerable tincture of that scepticism which was generally allied with republican principles. The high church party endeavoured to remedy the deficiency of the establishment by sending sound missionaries, who were listened to by the people with enthusiastic delight. The author of "Four Years in France" mentions one who in departing from a city had his cassock torn off his back, and cut into pieces to be distributed as relics. The liberals deride them as ignorant fanatics; but some travellers, who cannot be charged with superstition, report them as displaying a good deal of natural eloquence, and that their doctrines appeared really very edifying, since many who had been guilty of thefts, even at remote periods, were induced by them to come forward and make confession and restitution.

2370. *The intellectual character* of the French has been brilliant, and since the age of Louis XIV. has had a powerful influence, in matters of taste, on the general literature of Europe: that prince, ambitious of glory in every form, extended a munificent patronage to letters and arts. The French Academy, though its endowments were not very splendid, and though intrigue often influenced its admissions, gave a fixed and high place in society to men of letters; who, amid all the frivolity of French character, were received even among the highest ranks with a distinction not accorded to them in any other modern country. The aim of Louis to make the French a sort of universal language was in a great measure successful; it became the established dialect at all the courts, and the chief medium by which the different nations communicated with each other. The departments in which the writers of that age excelled, were chiefly pulpit eloquence, poetry of a light and satirical character, and the drama in a somewhat fettered and artificial form. The writers of the following age took a bolder and more varied flight, and sought to turn the opinion of mankind into new channels upon all subjects. The wit and varied talent of Voltaire, the eloquence of Buffon and Rousseau, the comprehensive views of Montesquieu, and the science of D'Alembert, gave a new turn to the ideas of the thinking world throughout Europe. These writers, with their successors of the same school, had a powerful influence in bringing on this revolution, in the ruins of which several of them were buried. Learning was for some time almost extinguished in France; but as soon as the revolutionary frenzy abated, the National Assembly constituted a new body called the National Institute, round which, under the changed appellations of Imperial and Royal, all the highest names in science have since continued to rally. The French during this period did not shine in poetry or general literature; but in mathematics, physics, and chemistry, the labours of Lavoisier, Laplace, Lalande, Chaptal, and a number of others, have, notwithstanding the powerful rivalry on this side the Channel, raised them perhaps to the very first place. Recently, however, France has produced some very eminent historians, and popular poets of a peculiar character; there has been also a remarkable extension of the habits of reading. The periodical sheets printed were in 1814 only 45,000; in 1826, they were 144,000. The most solid and useful branches also are those which have most increased, as appears from the following table, formed by M. Dupin: —

	1814.	1826.		1814.	1826.
Theology - - -	4,974,000	23,268,000	Military Subjects - -	441,000	1,445,000
Legislature - -	1,374,000	18,605,000	Fine Arts - -	775,000	1,999,000
Sciences - -	2,546,000	12,160,000	Belles Lettres - -	13,352,000	27,704,000
Philosophy - -	753,000	3,032,000	History, Travels, &c. -	16,286,000	46,545,000
Political Economy -	1,634,000	2,097,000	Varieties, Almanacks, &c.	3,600,000	7,659,000

2371. *The literary and scientific collections* of Paris are the most splendid in Europe: the royal library contains 360,000 printed volumes, besides 70,000 manuscripts, and 5000 volumes of engravings. There are several other large libraries in Paris. The Museum of Natural History and the Jardin des Plantes are equally copious in their respective departments. All these are opened to the public in the most liberal manner. The provincial collections are also respectable, though they do not equal those of the minor princes of Germany; and France is, on the whole, less rich in this species of treasure.

2372. *Among the establishments for public education* in France, the universities, which are twenty-six in number, hold the first rank. That of Paris is perhaps the most celebrated in Europe, and was, even in the dark ages, the grand theatre of those dialectic combats, which then usurped the honours of science. Though destroyed during the fury of the Revolution, it has been re-established on a great scale, and with a larger appointment of professors than any other in Europe; it attracts students from every part of the kingdom, as none of the rest enjoy equal repute, and indeed bear at present only the name of academies. The *Lycées*, now called royal colleges, are an institution of Napoleon, and correspond nearly to our grammar schools, the expense of board and education being from 15*l.* to 30*l.* a year; but they enjoy a very unwarrantable monopoly of the right to teach Latin; they were attended, in 1825, by 10,000 pupils. Primary schools intended for the general instruction of the people amounted in 1825 to 22,900, and were attended by, 116,000 scholars. Lancasterian schools have since been introduced, and amounted in 1820 to 800, attended by 80,000 scholars. M. Dupin remarks striking local differences in this respect. In the north, 13,000,000 of inhabitants send to school 740,000 children; while in the south, 18,000,000 send only 375,000: even in the south, the proportion is largest in the districts least favoured by nature, the Upper Alps and the Upper Pyrenees; while in Touraine, emphatically called the garden of France, it is only one in 229. All these establishments are under the patronage and control of the government, which does not, however, exhaust its finances upon them, since the whole amount in 1823 was not more than 95,000*l.*

2373. *The fine arts* were zealously promoted by the regent duke of Orleans, and by Louis XIV.; and though they never reached the splendour of the Italian or even of the Flemish schools, yet they could boast several masters of the first class; the Poussins and Claude Lorraine having fixed their residence and even found their scenery in Italy, became half Italian. Le Brun and Le Sueur were the chief artists decidedly French: of whom the former enjoyed the favour of the king, and the chief direction of the great works; but the latter has been pronounced by posterity to be his superior. After this, the French school sunk greatly, and was employed in delineating only the artificial forms of court society; but within the last thirty years a new school has sprung up, in which David, Gerard, Guerin, Girodet, and their followers have sought, not without success, to imitate the highest classical models. The French school has produced a series of very eminent engravers; and the names of Desnoyers, Bervic, and Massard still support its reputation, though it no longer surpasses, or perhaps equals, those of England and Italy. The French galleries of art have passed through many vicissitudes: before the revolution they were certainly the first out of Italy. During that convulsion, all the collections of the princes and nobles were put up to sale; the entire Orleans collection was brought over to England; the Crozat went to Russia; various minor collections shared the same fate. When the French, however, over-ran Italy and the Netherlands, they were seized with the desire of enriching Paris with treasures of art, and seized on whatever could be removed from among the masterpieces of the Flemish and Italian masters, and of ancient sculpture. Thus was assembled in the Louvre a display of all that is most brilliant in art, such as nothing before existing in the world could have rivalled. But a dire reverse awaited the nation. The allied armies who conquered at Waterloo, and thence advanced to occupy Paris, determined to exact full restitution of all this brilliant booty. The Venus, Apollo, and Transfiguration were sent off for Rome; the Descent from the Cross for Antwerp; and numberless other masterpieces were restored to their ancient possessors. The unseemly gaps thus left were filled up by native productions, and others taken from the palaces; and the gallery presents a *coup d'œil* almost as brilliant as ever; the intrinsic value, however, is vastly diminished; though since the purchase of the Borghese collection it still comprises some of the finest specimens of ancient sculpture.

2374. *The houses in France* under the former régime presented a great variety; for while the mansions of the nobles displayed a profuse splendour and luxury, and might be characterised as palaces, those of the body of the people, compared with the English, were very deficient in neatness and comfort; the rooms being dark, the passages straggling, the floors of stone, the doors and windows by no means well finished. The palaces, however, can no longer be maintained as such by their impoverished owners; and all the fine old châteaus throughout France are converted into barracks, prisons, or manufactories. On the other hand, the habitations of the peasantry, as well as their general condition, appear to be sensibly improved.

2375. *Amusement* used to form as it were the life of a Frenchman, and was sought for in every various and possible shape; but since the Revolution a very great change has taken place in this respect. Paris still claims to be, as it were, the centre of gaiety to the civilised world. The Parisians go from home in search of amusement much more than their neighbours; almost all their leisure is spent in places of public resort, which are open on terms that render them accessible to all classes. The attendance on the theatres is not occasional, as with us, but constant and habitual; and dancing is an exercise peculiarly French, in which, as to agility, and perhaps grace, they excel most nations. Much of their time is also spent in the open air; and the extensive ranges of gardens in Paris are provided with every recreation suited to the tastes of its citizens. Although many improprieties doubtless mingle with these entertainments, especially in Paris, there is less of intoxication, turbulence, or quarrelling, than in the amusements of the lower orders with us: so far, even, as concerns the public places, there are fewer open violations of decorum.

2376. *Dress* is a particular in which the French long claimed, and were allowed, to give the law to the rest of Europe. Paris has been for ages the grand *magasin des modes.* In that capital seems to have originated the system which is termed fashion, and which consists in the continual change, according to a prescribed model, of the form and construction of every part of the human attire. Such light and constant changes, however, while they indicate an inordinate attention to the object, seem as inconsistent with the formation of a pure and elegant taste, as the immutable costumes of our ancestors and of the East. The empire of Paris seems considerably shaken by the extinction of its brilliant societies, and its long separation by war from the other countries; but its influence remains still very considerable in this department.

2377. *In the preparation of food*, the French equally boast of a refinement and *recherche* superior to that of the other European nations. Instead of plain joints, presented in their natural form, French cookery delights in what are called made dishes, stews, fricassees, and ragoûts, which retain few traces of the original material. On the merits of this system various opinions have been entertained; but at present the fashion of this cookery out of France is on the decline, and the time seems past when it was considered a matter of state that the tables of the great should be covered with French dishes.

Sect. VII. *Local Geography.*

2378. *The local divisions of France*, prior to the Revolution, were provinces, thirty-two in number, most of which had formed independent states, and even little kingdoms, when they were merged into the mass of the French monarchy. The National Assembly, however, superseded this division by one much more minute, into departments; which has been retained by the Bourbons, and is the basis of all administrative operations. It is indeed very convenient, being founded upon natural divisions of rivers and mountains: all the departments are tolerably equal as to magnitude, and each has its seat of administration nearly in the centre. All the exclusive privileges and restraints upon internal communication, which were attached to the arrangement into provinces, have been happily removed. Yet these divisions must still be kept in view, not only because they are necessary for the understanding of history, but because they remain rooted in the mind of the nation, and often mark striking differences of race, of manners, and even of language. It would not consist with our limits, or be interesting to readers out of France, to enter into a detailed description of each department; but the following tables will exhibit a very comprehensive view of their respective statistical details. The first exhibits the departments in their relation to the ancient provinces, their extent according to the report of the commission of the Cadastre, their population according to the census of 1827, and their chief cities and towns. The square French league may be reduced to the square English mile by multiplying by 8, or, more closely, 7·84.

2379. *The following table* exhibits both the provinces and the departments as nearly as possible in their relation to each other, with their extent in square leagues, and the population of the capital and principal towns, according to the estimate formed by the French government in 1827: —

Provinces and Departments.		Square Leagues.	Population.	Cities and Towns, with their Population in 1827.					
Flanders	Nord	283	962,648	Lisle	69,860	Douay Dunkirk	19,880 24,517	Valenciennes Cambrai	19,841 17,031
Artois	Pas de Calais	338	648,969	Arras	22,173	Boulogne St. Omer	19,314 19,019	Calais	8,854
Picardy	Somme	395	526,282	Amiens	42,032	Abbeville	19,520	St. Quentin	12,351
Normandy	Lower Seine	300	688,295	Rouen	90,000	Havre	21,049	Dieppe	17,077
	Calvados	281	500,956	Caen	38,161	Bayeux	10,060	Falaise	10,303
	Manche	304	611,206	St. Lo	8,569	Cherbourg	17,066	Coutances	9,032
	Orne	283	434,379	Alençon	14,071	Argentan	6,044		
	Eure	293	421,665	Evreux	9,729	Louviers	9,242		
Isle of France	Seine	24	1,013,373	Paris	890,531	Sceaux	1,529	St. Dénis	5,731
	Seine and Oise	277	440,871	Versailles	29,791	Etampes	7,867		
	Oise	297	385,124	Beauvais	12,865	Compiègne	7,362		
	Seine and Marne	301	318,209	Melun	7,199	Fontainebleau	7,400	Meaux	7,836
	Aisne	375	489,560	Laon	7,354	St. Quentin	17,661	Soissons	7,483
Champagne	Marne	- -	325,045	Châlons	12,419	Rheims	34,862	Epernay	5,060
	Ardennes	256	281,624	Mezières	4,159	Sedan	12,608	Rocroy	3,500
	Aube	306	241,762	Troyes	25,587				
	Upper Marne	315	244,823	Chaumont	6,027	Langres	7,180		
Lorraine	Meuse	305	306,339	Bar le duc	12,520	- -	-	Verdun	9,882
	Moselle	339	409,155	Metz	4,276	Thionville	5,821		
	Meurthe	282	403,038	Nancy	29,122	Luneville	12,378	Toul	7,507
	Vosges	252	379,839	Epinal	7,951	St. Die	7,339		
Alsace	Upper Rhine	194	408,741	Colmar	1,549	Béfort	4,803		
	Lower Rhine	210	535,467	Strasburg	49,708	Saverne	4,993	Weissemburg	6,146
Britany	Isle and Vilaine	321	553,453	Rennes	29,377	St. Malo	9,838		
	Côtes du Nord	375	581,684	St. Brieux	9,963	Dinant	7,175		
	Finisterre	350	502,851	Quimper	10,032	Brest	26,655	Morlaix	9,761
	Morbihan	360	427,454	Vannes	11,289	L'Orient	15,310		
	Lower Loire	308	457,090	Nantes	71,739				
Maine and Perche	Mayenne	261	354,138	Laval	15,840	Mayenne	9,799		
	Sarthe	323	446,519	Le Mans	19,477				
Anjou	Maine and Loire	365	458,674	Angers	29,978	Saumur	10,314		
Touraine	Indre and Loire	321	290,160	Tours	20,920	Cherson	4,406		
Orléannois	Loiret	356	304,228	Orleans	40,340	Montargis	6,653		
	Eure and Loir	304	277,782	Chartres	13,703	Dreux	6,247		
	Loir and Cher	319	230,666	Blois	11,337	Vendôme	6,805		
Berri	Indre	354	237,628	Châteauroux	10,010	Issoudun	11,223		
	Cher	360	248,589	Bourges	19,500				
Nivernois	Nièvre	334	271,277	Nevers	15,782				
Burgundy	Yonne	364	342,116	Auxerre	12,348	Sens	8,685		
	Côte d'Or	440	370,943	Dijon	23,845	Semur	4,220		
	Saône and Loire	290	515,776	Maçon	10,965	Autun	9,936		
	Aisne	296	341,628	Châlons	10,609	Bourg-en-Bresse	8,494		

TABLE — *continued.*

Provinces and Departments.		Square Leagues.	Population.	Cities and Towns, with their Population in 1827.					
Franche-comte	Upper Saône	262	327,641	Vesoul	5,252	Gray	7,203		
	Doubs	276	254,312	Besançon	28,795	Pontarlier	4,549		
	Jura	254	310,282	Lons le Saulnier	7,864				
Poitou	Vendée	341	322,826	Bourbon-Vendée	3,129	Fontenay le Comte	7,493		
	Daix	296	288,260	Niort	15,799				
	Vienne	349	267,670	Poitiers	21,562	Châtellerault	9,241		
Aunis, Saintonge, Angoumois	Creuze	265	252,932	Gueret	3,448				
	Upper Vienne	290	276,351	Limoges	25,612				
	Corrèze	278	284,882	Tulle	8,479				
	Charente	280	353,653	Angoulême	15,306	Cognac	3,017		
	Lower Charente	307	424,147	Rochelle	11,073	Saintes	10,300	Rochefort	12,909
Auvergne	Puy de Dôme	409	566,573	Clermont	30,010	Riom	12,736	Thiers	11,613
	Cantal	274	262,013	Aurillac	9,576	St. Flour	6,640		
Lyonnois	Rhône	141	416,575	Lyons, with suburbs	170,875	Trevoux	2,452		
	Loire	234	369,298	Montbrisson	5,156	St. Etienne	30,615		
Dauphiné	Isère	420	525,984	Grenoble	22,149	Vienne	13,780		
	Upper Alps	275	125,329	Gap	7,015	Embrun	2,300		
	Drôme	331	285,791	Valence	10,283	Montelimar	7, 89		
Guienne	Dordogne	476	464,074	Périgueux	8,588	Bergerac	8,412		
	Gironde	517	538,151	Bordeaux	93,549				
	Lot and Garonne	242	336,886	Agen	11,971	Villeneuve	9,495		
	Lot	263	280,515	Cahors	12,413				
	Aveyron	445	350,014	Rhodez	7,747	Villefranche	9,521		
	Gers	312	307,601	Auch	10,844				
Bourbonnois	Allier	- -	285,302	Moulins	14,525				
Gascony and Bearn	Landes	459	265,309	Mont de Marsan	3,088	Dax	5,045		
	Upper Pyrenees	233	222,059	Tarbe	8,712	Bagnères	7,037		
	Lower Pyrenees	386	412,469	Bayonne	13,498	Pau Oleron	11,761 6,423	Orthes	6,834
Foix	Arriège	297	247,932	Foix	4,958				
Rousillon	Eastern Pyrenees	205	151,372	Perpignan	15,357				
Languedoc	Upper Garonne	339	407,016	Toulouse	53,319				
	Aude	306	265,991	Carcassonne	17,775	Narbonne	10,097		
	Tarn	290	327,665	Alby	10,993	Castres	15,463		
	Tarn and Garonne	114	241,586	Montauban	26,466	Moissac	10,115		
	Herault	315	339,560	Montpelier	35,842	Beziers	16,515	Soden	9,642
	Gard	303	347,550	Nismes	39,068	Alais	10,252		
	Lozère	257	138,778	Mende	5,445				
	Upper Loire	250	285,673	Le Puy en Velay	14,998				
	Ardèche	277	328,419	Privas	4,309	Argentière	2,797		
Provence	Lower Alps	275	153,063	Digne	3,955	Sisteron	3,950		
	Mouths of the Rhone	226	326,302	Marseilles	115,943	Aix	23,132	Arles	19,969
	Var	368	311,095	Toulon	30,171	Draguignan	8,016	Grasse	12,716
	Vaucluse	167	235,048	Avignon	31,180	Orange	[illegible]864	Carpentras	9,756
Corsica	Corsica	- -	185,079	Ajaccio	7,658	Bastia	9,527		

2380. *The following statistical table* exhibits a comparative view of the state of culture and production in the different departments of France. The amounts of grain, cattle, and wool are furnished by Chaptal. The wine is drawn from the report presented to the peers by the Duc de Dodeauville, and the forests from the memorial of the sub-administrator, M. Herbin de Halle. The entire annual amount of land revenue is derived from an estimate of the average produce of the arpent in each department, founded upon the Cadastre or general survey of the kingdom. It is furnished by Chaptal: —

Departments.	Wheat.	Rye.	Oats.	Cattle.	Wool.	Wine.		Forests.	Land Revenue.
	Hectol.	Hectol.	Hectol.	No.	Kilogrammes, 2 1-5th lbs. each.	Hectolitres, 26½ gallons each	Average Prices in Francs.	Hectares.	Francs.
Ain	374,000	398,000	148,000	93,000	68,000	373,000	15	64,000	16,062,000
Aisne	1,422,200	1,040,000	598,000	84,000	1,107,000	291,000	22	103,000	27,441,000
Allier	282,000	746,000	1,721,000	111,000	147,000	288,000	17	105,000	8,258,000
Alps, Upper	180,000	167,000	13,000	25,000	238,000	101,000	16	74,000	3,608,000
——, Lower	185,000	104,000	786,000	11,000	556,000	99,000	16	60,000	4,654,000
Ardèche	108,000	344,000	59,000	54,000	384,000	77,000	18	28,000	11,767,000
Ardennes	663,000	458,000	2,000	80,000	557,000	55,000	20	150,000	12,953,000
Arriège	162,000	180,000	224,000	54,000	222,000	117,000	15	55,000	11,618,000
Aube	469,000	631,000	147,000	45,000	168,000	572,000	17	77,000	13,685,000
Aude	1,290,000	183,000	30,000	29,000	1,442,000	601,000	10	56,000	17,863,000
Aveyron	312,000	434,000	278,000	71,000	630,000	291,000	14	45,000	12,462,000
Bouches du Rhône	387,000	12,000	120,000	2,000	505,000	590,000	14	54,000	17,258,000
Calvados	1,152,000	228,000	249,000	99,000	394,000			32,000	43,637,000
Cantal	52,000	574,000	125,000	103,000	425,000	4,000	12	30,000	10,022,000
Charente	291,000	241,000	962,000	70,000	256,000	1,826,000	9	22,000	17,324,000
Lower	709,000	34,000	1,211,000	67,000	211,000	1,791,000	10	58,000	33,258,000
Cher	40,000	260,000	1,501,000	42,000	835,000	335,000	20	150,000	9,370,000
Corrèze	104,000	620,000	185,000	86,000	213,000			13,000	9,572,000
Corsica	104,000	14,000	2,046,000		104,000			55,000	

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Table — *continued.*

Departments.	Wheat.	Rye.	Oats.	Cattle.	Wool.	Wine.		Forests	Land Revenue
	Hectol.	Hectol.	Hectol.	No.	Kilogrammes, 2 1-5th lbs. each.	Hectolitres, 26½ gallons each.	Average Prices in Francs.	Hectares	Francs.
Côte d'Or	904,000	511,000	120,000	104,000	240,000	520,000	42	228,000	[illegible]
Côtes du Nord	416,000	523,000	24,000	163,000	136,000			18,000	19,385,000
Creuze	9,000	855,000	22,000	95,000	331,000			39,000	6,929,000
Dordogne	650,000	365,000	42,000	120,000	402,000	427,000	16	67,000	14,451,000
Doubs	265,000	138,000	30,000	104,000	53,000	139,000	18	113,000	14,464,000
Drôme	552,000	223,000	277,000	10,000	963,000	251,000	18	92,000	9,749,000
Eure	1,398,000	621,000	202,000	43,000	413,000	55,000	22	97,000	25,486,000
Eure and Loir	1,532,000	162,000	695,000	56,000	917,000	1,094,000	20	44,000	15,912,000
Finisterre	282,000	479,000	444,000	200,000	46,000			12,000	[illegible]
Gard	351,000	134,000	75,000	6,000	708,000	1,041,000	10	81,000	18,215,000
Garonne, Upper	1,197,000	47,000	76,000	76,000	550,000	467,000	14	50,000	18,635,000
Gers	1,011,000	115,000	115,000	81,000	190,000	1,094,000	9	11,000	10,556,000
Gironde	415,000	333,000	46,000	89,000	438,000	2,565,000	19	90,000	8,120,000
Herault	504,000	87,000	73,000	7,000	900,000	1,713,000	10	71,000	21,692,000
Ile and Vilaine	619,000	450,000	638,000	164,000	88,000	2,000	12	20,000	18,451,000
Indre	457,000	265,000	375,000	102,000	816,000	282,000	13	102,000	5,455,000
Indre and Loire	737,000	315,000	243,000	63,000	226,000	665,000	16	73,000	16,176,000
Isère	737,000	1,025,000	210,000	113,000	269,000	153,000	21	133,000	22,334,000
Jura	439,000	117,000	142,000	113,000	84,000	308,000	17	138,000	23,474,000
Landes	256,000	254,000	16,000	58,000	236,000	419,000	12	125,000	15,285,000
Loir and Cher	554,000	279,000	569,000	69,000	664,000	647,000	12	66,000	16,337,000
Loire	157,000	33,000	29,000	72,000	144,000	276,000	19	36,000	11,269,000
Loire, Upper	220,000	630,000	118,000	50,000	339,000	88,000	14	23,000	15,786,000
Lower	597,000	267,000	88,000	133,000	239,000	710,000	10	57,000	15,959,000
Loiret	612,000	227,000	853,000	72,000	533,000	693,000	16	95,000	8,743,000
Lot	500,000	159,000	40,000	54,000	482,000	240,000	17	25,000	7,936,000
Lot and Garonne	885,000	218,000	31,000	58,000	125,000	401,000	21	25,000	17,689,000
Lozère	57,000	35,000	16,000	33,000	721,000	14,000	13	21,000	5,578,000
Maine and Loire	810,000	1,125,000	144,000	161,000	317,000	493,000	16	43,000	32,426,000
Manche	977,000	122,000	184,000	150,000	390,000			16,000	37,650,000
Marne	780,000	1,118,000	864,000	63,000	336,000	422,000	26	81,000	8,991,000
Upper	535,000	124,000	685,000	81,000	159,000	509,000	14	223,000	12,626,000
Mayenne	480,000	330,000	446,000	129,000	172,000			26,000	19,414,000
Meurthe	1,100,000	71,000	1,094,000	75,000	136,000	688,000	13	218,000	13,151,000
Meuse	709,000	32,000	453,000			546,000	16	180,000	10,292,000
Morbihan	511,000	590,000	284,000	174,000	68,000			18,000	16,631,000
Moselle	850,000	310,000	500,000	76,000	165,000	260,000	17	132,000	21,776,000
Nievre	294,000	231,000	230,000	99,000	97,000	33,000	20	182,000	10,289,000
Nord	1,536,000	501,000	1,178,000	172,000	744,000			57,000	52,645,000
Oise	1,217,000	756,000	1,147,000	74,000	932,000	85,000	36	88,000	26,984,000
Orne	549,000	152,000	1,497,000	101,000	452,000			59,000	20,758,000
Pas de Calais	2,019,000	307,000	136,000	146,000	662,000			46,000	36,117,000
Puy de Dôme	625,000	1,022,000	59,000	104,000	846,000	310,000	22	55,000	21,665,000
Pyrenees, Lower	305,000	17,000	82,000	102,000	486,000	159,000	17	112,000	14,729,000
Upper	122,000	88,000	66,000	49,000	348,000	278,000	11	68,000	9,831,000
Eastern	120,000	120,000	651,000	15,000	648,000	70,000	16	49,000	8,587,000
Rhine, Lower	602,000	155,000	35,000	107,000	86,000	464,000	18	156,000	16,142,000
Upper	500,000	109,000	297,000	49,000	182,000	347,000	14	159,000	9,720,000
Rhone	160,000	217,000	421,000	44,000	93,000	458,000	16		10,021,000
Saône, Upper	593,000	194,000	178,000	93,000	121,000	78,000	20	150,000	19,157,000
Saône and Loire	800,000	597,000	62,000	113,000	76,000	448,000	19	131,000	23,784,000
Sarthe	487,000	377,000	300,000	108,000	193,000	148,000	15	58,000	18,770,000
Seine	88,000	79,000	189,000	12,000	68,000			4,000	65,001,000
Lower	1,491,000	189,000	84,000	60,000	640,000			84,000	34,290,000
Seine and Marne	1,361,000	244,000	243,000	78,000	1,196,000	557,000	5	73,000	25,358,000
Seine and Oise	1,326,000	335,000	264,000	117,000	1,082,000	819,000	17	74,000	32,242,000
Sèvres, Deux	329,000	373,000	60,000	63,000	390,000	264,000	12	39,000	12,741,000
Somme	882,000	1,367,000	60,000	85,000	778,000	600	20	55,000	28,947,000
Tarn	840,000	650,000	1,039,000	50,000	634,000	433,000	12	42,000	12,343,000
Tarn and Garonne	720,000	844,000	728,000	39,000	351,000	264,000	8	11,000	10,847,000
Var	438,000	13,000	28,000	11,000	573,000	693,000	11	118,000	21,823,000
Vaucluse	279,000	130,000	23,000	4,000	438,000	306,000	18	57,000	10,972,000
Vendée	563,000	379,000	309,000	104,000	226,000	336,000	10	19,000	10,898,000
Vienne	517,000	297,000	72,000	42,000	381,000	435,000	11	57,000	8,630,000
Upper	76,000	565,000	766,000	94,000	232,000	21,000	17	22,000	8,577,000
Vosges	507,000	168,000	1,181,000	106,000	45,000	101,000	18	216,000	7,902,000
Yonne	401,000	439,000	613,000	57,000	174,000	907,000	26	158,000	26,444,000

2381. *The Isle of France*, now divided into several departments, claims priority of notice as containing the capital. It is not, strictly speaking, an island; but being situated near the junction of the Oise, the Marne, the Aisne, and the Seine, is intersected by very numerous river channels. It is in general level, fertile, and highly cultivated; and beneath the surface are quarries of gypsum so copious, that the substance is commonly designated "plaster of Paris."

2382. *Paris*, the capital of France, has also made pretensions to be considered as the general capital of the civilised world. London can, in fact, alone dispute its claim, being more extensive, more wealthy, and the seat of a much more extended commerce; yet the central situation of Paris, the peculiar attractions rendering it the crowded resort of strangers, and its brilliant and polished society, especially under the old monarchy, gave to this city a gayer aspect, and rendered it a more conspicuous object in the eyes of Europe. Paris is not only less populous than London, but in proportion to its population it covers less ground. It forms on both banks of the Seine an ellipse of about four miles in length and three in breadth. The principal streets are long, narrow, bordered by high houses, which, like those of Edinburgh, are each occupied by several families. The streets of shops are further encumbered by the exhibition of the merchandise in front of the doors, a practice only tolerated in the most obscure districts of British cities. Paris thus presents generally a more gloomy and confused aspect than London; nor has it any structure which can match the grandeur of St. Paul's, or perhaps the beauty of Westminster Abbey; yet some of its quarters contain long ranges of superb and stately edifices, which London cannot rival. The palaces of Paris, in particular, far excel those of the rival metropolis. The most distinguished is the Louvre, finished with the utmost splendour in the style that distinguished the age of Louis XIV. Its front, 525 feet long, is a model of symmetry, the effect of which is only injured by the want of space before it. The Louvre is not now occupied as a palace, but as a grand depôt of the objects of taste and art. The gallery, which is more than a quarter of a mile long, and the walls of which are entirely crowded with paintings that are still fine, forms a magnificent *coup d'œil.* The hall of statues is still adorned with some of the finest specimens of ancient sculpture.

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THE LUXEMBOURG.

The Tuileries, which is the present royal residence, was begun at an earlier period than the Louvre, and carried on at successive times; whence it exhibits varied and sometimes discordant features, but is on the whole a noble and venerable edifice, surrounded with fine gardens and avenues. The palace of the Luxembourg (*fig.* 237.), on the south of Paris, and the Palais Bourbon on the west, are edifices of great taste and beauty. The former, now stripped of the famous series of paintings by Rubens, which has been transferred to the Louvre gallery, affords in one part a place of assembly for the Chamber of Peers, and in another apartments for the exhibition of paintings by living artists; while the Palais Bourbon is in part occupied by the Chamber of Deputies.

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PALAIS ROYAL.

The Palais Royal (*fig.* 238.) is no longer exclusively a palace, but is in part leased out to sundry persons, for purposes partly of business, but much more of pleasure: it is filled with shops, coffee-houses, taverns, gaming-tables, and every form of gaiety and dissipation which can find acceptance in such a city. Notre Dame, the ancient cathedral of Paris, is somewhat heavy and massive, but the interior is richly decorated. The modern church of St. Généviève, called during the Revolution the Pantheon, was highly extolled during its erection, as destined to eclipse both St. Peter's and St. Paul's; and such was the expectation entertained in France, till, the scaffolding being removed and the front thrown open, its inferiority became apparent: however, it is still an edifice of a high class (*fig.* 239.).

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CHURCH OF ST. GENEVIEVE.

St. Sulpice is also a modern structure. Paris has no fine streets, nor any of those ample squares which are so great an ornament of London. It boasts, however, of its *places,* which, without having the regular form or dimensions of a square, command admiration by the ranges of noble buildings that surround them. In particular, the *Place Louis Quinze,* standing in a central situation among the palaces, presents one of the most brilliant points of view to be found in any city. This capital possesses also great advantages in the wide ornamented open spaces which lie in the very heart of the city. The Boulevards, the ancient rampart of Paris, when it was circumscribed within a much narrower compass, are now converted into a walk adorned with rows of trees, and filled with numerous exhibitors and venders of every thing that can conduce to public amusement. The gardens of the Tuileries, and the embellished spot called the *Champs Elysées*, are also open to the public.

2383. *The statistics of Paris* have been carefully illustrated in a series of interesting works by the Count de Chabrol. The population, in 1821, amounted to 713,966, but has now risen to 890,431. The births, in the three years ended 1821, averaged 24,700; the deaths 22,680; leaving thus 2000 as the annual excess of births. A third of all the births were illegitimate, and of these only a third were acknowledged by the parents. The still-born children were averaged 1365. The average of marriages in the three years was about 6000. In the three years 732 died of small-pox, and only one child out of twenty-five was vaccinated. The violent deaths averaged 350, half of whom were married persons, and the most common cause was domestic chagrin. Drowning was the most frequent mode: 170 persons were drowned annually by accident. The consumption of Paris consisted, in 1823, of 76,689 oxen; 8142 cows; 74,759 calves; 361,946 sheep. The taxes paid in Paris amount to 3,150,000*l.*, which is 4*l.* 6*s.* for each inhabitant; while the rest of France pays only at the rate of 1*l.* 2*s.* 6*d.* House rent amounts to 2,500,000*l.*; being 3*l.* 15*s.* for each inhabitant. The number of houses, in 1821, was 27,000, with an average of thirty-four doors and windows in each. There is an average of 209 bankruptcies, the amount of which, in 1819, was between 250,000*l.* and 300,000*l.* The loans made on pledges by the charitable establishment called the *Mont de Piété* were 750,000*l.*, upon 1,000,000 articles, of which 540,000*l.* was redeemed. There are fourteen hospitals for the sick, and eight *hospices* for the infirm. The former received annually 42,500, of whom about 40,000 went out cured; the latter 18,500. The annual expense is about 280,000*l.* There is besides an office of charity in each of the twelve *arrondissemens*, the aids of which are administered by "sisters of charity," who divide the poor among themselves, make regular lists of them, and pay frequent visits. They make an annual collection in their district, the produce of which is transmitted to the office. The annual distributions made by the offices of charity amount to 50,000*l.* in money; 747,000 quartern loaves; 270,000 lbs. meat; 19,000 ells of cloth, &c. The manufactures of Paris are considerable. The principal are of works in gold and silver, which employ 7000 or 8000 workmen, and yield a value, according to M. Dupin, above 5,000,000*l.* sterling. There are manufactured also, by 2000 workmen, 80,000 gold and 40,000 silver watches, with 15,000 clocks, which may be worth 750,000*l.* Sugar refinery is also supposed to produce 20,000,000 lbs., worth 1,300,000*l.* There were eighty printing-offices, employing 600 presses and 3000 workmen, and using annually 280,000 reams of paper; supposed value, 350,000*l.* Of the various articles above enumerated there are exported to the value of nearly 2,000,000*l.* sterling. Paris is visited by 12,000 or 13,000 boats, of which 1000 from the lower Seine, and the rest from the upper. Twenty are steam-boats. The city has 1000 boats of its own.

2384. *The environs of Paris* are not covered with those numerous villas and country residences which have been constructed to gratify the rural taste of the citizens of London. Immediately beyond the gates they present a flat open corn country. They are chiefly marked by the royal palaces; superb fabrics, the works of successive kings, and on which millions have been expended. The most elaborate and most splendid is Versailles (*fig.* 240.). It was begun by Louis XIII. who found it little more than a village; but its chief ornaments are due to Louis XIV., who, during twelve years, expended immense sums in surrounding it with every kind of magnificence. The front is highly elegant, built of polished stone, and approached by three great avenues. The interior consists of spacious apartments embellished in the most costly manner, and many parts of them, and of the staircases are covered with frescoes executed by eminent French painters. The interior and the gardens are filled with crowds of statues, partly antique and partly the work of French sculptors. Water was at first deficient; but it has been conveyed in such abundance as to be lavished in fanciful and fantastic forms, — fountains,

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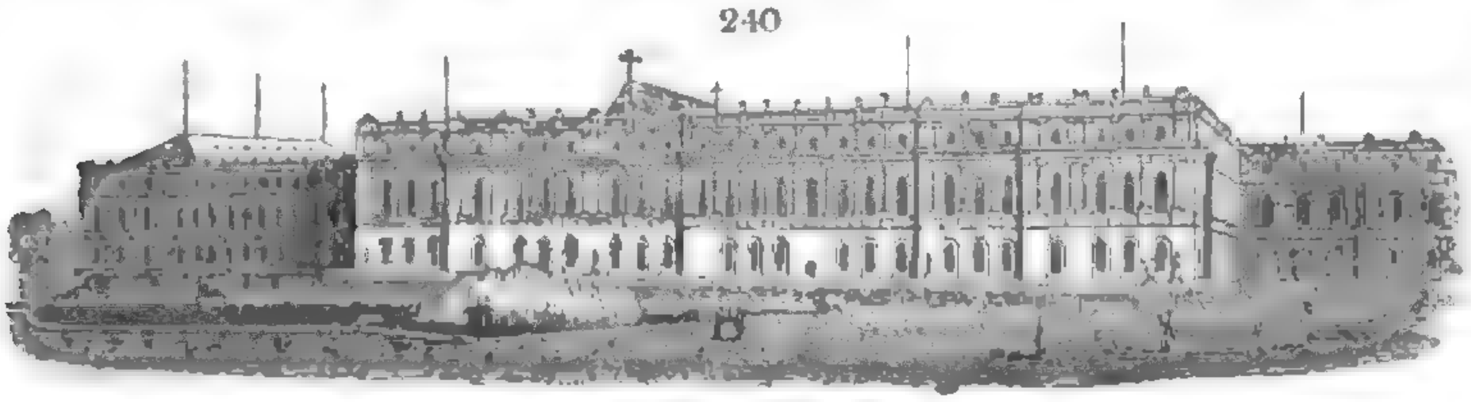

CHATEAU AT VERSAILLES.

jets d'eau, cascades, with which Versailles is more profusely embellished than any other royal residence. The two palaces, called the Great and Little Trianon, are in the vicinity, and are celebrated, particularly the last, for gardens laid out in the English style. The long residence of the court at Versailles assembled round it a splendid city formed by the courtiers and great nobles, who considered it necessary to have at least a mansion there. Since the tragic scenes of October, 1789, the palace has never been inhabited; though the Bourbons, after their return, placed it in repair. Hence the city has declined in population, and the late mansions of the nobles are in a great measure occupied by English residents. St. Cloud, four or five miles distant from Paris, is particularly admired for its gardens and extensive woods, an excursion to which forms a popular amusement, especially on festival days. It was the favourite residence of Napoleon, whose court was thence called the cabinet of St. Cloud. Fontainebleau is the hunting-seat of the monarchy, being surrounded by a forest of nearly 30,000 acres. The palace, built by successive monarchs, from Francis I. to Louis XV., is chiefly noted for its long and numerous galleries. Among the few towns in this country, Meaux is distinguished not only by the beautiful choir of its cathedral, but by having been the see of the celebrated Bossuet, whose tomb it contains. Melun is a considerable, but ill-built and gloomy, old town.

2385. *The northern departments*, comprising the provinces of French Flanders, Picardy, and Normandy, compose together an extensive plain, the richest, most flourishing, and most highly cultivated in the kingdom. The farms, though of various size, are generally larger than in the rest of France; the improved English processes are gaining ground, and the introduction of artificial grasses has in a great measure supplanted the routine of wheat, oats, and fallow. This region is also the chief seat of manufactures. These provinces have produced many men of distinguished talent, and knowledge is very generally diffused in them. The Flemings retain their national character, distinct from that of the French; heavy, phlegmatic, industrious, addicted to pretty close drinking and long rustic festivals. The Norman still partakes the adventurous spirit of his forefathers; he loves expeditions and journeys, readily engages in any enterprise, and eagerly pursues it.

2386. *The cities throughout all this part of France* are large and flourishing. Those of French Flanders, or the *Nord*, rank among the strongest fortresses in Europe, and are the bulwarks of the monarchy. Lille perhaps holds among these the very first place, being considered the master-piece of Vauban. It was reduced by Marlborough only after a long blockade, and is considered in any other way almost impregnable. It is also well and regularly built, and the *Rue Royale* is a very splendid street. Lille has also a very considerable variety both of manufacturing and commercial industry, with institutions both for literature and the arts. Douay is an ancient and strong town on the Scarpe, and enjoys some celebrity as a seat of rather antiquated and scholastic learning. Its university consists of three colleges, now united, one of which is called the English college, and is resorted to from all the three kingdoms as a place of catholic education. Cambrai is a very ancient and celebrated city, the capital of the Nervii in Cæsar's time, and afterwards of the kingdom of the Franks. Here was concluded, in 1597, the league of Cambrai, which caused the downfall of Venice; and it was the scene of other important diplomatic transactions; but perhaps the name is best known from its having formed the archiepiscopal see of Fénélon. It ranks still as a fortress of the first class, and was one of those held by the army of occupation, after the peace of Paris, in 1815. Valenciennes is another ancient bulwark of the kingdom, which yielded to the allies in 1793, after a long siege; but they did not derive any advantage from their success. It has some fine manufactures of lace, gauze, and cambric.

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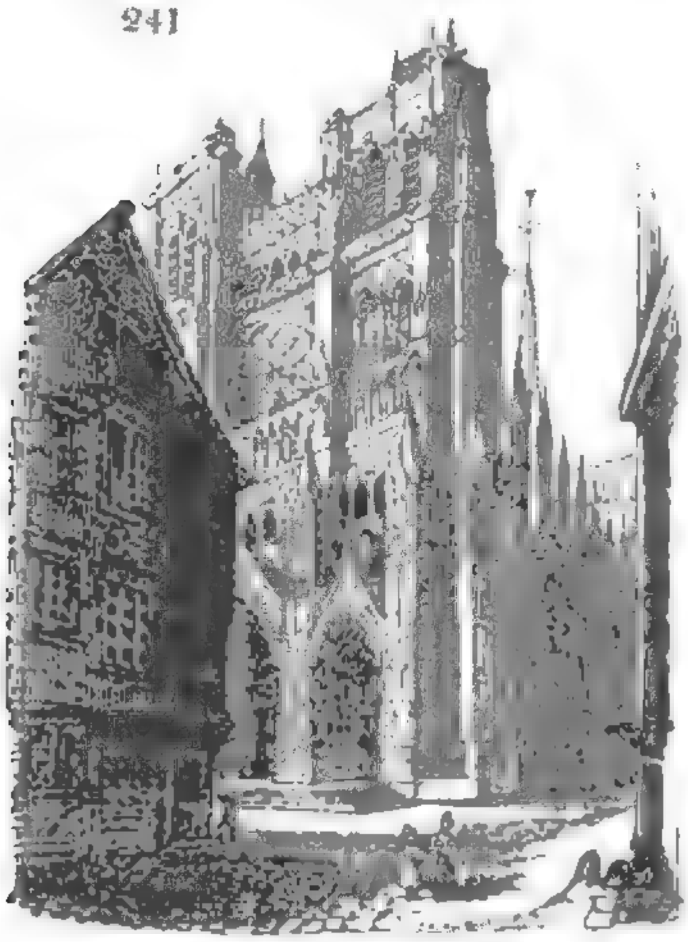

AMIENS CATHEDRAL.

2387. *In Picardy and the part of the Isle of France bordering on it*, there are several large and flourishing *cities*. Amiens has long been celebrated for its manufacture of coarse woollens, as serges, plush, velvets for furniture, and carpets; also coarse linens. Here was concluded the peace of 1801, between Britain and France. Its cathedral (*fig.* 241.) is one of the most spacious and most highly ornamented in France or in Europe. Abbeville is celebrated as one of the few seats of the manufacture of very fine woollen cloth, which surpasses even the English; it deals most extensively in sailcloth, sheeting, and other coarse fabrics from hemp and flax. St. Quentin, the scene of the great victory of Philip II., enjoys a more humble and useful distinction as one of the most thriving manufacturing places of France. Its manufactures consist in lawns, cambrics, and still more of late in the spinning and weaving of cotton; all which employ in the town and neighbourhood upwards of 50,000 persons. The citizens of St. Quentin display an enterprise and an activity in pushing every new and promising branch of industry, which is not usual in France. A canal is here cut from the Oise to that of Douay, remarkable for its extensive tunnels. Laon is an ancient town, with a stately cathedral. Soissons is distinguished in French history, and its bishop had, second to that of Rheims, the right of crowning the king of France. It does not now present any striking features. Beauvais is thriving and industrious.

2388. *The ports of Picardy and French Flanders* are also very deserving of notice. Dunkirk, being the only one which opens into the North Sea, was always considered of great importance. Louis XIV. having definitively obtained this place in 1662, made it one of the strongest harbours in Europe. It soon became so annoying to British trade, that advantage was taken of the triumphs of the war of succession, to require, at the treaty of Utrecht, its entire demolition. By canals and other means, the French contrived always to replace it in an effective state; but by successive treaties, the demolition of the fortifications on the side of the sea was again and again stipulated, till the circumstances of the peace of 1783 obliged England to cease from exacting it. From that time Dunkirk became the main centre of the privateering system. It has also a considerable share of fishery and of the Baltic trade. A memorable era in its history was its siege by the British in 1793. They were compelled abruptly to raise it, and this formed the commencement of a long series of reverses sustained by the allied arms. Dunkirk has a good harbour in the centre of the city, entered by a canal of a mile and a half; it is rather well built, but for want of springs the inhabitants are obliged to use rain water. The neighbouring territory is low and marshy, only preserved from the inundation of the sea by a ridge of downs, and only cultivated by means of numerous draining canals. Calais is well known as the point of communication with England, which so long held it as the key of France, even after her aims at the entire conquest of that monarchy had ceased. At present, it is chiefly supported by the packet intercourse, its indifferent harbour (*fig.* 242.) unfitting it for any commerce on a great scale. Calais is in a very flat country, intersected by canals, by which it might be even inundated. Boulogne has more maritime importance; though its port, choked with sand, will no longer receive vessels of any size, unless at high tide. It has lost altogether the forced consequence given to it by the construction of the grand flotilla, destined it subdue the British empire, but now abandoned to rot. Its proximity, however, to our coast has rendered it a great resort of English families, who inhabit it to the amount of several thousands. The fishery of herring, mackerel, &c. varies in value from 40,000*l.* to 80,000*l.*

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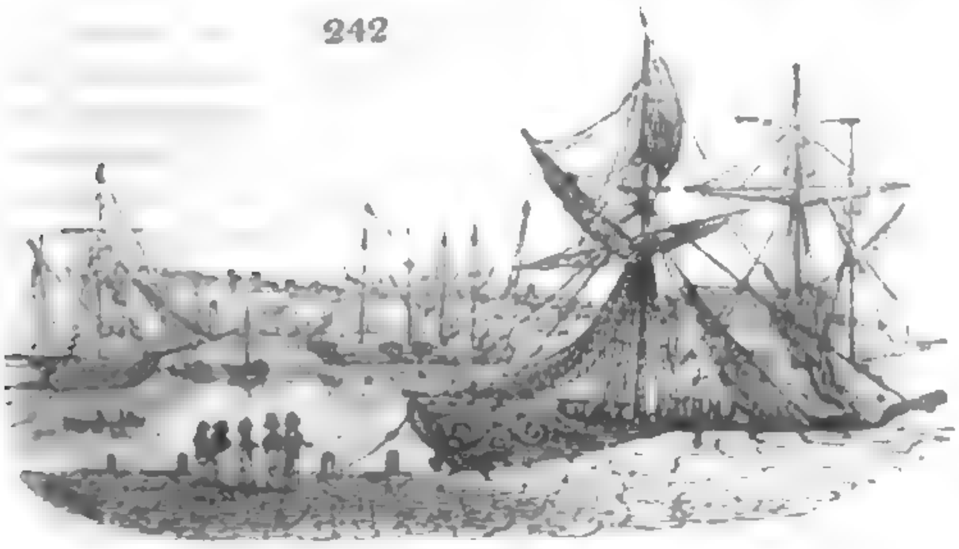

CALAIS HARBOUR.

2389. *The cities of Normandy* are larger and more important than those already described. Rouen is one of the noblest in France. Its manufacturers are, perhaps, the most enterprising and industrious in the kingdom, and from their vicinity to England have had peculiar facilities in borrowing her processes. The main staple is cotton-spinning and weaving, which is supposed to occupy two thirds of the 55,000 workmen, and so to constitute the same proportion of the two millions sterling of manufactured goods annually produced. The cathedral (*fig.* 243.), commenced by William the Conqueror, was considered one of the finest specimens of ecclesiastical architecture in France, till the late disaster, which overthrew a great part of it. The streets are excessively narrow and dirty, though those adjoining to the Seine are agreeable. That river was long crossed only by a pontoon, composed

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ROUEN CATHEDRAL.

of nineteen large barges, strongly moored together by iron chains; but as this had many inconveniences, a handsome stone bridge has been lately substituted. At Elbœuf, near Rouen, is a manufactory of fine cloth, almost equal to that of Louviers. Caen is a very ancient city, of great historical name, the favourite residence of William the Conqueror, and the frequent head-quarters of the English armies. It is still a considerable place, rather unusually well built for a French town, containing a handsome castle, the only remaining part of its fortifications, and some fine old churches. Its manufactures are numerous, but none of them very eminent, except that of lace, which gives employment to about 20,000 females in this place and the neighbourhood. It is of some eminence as a seat of literature, gave birth to Malherbe and Huet, and has a university of considerable reputation, which, though suppressed during the Revolution, has been restored in full lustre. Havre, at the mouth of the Seine, is the port of Paris, and one of the most active seats of French commerce. The custom duties, in 1824, amounted to somewhat above a million sterling, and its trade has since been greatly augmented. The chief fabric of the town and neighbourhood is that of printed cottons. It is a gloomy town, the streets narrow, and the houses often built of a framework of wood filled up with mortar. Dieppe, St. Valery, Fécamp, and Honfleur are very active stations for fishing; which is not, however, carried on with the same energy and adventure as before the Revolution. The immense efforts made to render Cherbourg a naval station of the first rank, have proved nearly abortive. The French government, after the peace of 1783, began to erect a series of cones, with the view of breaking the force of the waves; but these were overwhelmed, and retain no vestige of their original form: they lie under water, a shapeless ruin, which Bonaparte in vain attempted to make the foundation of a regular breakwater. After two millions had been spent in this undertaking, he employed other five millions in forming an interior basin and a wet dock; but all these mighty works remain unfinished.

2390. *Britany* forms a peninsula distinguished by many marked features from the rest of France: its rude surface, composed in a great measure of forests, marshes, and heaths, enabled it not only to preserve a large portion of its original Celtic population, but to give shelter to fugitives from Britain, whence it received its name. After being long a separate duchy, it was united to France by the marriage of its heiress with Louis XII. It retained, however, down to the era of the Revolution, its feudal states, which assembled every two years. The Bas Breton is a Celtic dialect. The people are very numerous and very poor. The country is divided into small properties or farms, seldom exceeding twelve acres, cultivated by the manual labour of the occupants, according to antiquated and unskilful processes, to which they adhere with the most fixed determination. The peasantry reside in small huts, gloomy, dark, and damp; they are strongly attached to their homes; ignorant and superstitious, but at the same time frank, brave, hospitable, constant in their friendships, and faithful to their word. They are stubborn and hardy, and those on the coast make bold sailors.

2391. *Of the cities of Britany*, Rennes, the ancient capital of the Rhedones, is the first in dignity, and was the place of meeting for the states, the discontinuance of which has diminished its importance. It is still rather a fine and handsome city, having been regularly rebuilt since a great fire in 1720; and its cathedral of St. Peter is adorned with lofty towers. There is a library of 30,000 volumes, a fine botanic garden, a museum of natural history, and extensive collections in the fine arts. It carries on some trade by the river Vilaine, which admits barges of considerable size. Vannes, the ancient capital of the Veneti, is a much smaller and poorer town, though its vicinity to the sea gives it some commerce and fishery. Morlaix and Quimper are rather good towns in the eastern departments: but the finest city in Britany is undoubtedly Nantes, which seems almost to belong to the rich provinces on the Loire; it is situated on a hill above that river, twenty-seven miles from its mouth, and has the advantage of delightful walks and environs. Its situation, at the mouth of the greatest river in France, is very favourable to commerce, which was carried on to a vast extent, till ruined by the disastrous influence of Napoleon's continental system; but Nantes is beginning again to rear its head. The West India trade and the cod fishery were the most extensive branches. Much ship-building is carried on for the merchant service, and vessels of 1000 tons are occasionally built. Its manufactures are various, and were formerly extensive, especially sugar refinery, cotton, woollen, and linen cloths, and earthenware. It is connected with the opposite side of the river by a noble bridge, which, uniting five different islands, extends in its entire length more than two miles. In its construction Nantes exhibits the usual faults of old cities; the most agreeable parts are the suburbs, and the islands thickly planted with trees and houses.

2392. *Brest*, on the western coast of Britany, is the chief naval station of France on the ocean, as Toulon is on the Mediterranean. It was selected for this purpose in 1631 by Cardinal Richelieu, in consideration of its harbour, which is secure from every wind, and of a spacious roadstead, affording anchorage to 500 ships of war. From Brest issued the fleet which was totally defeated, in 1792, by Lord Howe; and during the whole of the subsequent war between England and France, this port, with the navy which it contained, was held in almost constant blockade. The works of Brest are very strong, and the attempt made in

1694 to carry them by storm, was repulsed with considerable disaster. The town, though modern, having been built in haste, and with a sole view to utility, is crowded and dirty; but within the last half century there has been built a handsome suburb, called *La Recouvrance*. Brest, besides its naval importance, carries on a considerable fishery.

2393. *There are other maritime stations* of considerable magnitude in Britany. L'Orient has been made a depôt for naval stores, and strongly fortified: it derived much importance from being the almost exclusive seat of the commerce of the East India Company; but since that trade has been nearly annihilated, this port has greatly declined. St. Malo contains a race of bold and hardy mariners, actively employed in the Newfoundland and other fisheries; and who, in time of war, exercised briskly the trade of privateering. Morlaix carries on a considerable trade with the north of Europe. Quimper, though ranking above Brest, as capital of the department of Finisterre, is now only an old town of little importance.

2394. *The provinces on the Loire*, in its course from east to west, comprehending Orleannois, Touraine, Anjou, to which may be added those of Maine and Perche, adjoining on the north, are the most central and perhaps the richest in the kingdom. A great part, indeed, especially of Anjou and Maine, is covered with those wide wastes, overgrown with brushwood and heath, which occupy so much of the French soil. But the banks of the Loire around Orleans are generally considered the garden of France; they consist of unbounded plains, through which the magnificent Loire winds its stately course, and which are variegated with rich meadows, vineyards, gardens, and forests. On this theatre were acted many of the greatest events in the history of the monarchy, particularly its rise from the apparent peril of total subjection, through the inspiring influence of Joan the Maid of Orleans.

2395. *The cities of this region* are celebrated and magnificent. Orleans, in former times, ranked almost as a second capital: though it exhibits the usual characters of antiquity, it is a superb and beautiful city. A very fine stone bridge of nine arches opens to the *rue royale*, spacious and handsome, which extends to the fine square in the centre: here is placed a statue of Joan, the sculpture of which is not altogether so elegant as might be desired. The cathedral is a very fine edifice, the choir of which was raised by Henry IV. From its steeple is an almost unbounded view over the magnificent plain of the Loire. Situated in the centre of France, and dividing as it were the Lower from the Upper Loire, Orleans enjoys a great transit trade. *Blois* is almost equal to Orleans in historical celebrity; its ancient edifices, placed on a hill above the Loire, have a most commanding appearance. The castle, on a rock overhanging the river, is an immense and lofty pile, full of windows of all shapes and sizes, balconies, galleries, buttresses, and "a strange incongruous assemblage of buildings destined for ornament in peace and defence in war." All the parts are little; but the whole is so vast as to be almost sublime. In this edifice the states-general once assembled. The glory of Blois has now entirely passed away; its streets are narrow, gloomy, and dismally dirty. Tours, equally ancient, is now much more flourishing; its plain is pre-eminent, even among the other districts on the banks of the Loire. The silk manufacture, first introduced here, has been in a great measure transferred to Lyons, but it still employs 7000 or 8000 persons. Happily for the beauty of the city, a great part of it was consumed 50 years ago, and occasion was taken to build a new street, running its whole length, of fine hewn stone, broad, and on an elegant design; it is, perhaps, the finest in France. It is connected with a bridge of 14 arches, which till of late was considered equally unrivalled; and also with a fine promenade bordered with trees. The metropolitan church was almost entirely demolished during the revolutionary excesses; only two of its lofty spires remain. The beauty and abundance of the country around Tours has attracted such numbers of English residents, that Mrs. Carey was asked on the road what great convulsion was agitating England, that her people were flying from it in such crowds. Saumur, once highly flourishing and industrious, lost two thirds of its population by the revocation of the edict of Nantes. Angers is a large, old, steep, ill-built town, but has a considerable trade; its monuments have been dreadfully shattered during the Revolution. Le Mans, capital of Maine, on the Sarthe, is very old, but large and clean, with a spacious market-place, and some considerable manufactures.

2396. *The provinces between the Loire and the Garonne*, Poitou, Berri, Limousin, and the Marche, are of diversified and somewhat peculiar aspect: they present none of those boundless plains which characterise France north of the Loire; they are every where traversed by valleys and ridges of hills, never rising into mountains, but giving to the country a broken and variegated aspect. This, according to the nature of the soil, is sometimes rude and dreary, sometimes gay and smiling. Mr. Young ranks the Limousin as the most beautiful district in all France, such is the variety of hills, dales, streams and woods which compose its landscape. Mrs. Carey describes Marche, beyond Argenton, as singularly pastoral; the hills covered with sheep, goats, kids, and lambs, the last of which at evening come down bleating, and are received into the houses. Poitou, a part of which is so fatally celebrated under its new name of La Vendée, is a rough country, a great part of which is covered with a forest called the Bocage. All these districts are more productive of cattle than of grain, though they are cultivated by a simple peasantry with hardihood and vigour, but quite in the antique style, and with a strong antipathy to all modern improvements. In Poitou, the proprietors, being small, and residing much on their estates, excited feudal feelings and attachments, that were extinct in the rest of France; hence the formidable war which they waged single-handed in defence of the ancient régime.

2397. *The cities in this range of provinces,* though ancient, are neither large, nor distinguished by much industry. Poitiers is of high antiquity, and presents some interesting Roman remains; in modern times it is distinguished by the signal victory gained here by the Black Prince. The city is of great extent, but comprises many empty spaces and gardens. Limoges is an ill-built town, with many houses of timber, roofed with tiles, and projecting eaves, but there are several handsome squares and fountains, and the public walks command a beautiful view of the Vienne flowing down a charming valley. Its cathedral, said to have been built by the English during their temporary possession of this part of France, suffered much during the revolution, and has only one tower left standing. Bourges, the ancient Biturigæ, is very ill built, but adorned with a fine cathedral, and distinguished for its university, and as the birth-place of Bourdaloue, and of the jesuit, Father d'Orléans. Châteauroux is gloomy, but has a large woollen manufacture.

2398. *The two departments of the Charente,* watered by the fine river of that name, form a region different in character from those now described; level, and extremely fertile, though in some parts marshy and unhealthful. A great part of the produce of its rich vineyards is at Cognac converted into brandy, which bears an unrivalled reputation, though, probably, the name is applied with a fraudulent latitude to inferior liquors. The yellow tinge so generally given to brandy is the consequence of a local custom at Cognac. Saintes is ancient even as a French city. An ample theatre, an aqueduct, and a triumphal arch of white marble, attest its ancient importance as a Roman city; and the cathedral is said to belong to the age of Charlemagne. But the most conspicuous features of the Charente are Rochelle and Rochefort. The former is renowned as the grand and last bulwark of the protestant cause, and its reduction, effected by the almost incredible efforts of Cardinal Richelieu, fixed the downfall of civil and religious liberty in France. Though no longer a haven of the first magnitude, its colonial trade, prior at least to the late war, was very considerable. The town is handsome, with broad streets, many of the houses built on arcades, with shops beneath, as in Chester. Rochefort has little trade, but is one of the principal French naval stations. It has a secure harbour, with very safe and extensive docks. Being one of the few towns in France that are not much more than a century and a half old, it is built on a regular plan, with broad open streets. Angoulême, in the interior, stands on a rock in the centre of a charming valley, through which winds the silver stream of the Charente. It is a clean well-built town, having a cathedral with five cupolas, and displaying other marks of historical importance. There is a large manufacture of paper.

2399. *Guienne* is a most important province, which for several ages formed an appanage of the English crown. It consists of a magnificent and highly cultivated plain, watered by the Garonne, whose broad stream here resembles an arm of the sea, and by its ample tributaries, the Tarn, the Lot, and the Dordogne. It is distinguished by various rich productions, but more especially by the wines bearing the name of claret, which though not quite so rich and highly flavoured as some, are so light and agreeable that a greater quantity is drunk at the tables of the opulent, than of any other. M. Frank, in a late work published at Bordeaux, estimates the entire produce of claret at 250,000 tuns. The wines of the farms Laffitte and Château-Margaux are the most esteemed; but much is sold under these names which has no title to them.

2400. *Bordeaux* (*fig.* 244.), near the mouth of the Garonne, is one of the grandest emporia in France, and, indeed, in Europe. Situated at the mouth of the Garonne, which here allows the largest vessels to ascend to its port, it exports all the valuable produce of this great southern plain, of which the wines are said to amount to 100,000, and brandy to 20,000 pipes annually. It is engaged also in colonial trade, and in the cod and whale fisheries. Recent travellers remark a greater display of wealth and prosperity in this than in any other of the French commercial cities. Every thing is on

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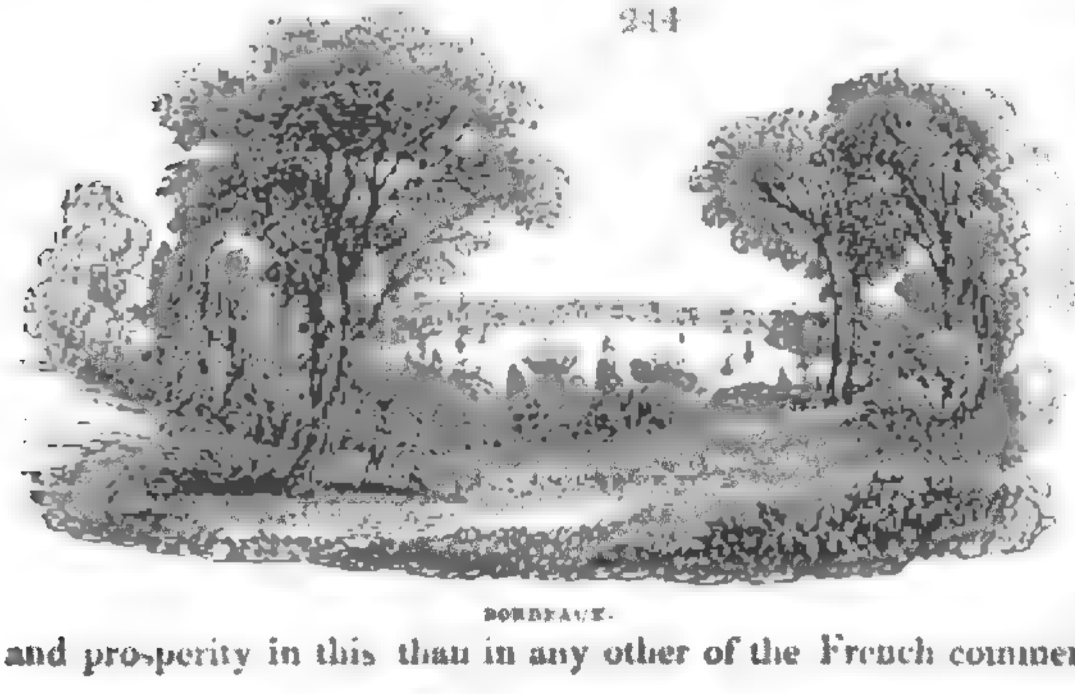

BORDEAUX.

a grand scale, and buildings are in progress which, when finished, will leave it without a rival in France. The theatre, designed after that of Milan, is considered a model of architectural beauty. Many of the ecclesiastical structures were founded by the English. A very republican spirit is said to prevail at Bordeaux.

2401. *The other towns of Guienne are not of the first magnitude.* Montauban embraced with ardour the protestant cause, and had a distinguished university, which was suppressed, when the place was taken in 1629, by Louis XIII., and the fortifications razed. This seminary, however, was restored by Napoleon in 1810. Montauban, is well built, of painted brick, with wide and clean streets; and an elevated walk, which commands a most extensive view, reaching to the Pyrenees. Agen is a very dirty ill-built town, but famous for the plums raised in its vicinity. Cahors has some thriving manufactures, and its vicinity produces the *vin de Grave*, which is held in high estimation. Rhodez, on the Aveyron, is a gloomy old town, but the seat of a distinguished bishopric.

2402. *Gascony* is a large province, extending to the Pyrenees, and consisting chiefly of a wide level surface, of peculiar character, called the *landes*. These are plains of sand, in some places loose and blowing, but mostly covered with pine trees, sometimes affording pasturage for sheep, and more rarely detached tracts fit for cultivation. The Gascons, long an independent people under their dukes, are a peculiar race, fiery, ardent, impetuous, and proverbially addicted to boasting; hence the term *gasconade*. Bayonne, though not very large, is one of the strongest and prettiest towns in France. Situated at the broad mouth of the Adour, it has a considerable traffic in exporting the timber of the Pyrenees and the Landes, and sends also vessels to the cod and whale fisheries. Mont de Marsan, the capital of the Landes, is but a small and poor place.

2403. *The Pyrenean departments* comprehend some interesting features. Bearn, the little original principality of Henry IV., which he governed with paternal kindness; and Roussillon, which underwent several revolutions, alternately belonging to France and to Spain, before it was finally annexed to the former. Young gives a delightful view of the state of this mountain district. It is divided into a number of small properties, which are well enclosed, well cultivated, each comfortable cottage being surrounded by its garden well stocked with fruit trees; the inhabitants snugly dressed, like Highlanders, in red caps. The subdivision of property, though great, seems not to have gone so far as to lead to misery. Pau is a considerable town, in a romantic situation, and celebrated as the birth-place of Henry IV., whose cradle is still shown in the ancient palace, now converted into a prison. It makes a good deal of linen, and is noted for its excellent hams, which are exported from Bayonne. Tarbes, capital of the upper Pyrenees, and Bagnères, with its mineral hot springs, a place of crowded and fashionable resort, are delightfully situated, affording an approach to the fine valleys of the highest Pyrenees. The slopes of the neighbouring mountains are richly cultivated, and often well enclosed. Roussillon is Spanish as to language and customs; but the magnificent roads effected in defiance of natural obstacles, and the thriving industry of the people, mark the influence of a more active and enlightened government. The extensive fortifications of Perpignan render it a barrier of the kingdom. It is gloomy and ill built, but has some manufactures.

2404. *Languedoc*, the ancient Gallia Narbonensis, and afterwards the domain of the counts of Toulouse, is the pride of France in regard to climate, soil, and scenery. The air along its coasts is generally considered the most salubrious in Europe. The plains of Languedoc are celebrated; yet they are encroached upon not only by the Pyrenees on the east, but by the Cevennes, which form their constant northern boundary, and in many places reduce them to a breadth of a few miles. But on the line from Beziers by Montpelier to Nismes, the plain is of much greater breadth, and displays a luxuriant fertility scarcely rivalled in any other part even of this happy region. Every thing flourishes here, even what is most strictly denied to other provinces; not only grain and the vine, but the silkworm and the olive.

2405. *The cities of Languedoc* are not of the very first magnitude; but they are handsome and finely situated; and they present some interesting Roman monuments. Toulouse covers a great extent of ground, but it has suffered in consequence of the discontinuance of its parliament, which was one of the most important in France. The cathedral is very large, but not very beautiful; and many of the churches were destroyed during the Revolution. There is an university attended by 1500 students, and two large libraries open to the public. Castres is a well-built, industrious, large town, the birth-place of Rapin and Madame Dacier. Carcassonne still retains some of the bastions and towers of the castle on its hill; but this ancient quarter is almost deserted in favour of the neat pleasant town built beneath. Beziers is ugly and dirty, but has a handsome cathedral, and is important from its site on the canal of Languedoc. Narbonne, though celebrated as a Roman capital, presents few monuments of that people; these are said to have been taken down at the building of the walls. Montpelier enjoys an unrivalled fame for its mild and salubrious air; but our late travellers, Mr. Matthews and Mrs. Carey, have declared themselves unable to discover on what that renown is founded. It is subject to alternations of heat and cold; cloth pelisses must be worn the whole winter, and fires cannot be discontinued till May. It is, however, an agreeable residence; the public walk commands a view over the Mediterranean and the surrounding country, scarcely equalled in Europe: there is a flourishing medical school, with good practitioners, and a library of 40,000 volumes. Montpelier is not uniformly well built; but it presents a noble Roman aqueduct, a fine cathedral, and other public buildings. Nismes is one of the greatest and most flourishing cities in the south of France. The silk manufacture, as already noticed, flourishes there to a great extent. More than half the inhabitants are protestant, who, as may be well remembered, were, on the restoration of the Bourbons, exposed to violent outrages on the part of their catholic fellow citizens. The catholic author of "Four Years in France" alleges that the protestants had somewhat too freely used their superiority during the revolution; but these disorders were disavowed by the French court, and have ceased. The city is ill built, ill paved, ill laid out; but there is a fine boulevard bordered with trees; and it is particularly illustrious for the magnificence of its Roman monuments. The amphitheatre is nearly entire, and, though rather smaller than that of Verona, from its massive grandeur, and the enormous stones of which it is constructed, suggests the idea of an imperishable fabric. But the edifice called the *Maison carrée*, supposed to have been a temple of Augustus, is that which has excited the admiration of all travellers, from its extreme elegance and graceful proportions, which render it almost a perfect model of architectural beauty. It remains after so many ages quite entire, "as if savage and saint had been alike awed by its superlative beauty." Near Nismes is the Pont du Garde (*fig.* 245.), an ancient bridge, or rather aqueduct, forming one of the most remarkable monuments now extant of Roman grandeur.

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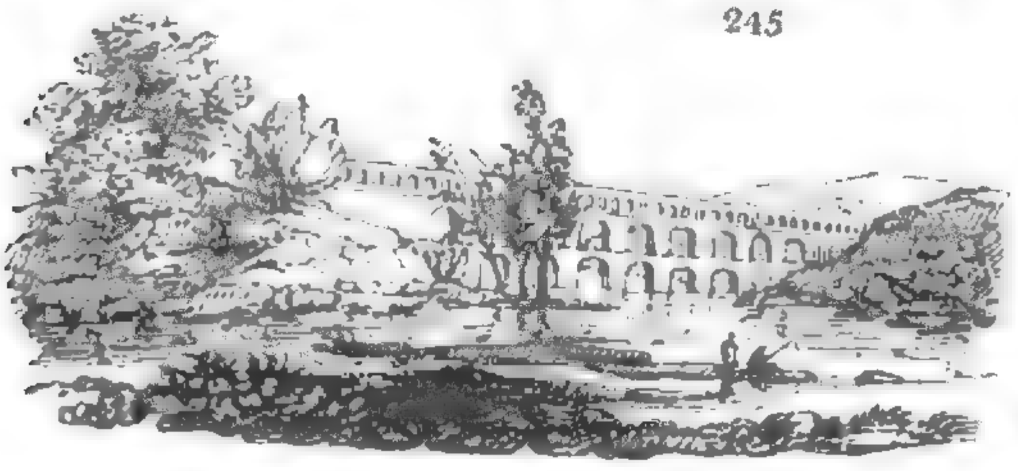

PONT DU GARDE.

2406. *Provence* is one of the most celebrated and interesting of the French provinces, first, as the earliest seat of wealth, civilisation, and poetry; next, as containing the ecclesiastical capital, Avignon, near which is Vaucluse, the favourite residence of Petrarch; lastly, as including Toulon and Marseilles, the greatest naval and the greatest commercial city in the kingdom. The classic stream of the Durance, though it crosses the whole region from its alpine boundary to the Rhone, and too often overflows its banks, does not preserve the extensive tracts covered with rude calcareous hills from the evils of aridity. Although, therefore, the products of this province are various, and many of them fine, it does not yield corn sufficient for its own consumption, nor can it boast of extensive manufactures, but depends chiefly upon commerce.

2407. *The cities of Provence* rank, in all respects, among the greatest and most interesting of the kingdom. Aix is not the largest, but is reckoned the capital, and was formerly the seat of the parliaments of Provence. Its name is contracted from that of Aquæ Sextiæ, given to it by the Romans from the copious warm baths, in whose vicinity numerous medals and inscriptions have been discovered. It is pleasant, airy, well built, in a fine plain encircled by lofty mountains. The *cours* is very beautiful, formed by two rows of trees, with hot fountains bubbling up, at which women are seen washing clothes. Greater celebrity attaches to the name of Avignon, for some time an ecclesiastical capital, and still more illustrious by association with the names of Laura and Petrarch. It is finely situated on the Rhone, with many handsome houses; but the streets are crowded and ill paved. In the centre rises an insulated rock, separated by the river from a range of hills on the other side, and in which are the remains of the palace of the popes, now converted into barracks and prisons. The cathedral had accumulated immense wealth in silver and other offerings, of all which it was rifled at the Revolution; an event more fatal to Avignon than to any other city, except Lyons. Avignon is surrounded by a wall built only for fiscal purposes, and the Rhone is crossed by a handsome bridge built by St. Benezet in the twelfth century from the produce of alms, and which yields 50,000 francs of annual toll. It would be profane for a traveller to leave Avignon without visiting the tomb of Laura in the church of the Franciscans, and making an excursion to the beautiful fountain of Vaucluse (*fig.* 246.), the scene of inspiration to Petrarch. Arles was, in early times, one of the most important cities in the south of France; under the Romans it was the seat of the prætorian prefect; in the ninth century it was the capital of a separate kingdom, and afterwards the seat of an archbishop, and of thirteen successive councils. It is still a large city, and presents the vestiges of a Roman amphitheatre (of which the interior area is now built upon), once capable of containing 30,000 persons. Tarascon is still a flourishing place, above which rises the ancient castle of the counts of Provence, now converted into a prison. On the opposite bank of the Rhone is Beaucaire, distinguished for its great annual fair, at which are still sold goods of various descriptions to the value of about 300,000*l.* Digne and Carpentras are of some importance as capitals of districts.

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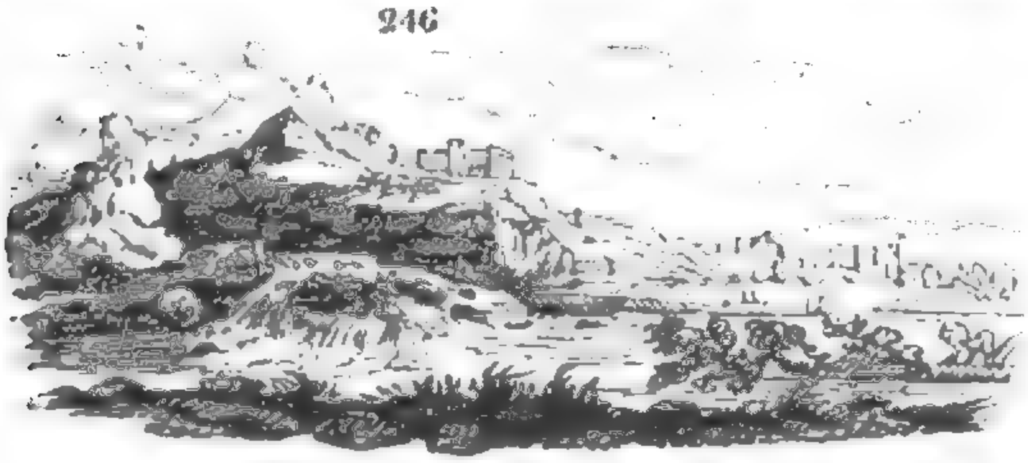

FOUNTAIN OF VAUCLUSE.

2408. *Marseilles and Toulon*, the two great southern havens, form now the most important features of Provence. The commercial fame of Marseilles dates from early antiquity, when it was a Greek colony, and carried on almost all the commerce of Gaul. In modern times it has been the chief centre of the trade to the Levant; and though its prosperity suffered a total eclipse under the régime of Napoleon, it has since regained much of its former splendour. The harbour is spacious and secure, but is somewhat narrow at the entrance, and shallow. It is bordered by extensive quays of hewn stone, with spacious warehouses; and is filled with all the shipping peculiar to the Mediterranean, among which are galleys, and beautiful pleasure-boats with silk awnings; it is crowded with all the nations of that sea, Greeks, Turks, Jews, Spaniards, Italians, and loaded with the produce of Asia and Africa. It is compared by a late writer to Liverpool: the districts round the port are a nucleus of trade and dirt; but in the exterior, the streets are handsome, airy, and well built. Among other fine public buildings is the *hôtel de ville*, with its magnificent marble staircase. The *cours* is formed by two rows of fine trees bordered by handsome houses, and the central walk is crowded like a fair. The neighbouring plain is finely cultivated, but is bounded by bold and rugged mountains that rise above the range of vegetation. Toulon, though not a seat of commerce, is the chief naval station of France on the Mediterranean. It has two ports, the old and the new: the latter alone receives ships of war, and is bordered by most extensive arsenals, in which 5000 men are constantly employed. This port can contain 200 sail of the line; and without is a very spacious and well-sheltered roadstead. It is defended by two strong forts, which, however, were occupied in 1793 by the British, who, at the end of the year, were obliged to evacuate the place. This was the first occasion on which Bonaparte's military talents became conspicuous. Toulon is a clean, pleasant town, refreshed by streams of water, running through the streets. The adjacent country is wild and romantic, and interspersed with some cultivated valleys.

2409. *Dauphiné is a region completely alpine*, the two departments of the Higher and Lower Alps occupying the greater part of its surface. The mountains are chiefly calcareous, and broken into the most picturesque, peculiar, and romantic forms. Young even considers the scenery of Dauphiné, particularly along the Isère, as surpassing that of any other part of the Alps. In one of the most awful recesses of these rocks and wilds, at a distance from all the smiling scenes of earth, St. Bruno erected the monastery of the Chartreuse (*fig.* 247.), of which Gray has drawn so sublime and imposing a picture. There are other scenes emphatically termed the wonders of Dauphiné; as the burning fountain, the grottoes of Sassenage, &c. Although this part of the kingdom cannot be considered as productive, yet great numbers of cattle and sheep are reared on its high slopes by a simple race of men resembling the mountaineers of Switzerland; and even the silk-worm is bred in its lower valleys.

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GRANDE CHARTREUSE.

2410. *The cities do not require very particular notice.* Grenoble is a considerable place, not ill built, with a library of 60,000 volumes, and some other literary establishments. It took a conspicuous part in promoting the commencement of the Revolution, and was also the first town that opened its gates to Napoleon on his return from Elba. Gap is a pretty large but poor old town, in a deep hollow, amid barren mountains. Vienne is a Roman city, and presents a temple, with several other interesting remains of that people. It has also a fine modern cathedral with a very lofty spire. Valence has a military school, at which Bonaparte was educated. Near Tain is produced the celebrated wine called Hermitage.

2411. *The Lyonnois is a small territory*, penetrated by branches of the Alps, in some places rough and stony, in others finely diversified with hill and dale. Its chief interest, however, centres in the great city which is its capital.

248

LYONS.

2412. *Lyons (fig. 248.) is generally considered as the second city in France*, and as foremost in regard to commerce and industry. It is on the whole a noble city. The quays along the Rhone are superb; the *hôtel de ville* is held to be second only to that of Amsterdam; the cathedral is highly ornamented in the florid Gothic style; and the squares, especially the *Place de Bellecour*, with its fountains and statues, are nowhere surpassed. On the other hand, the old streets are narrow, bordered by lofty and gloomy walls, and divided by a muddy stream. To turn into them from the quays has been compared to entering subterraneous passages, watered by the sluices of Cocytus. Lyons suffered dreadfully under the sway of the jacobins, who made it a chief theatre of those atrocities that rendered them the horror of mankind. To say nothing of the massacres perpetrated under the appellations of *fusillades* and *noyades*, they studiously broke in pieces all the manufacturing machinery, while with barbarous hands they defaced all the ornaments of the city, filled up the fountains, broke the statues in pieces, and demolished the whole of the cathedral except the walls. Her citizens have made diligent efforts to restore her prosperity, and not without success; still, the want of capital and the stagnation of trade are serious obstructions, and cause the evils of poverty among a large population to be severely felt. The Lyonnese have the propensities usually observed in manufacturing places; they dislike the Bourbons, and the sight of an Englishman is wormwood to them.

2413. *Auvergne*, to the west of the Lyonnois, is the only mountainous and pastoral tract which France has peculiarly its own. It consists of a continuous range of mountains which have evidently been in a state of volcanic action, the country being covered with lava, and the houses built of it. From an elevated and extensive plain rises the great Puy de Dôme, nearly 5000 feet high, with about sixty attendant mountains, called in the country the giantess and her children. The country is diversified with many rugged and precipitous rocks, having castles and even towns built on them. Yet Auvergne is not a barren country. The Puys are mostly covered with herbage, and have large level plains. The natives are laborious, and rear large herds of cattle, which are almost wild; they are even said to beat off the wolf, the low of the animal attacked summoning all the rest to its assistance; but, in return, they cannot be milked unless the calf be on the other side. The people are homely, and very republican; they form themselves into a number of societies, of which the principle is a common table, attended however by the men only. In winter they take up their abode under the same roof with the cattle, which occupy each end, and by their heat save fuel, which is scarce. Clermont is a considerable town, perched on the top of a hill, and built of lava. It is extremely dirty, and Mr. Young compares several of its streets to channels cut in a dunghill; however, the mountain breezes purify the air. The cathedral, which was fine, was nearly destroyed during the Revolution. In the surrounding country are many curious caverns, petrifying wells, warm springs, cascades, &c. Aurillac also, Riom, and Thiers are elevated towns, commanding striking views of the rocks and cones of this remarkable chain. Towards Puy en Velay, which naturally belongs to Auvergne, the rocks become still more steep and romantic, and among the castles seated in them, Mr. Young especially distinguishes that of Polignac (*fig.* 249.), the form and site of which appears to him so striking, as to cause all the feudal ages, by a sort of magic influence, to rise before the mind. St. Michael's church, in the centre of the town of Puy itself, stands on the top of a very striking, almost precipitous rock, of tower-like form.

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CASTLE OF POLIGNAC.

2414. *Burgundy and Champagne*, with the small adjoining provinces of Bourbonnois and

Nivernois, form a vast plain extending north of the provinces last described. Burgundy, however, is traversed by branches from the Vosges, forming hilly tracts of moderate elevation. This is the great country of wine, producing the finest in France, and, with very few exceptions, in the whole world. The surface of the vine-district is chiefly red sandstone rock, with very little soil. The vineyards are cultivated by small proprietors, who do not usually hold more than twenty or thirty arpents. It costs 21*l.* to plant an arpent in vines, and 1*l.* 5*s.* annually to keep it in repair. Three years elapse before it yields any wine, and six before it yields good wine. Common vineyards sell at 60*l.* an acre; and there are some that sell so high as 400*l.* The precariousness of the crop, however, and the want of capital, render this branch of industry a poor employment; and the cultivators of Burgundy are the least flourishing of any in France. Few new vineyards are now laid down; though the capital invested in the old ones is a sufficient reason for keeping them up.

250

CATHEDRAL AT RHEIMS.

2415. *Of the chief towns*, the first in dignity is Rheims, a noble and ancient city, the ecclesiastical capital of France, where the kings were crowned and anointed. The cathedral (*fig.* 250.) has been considered the most splendid specimen of Gothic architecture existing, though some of its ornaments are not in the purest taste. The Hôtel de Ville is also fine; and the streets, unlike what is usual in old towns, are broad, straight, and well-built. Rheims is still the chief mart of that favourite wine called champagne, and from thence the connoisseurs of Paris take care to procure their supplies. Troyes, once celebrated for its great fairs, and noted as having given its name to the Troy weight, ranks as capital of Champagne, and is still a large and flourishing town on the Seine. Châlons sur Marne is also considerable, and, by a seemingly capricious choice, is the capital of the department of the Marne, instead of Rheims. Mezières and Sedan are strong frontier towns; the latter celebrated for its manufacture of fine woollen cloth, as well as for one of arms. Rocroy is only distinguished for the signal victory of 1643, which first established the superiority of the French arms. In Burgundy, Dijon (*fig.* 251.), with its numerous and lofty spires, presents a noble appearance to the approaching traveller; but it has lost much of its ancient importance. Its churches, now too numerous for the place in its reduced state, were dreadfully defaced and mutilated during the Revolution: one has been converted into a market for fish, another into one for corn. The streets, however, are wide and clean. Dijon has a distinguished university, and can boast of giving birth to Bossuet, Buffon, and Crébillon. Autun attracts notice by a temple and other remains, which indicate its importance as a Roman city, also by a fine modern cathedral (*fig.* 252.). Auxerre still flourishes by the excellent wine produced in its neighbourhood, and is adorned with a cathedral and several lofty spires. Châlons sur Saône is a good country town.

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DIJON.

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AUTUN CATHEDRAL.

Sens, the see of an archbishop, and formerly the seat of several councils, presents still some noble monuments in decay. Moulins, capital of the rich plain of the Bourbonnois, though not handsome, is busy and cheerful, having a considerable traffic upon the Seine. Nevers, in Nivernois, is finely situated on the Loire, but is an ill-built and dirty town.

2416. *The provinces of Lorraine, Franche-comte, and Alsace* are less an integral part of France than a series of appendages obtained by conquest chiefly during the reign of Louis XIV. They remain still in many points connected with Germany. They are watered by the Meuse and the Moselle, tributaries of the Rhine; they are traversed by the chain of the Vosges, connected with the Swiss Alps and the Black Forest; their surface is rude and irregular; their wines have the same agreeable acid quality as the Rhenish. Even yet Alsace, both as to language and manners, is altogether German.

2417. *The cities are,* — Nancy, capital of the dukes of Lorraine, a race of gallant and accomplished princes. It is said to be the most elegant city in France, especially the new town, built in the sixteenth century. The gates appear almost like triumphal arches; the public buildings are numerous; the *place royale* and the adjoining area are superb. The place is lighted in the English manner. Metz is a larger town, and now more important, being one of the strongest of the French fortresses. It is nearly enclosed by the Moselle and the Seille, and entered by successive drawbridges. The usual complement of its garrison is 10,000 men. Metz is celebrated for its long and triumphant defence under the Duke of Guise against the army of Charles V. It is still a flourishing town, with numerous manufactures, and contains a library of 60,000 volumes. Luneville was for some time the residence of Stanislaus, the ex-king of Poland, who considerably embellished it; and it was the scene of Bonaparte's first triumphant treaty in 1801. It is now rather a poor place, having few manufactures. Another strong fortress is Verdun, a name but too familiar to English ears, as the scene of the iniquitous detention of our countrymen in 1803. It is well situated on the Meuse. Salins flourishes by means of the salt extracted from the brine-springs, which are found also in other parts of this territory. Besançon, in Franche-comté, was a city of the German empire till the treaty of Westphalia, when it was ceded to the Spaniards, from whom it was wrested by Louis XIV. It is a large and industrious place, particularly distinguished by a manufacture of clocks and watches, introduced towards the end of the last century, and employing about 1800 persons. It has also valuable scientific and literary establishments. Dòle is likewise a very ancient town, once the capital of Franche-comté. Vesoul and Lons le Saulnier are pretty good towns, and capitals of departments. In approaching Switzerland, the country becomes elevated, and the towns occupy picturesque sites. Ornans lies in a deep dell, skirted by green rocky hills, like Matlock. Pontarlier stands on a height having a strong castle which guards the passage into Switzerland. Nantua is placed in a nook between two enormous mountains. On crossing the Vosges appears the rich and fruitful plain of Alsace, more highly cultivated than any other part of the kingdom, except French Flanders. Here Colmar, Haguenau, Saverne, Weissemburg, are agreeably situated and rather thriving towns. But by far the most important place in this part of France is Strasburg (*fig.* 253.). It was early celebrated as an imperial city, enjoying extensive privileges, and enriched by the navigation of the Rhine. Its prosperity was still farther promoted in consequence of the zeal with which, along with the rest of Alsace, it embraced the reformed doctrines. Strasburg and Alsace suffered a severe misfortune, by being, in 1689, subjected to France by Louis XIV. Yet the city retained privileges beyond any other in France, and continued to be distinguished both by wealth and intelligence. Its schools were considered second only to those of Paris, till the Revolution, when they were severely injured, and have not yet been fully restored. Strasburg, however, has still valuable institutions, both literary and economical, and is one of the greatest and most flourishing cities of France. Its ancient importance is attested by its cathedral or minster, one of the most splendid existing monuments of the Gothic. Its tower, 470 feet high, is said to be the most elevated structure in the world, with the exception of the Great Pyramid of Egypt.

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STRASBURG.

Chap. VI.

SPAIN.

2418. *Spain forms the principal part of a very extensive peninsula;* the most southern, and also the most western, portion of Europe. It is only connected by an isthmus about a hundred miles broad, traversed by the Pyrenees, a chain holding the second rank among the mountains of Europe. Spain is thus almost insulated from the rest of the continent.

Sect. I. *General Outline and Aspect.*

2419. *The boundaries of the Peninsula* in general, are on the north, the Bay of Biscay; on the west, the Atlantic; but this coast for more than half its extent is occupied by Portugal, whose interior frontier forms to that extent the western boundary of Spain. The most southern point near Gibraltar is separated only by a narrow strait from the opposite shore of Africa. Eastward from this strait is the Mediterranean, along which the coast winds in a north-easterly direction, gradually receding from Africa, and facing at a great interval the western coast of Italy. From its termination, the Pyrenees stretch across to the Bay of Biscay, and form the lofty limit between Spain and France.

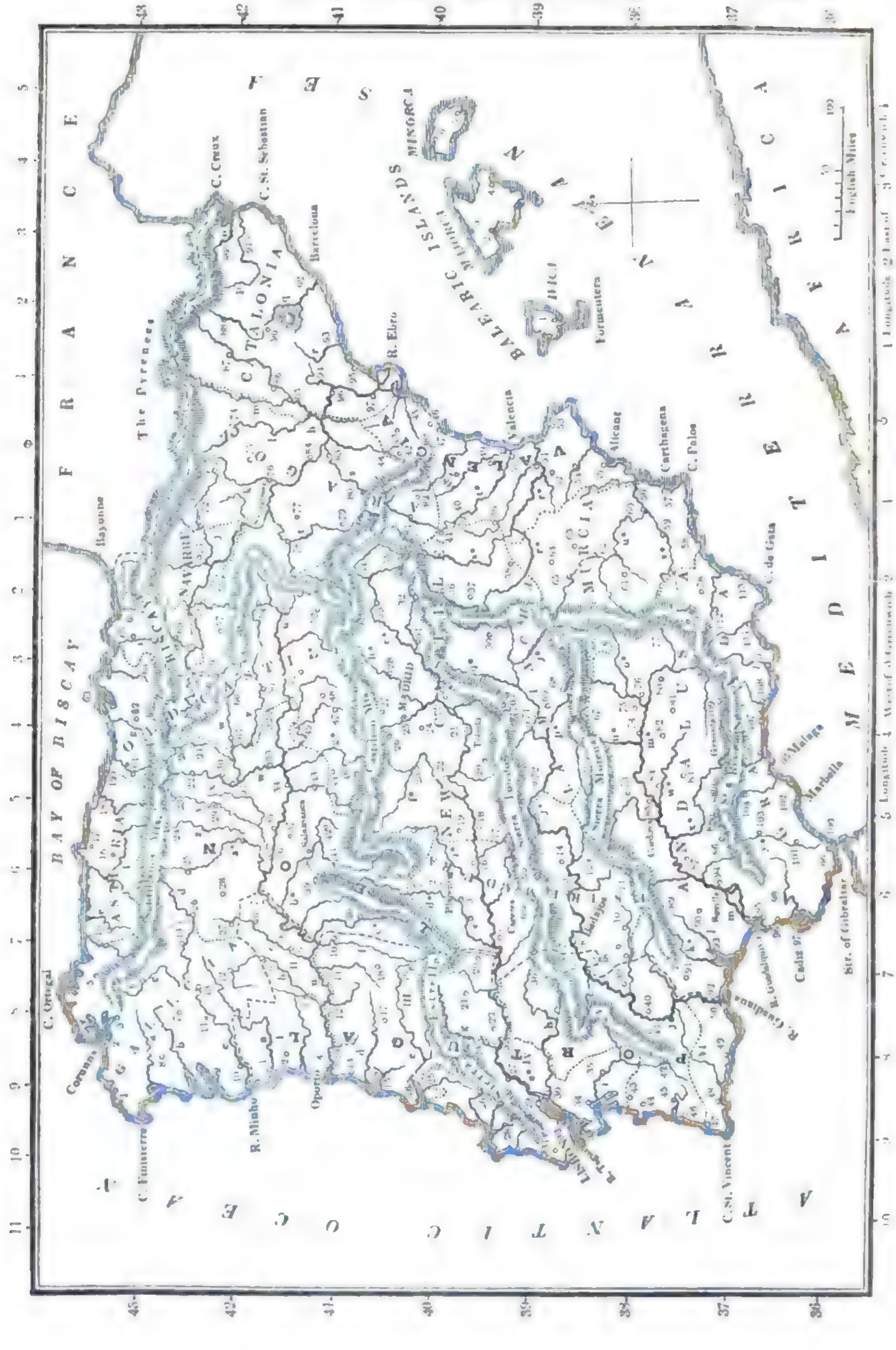
2420. *The extent of Spain,* north and south, is, from Tarifa Point in the straits, in 36° N. latitude, to Cape Ortegal in Galicia, 43° 46′; making 7° 46′ of latitude, or about 540 English miles. From east to west, the extreme points are Cape Creus, in Catalonia, 3° 17′ E. longitude, and Cape La Roca, 9° 17′ W. longitude; implying twelve and a half degrees, which, in this latitude, amounts to about 560 miles. Thus the Peninsula forms almost a square; allowance being made for the irregularity of its outline; and, the entire extent of Portugal being taken off, it is reckoned not to contain more than 176,600 square miles.

2421. *The surface of Spain* is strikingly irregular. It is traversed by long and lofty ranges of mountains, having plains of vast extent between them and the sea. These mountains may be considered as part of the great range which crosses Europe from the Black Sea to the Atlantic. The Pyrenees, common to France and Spain, form a long continuous line of lofty summits, the most central and elevated of which is Mont Perdu near the source of the Cinca, which the measurements of Ramond have fixed at upwards of 11,000 feet. Towards the sea, on both sides, the mountains sink into a more moderate elevation, and the barrier between the two kingdoms is less formidable. This great chain shoots lower branches into Catalonia and Navarre, presenting also some striking insulated peaks, among which that of Montserrat is the most conspicuous. From the western extremity of the Pyrenees, a great chain, which has been called the Iberian, reaches almost due south, forming the boundary of the fine plains of Aragon and Valencia. All the other ranges run from east to west. The Cantabrian is nearly a continuation of the Pyrenees: it stretches across the whole north of Spain, covering the provinces of Asturias and Galicia, and leaving only a narrow and rugged plain along the sea-coast. Parallel to this, on the opposite side of a vast plain through which the Duero flows, is another transverse range, bearing in its highest points the names of Guadarrama and Somosierra, and enclosing with its rugged and romantic cliffs the elevated palaces of San Ildefonso and the Escurial. On the opposite side of the Tagus and of the plain of Madrid is another parallel chain, the Sierra of Toledo. It borders the wide elevated plain of La Mancha; on the southern boundary of which is the more celebrated chain of Sierra Morena, the lofty barrier of the rich plains of Andalusia. Beyond these rises another longitudinal chain, of a peculiarly bold and lofty character, called the Sierra Nevada, from the snow which perpetually covers many of its summits; between which and the Mediterranean only a narrow though beautiful plain intervenes. These long and lofty ranges, as observed already, are separated by very extended plains, which, in the interior, are of great elevation, and even Madrid is 2000 feet above the sea: the plains along the Mediterranean, and almost on a level with it, display a profuse fertility, and abound in all the choicest fruits of a southern climate.

2422. *The rivers of Spain* form as important and celebrated a feature as its mountains. The Tagus and the Duero, rising in the Iberian chain, on the frontiers of Aragon, roll along the two grand central plains, receiving numerous though not very large tributaries from the mountains by which they are bordered. Unfortunately for Spain, they terminate in the somewhat hostile realm of Portugal, and are scarcely navigable above its frontier; so that the commercial benefits arising from them are of little importance. The Guadiana belongs to La Mancha, and on its approach to Portugal forms the boundary of the two kingdoms; but the high tract through which it flows is only distinguished for its rich pastures, and does not render its port of Ayamonte a place of any importance. Beyond the Sierra Morena, the Guadalquivir waters the plain of Andalusia, and has on its banks the noble cities of Cordova and Seville; while Cadiz, not far from its mouth, forms the chief emporium of Spain. Though its navigation is now much impeded, and practicable for large vessels only to Seville, it is the only river in Spain of much commercial im-

MAP OF SPAIN AND PORTUGAL.

Fig. 254.



portance. The Ebro, which derives from its position a greater historical celebrity than any other, rising in the Cantabrian mountains, nearly crosses the breadth of north-eastern Spain, and separates Catalonia and Aragon from the extensive regions of the interior. Its banks at present afford few materials for trade, except a large quantity of timber. The Guadalaviar and Xucar in Valencia, and the Miño in Galicia, are also rivers of some magnitude.

2423. *The mountains of Spain* enclose no lakes, their waters finding a ready issue along the vast plains on which they border.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2424. *The principal mountain chains in Spain* differ not only in their external aspect, but also in their internal composition: they appear more as different individuals than as members of a single system. They have this in common with one another, that their nucleus consists, in whole or in part, of primitive and transition rocks; but not only the species, but also the relations of these, vary in the different chains. A great body of granite, which seldom reaches the highest points of the country, and contains subordinate beds of gneiss and other primitive rocks, ranges through the Pyrenees properly so called. It is surrounded by a predominating mass of crystalline slate and of transition rocks, among which the most abundant are clay slate and limestone. On the contrary, on the western continuation, in the Biscayan mountains, the older rocks are not widely distributed, and appear first in Galicia, at the western extremity of the northern mountain chain, where, according to Humboldt, granite, accompanied by crystalline slates, appears again, and in great extent. The principal mass of the mountain chain which separates Old from New Castile is composed of gneiss and granite. In the chain of mountains extending between the Tagus and the Guadiana, according to Link, the principal rock is granite. The long

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References to the Map of Spain and Portugal.

NORTH PART.
Galicia.
1. Camarinas
2. Corunna
3. Betanzos
4. Ferrol
5. Mera
6. Lugo
7. La Gesta
8. Santiago
9. Vigo
10. Tuy
11. Ribadavia
12. Atabides
13. Orense
14. La Rua.

Asturias.
15. Llano
16. Oviedo
17. Gijon
18. Rivaldacella
19. Lanes.

Leon.
20. Aguilar de Campos
21. Herrera
22. Saldana
23. Almanza
24. Leon
25. Astorga
26. San Justo
27. La Mezquita
28. Corrijal
29. Mayorga
30. Anuso
31. Palencia
32. Villaconancia
33. Valladolid
34. Tordesillas
35. Toro
36. Zamora
37. Fuentelsauca
38. Salamanca
39. Matilla
40. Ciudad Rodrigo
41. Cespedosa
42. Penaranda
43. Medina del Campo.

Old Castile.
44. Arevalo
45. Becilla
46. Villacasta
46* Espinar
47. Segovia
48. Pedraza
49. Cuella
50. Lerma
51. Fresnillo
52. Barroma
53. Almazan
54. Soria
55. Arnedo
56. Logrono
57. Najera
58. Frias
59. Briviesca
60. Burgos
61. Palenzuela
61* Alles
62. Vargas
63. Santander
64. Orduna.

Biscay.
65. Bilboa
66. Deba
67. Tolosa
68. St. Sebastian
69. Vittoria.

Navarre.
70. Pampeluna
71. Tudela.

Aragon.
72. Verdun
73. Jaca
74. Ainsa
75. Huesca
76. Saragossa
77. Garinena
78. Calatayud
79. Luco
80. Montanban
81. Teruel
82. Sarrion
83. Ixar
84. Pina.

Catalonia.
85. Lerida
86. Balaguer
87. Orgagna
88. Urgel
89. Figueras
90. Cardona
91. Gerona
92. Barcelona
93. Tarragona
94. Cervera
95. Espital
96. Flix
97. Tortosa.

SOUTH PART.
Estremadura.
1. La Clisa
2. Placentia
3. Galistea
4. Coria
5. Alcantara
6. Caceres
7. El Tersorero
8. Badajos
9. Oliva
10. Xerez
11. Llerena
12. Majacella
13. Merida
14. Acadera
15. Truxillo
16. Almaraz.

New Castile.
17. Gaudalupe
18. Azutan
19. Oropesa
20. Talavera de la Reyna
21. Toledo
22. Cavocca
23. El Prado
24. Mostoles
25. Madrid
26. El Escurial
27. El Prado
28. Guadalaxara
29. Aranjuez
30. La Mota de Belmont
31. Secadon
32. Canavara
33. Valtablado del Rio
34. Hinojosa
35. Frias
36. Cuenca
37. La Parra
38. Yniesta
39. Requena.

Valencia.
40. Tuejar
41. Ademuz
42. Forcall
43. Morella
44. Zurita
45. Peniscola
46. Pt. de Sal
47. Oropesa
48. Almodinar
49. Murviedro
50. Valencia
51. Alcira
52. Felipe
53. Denia
54. Nizana
55. Alicante.

Murcia.
56. Rafat
57. Carthagena
58. Almazarron
59. Totana
60. Murcia
61. Cebegin
62. Hellin
63. Velannera
64. Chinchilla
65. Ayna
66. Chiclana

La Mancha.
67. S. Lorenza
68. Almagro
69. Ciudad Real
70. Madridejos
71. Malagon
72. Lebornia.

Andalusia.
73. Demacar
74. Andujar
75. Linares
76. Baeza
77. Huescar
78. Albox
79. Cullar
80. Jodar
81. Monasterio
82. Jaen
83. Montilla
84. Bujalance
85. Cordova
86. Ossuna
87. Carmona
88. Ecija
89. Aracena
90. Axiracollar
91. Almendra
92. Ayamonte
93. Huebla
94. Seville
95. S. Lucar
96. Rota
97. Cadiz
98. Xerez
99. Tarifa
100. Gibraltar.

Granada.
101. Gaucin
102. Marbella
103. Ronda
104. Antequera
105. Malaga
106. Velez Malaga
107. La Herradura
108. Motril
109. Granada
110. Agra
111. Almeira
112. Purchena
113. Mujacar.

PORTUGAL.
I. *Entre Douro.*
1. Viana
2. Braga
3. Amarante
4. Oporto

II. *Tras os Montes.*
5. Carabranca
6. Braganza
7. Miranda de Vita
8. Aldea
9. Mirandella.

III. *Beira.*
10. Almeida
11. Lamego
12. Alcarral
13. Villanova
14. Feira
15. Aveiro
16. Coimbra
17. Viseu
18. Trancoso
19. Guarda
20. Salvatierra
21. Castello Branco
22. Sardoal
23. Abrantes.

IV. *Extremadura.*
24. Arega
25. Porta
26. Leiria
27. Santarem
28. Obidos
29. Villafranca
30. Benevente
31. Cintra
32. Lisbon
33. Almada
34. Setubal or St. Ubes
35. Alcacerdo.

V. *Alentejo.*
36. Portalegre
37. Elvas
38. Olivença
39. Porea
40. Serpa
41. Beja
42. Ourique
43. Mertoles
44. S. Andre
45. Villa Nova
46. Serdao.

VI. *Algarve.*
47. Sevja
48. Lagos
49. Albofeira
50. Castro Marino.

Rivers of Spain.
a Tambre
b Ulla
c Minho
d Sil
e Navia
f Nalon
g Besaya
h Ebro
i Durango
j Aragon
k Gallego
l Cinca
m Ribagorzano
n Segre
o Muga
p Ter
q Llobregat
r Francoli
s Martin
t Xiloca
u Douro
v Arlanza
w Arlanzon
x Pisuerga
y Carrion
z Esla
a* Orvigo
b* Tormes
c* Coa
d* Zezere
e* Tagus
f* Alberche
g* Eresma
h* Henares
i* Tietar
j* Guadiana
k* Odiel
l* Tinto
m* Guadalquivir
n* Jandula
o* Guadalimar
p* Guadia
q* Giguela
r* Xucar
s* Cobriel
t* Guadalaviar
u* Segura
v* Lorca
w* Guadajoz
x* Genil
y* Guadiaro.

Rivers of Portugal.
a Luna
b Tamaga
c Sabar
d Vouga
e Mondego
e* Tagus
f Coa
g *Zezere*
h Loura
i Saldo
l Guadiana.

BALEARIC ISLANDS.
Iviza.
1. Iviza.

Majorca.
2. Palma
3. Soller
4. St. Lorenzo.

Minorca.
5. Mahon
6. Ciudadela.

ridge of the Sierra Morena contains principally transition rocks; granite breaks out on its southern foot towards the Guadalquivir. This rock, so frequent in the Iberian peninsula, appears to be wanting in the highest southern chain. The middle mountain ridges consist of mica slate, abounding in garnets, which, in the ridges lying before them, passes into less crystalline mica slate, chlorite slate, and clay slate, which sometimes enclose beds, at times of vast magnitude, of compact limestone, marble, dolomite, and serpentine. On the south coast, newer transtion slate and greywacke slate, with beds of flinty slate, lie here and there on the older slate. The basis or fundamental part of the rock of Gibraltar is of these rocks.

2425. *The structure of the chains of mountains* corresponds in general with their chief direction. Not only the alternation of the different rocks, but also the direction of the strata, are conformable with the direction of the chains: hence, in the greater part of Spain, the principal direction of the slaty rocks is from S. W. to N. E., or W. S. W. to E. N. E. But the inclination of the strata varies. In the Pyrenees, properly so called, the dip of the strata is conformable with the two acclivities of the range. In the Somosierra and Guadarrama ranges, the principal mass of gneiss dips S. E. towards the granite lying before it. In the Sierra Morena, the predominating dip of the slaty strata is towards the N. W., so that they appear to rest on the granite which breaks from under them. In the Sierra Nevada, the dip of the strata is conformable with the two acclivities of the chain. It is worthy of remark how the curvature of the south coast of Spain obeys the direction of the strata, and how the formation of the far-projecting southern point of the land also stands in connection with the direction of the strata. At the foot of the rock of Gibraltar, the slaty strata run nearly north and south with a rapid dip towards the east. The Gut of Gibraltar is therefore nearly at right angles to the direction of the strata. The rocky wall between the Mediterranean and Atlantic Seas, by this direction of the strata, must have opposed the strongest resistance to the currents. The primitive and transition rocks, in very different places, are rich in ores. The present mines are confined principally to the south-west and south-east parts of Spain. The mighty lead-glance veins of Linares occur in granite; the colossal deposit of lead-glance in the Sierra de Gador, which afforded, in the year 1828, 600,000 cwt. of lead, is distributed in masses (putzen), in a limestone which may be referred to the oldest transition rocks, and the rich mercury mines of Almaden are contained in clay slate. The secondary rocks also assist in forming the principal Spanish mountain chains, but in a different manner. They ascend to a great height on the Spanish side of the Pyrenees; even some of the highest summits are of secondary rocks. The western continuation of the Pyrenean chain consists, in the Biscayan provinces, principally of secondary rocks; and it is probable that the lofty limestone mountain ridges which separate Asturias from Leon are a continuation of the Biscayan secondary formation. On both sides of Somosierra the primitive rocks are skirted by those of the secondary class; but they are far from the middle and higher parts of the mountain chain. When we follow the road from Madrid to Andalusia, we meet with secondary rocks near the transition clay slate of the passes of the Sierra Morena; but we must descend very low on the south side before we meet with similar rocks. The high mountains of Jaen are formed of secondary rocks. In the northern *vorgebirge* of the Sierra Nevada, between Granada and Guadiz, there are secondary deposits, which are not, however, so considerable and extensive as to reach to the high ridges. Also in the vicinity of Malaga new secondary rocks lie on the foot of older mountain masses; and the ridges of secondary rocks extend from the hills of Ronda towards the southern extremity of Spain. The wonderful isolated rock of Gibraltar is also principally composed of new secondary rock. The distribution of the rock is not confined to the immediate vicinity of the higher mountain chains, but it extends from the one to the other, rises or falls in the intermediate spaces, and forms in this way the widely extended high table-land.

2426. *The most important* of the Spanish secondary rocks are the following; viz., variegated sandstone and marl, gryphite limestone, and the white limestone or Jura limestone. The first of these exhibits the same relations as in Britain, where it is known under the name of new red sandstone and red marl. The shell limestone, which, in Germany, is enclosed between Werner's variegated sandstone and the younger marl formations, is wanting in Spain, as is also the case in England. The sandstone and marl is rich in gypsum and masses of rock salt. At Vallecas, near Madrid, and in some other places, there rests upon it, in single beds, that rare deposit consisting of *meerschaum*, with nests of siliceous minerals. It is to this formation, which occurs widely spread over the high table-lands of Old and New Castile, that these countries owe the reddish-brown colour of their soil, and the tiresome uniformity of their surface. The lias formation is widely distributed in the northern provinces of Spain. It appears to reach a considerable height on the Spanish side of the Pyrenees. In the Biscayan provinces it exhibits the same characters as the gryphite limestone of the Weser, and is so widely distributed that nearly all the older rocks are covered by it. Here it is remarkably prolific in an excellent iron ore. The immense mass of sparry iron ore, converted by decomposition into brown and red iron ores of Sommorostro, near Bilboa, and which probably forms the ironstone hills mentioned by Pliny in the 34th book of his *Natural History*, belongs to this formation. Probably also the vast beds of coal in the Asturias are subordinate to it. The white Jura limestone, which is one of the most widely distributed formations, is also of great geognostical importance in Spain. It forms, in most places, the immediate cover of the variegated sandstone and marl, and occurs in the north, and also in the south of Spain, in single ridges and great mountain masses. This formation is exhibited in its most characteristic forms in the narrow pass of Pancorbo in Old Castile, in the lacerated mountains of Jaen, and the isolated rocky wall of Gibraltar. Wherever it occurs, its presence is announced by the yellowish-brown colour of the soil with which it is covered.

2427. *Some members also of the chalk* formation occur in Spain. The sandstone of the rocky ridge of the southern coast, between Cadiz and Gibraltar, and the limestone in the district of Los Barios, bring to our recollection the rocks of the Saxon Switzerland. The first agrees with the German quader-sandstein, the latter with the Saxon planer limestone, an equivalent for impure chalk.

2428. *Tertiary deposits* occur in different parts of Spain. In the south, particularly near the sea-coast, there is a deposit, filled with marine organic remains, in which calcareous sand and pebbles occur, partly in a loose mass, and partly more or less firmly compacted by means of calcareous cement. Judging from the included petrifactions, among which are beds of oyster shells, this deposit, on which Cadiz stands, and which, in some places, rises into hillocks and low hills, belongs to the upper tertiary sea-water formation. Probably the tertiary deposit mentioned by Bronguiart as occurring in the neighbourhood of Barcelona belongs to the same deposit. That freshwater limestone occurs in Spain has been sufficiently proved by the observations of Baron Férussac. The deposit very much resembles that so generally distributed in Germany, and is found in different parts of Spain, both in the interior and on the coast, and at different heights. The calcareous breccia, generally with a ferruginous basis, which occurs principally in the south-west, where it is widely distributed, belongs to the latest of the antediluvian deposits. It not only incrusts limestone rocks of different formations more or less thickly, but also fills up rents and fissures in them: thus it abounds among the calcareous rocks of Gibraltar, where it sometimes contains bones of quadrupeds no longer met with there. The formation of the breccia is ascribed to a catastrophe which affected different parts of the coast of the Mediterranean sea. As Professor Hausmann, to whom we owe the preceding details, had not an opportunity of travelling in Murcia, he was not able to confirm or reject the accounts of Spanish geologists, who maintain that it contains true volcanic rocks. The occurrence of other rocks, which are conjectured to have come from below, has been noticed in but few places. Characteristic basalt occurs in Catalonia. The porphyritic and basaltic-looking rocks extending from Cabo de Gata, and from Avila, on the north side of the Guadarrama range, are still problematical. Hypersthene rock has been found by Professor Garcia in the vicinity of Salinas de Poza, in Old Castile, in contact with Jura limestone. Professor Hausmann found, in the mountains of Jaen, near to variegated marl containing masses of gypsum, rocks of greenstone. Col. Silvertop describes tertiary deposits in Granada in the *Edin. New Phil. Journ.*

2429. *It may not be improper*, from Professor Hausmann, to point out the influence of soil and climate on the other departments of nature, as also on the peculiarities and occupations of man. A glance at the whole nature of Spain discovers a threefold principal difference. The northern zone, which extends to the Ebro, differs entirely in its characters from the middle zone; and this again is completely different from the southern zone, which is bounded on the north by the Sierra Morena, and a part of the Ostrandes. The northern zone, which includes Galicia, Austurias, the Biscayan provinces, Navarre, the northern part of Aragon, and Catalonia, is a widely extended mountainous and hilly country. The snow fields and glaciers of the Pyrenees on the one side; and on the other the north and north-west winds, have a marked influence in lowering the temperature of the atmosphere, and in increasing the supply of water. The increased humidity is favourable for vegetation, which, on the whole, very much resembles that of the south of France; and the variety of rocks containing lime, clay, and sand, and also their frequent alternations, operate beneficially on the soil. The soil every where invites to cultivation, and the Catalonians and Biscayans are active cultivators of the ground. The middle part of Spain, to which belongs Old and New Castile, a part of Aragon, Leon, and Estremadura, is not so favourably circumstanced. In general, we rarely meet with either beauty or variety of aspect. The extensive and lofty table-lands, destitute of trees, are dull and tiresome; their uniform and monotonous surface, formed by vast deposits of horizontally disposed secondary strata, is swept across by the wind, and burnt up by the sun's rays. Whichever way the eye turns, it meets with scarcely any thing but wretchedly cultivated cornfields and desert heaths of cistus. Seldom, in general, more in the southern than in the northern districts, plantations of olive trees afford a meagre shelter, and vary the scenery, although in an inconsiderable degree. Nothing, certainly, has so great an influence on these properties of nature, with which many of the peculiarities and modes of life of man harmonise, than the high situation of the widely extended table-lands, and the uniformity of the rock which forms the support of the soil. It is owing principally to the horizontal stratification, and the want of water, that the great Spanish table-lands are so widely extended, and so little intersected by deep valleys. The rivers, in most cases, carry but little water in comparison with the magnitude of the land, and the number of considerable mountain chains; and it is further surprising how insignificant the waters of most of the Spanish mountain groups are, even when the qualities of the rocks favour the formation of springs. The causes of this great deficiency of water are principally the great dryness of the atmosphere, the inconsiderable cover of snow on the mountains, and its short continuance; the absence of forests, and the want of great moors on the heights, and the comparatively inconsiderable breadth of the mountain ranges. The southern and south-western part of Spain, which comprehends Andalusia, with Granada and Murcia, is very different from that just described. On the opposite side of the Sierra Morena the whole land has a more southern and foreign aspect, a breathing of that African nature, which announces itself not only by the world of plants, but also by the animal world, and man himself. The great difference of climate is produced by the southern situation, the exposure of the acclivity on the south and south-west to the African winds, and the strong reflection of the solar rays from the lofty, naked mountain walls. The mountain ranges are more closely aggregated, the valleys more deeply cut: there is no room for very extensive table-lands, and the more limited ones that occur, as those of Granada, are more amply supplied with water than those in the middle of Spain. Along with this arrangement, there is greater difference among the rocks, and also of their position. The south of Spain, therefore, possesses not only a much higher temperature, one fit for the orange and the palm, but also a more varied and a more favourable soil for cultivation. But these relations would have acted more beneficially if the air had been more humid, and moisture had been every where more abundant. The deficiency of moisture is the principal cause not only of the striking meagreness of phenogamous vegetation, on the most of the mountain acclivities, but also of the remarkable paucity of lichens and mosses on the mountains on the coast; and in connection with this is the fact, that the weathering of the rocks, and the reforming of the original surface of the mountains, assume there a somewhat different course from what is observed in places which are moister, and provided with a more powerful vegetation.

Subsect. 2. *Botany.*

"Oh! Christ! it is a goodly sight to see
What Heaven hath done for this delicious land!
What fruits of fragrance blush on every tree!
What goodly prospects o'er the hills expand!
(But man would mar them with an impious hand)."

2430. "*European Spain*," says M. de Humboldt, "situated in latitudes under which Palm trees (*Phœnix dactylifera* and *Chamærops humilis*) grow upon the plains, presents the majestic spectacle of a chain of mountains, the tops of which shoot up into the region of everlasting snow. By a levelling survey executed with the greatest care, it has been ascertained that in the Sierra Nevada of Granada, the Pico de Venleta rises 1781 fathoms (or about 11,353 English feet), and the Mulahasen 1824 fathoms (or 11,628 English feet), above the level of the ocean. None of the mountains of the Pyrenees are of so great a height; for Mont Perdu, the loftiest of the Spanish Pyrenees, is only 1763 fathoms, and the highest of the French Pyrenees only 1722 fathoms. The peak of Mulahasen, in the Sierra Nevada of Granada, wants only 76 fathoms of being as high as the Peak of Teneriffe. Yet even this summit, if situated in the same latitude as the town of Mexico, would not be perpetually covered with snow: for the never-melting snows begin under the equator at 2460 fathoms; under the twentieth degree of latitude at 2350 fathoms; under the forty-fifth, at 1300 fathoms; and under the sixty-second, at 900 fathoms."

2431. *Thus circumstanced in regard to climate*, and the elevation of its mountains, how greatly is it to be regretted that no country in Europe has been so little investigated in regard to its botanical productions! Enough, however, is known for our purpose, which may be collected from the different travels in, and accounts of, Spain and Portugal, and from the *Recherches sur la Distribution Géographique des Végétaux Phanérogames dans l'Ancien Monde*, already alluded to, by M. de Mirbel. This author considers the whole of this peninsula, with the exception of the northern part of Spain, which forms the shores of the Gulf of Gascony, and which belongs to the temperate zone, as entering into the transition zone. If, therefore, its vegetation has any affinity with that of France, it is only where its mountainous parts, especially the Pyrenees, resemble the mountains of France, and its warm districts are like the extreme south of France. In East Valencia and Murcia, in the south of Andalusia and the Algarves, in Western Alemtejo and South Estremadura, the rich and varied vegetation calls to mind the fertile plains of Syria. In Andalusia, frosts are unknown, and the snow, if it ever falls, melts the moment it touches the soil: so that it is not surprising that, in the cultivated parts, the Spaniards, long famous for their voyages, should have introduced many vegetables from remote parts of the world; thus giving a perfectly tropical appearance to the country.

2432. *The Erythrina Corallodendron, or Coral tree,* with its brilliant scarlet blossoms, the *Schinus Molle*, with its gracefully pinnated foliage, and the *Phytolacca dioica*, are introduced, with many other plants, from South America. Even the Bananas are common to the south of the Guadalquivir; as are also the Cayenne Pepper; and, in gardens, the Convolvulus Batatas or Sweet Potato. Every where about the rural habitations of the Spanish peasantry, the Date, the Orange (*fig.* 255.), the Lemon, the Olive, the Pomegranate, the Fig (*fig.* 256.), and the Mulberry, flourish nearly as well as in the native soil. Link notices the trees growing about Lisbon; "they are chiefly," he says, "Olive and Orange trees, Cypress, Judas trees: Elms and Poplars appear too. But of Oaks, Beeches, and Lime there are none, and very few Willows; so that one may instantly perceive how different is the character of a Lisbon view from that of Germany." The Orange is the most striking of these; for there are many plantations in quintas, where they form compact groves, and also scattered in open spots. These trees require much artificial watering, and they are propagated by seed, and afterwards by grafting upon those seedling trees. In December and January the fruit begins to turn yellow; and at the end of January and in February, before they are ripe and sweet, they are gathered for exportation. Towards the end of March and April, the oranges are very good, but they are not in perfection till early in May. In July and August they are scarce, and over ripe. At the end of April and May, the new flowers appear, the fragrance of which extends far and wide, and at this time the quantity of glittering fruit embosomed amid the dark foliage, "like golden lamps in a green night," relieved still more by the snowy blossoms, presents an object which continually excites new admiration, though it is one of daily occurrence. One single tree frequently bears 1500 oranges, and examples are not wanting of their bearing 2000, and sometimes, though rarely, 2500. In the provinces they sell for half a farthing apiece. Figs are exported largely from the city of Faro; they are the most important produce of the Algarve, and are brought down by the country people to the merchants in immense quantities. They are thrown in heaps in a building prepared for the purpose, where a syrup flows from them, which is used to advantage in making brandy. They are then spread to dry in the sun, in an open situation, where they are left for a few days in proportion to the heat of the weather; after which they are packed into small baskets made of the leaves of the Fan Palm, and exported. "Greece and the Algarves," M. Link observes, "are the only countries where caprification is practised; for in the latter country are some varieties of Figs, and those very excellent, that fall to the ground immature, unless punctured by gnats." Two ideas prevail respecting the effect of this operation; the general opinion being, that the little insect, on entering the Fig, (which is known by botanists, to be a fleshy receptacle, including many, and often only barren flowers,) carries with it, from other figs that it has visited, and from which it comes loaded, the farina necessary for fertilisation: while others maintain, and among them M. Link, that the puncture caused by the insect gives a fresh stimulus and a new movement to the sap or juices of the fruit, thereby not only preventing the fall of the fruit, but rendering it sweeter and better flavoured; and it is certain that many of our common fruits, when pierced by insects, acquire the sweetest flavour. The ancients perfected the figs in the Archipelago by means of an insect, a species of Cynips (*C. Ficus.*) In Algarve, besides the cultivated kind, another wild sort is grown; in which the insects abound. These trees are recalled *Fijos de tora;* and branches of them are, at the proper season, broken off, and suspended over those intended to be fertilised, when the little animals come forth, alight upon the fruits, puncture them, and aid their ripening.

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THE ORANGE.

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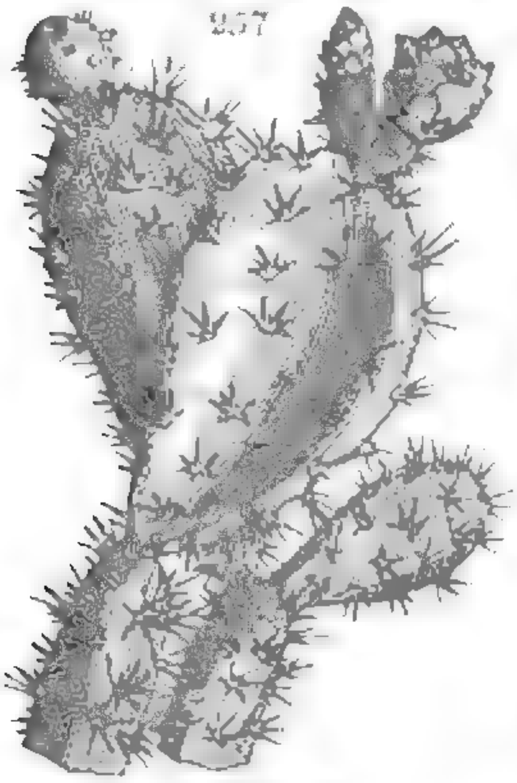
THE FIG.

2433. *Formidable fences* are made of the Cactus Tuna (*fig.* 257.), and the Agave americana, or American aloe. The former is often mixed with the Pomegranate, but of itself it constitutes a hedge almost impervious to cattle. In Portuguese it is called, on account of its prickles, *Fijo do inferno:* the flowers are yellow and the fruit esculent; the latter is by no means unpalatable, and is regularly sold in Lisbon. Of the *Agave americana* we have already spoken, and shall, therefore, simply mention here, that its leaves undergo a process by which a valuable thread is extracted, known in Portugal by the name of *Filo da pita.* The largest and most perfect leaves are cut off, laid upon a board, and scraped with a square iron bar, which is held in both hands, until all the juices and pulp are pressed out; the nerves only remaining, when these are found easily separable into threads. Where pasturage is scarce, as in Algarve, the cattle eat the foliage of this plant, if cut into thin transverse slices.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CACTUS TUNA.

2434. *In La Mancha grows the* Esparto grele (*Stipa tenacissima*), of which cords are made, and the foliage is sent in large quantities into Portugal for this purpose. To prevent the careless destruction of these valuable plants, penalties are inflicted on any person who ventures to gather them before the month of May, when they are in perfection.

2435. *The Carob tree* (*fig.* 258.) Link reckons the most beautiful of European trees. It attains a considerable height, forming, with its large evergreen pinnated foliage, a head of considerable dimensions, and yielding a welcome shade. Among the foliage hang down the numerous long pods, which, when ripe, are used as fodder for cattle, especially the mules, and as meat for swine, though inferior to the acorns of the Evergreen Oak. Before the expulsion of the Moors, the Sugar Cane was cultivated to a considerable extent, and lately it has been re-introduced, at San Lucar, into a garden "d'acclimation," together with Coffee, Indigo, and Gum Arabic. A vast extent of country is covered by the Chamærops humilis (*Dwarf Palm* or *Palmetto*), growing in waste places. This vegetation, in part exotic, follows the coasts of the Spanish peninsula, to the east and to the west. It is diffused in all its luxury in the delicious territory of Valencia, where the agriculture of the Moors is still held in respect. With the species already named, are here cultivated the Aloë perfoliata, Yucca aloifolia, Cassia tomentosa, Media Azedarach, many kinds of Mimosa, Annona, &c. In the environs of Alicant the Date harvest is very abundant. This Palm there grows in large plantations, and often attains the height of 120 feet. It reaches along the entire coast, to the 40th degree, and perhaps higher. The Agave abounds in the environs of Tarragona, in the 41st degree; and the Olive continues to the shore of France.

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CAROB TREE.

2436. *In general*, the vegetation of the east of the Peninsula differs little from that of the other shores of the Mediterranean. The coasts of the Ocean, on the west, are less hot, according to M. Bory de St. Vincent, than corresponding latitudes on the east sides; so that the southern vegetation does not extend so far to the north. Be this as it may, the Date, the Lemon, the Orange, abound in Algarve and Alemtejo. The Orange grows plentifully in the environs of Oporto, in 41°; and the Olive extends to 42°. A great number of American plants, the seeds having been probably brought in ballast, are mingled, and as it were confounded, with indigenous species. Upon the whole, however, the vegetation may be considered as having more in common with that of the Atlantic than with the coasts of the Mediterranean. Link thus pictures the climate of Portugal, and its effects upon vegetation:—"A heat, equal to 96° of Fahrenheit, is not uncommon in this country; and, from comparative observations, it appears that the climate is warmer here than in Brazil, though the heat does not continue near so long. From Midsummer-day to the middle of September, rain is extremely uncommon, and even in the beginning of that month very scanty; the drought often continues much longer. Immediately after the first rains follow the autumnal flowers, the Meadow Saffron (*Colchica,* two species but little known); Saffron (*Crocus sativus*); the Autumnal Snowdrop (*Leucojum autumnale*); the sweet-smelling Ranunculus bullatus, and many others. These appear in the higher lands around Cintra, where the rains are earlier than in the low parts near Lisbon. Immediately after the autumnal flowers come the spring plants, owing to which the interval between spring and autumn is scarcely perceptible. In October the young grass springs up, and the new leaves shoot out, rendering it the pleasantest month of the year. In November and December fall heavy rains, with frequent storms. Days of perpetual silent rain are very rare, for in general it comes down in torrents. The brooks round Lisbon, which it was a little while before easy to step over, and which wholly disappear in summer, now rush like torrents down the hills. This swelling of the streams renders travelling difficult at that season, and would retard the operations of war as much in winter as the drought in summer. In January, cold, clear weather often prevails, but becomes milder in February, which is generally a very pleasant month.

2437. *The most common vegetables of the plains of Spain* are the Cork tree (*fig.* 259.), the Ilex, and Kermes Oak (*fig.* 260.), the Bay tree, the Myrtle, the Phillyrea media and angustifolia, Juniperus Sabina, Celtis australis, Pistacia Terebinthus and Lentiscus; Rhamnus Alaternus, and many other species of this genus; Viburnum Tinus, Osyris alba, Paliurus australis, the Strawberry tree, the common and shrubby Jessamines, the Caper plant, and a great number of Cisti (*fig.* 261.) with other shrubs, whose foliage is of an evergreen and coriaceous nature. Immense plains are clothed with Lygeum Spartum, and the running streams are bordered with Bupleurum spinosum and Nerium Oleander.

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CORK TREE.

260

KERMES OAK.

261

CISTUS.

262

CHESTNUT.

2438. *But it has been justly remarked*, that no country in Europe presents a more sorrowful aspect than the interior of the Peninsula. " No man, perhaps, saving a botanist," says Link, " could travel with any pleasure in the barren tracts of Old Castile; but this pursuit can render travelling both instructive and interesting, even in these, apparently, sterile wastes. Where forests have existed there, they have yielded to the stroke of the axe; and the naked soil remains without any culture. Vast chains of mountains spread out in all directions, and between them are extended the Parameras, more or less elevated plains, frequently as naked as the steppes of Siberia." M. Bory estimates at from 1800 to 2000 feet the elevation of the Paramera which divides the sources of the Douro and the Ebro. In the valleys formed by these rivers and their tributary streams, a vegetation of great beauty is found, partaking of that in the more temperate climates of the north. Here are seen small fields of Maize, and even of Rye and Barley, more rarely of Wheat, surrounded by lofty Oaks, Chestnuts, and Poplars, every tree supporting a Vine, which spreads over it and not unfrequently reaches to the very summit of the highest Oaks; while a cool refreshing shade usually abounds, adorning a cultivated populous country, every valley resembling a fairy land, enclosed between dark and rocky mountains.

2439. *The great mass of the forests* which have escaped destruction are mostly formed of Evergreen Oaks; among which, besides the other species already enumerated, are found the Quercus Ballota, ægilopifolia, faginea, prasina, crenata, rotundifolia, humilis, &c. The latter does not exceed six inches in height. In the valleys and on the mountains also, grow Tilia europæa (*platyphyllos?*) Fagus sylvatica, Castanea vesca (*fig.* 262.), Taxus baccata, Pinus sylvestris, Fraxinus, Ornus, &c. The commonest forest tree on the plains of the temperate zone, namely the Oak (*Quercus Robur*), inhabits the southern slope of the Pyrenees. It is said that this tree occurs also in some other parts of the Peninsula, and we are the more inclined to credit it, because the learned and accurate M. Desfontaines has ascertained its existence on the chain of the Atlas.

2440. *The vegetation which prevails* on the lofty mountains in the interior of Spain is almost wholly unknown to us. M. Ramond has made some interesting observations on that of the Pic du Midi, one of the highest of the Pyrenees; and has compared the plants of its most elevated summit, estimated at about 10,000 feet, with that of Melville Island, as described by Mr. R. Brown. The similarity is very striking.

SUMMIT OF THE PIC DU MIDI.			MELVILLE ISLAND.		
Cryptogamia.			*Cryptogamia.*		
Fungi	0		Fungi	2	
Lichens	51		Lichens	15	
Hepaticæ	1		Hepaticæ	2	
Mosses	6		Mosses	30	
Ferns	4		Ferns	0	
		— 62			— 49
Phænogamous.			*Phænogamous.*		
Cyperaceæ	3		Cyperaceæ	4	
Grasses	7		Grasses	14	
Junci	0		Junci	2	
Polygoneæ	1		Polygoneæ	2	
Plantagineæ	1				
Plumbagineæ	1				
Lysimachiæ	4				
Pedicularinæ	3				
Labiatæ	1				
Scrophularinæ	1		Scrophularinæ	1	
Borragineæ	1				
			Ericeæ	1	
Gentianeæ	2				
Campanulaceæ	1		Campanulaceæ	1	
Cichoraceæ	3		Cichoraceæ	1	
Corymbiferæ	10		Corymbiferæ	4	
Rubiaceæ	2				
			Ranunculaceæ	5	
Papaveraceæ	1		Papaveraceæ	1	
Cruciferæ	6		Cruciferæ	9	
Caryophylleæ	6		Caryophylleæ	5	
Ficoideæ	4				
Saxifrageæ	4		Saxifrageæ	10	
Rosaceæ	4		Rosaceæ	4	
Leguminosæ	4		Leguminosæ	2	
Amentaceæ	1		Amentaceæ	1	
		— 71			— 67
		133			116

Of these, eight of the Melville Island *lichens* and one of its *mosses* are found on the summit of the Pic du Midi; five others of the lichens, and one out of its two *hepaticæ*, and six of its mosses grow on the crags of the peak, or in its immediate vicinity.

Subsect. 3. *Zoology.*

2441. *The native zoology* has been so little investigated, that nothing beyond a meagre list could be furnished of indigenous animals. In the mountains of Asturias the Ibex is not uncommon, and the Alpine Squirrel (*Sciurus alpinus*) is only found in the Pyrenees. In the southern parts, bordering on the African shore, a few species of warblers have recently been found, which are as yet unknown to the rest of Europe. The European Bee-eater (*fig.* 263.) frequents the vicinity of Gibraltar in large flocks during the season of migration.

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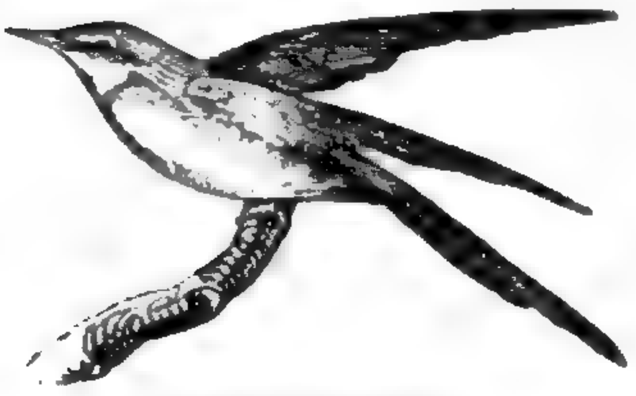

European Bee Eater.

2442. *Among the domesticated animals*, the horse and sheep of Spain deserve particular notice, as having been long celebrated throughout Europe. The best horses are generally about four feet six or eight inches high; they have all the fire, docility, grace, and action of the beautiful Arabians of Barbary (generally called Barbs), and there can be no doubt of these noble animals having been introduced by the Moors, and crossed with the native breed: those of Andalusia, Granada, and Estremadura are the most distinguished. At Xeres are found two perfectly distinct races; the one, which possesses the fine qualities above mentioned, is still preserved in all its purity at the Chartreux. The other race is larger, stronger, less elegant, and used for common purposes. Latterly but little care has been bestowed in keeping up the more noble breed, so that fine horses are not so common in Spain as formerly.

2443. *The mule*, in so mountainous a country, is particularly useful, and, with the ass, is principally used for conveying goods in the interior; the breeds of the latter are very fine, and are hardly excelled by those of Egypt. Spain is still famous for its merino race of sheep (*fig.* 264.). The flocks are kept constantly travelling during the greater part of the summer, but are carefully pent up in winter. This race, subdivided into breeds, is extended over the greater part of Spain; but those of *Cavage*, and *Negrate* are the best. A third breed, the *Souan*, appears more hardy, and passes the winter in Estremadura, Andalusia, and New Castile: these three constitute the *Transhumante*, or travelling race, to distinguish them from the *Estantes*, or those of a somewhat inferior breed, who do not migrate. The best fleeces are those which appear almost black on their surface, caused by the dust adhering to the peculiar greasy pile; for it is invariably found that such fleeces are of the purest white beneath. The merinos, dispersed by George III. over England, have incalculably improved our own races. By great care and expense on the part of the native graziers, this valuable race has likewise been introduced in the distant regions of Australia with equal success. There is a very large breed of oxen in the country round Salamanca; but the cattle of Spain have been much neglected; the mountaineers deriving all their milk and butter from goats. The spaniel appears to be a breed of dogs originating from this country; and the Spanish pointer is considered to have a greater acuteness of scent than that of Britain.

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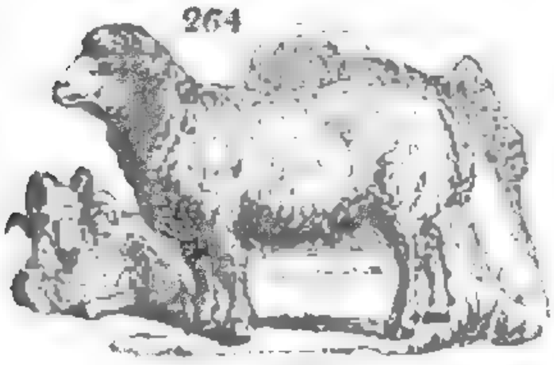

Merino Sheep.

Sect. III. *Historical Geography.*

2444. *The earliest inhabitants of Spain*, like those of Gaul and Britain, were of the Celtic race, and from the river Ebro (Iberus) were called Celtiberi. The whole country was by the Greeks called Iberia, and sometimes, from its western position, Hesperia. The people, like those of the rest of Europe, were divided into a number of small tribes, hardy and warlike, who often showed a peculiar attachment to national independence, and obstinacy in its defence.

2445. *The Carthaginians* were the first civilised people who occupied Spain, which, for several centuries, was considered as theirs. They founded colonies on the most advantageous points, worked its rich silver mines, and easily allured many of its brave but poor inhabitants into their mercenary armies; they were far, however, from having thoroughly subdued the Peninsula, the people of which, on the rise of the Roman power, endeavoured by its alliance to emancipate themselves from the Punic yoke. The siege and fall of Saguntum seemed to have extinguished these hopes, and to have secured the ascendency of Carthage; but the events which marked the close of the second Punic war completely humbled that proud republic, and put an end to its dominion over Spain.

2446. *The Romans*, by the capture of Numantia in B. C. 134, established their supremacy over Spain, undisputed by any other nation; but the complete subjugation of its inhabitants was a long and arduous task, to which the utmost exertions of Cæsar and his lieutenants were not fully adequate. Spain, however, was at length reduced to a province, divided by Augustus into three parts:—Tarraconensis, the north and east; Bætica, the south; and Lusitania, Portugal. The Spaniards even became civilised and peaceable subjects; so that when Rome, sinking under its own weight, was unable to defend them, they could not resume their early independence, but fell a prey to the Vandals, Goths, and other barbarous hordes that poured in from the north of Europe.

2447. *The Goths*, in this terrible struggle, finally prevailed; and in 418 a Gothic dynasty was fully established over Spain. These barbarous invaders appear here, as elsewhere, to have expelled or extirpated the native people, whose features and language are recognised only in some of the higher mountain districts. After a sway of three centuries, the Goths were destined to yield to a new people, coming from a remote quarter.

2448. *The Arabs*, rendered invincible by fanaticism, had over-run all the north of Africa, and established a powerful kingdom in Fez. The vengeance of Count Julian invited them over, and opened the way for them; their immense host covered the plains of Andalusia; Roderick, the Gothic king, was totally defeated. The invaders then over-ran the whole kingdom, with the exception of some mountain recesses, in which a remnant of the Gothic chiefs found shelter; they even passed the Pyrenees, and seemed about to over-run all western Europe. But Charles Martel met them on the plains of Aquitaine; and, after a dreadful battle of three days, they were signally overthrown, and never again attempted to pass the Spanish frontier. Meantime Don Pelayo, and other chiefs of the Gothic race, again raised the national standard in the mountains of the Asturias: then commenced a contest of 700 years, distinguished by numerous heroic achievements and memorable events, which gave to the Spanish character that romantic and adventurous cast which it has never wholly lost. The Arabs or Moors still retained the finest provinces, and the courts of Cordova and Granada were the most splendid and polished in Europe. The Spaniards, however, under a succession of able chiefs, and particularly of their great hero the Cid, gained ground: new kingdoms were successively founded; which all merging into those of Castile and Aragon, comprehended the whole of Spain, except the extreme southern kingdom of Granada.

2449. *Spain was again formed into one great kingdom* by the union of the crowns of Castile and Aragon, under Ferdinand and Isabella, in 1474, and by the final overthrow and expulsion of the Moors. From this period commences the most brilliant era of her annals. The discovery of America, the conquest of the golden regions of Mexico and Peru, and of other dominions so extensive as to make it a plausible boast that the sun never set on them, threw an almost unrivalled lustre around the Spanish crown. Under Charles V. and Philip II., Spain continued the most powerful kingdom, and her armies the most formidable, of any in Europe. The throne derived even an addition of apparent lustre from the subversion of the popular part of the government, and the conversion of a body of grandees, once the proudest in Europe, to the condition of humble vassals.

2450. *The decline of Spain*, though its causes had begun to operate, did not become perceptible till after the death of Philip II. A gloomy indolence and degrading superstition now marked her councils; her armies were vanquished by the French under Condé and Turenne; she lost her place and rank in Europe. The trade with her vast colonies, fettered by absurd restrictions, became profitable only to the industrious nations which supplied its materials. The war of the succession drew notice towards this country, and called forth some displays of national energy; but the Bourbon dynasty, which it placed on the throne, soon relapsed into the characteristic indolence, and Spain became little more than a dependency of France. We know not whether to designate as an era, the train of remarkable events which have occurred between 1808 and 1822. The Spaniards excited the admiration and astonishment of Europe by their daring defiance of the power beneath which the greatest sovereigns had been reduced to the rank of vassals. Their subsequent exploits did not altogether correspond to this beginning. Still, their resistance, considered as that of a people, was, on the whole, obstinate and glorious; it even appeared that there had been formed a body attached to popular government, and eager to redress the political grievances under which Spain laboured. Ultimately, however, the eagerness with which the majority of the nation acquiesced in the system of absolute power, re-established by foreign interference, tarnished its honour, and reduced it again to that imbecile and degraded state in which it had existed for several centuries.

SECT. IV. *Political Geography.*

2451. *The constitution of Spain* ever since the downfall, of her liberties under Charles V. has been the most despotic of any in Europe, except Russia and Turkey. The Cortes, that powerful assembly, whose privileges were greater than those of any other European representative body, have since that period been rarely assembled, and then only partially, on occasions of mere form. The only two bodies which possess any influence, are the council of state and the council of Castile; but as these are entirely under the appointment and direction of the monarch, they form little more of a check upon absolute power, than the Turkish divan.

2452. *Two attempts to restore a representative form of government* have lately been made, under circumstances which must be familiar to our readers. Unluckily, the leading or liberal party were hurried, on this occasion, into an opposite extreme; adopting the system of universal suffrage, forming themselves into one house, and allowing only a temporary veto to the monarch. This system, which excluded the nobles and clergy, the most wealthy and influential bodies, was from the first decidedly unpopular; and Ferdinand found it easy, first without, and afterwards with, foreign aid, to subvert it, and to re-establish in full plenitude the despotic sway exercised by his predecessors.

2453. *The grandees and other privileged orders* in Spain are distinguished for their pride beyond any others in Europe. Even Charles V. was baffled in his attempt to retrench the right of wearing the hat in the royal presence. The Spanish nobles impair their fortunes less by extravagance than those of the same rank elsewhere; and as they intermarry only with each other, the number of titles, or *hats*, as they are called, continually accumulates upon single heads. The dukes of Medina-Celi, of Alba, of Infantado, of San Estevan, of Ossuna, and some others, hold possessions truly immense, covering whole provinces. They are administered, indeed, in the worst possible manner, being kept in their own hands, managed by tribes of factors or intendants, of whom some nobles keep 300; so that it is truly astonishing that they should sometimes yield 50,000*l.* or 80,000*l.* a year. As these grandees, however, live not on their estates, but in the cities, in secluded pomp, they have lost all their feudal influence, and the ties which united them with the greater body of the people. The *hidalgos*, claiming nobility by descent from the members of great families, are much more numerous, and form, in some provinces, a large proportion of the inhabitants. They are often reduced to great poverty; in which they display that union of pride and indolence which has been supposed characteristic of the Spaniard. Mr. White mentions a species of illustrious birth quite peculiar to this country, consisting in a pure Christian descent, without any mixture of Jewish or Moorish blood, which last is supposed to produce so deep a stain, that no time can efface it. The clergy, moreover, exercise a paramount influence over the minds particularly of the lower orders, and have been the main spring in all the movements, good or bad, which for a long time past have taken place in the Peninsula.

2454. *The revenue* of Spain, though levied with little regard to the comfort and well-being of the subject, has never risen to any great amount. Yet she is the only power which ever derived any from her colonies; as the *quinta*, or royal fifth, of the mines of Mexico and Peru, after every deduction, brought home considerable treasure: but this source of wealth is now withdrawn. The other taxes were the most ruinous to industry and trade ever contrived by any government. The alcavala, or impost upon each transference of commodities from one hand to another, seems expressly destined to impose fetters upon commerce; while the royal monopolies of salt, lead, powder, tobacco, and other articles in general use, have the usual pernicious effects. Combined with those prohibitory clauses, by which Spain endeavoured without success to prevent her industrious neighbours from supplying the wants of her American colonies, they gave rise to a vast contraband, carried on in almost open defiance of government. Hence the taxation of Spain, though highly oppressive to the nation, yields very little to the crown; being in a great measure absorbed by the support of the individuals employed in its collection, who are said to amount to 16,650. Although, therefore, the entire sum taken from the people has been suspected not to fall short of 12,000,000*l.* sterling, the receipt by government in 1828 did not exceed 5,980,000*l.* The expenditure in that year was for the army, 2,650,000*l.*; navy, 400,000*l.*; marine, 1,445,000*l.*; justice, 145,000*l.*; state, 108,000*l.*; royal household, 505,000*l.* At the same time, Spain is burdened with a debt of 160,000,000*l.* sterling, of which the revenue would be wholly inadequate to defray the interest, had not more than half consisted of the *royal vales*, which do not bear any. Under the constitutional government a considerable addition of debt was incurred, which, however, Ferdinand has cleared off by refusing to acknowledge it; while he himself has vainly attempted to raise a loan to any amount.

2455. *The navy*, at the commencement of the late war, was at least respectable, and a formidable auxiliary to France. The fatal days of St. Vincent and Trafalgar, and the fruitless expeditions to South America, have reduced it to absolutely nothing. In 1823, there was only a single ship of the line, the Asia, which, being sent out to South America, surrendered to the Peruvian government.

2456. *The army of Spain*, which, under Charles V. and Philip, was the bravest and most formidable in Europe, has for a century and a half enabled her to rank very low among military nations. It is, however, at present the best organised part of her establishment. According to the author of "A Year in Spain," it consists of 25,000 royal guards, and 55,000 troops of the line and provincial militia, which, being commanded by experienced officers, formed during a period of protracted warfare, possess a considerable degree of efficiency; and their discontent being an object of dread, every effort is made to pay them regularly. The royalist volunteers, amounting to about 300,000 men, form a band of armed fanatics almost entirely under the command of the priests and monks, and seeking in their favour to lord it both over king and people.

Sect. V. *Productive Industry.*

2457. *In respect to industry and wealth*, Spain, which had every opportunity within and without of becoming the foremost nation of Europe, is, in fact, the poorest and the most uncultivated. The insecurity of property, and the multiplied restraints imposed by an unenlightened government, appear to be the main causes which have paralysed all branches of industry. The furious bigotry of its monarchs, in particular, led to the most suicidal acts against the public weal. At the commencement of the fifteenth century, the country contained a numerous population of Jews and Moors, who formed its most industrious and wealthy inhabitants, and rendered it the most flourishing kingdom in Europe. The Jews, unless in the alternative of feigned conversion, were expelled from the kingdom by Ferdinand and Isabella, the Moors by Philip III. Although it appears to be upon exaggerated estimates that Spain has ever been supposed to have previously contained 20,000,000 of people, yet it cannot be doubted that the emigration of mercantile communities, with their capital and machinery, must have struck deeply at the root of the national prosperity.

2458. *Spanish agriculture*, it must be confessed, has some obstacles to struggle against. The territory, as we have had occasion to observe, is traversed in every direction by chains of rugged, and often barren, mountains. Yet these elevated provinces being the seats of comparative liberty and industry, are, on the whole, the best cultivated and the most populous. The great extent and continuity of these chains certainly present serious difficulties to the transport of grain. When government were bringing a supply from Old Castile to the capital, it was found that 30,000 beasts of burden were necessary to convey 2000 quarters. Another great impediment to effective agriculture consists in the habit, partly oriental, partly formed during a long internal warfare, which leads the farmers to crowd into towns, and thus live often at many miles' distance from the fields which they cultivate. In many cases they merely pitch their tents during seed-time and harvest, and at other seasons pay only occasional visits. They are also very poor, destitute of capital, and oppressed by the burden of tithes and other exactions.

2459. *The grain* produced in Spain is of admirable quality; the wheat of Andalusia bearing a price ten or fifteen per cent. higher than that of any foreign wheat brought to the markets of Cadiz. But a deplorable defect appears, when it is stated that Spain, a country purely agricultural, does not grow corn for her own use, but makes a regular importation. This, however, according to Bourgoing, amounts only to 2,000,000 fanegas or 400,000 quarters; a small proportion of the entire consumption, which may be estimated at 12,000,000 of quarters. The agriculture of Spain, however, produces three valuable articles; wool, wine, and barilla.

2460. *The wool of the merino* is of almost unrivalled fineness, though dearly purchased by the system upon which it is produced. Vast flocks, amounting to 20,000, 30,000, or even 60,000, belong to the grandees, convents, and dignitaries of Spain. After being pastured, during summer, on the sides of the mountains of Leon and Old Castile, they descend, in winter, chiefly to the plains of Estremadura. According to the rules of the powerful society of the *mesta*, composed of the above high members, they must pass freely, and be allowed, on payment of a very inadequate rent, to pasture upon all the unenclosed lands, which form the bulk of those in Spain. The entire number of sheep in all these wandering flocks is reckoned at 5,000,000; and there are a great number which remain stationary, and enjoy privileges nearly similar. The annual shearing takes place on a great scale, and with much celebration; and the wool is carefully sorted into three kinds, according to the part of the body from which it is taken.

2461. *The wines* of Spain are produced on the fine plains of the southern provinces. The most important is the Xeres, or sherry, which has come into such general use with the English nation. Mr. Jacob reckons that 40,000 pipes are produced in the plain of Xeres; of which 15,000 are exported, almost the whole to England. Around Malaga is made wine still more valued, though not in such quantity; which when white is called *mountain*, when red, *tent* (tinto). The northern and central provinces yield wine only of inferior value.

2462. *Barilla*, the finest known species of ashes, and highly useful in glass-making, bleaching, and other processes, is procured by burning various species of saline and aromatic plants in the provinces of Murcia and Valencia, and is one of the few articles which other nations can nowhere else procure of equally good quality. Silk and oil, in the Mediterranean provinces, are only limited by the want of culture or demand.

2463. *The manufactures of Spain* have been of little importance since the expulsion of the Moors. That industrious people introduced the silk manufacture; a branch entirely suited to a country where the material is produced in the greatest perfection; but it is now generally decayed, unless in Valencia, where it was supposed lately to employ 3000 people. The blades of Toledo were once famous over Europe, and the city has still a royal manufactory of swords, though of little importance. The Spanish government has devoted rather an extraordinary attention to manufactures, but unfortunately seeks to promote them by the king becoming himself the producer. He has established a great fabric of broad cloth at Guadalaxara, which, having fine materials at hand, is rather thriving. Yet Spain does not supply herself with fine cloth. Other royal works are those of porcelain, at San Ildefonso; paper, in Segovia; cards and tapestry, at Madrid: all rather for show than use.

2464. *Commerce*, for which Spain seemed to have monopolised the most extensive materials, has long been in a state, at least, as low and depressed as any other branch. It has suffered severely, indeed, from the immense importance attached to it by the government, which actually crushed it to pieces in the attempt to prevent any portion from escaping. To absorb within their own circle the entire treasures of Mexico and Peru, was the first policy of the Spanish sovereigns. The gold and silver of those regions were to be brought exclusively to Spain, never to be taken out of it, and only the produce and manufactures of that country to be sent in exchange. By a sad fatality, the commerce of the colonies was carried on almost entirely by French and English merchants; nearly all the goods exported thither were foreign; and Spain, of all her neighbours, was the most destitute of the wealth accruing from this trade. These colonies, with the exception of Cuba and the Philippines, are now gone, and with them the greatness of Cadiz, which, by the absurd monopoly granted to her, became one of the principal emporia of Europe. The trade of Spain consists now in the export of wines, fruits, brandies, wool, silk raw and manufactured, lead, quicksilver, barilla, and a few other articles, which, according to a very imperfect document, issued by the Spanish government, amounted at 1826 to about 1,584,000*l.* Of this, 241,000*l.* was stated to be to the colonies. Her imports consist of sugar, cocoa, salt fish, spices, wood, rice, butter and cheese, hides, cotton wool, and almost every species of manufactured commodity. They are stated for the same year at about 3,267,000*l.*, of which 724,000*l.* was from the colonies.

2465. *Internal communication* is a particular in which Spain actually labours under natural disadvantages, from the obstructed navigation of its rivers, and its long and steep chains of mountains. These obstacles the government has endeavoured to surmount by vast but ill-executed projects of improvement. They had conceived the plan of a grand canal, which, passing through Asturias, Old Castile, and Aragon, might join the Mediterranean with the Bay of Biscay. Of this mighty undertaking only two small portions exist; the canal of Aragon, running parallel to the Ebro from Saragossa, and that of Old Castile along the Pisuerga and Carrion by Placencia; but as neither of them makes any approach to the sea, their benefit is very limited. The main roads maintained by government between Madrid and the other great cities are good, and the mails well conducted; but most of the other communications are mere tracks worn by the feet of mules, which are chiefly employed in the conveyance of goods.

Sect. VI. *Civil and Social State.*

2466. *The population of Spain*, according to a census made in 1798, amounted to 10,351,000. It was generally understood, however, that the jealousy of the people, and all the obstacles usually encountered in such undertakings, operated to a peculiar extent in diminishing the amount. The census, in 1787-8, gave only 10,268,000, of which 188,600 were churchmen; and among these, 61,000 were monks, and 32,500 nuns. There were 480,000 hidalgos; 34,000 merchants; 40,000 manufacturers; 271,000 artisans; 907,000 peasants, 960,000 day-labourers; 280,000 domestic male servants. A census was undertaken in 1826, which was not fully completed, but carried so far as to prove that the number of inhabitants must be considerably greater than the above: it is estimated by Minano at 13,732,000; by Hassel at 13,953,000.

2467. *The national character* of the Spaniard is marked by striking features. The genuine Spaniard is grave, proud, adventurous, romantic, honourable, and generous. It has been insinuated that this is the Spaniard of the fifteenth century, of whom the Spaniard of the present day is only as it were the shadow. But though the higher ranks have certainly lost the original stamp, and become frivolous and dissipated, the body of the people, and especially the peasantry, form a very fine race. Even among the former, the late troubles brought forward signal displays of heroism, though, as too often happens in such cases, equally base examples of treachery. In the virtue and wisdom of the best Spaniards, there is apt to be something speculative and theoretical, not applicable to the practical purposes of life; a want of the wisdom of action. In prosperous circumstances they readily give way to supineness and false confidence; but in sudden and overwhelming vicissitudes, which sink the spirit of others, their latent energies are roused, and they display unexpected and surprising resources. Although assassination, which was once the reproach of Spain, is greatly diminished, yet a promptitude to fight and to shed blood, characteristic of all nations imperfectly civilised, is still prevalent. It is accompanied with a readiness to rise in tumultuary insurrections, and an unwillingness to submit to the restraints of discipline. The jealousy which was wont to dwell so deep and dark in the mind of the Spanish husband, has been superseded by a general laxity of morals. The custom is said to provail, that every married lady should have a *cortejo* or gallant, corresponding to the Italian *cicisbeo;* and though the usage may not be so decidedly criminal as it appears to strangers, it is certainly inconsistent with those habits and feelings which form the felicity of the matrimonial state. In this singular relation fixed rules are observed, and a certain fidelity is exacted; the jealousy of the husband is assumed by the *cortejo;* and the lady who changes, at least with any frequency, this object of attachment, loses *caste* in the eyes of the public.

2468. *The religious state of Spain* need only be mentioned to suggest the dark and gloomy features by which it is marked. That bigotry and superstition which the Romish faith contracted during ages of darkness, and which in all other countries is so much abated, retains nearly its full force in Spain. The Inquisition, that frightful tribunal, the disgrace of modern Europe, which here held its central seat, kept alive its fires against all who exercised their reason on a subject connected with the national faith. The order of Jesuits, who have been called the militia of the Romish church, originated also in this country. The Inquisition perished in the late struggle; yet a numerous body still call aloud for its re-establishment; and the most liberal rulers, whom the revolution raised to power, durst not attempt any approach to toleration, or to trench upon the "catholic religion one and indivisible." This spirit of bigotry and superstition is deeply diffused through the nation, who, if they no longer demand that heretics shall be committed to the flames, never doubt at least of the future tortures to which they are destined. All the childish and absurd customs which marked its prevalence during the dark ages, are preserved nearly unaltered; the processions and exhibitions, in which the events of sacred history are represented, often in a familiar and ludicrous manner; the endless festivals, which impoverish the nation, and favour its natural indolence; and the zeal of multitudes, who are induced by mistaken piety to withdraw themselves from their families and the world. Mr. Blanco White has given a striking account of the artifices by which the young female is led to make the irrevocable sacrifice; the respect and importance attached to her during the period of noviciate; the ceremonies, which resemble those of marriage, even the name of bride being given to her; and the disgrace attached to a retractation. Yet it appears evident, from the same author, that this profession is often deeply sincere; that it aids in producing that strong moral feeling which prevails throughout the nation; that many are even tormented by minute conscientious scruples; and that, with such persons, absolution, founded on false pretensions to penitence, is considered as aggravating the guilt. At the same time, there is a combination of deep devotion and dissolute conduct, which not only rapidly succeed, but actually coexist, in a manner never seen in any protestant society. It may be observed, that amid this thick darkness which covers the nation, a body of men has lately arisen, of active and enquiring minds, who have discerned the errors of the national creed, and have passed to the opposite extreme. They are comparatively small in number, however; and, as already observed, even in their greatest triumph, although they considerably reduced the conventual establishments of Spain, they never durst attempt to introduce the toleration of any form of worship different from the catholic.

2469. *Spanish literature*, during the era of the national glory, supported itself at least on a level with that of any other nation in Europe. Spain had, as it were, a literature to itself, scarcely any of the productions of which, if we except the inimitable satire of Cervantes, became familiar to the rest of Europe. During the middle age, she was rich in chivalric romance, the taste for which, however, was banished by the appearance of Don Quixote, a change which some lament, as having led to the decline of the national spirit. The poetry of Spain, roused by so many vicissitudes of internal revolution and transmarine triumph, took a somewhat lofty flight. The *Araucana* of Ercilla, celebrating her conquests in the New World, is named together, though not on a level, with the best modern epics. Garcilasso de la Vega, Villegas, Mendoza, and others, chiefly officers in the army of Charles V., introduced a style formed on the Italian model; and, having the advantage of a noble and sonorous language, worked up their verses to the highest polish. But it is in the drama that the Spaniards have been chiefly distinguished. Lope de Vega and Calderon, indeed, construct their plots with an entire disregard of the unities, filled with extravagant incidents, and strained and artificial sentiments. But they display an inexhaustible fertility of invention, and often strong traits of character; so that, though they never could be transferred entire to any other stage, they furnished useful hints both to the French and English dramatists. Mariana's History of Spain ranks among classical productions; while Herrera and Solis, though of inferior merit, have produced valuable histories of the Spanish transactions in the New World. To Don Antonio de Solis the Spaniards are willing to ascribe that inimitable satire on human character and manners, Gil Blas, which must, they say, have been written by a Spaniard and a courtier. As such, he might rejoice that it had amply fulfilled his intentions without compromising his security, and could very well afford to dispense with the fame which redounded to its reputed author, Le Sage. These writers belong to the classic age of Spain, which nearly expired with the seventeenth century; but of late the intellectual spirit which has spread so actively throughout Europe, has penetrated into Spain, and made vigorous struggles against the night of ignorance and prejudice in which that country was involved. Campo-manes, Ustariz, Jovellanos, and Arguelles, have endeavoured to trace the causes which have paralysed Spanish industry, and to discover the means of reviving it; Feyjoò has done much to rouse a spirit of reflection; Yriarte, Isla, and Melendez Valdez have produced agreeable miscellaneous writings; and Moratin has adopted a more regular drama, formed on the French model. There are extensive public libraries; one, the royal library in Madrid, consisting of 130,000 volumes, with valuable manuscripts, and a rich collection of medals; and others in the great provincial towns; but the prevalence of monkish legends, and the prohibition of many of the most important standard works, greatly limit their value. The universities are numerous, and that of Salamanca once perhaps the most celebrated in Europe; but education being conducted upon obsolete and scholastic principles, and impregnated with the national bigotry, they have long ceased to attract students from any place out of Spain. Some of the younger members were supposed to have embraced novel ideas in regard to religion and government; whence they have become objects of jealousy to the government, which will probably be little anxious to rescue them from that decay into which they were thrown by the events of the revolution.

2470. *The fine arts*, especially painting, could boast in Spain of a distinguished school, marked by features strikingly national and original. It is characterised by depth, force, great truth of nature, and a warm expression of devotional feeling. Murillo, Ribeira (self-named Spagnoletto), and Velasquez, are those alone whose works are diffused throughout Europe; but by those who have visited Spain, Cano, Juanes, Ribalta, and Morales are mentioned in terms of equal praise. The Escurial and other royal palaces are likewise adorned by some of the finest pieces of Raphael, Titian, and Rubens. This taste seems to have declined with that of literature; and Townshend observed that the nobles set little value on the magnificent collections with which their palaces were adorned. Of late the efforts to revive painting have been considerable, but without producing any artists of much celebrity. The Spaniards are fond of music, but delight rather in detached airs for the serenade and ball, than in that higher class in which the Italians and Germans excel. The guitar (*fig.* 265.) as an accompaniment for song, and the castanets for the national dance, are characteristic Spanish instruments.

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THE GUITAR.

2471. *The Spaniards have favourite and peculiar diversions.* They are most passionately attached to the bull-fight: a large space is enclosed, sometimes the great square of the city, around which the people sit as in an amphitheatre. The bull, being introduced, is first attacked by the *picadores*, or horsemen armed with spears; a desperate conflict ensues; the horse is frequently killed, or overturned with his rider, when persons on foot run in, and distract the animal, by holding up different kinds of coloured stuffs. He is next attacked by *banderilleros*, or footmen armed with arrows; and not only their skill, but their dexterity in escape, are the subjects of admiration: at last, when the animal is completely covered with wounds, the *matador* or slayer appears, and closes the scene. Tumultuous applause or hissing from the populace accompanies every part of this savage performance, according to the respective merits of the bull or his assailants. The comparative excellence of different matadores becomes often a party question, and the subject of keenly agitated discussion in the circles of Madrid. Wounds frequently, and death sometimes, are the result to the actors in this exhibition, for whose benefit a priest with holy water is in regular attendance. Not less is the fondness for the dance, particularly under its national forms of the *fandango* (*fig.* 266.), the *bolero*, and the *guanacho*, performed with the castanet in the hands; and the two former especially consisting chiefly in movements expressive of passion, but so little consonant to the rules of decorum, that the indulgence shown to these amusements by the church cannot but be regarded as matter of surprise.

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THE FANDANGO.

2472. *The dress of the Spaniards* is antique, and varies much according to the different provinces; that of the ladies consists chiefly of a petticoat and a large mantilla or veil, covering the upper part of the person. The grandees, and the opulent in general, display a profusion of jewels; the dress of the men is slight, and closely fitted to the body, with the exception of a loose cloak thrown over the whole. The minister, Squillace, under Charles III., having conceived that these cloaks, by concealing the person, served as a cover to deeds of violence, stationed persons at the corners of the streets, who seized the passengers, and forcibly cut down this part of their dress to the legal dimensions; but this measure raised so violent and general a clamour, that the king was forced to appease it by the sacrifice of the minister who had attempted such an obnoxious curtailment.

2473. *Both in eating and drinking* the Spaniards are temperate; the only noted national dish is the *olla podrida*, in which various meats, vegetables, and herbs are mixed together in a manner which even foreigners admit to be palatable. The pleasures of society are chiefly sought at *tertulias*, or evening parties, where only slight refreshment is presented; but *refrescos* or dinner parties are given on a large scale upon very special occasions.

Sect. VII. *Local Geography.*

2474. *Of the divisions of Spain*, the most prominent is into kingdoms or principalities, each of which, at some period of its eventful history, enjoyed an independent existence, though they are now merged into one monarchy. More recently the country has been split into a number of smaller departments or jurisdictions; but the original distinction into kingdoms, being founded upon natural limits, and maintained by feelings and impressions derived from former independence, is still the most interesting. The kingdoms are New Castile, Estremadura, Old Castile, Leon, Galicia, Asturias, Biscay, Navarre, Catalonia, Aragon, Valencia, Murcia, Granada, and Andalusia.

2475. *The following table* exhibits the divisions and subdivisions of Spain, with the extent and population of each, according to Hassel: —

		Square Leagues.	Population.			Square Leagues.	Population.
New Castile	Madrid	110	298,000	Asturias		3062	565,000
	Toledo	734	485,000	Galicia		1330	1,585,000
	Guadalaxara	163	153,000	Catalonia		1003	1,116,000
	Cuença	945	362,000	Navarre		205	288,000
	La Mancha	631	257,000	Biscay	Biscay	106	145,000
Estremadura		1199	556,000		Guipuscoa	52	136,000
Old Castile	Burgos	642	612,000		Alava	902	93,000
	Soria	341	267,000	Aragon		12,322	856,000
	Segovia	290	221,000	Valencia		643	1,255,000
	Avila	215	153,000	Murcia		659	493,000
Leon	Leon	493	311,000	Granada		805	1,097,000
	Palencia	145	153,000	Andalusia	Seville	752	970,000
	Toro	165	126,000		Jaen	268	277,000
	Valladolid	271	243,000		Cordova	348	325,000
	Zamora	133	93,000				
	Salamanca	471	273,000				

2476. *With New Castile*, the central and metropolitan province, we commence our survey: it consists chiefly of an extensive plain enclosed between two of the long parallel mountain ranges, the Sierra de Guadarrama and the Sierra de Toledo. Along this plain, and parallel to both ranges, the Tagus flows in a deep rocky bed. Beyond the Sierra de Toledo, the district of La Mancha, which we include also in New Castile, extends to a third parallel mountain range, the Sierra Morena, dividing it from Andalusia and the southern provinces. The plain of Castile Proper is elevated and naked; and being thus exposed to the sun's direct rays, presents a bare and parched appearance. It includes, however, fertile valleys, producing wine, oil, grain, and fruits of various kinds; but the inhabitants are extremely deficient in every species of industry.

2477. *Madrid* (*fig.* 267.), the capital of Castile, and of "all the Spains," stands on several low hills on the immense Castilian plain, which on the north appears bounded by the high distant range of the Guadarrama, but on every other side has no visible termination. A small rivulet, the Manzanares, flows past the city, and falls into the Tagus. Madrid is a superb but somewhat gloomy capital; the houses are high, well built of good stone, not defaced by

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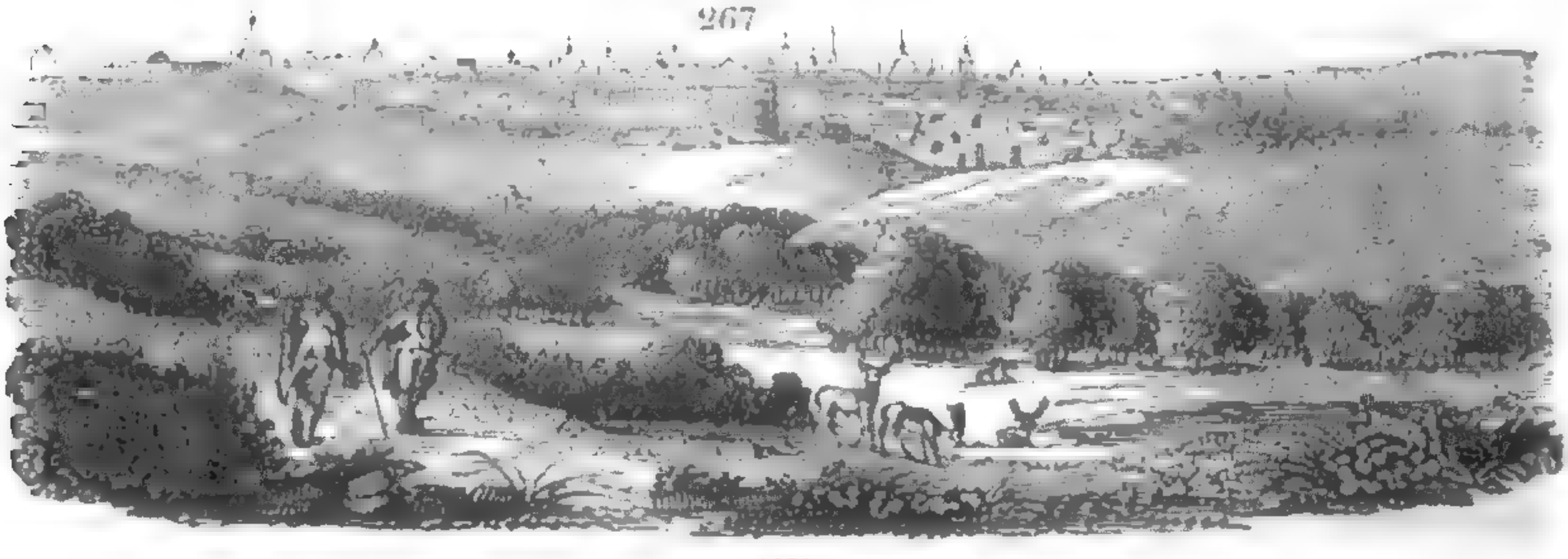

MADRID

smoke; the streets are well paved, and have broad footpaths. The main street of Alcala, long, spacious, and bordered on each side by a row of princely houses, attracts particular admiration. The Prado, a wide public walk, bordered by trees, and connected with gardens all open to the public, is equally conducive to ornament and pleasure. There are many public fountains, supplied with pure, light, and salubrious water, filtered through beds of gravel and sand, from a distance of seven or eight leagues. The gates built by Charles III., are uncommonly beautiful, particularly that of Alcala; though Mr. Semple criticises their position in a miserable wall which might be battered down by a three-pounder in half an hour. The royal palace, built by Philip V., is a spacious and magnificent structure, though the taste displayed in it is a subject of controversy. It contains numerous fine paintings, though not equalling those of the Escurial. The Retiro with its fine gardens, was defaced by the French, who made it a military post; an extensive and costly menagerie, however, is now forming within its precincts. The museum of statuary and painting, a new and elegant building, has recently been enriched with some of the finest pictures from the royal palaces. The cabinet of natural history, supported by the government, is also a handsome structure, and its contents valuable. The environs of Madrid are not remarkable for beauty; they are much broken into hills and hollows; so that, of the 200 villages situated in them, only three or four can be seen at once.

2478. *Toledo*, even in its present decay, excites an interest equal or superior to Madrid. Once the proud capital of Spain, it has a commanding site on a lofty rock, almost insulated by the Tagus. A position so strong rendered it a grand national bulwark during the long ages of internal warfare, but occasioned its desertion during peace, when it was felt as extremely inconvenient, the streets being so steep that a carriage can scarcely drive safely through them. Its manufactures of wool and silk, which are said once to have employed nearly 40,000 men, have disappeared; and government has in vain attempted to revive that of swords, of which those formerly manufactured at Toledo were valued above all others. Its population of 200,000 has been reduced to 25,000; and it presents a mere mass of narrow, deserted, winding, and dirty streets. Toledo, however, still exhibits two grand monuments; the Alcazar or palace, and the cathedral. The former is a noble and extensive pile, in a pure style of architecture, and the granite columns of the Corinthian order which adorn the inner court are particularly admired. The grand staircase and spacious gallery, no longer crowded with guards and courtiers, are now dirty, deserted, and silent. This edifice, however, though neglected and decaying, still wears a stately and imposing aspect; "and its handsome front, immense quadrangle, and elegant colonnade, declare it to have been the pride and ornament of a happier period." The cathedral is also one of the grandest edifices in the Peninsula. It was originally a mosque, built in a grand style; but its simplicity has been much impaired by tasteless additions, and by the profusion of gilding, relics, and statues, with which its interior has been filled. It retained its wealth and splendour, however, till the late war, when its treasures became the prey of the invader, and its six hundred ecclesiastics were dispersed, leaving only a few to perform the sacred functions.

2479. *Two other considerable towns* in New Castile are Guadalaxara, to the west of Madrid, where the government has established a manufacture of fine cloth on a great scale. It is of course an ill-conducted and unprofitable concern; yet it supports the population of 12,000 or 14,000 in a degree of comfort not usual in Spanish towns. To the east, Cuença is the capital of a mountain district of the same name, interposed between Valencia and the plain of Castile. It is a small ancient city, distinguished by a cathedral and some other monuments.

2480. *La Mancha*, sometimes reckoned a separate province, is the most southern part of Castile, from which it is separated by the Sierra de Toledo. It is an immense table plain, intersected by different ridges of low hills and rocks, without a tree, except a few dwarf evergreen oaks; or an enclosure, except mud walls round the villages. All this vast tract of open country is cultivated, and produces corn or vines: its wine, especially that of Val de Peñas, enjoys a high repute. Its name, however, is chiefly familiar to the public as having given an appellation to the celebrated hero of Cervantes. The names of Don Quixote and Sancho Panza are familiar to the district; and the dress of the peasantry presents still an exact model of that of the doughty squire. There are a number of large villages; and Ciudad Real, the capital, is well built in a fine plain, though it has lost much of its former prosperity. Almagro and Ocaña are also pretty considerable towns.

2481. *Estremadura* forms a continuation to the west of the same plain as New Castile, traversed like it by the Tagus, and bounded by the same ranges of mountains. It is a fine, wide, wild province, diversified by rugged mountains, deep valleys, and almost boundless plains. The depopulation generally complained of in Spain seems more remarkable here than in any other province; and vast tracts may be passed without seeing a human habitation. This seems chiefly owing to the pernicious laws of the Mesta, which assign it almost entirely for the occupation of the merino flocks, when they descend from the mountains of Leon. Estremadura, therefore, forms a vast pastoral district; only a small proportion of its surface being necessary to furnish grain for its scattered population. Yet the Romans made it one of the chief seats of their dominion; and no part of the Peninsula exhibits more striking works and monuments of that great people. The Estremenos also retain much of the antique Spanish aspect and character; and no province, during the late crisis, made more striking displays of patriotic energy.

2482. *The cities* are no longer considerable. Badajos, the capital, a strange corruption of the Roman name Pax Augusta, is a considerable and strong town, but much shattered by the successive sieges it sustained in the late war from Soult and Wellington. Merida, the ancient capital of Lusitania, excites more interest, from the striking remains which it presents of Roman magnificence. The amphitheatre, baths, a lofty triumphal arch, three votive altars, and a handsome stone bridge, are all magnificent monuments, and in wonderful preservation. Truxillo, an old city, of small extent, was the birth-place of Pizarro, whose splendid mansion is still to be seen, adorned with barbarous trophies of his conquest. Almaraz is distinguished chiefly by the very noble modern bridge adjoining to it. Talavera de la Reyna, once splendid but now decayed, has acquired recent lustre from being the theatre of one of the greatest battles fought during the peninsular war. In the extensive plain north of the Tagus are the two pleasant little cities of Coria and Placencia; the latter of which was the scene of the singular monastic retirement of Charles V. In the mountains separating this part of the province from Leon is a rocky region, of the most savage and desolate character, called the Batuecas.

2483. *Old Castile* is situated on the opposite side of the chain of mountains which forms the northern boundary of New Castile. It presents a high variegated table-land, separated on the north by the Cantabrian chain from Asturias. Some parts are rugged; but it is, upon the whole, a fertile well-watered region, traversed by the Duero in its early course. There are many tracts of rich pasturage, and others equally fitted for the growth of corn. It is, however, one of the provinces in which the marks of decay are most striking. The capitals are neglected and ruinous; large portions are left uncultivated; and of the fine manufactures of cloth from the merino wool, only a remnant is now supported by the aid of government. Castilian pride and indolence have fixed here their old and central seat: the hidalgos belonging to Old Castile amount to 146,000, a much larger proportion than in any other province.

2484. *Burgos*, the once magnificent capital of the kings of Castile, and the highest in rank of any city in the kingdom, is dwindled into a poor place, not containing above 10,000 inhabitants. Amid its gloomy and decayed streets, however, towers the cathedral, one of the finest specimens of Gothic architecture existing in Europe, and the form of which bears a considerable resemblance to that of York minster. The strong ancient castle, which had fallen into decay, was, however, so far re-established by the French, that it successfully stood a long siege from the Duke of Wellington.

2485. *Of the other towns* of Old Castile, Segovia presents some interesting monuments of Roman and Moorish grandeur. Its aqueduct (*fig.* 268.), of 159 arches, nearly half a mile long, and in one place 94 feet high, is a stupendous Roman work, ranked by Swinburne above the Pont du Gard. The Alcazar, or royal castle, was erected by the Moors on a rock overlooking a wide range of country. After it came into the possession of the Christians, it was employed as a state prison, and is now a military school. Five centuries ago, Segovia had very extensive manufactures of fine cloth; but these, notwithstanding the honour of having the king for a partner, have dwindled to a very small amount. Avila, capital of a small province of the same name, is a city of ancient distinction; and its massy walls, its towers, its Alcazar, and the dome of the old cathedral, render it imposing at a distance; but it is in a state of wretched desertion. The attempt to establish manufactures of cloth and cotton has not been successful. Soria, near the site of the ancient Numantia, on the right bank of the Duero, near its source, is a tolerable country town, capital of one of the smaller provinces into which Old Castile has been subdivided.

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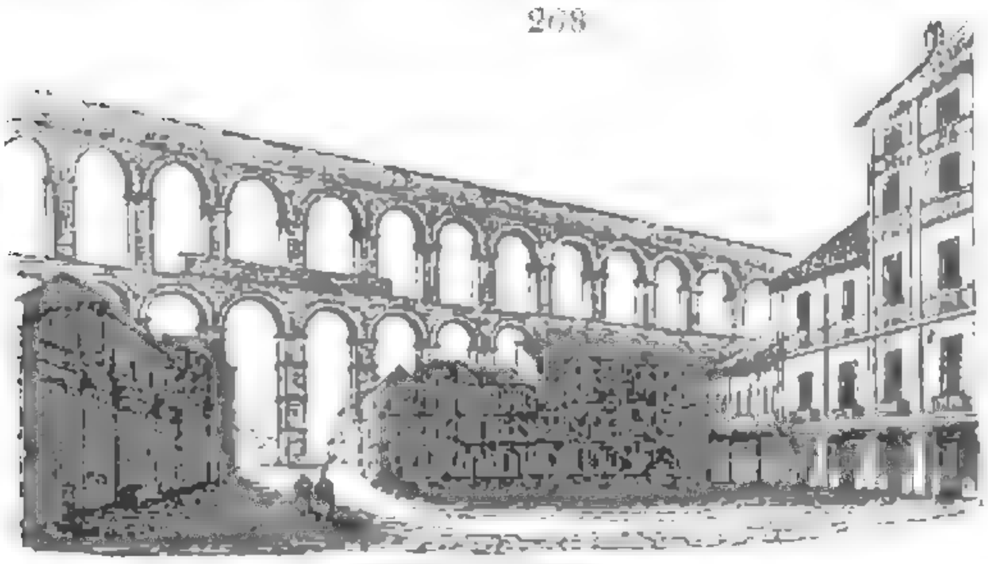

AQUEDUCT OF SEGOVIA.

2486. *The palaces* of the Escurial (*fig.* 269.) and San Ildefonso are striking objects in Old Castile. The "royal monastery" of the Escurial was founded by Philip II. on a plan entirely congenial to his gloomy mind. It unites the characters of a palace and a convent; and has the form of a gridiron, the instrument of the martyrdom of St. Lorenzo, to whom it is dedicated. Attached to it is the Pantheon, a classic and somewhat profane structure, in which, however, are interred all the crowned kings and queens of Spain since Charles V.

The wealth of the Spanish monarchs has been continually employed in adding new ornaments to this favourite residence, which is considered by the nation as the eighth wonder of the world; and large volumes have been filled with descriptions of it. The church and the great altar have scarcely a rival for magnificence and grandeur of effect. The library is not extensive, but contains manuscripts, especially Arabic, that are of great value. The collection of paintings, it is probable, yields only to that which covers the walls of the Vatican. Besides select productions of Murillo and other masters of the Spanish school, it contains several of the greatest works of Raphael, Titian, and others of the first Italian masters. The environs are wild and naked in the extreme, without shelter from the cold blasts of winter, or the intense heats of summer. On the opposite declivity of the same mountains, looking towards the north, San Ildefonso, without any pretensions to equal magnificence, is finely surrounded by woods, gardens, and beautiful jets d'eau. Aranjuez stands in quite a different situation, on the lowest plain of Castile, at the junction of the Tagus and the Xarama. It is chiefly admired for its magnificent woods and gardens; the former carried in long and spacious avenues, the latter containing in profusion the finest native and exotic plants.

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ESCURIAL.

2487. *Leon* forms a continuation of the plain of Old Castile, along the lower course of the Duero, and bounded by the same ranges of mountains. For several centuries it was the seat of a kingdom, comprising the chief Christian power in Spain, until it was united to that of Castile. It is almost entirely within the domain of the *mesta*, and thus devoted principally to pasturage. The consequent depopulation has been very great; insomuch that, according to Townshend, the bishopric of Salamanca, which once contained 748 townships, is now reduced to 333. The vast extent of open plain which forms the centre of this province has been found highly favourable to an invader who possessed superior cavalry; such as the Moors once, and more latterly the French.

2488. *The cities of Leon* are almost solely interesting from the traces which they present of ancient grandeur. Leon itself, by its highly ornamented cathedral, its nine convents, and its ancient palace, testifies the remote period when it was the seat of royalty; but a heterogeneous assemblage of dirty streets filled with beggars, splendid churches, and half ruined family mansions, are all that it now presents. Salamanca, by its university, has acquired a much greater fame. This seminary, one of the first in Europe, was founded in 1200, and extended during the same century by Alfonso the Wise, celebrated for the progress which astronomy made under his auspices. From the medical knowledge of Avicenna, Averroes, and other Arabian sages, it derived a character superior to those of the other monkish universities during the middle ages. Salamanca, however, remained stationary in the fourteenth century; and, while sound science was spreading through the rest of Europe, continued to occupy its students with dogmatic theology, and with the worship of Aristotle and Aquinas. Its students, once reckoned at 16,000, have been reduced to less than 2000. Salamanca is crowded with sacred edifices, to enrich which, all the four corners of the world have been made to contribute; and on days of high festival the display of silver and precious stones was altogether dazzling. The cathedral and the principal square are very magnificent, but the streets are narrow and gloomy. Captain Sherer, in 1813, found Salamanca quite a deserted city; only a few of the old professors and youthful students still lingered in the colleges, or paced the spacious aisles of the elegant cathedral. Of the latter, some, as appears from Mr. White, notwithstanding the antiquated course of instruction, had adopted modern and liberal ideas, and in the late crisis obeyed the call of their country and of liberty. The French having made Salamanca a military position, a great part of the place was levelled or battered down; and subsequent events have not been favourable to its restoration. We must not, however, dismiss Salamanca without noticing the new lustre it has derived from giving name to one of the most splendid of Wellington's victories.

2489. *Valladolid* has a great name in history. Charles V. made it his capital, and it continued to be the residence of the Spanish court until Philip IV. removed it to Madrid. In these splendid days Valladolid was supposed, perhaps with some exaggeration, to contain 200,000 inhabitants, now reduced to a tenth of that number. Yet it covers a very large space of ground; and the numberless spires, domes, and turrets of its sacred edifices give it still the appearance of a large metropolis. Its university is attended by 2000 students, and taught by forty-two professors and fifty doctors. After a very marked period of decay, Valladolid experienced lately a considerable revival. Its environs are particularly healthy and agreeable.

2490. *Several other large decayed towns attest the former grandeur of Leon.* Zamora and Toro, both on the Duero, are capitals of two of the small provinces. Benavente is distinguished by its castle, which has been described as one of the grandest monuments of the age of chivalry; and Tordesillas was a royal residence in the reign of Charles V. Astorga, once capital of the Asturias, and one of the bulwarks of the Peninsula, has lost its strength and magnitude. Palencia is also a small capital, pleasantly situated on the Carrion, having a little inland trade. Ciudad Rodrigo is a national barrier on the Portuguese frontier, still kept up as a strong fortress, which sustained successive sieges during the peninsular war.

2491. *Galicia*, separated by its mountain boundary from Leon, forms the south-western corner of the Peninsula. It is entirely a highland and alpine region, broken into rugged rocks and narrow passes, though with valleys of great fertility and of peculiar beauty interspersed. The Gallegos are industrious; and the country is better peopled than many of the more favoured regions of the Peninsula. They are hardy and enterprising, and often leave this barren territory to seek employment in the cities of Spain and Portugal, where, like the Scottish highlanders, they act chiefly as porters and servants. The shores and ports of Galicia are celebrated in naval history, forming as it were the outer coasts of Europe, beaten by the waves of a tempestuous ocean, and where fleets from the distant quarters of the globe often made their first appearance in Europe, and met with hostile fleets on the watch for them.

2492. *The interior towns of Galicia* have for their capital, St. Jago de Compostella, the most celebrated shrine of the Peninsula, supposed to contain the body of St. James, its patron. In the chapel dedicated to him is his statue, two feet high, of pure gold, illuminated every night by 2000 wax tapers. Twenty-two other chapels have been enriched by the offerings of pilgrims from every part of the Peninsula, whose numbers have diminished. Lugo presents the poor remains of an ancient city surrounded by a wall and towers, once of great strength, but now mouldering into ruin. Orense, a little city, formerly celebrated for its hot springs, and Tuy, a strongly situated fortress, are on the Portuguese frontier.

2493. *Of the seaports of Galicia*, Vigo had the greatest reputation, several great naval actions having been fought near it; particularly that of 1702, when the whole fleet of Spanish galleons was sunk or taken by the English. It has one of the finest harbours in Spain; which, however, since Ferrol became the chief naval station, is only employed for a limited coasting trade. Corunna on the Groyne is now the most trading place in the province, and packets sail from it to England and America. It is a steep, dirty, but well-paved town, of no strength, being commanded by the neighbouring heights. Ferrol, since 1752, has been made the chief naval station of Spain. Its harbour, besides being one of the safest and most spacious in Europe, has the advantage of being accessible only by a narrow winding passage which can be rendered almost impassable by a chain of forts. A considerable city has been formed, and very extensive docks and arsenals built; but since the extinction of the Spanish navy, these have of course fallen into considerable neglect.

2494. *The Asturias* form a long narrow stripe between the Bay of Biscay and the Cantabrian mountains, which extend along its whole length. It is celebrated in history as the sacred retreat in which the hero Pelayo raised again the national standard, after it seemed for ever trampled under foot by the Saracen invaders. Since the fourteenth century the Asturias have given the title of prince to the heirs of the Spanish throne. The province is approached only by narrow ravines and passes, through which torrents dash, and which are overhung by steep cliffs and luxuriant woods. There are, however, a number of valleys, and the whole plain of Oviedo is distinguished both for fruitfulness and beauty. Instead of wine, a good deal of tolerable cider is made and exported: amber, jet, and coal abound, but the last strongly impregnated with sulphur. The Asturians are brave and proud, boasting that their country was never conquered, even by the Romans; and more than a third part of the population is composed of hidalgos.

2495. *Oviedo*, the only large town, has more magnificence than its situation might lead us to expect: the cathedral, in particular, long the only shrine secure from the rage of the invader, afforded an asylum to many pious treasures scattered through the Peninsula. These, however, consist chiefly of relics, valuable only to devout and believing eyes. Among them are the rod of Moses, the mantle of Elias, the olive branch borne aloft in entering Jerusalem; thorns from the sacred crown; the milk of the blessed Virgin, &c. Oviedo is still a considerable town, with a rich bishopric, and many religious houses; the principal is a convent of Benedictine nuns, the revenues of which, however, do not, according to Townshend, exceed 2100*l.* a year. Gijon, though with a costly and not very complete harbour, carries on all the little trade of the province. Avila and Santillana are large villages, giving their name to districts. Santander and Santona are sea-ports of some little consequence, in the district of Montana, on the borders of Biscay.

2496. *Biscay* is a small, high, rugged province, on the western slope of the Pyrenees. Streams descending from its numerous heights, combine in forming the channel of the Upper

Ebro. The Basques are a peculiar race, preserving the only remnant which revolutions have left in the Peninsula, of Celtic language and aspect. Under the name of Cantabria, this region presented a barrier even to Roman conquest; and though the Saracens penetrated through it into the plains of France, it is still boasted that they never could reach the mountains of High Cantabria. The Basques, amid the general slavery of Spain, have still preserved some portion of their original rights. They have a cortes of their own; and the taxes, levied by provincial authority are presented to the sovereign in the form of a free gift. Every native Biscayan is an hidalgo or noble, scarcely owning a superiority of birth in the proudest Castilian. With all this they are excessively industrious; the mountain declivities are cultivated as high as the plough can reach; and while the finest plains of Castile are nearly a desert, Biscay's rude vales are covered with a numerous population.

2497. *The cities* in such a district cannot be large: yet Bilboa, the capital, situated on the Ybaizabal, which admits large vessels up to the town, is one of the most commercial places in Spain. Most of the merino wool from the plains of Castile is brought hither for exportation. Biscay Proper contains also Orduña, a neat little city, and numerous villages. Guipuscoa is another district, lying more to the east, and in closer contact with France. Its capital is St. Sebastian, an indifferent port, but a neat, tolerably large city, and so strongly fortified as to be considered one of the four keys of the kingdom; the others being Pamplona, Barcelona, and Figueras. Fontarabia, close to the frontier, has a great name in history, but little else now left. The small village of Irun stands on the immediate bank of the Bidassoa, whose broad clear stream, descending from the Pyrenees, forms the boundary between two rival and long hostile nations. More in the interior, and on a lower level, is the district of Alava, having for its capital Vittoria, a somewhat well-built modern town, and celebrated as the theatre of the complete victory there gained by the Duke of Wellington over the French army under Joseph Bonaparte, which was thence finally expelled from the Peninsula.

2498. *Navarre* is a small province or kingdom, lying immediately beneath the highest and steepest Pyrenees. Eight very difficult passes penetrate through them into France, but scarcely any one passable for the artillery and train of an army. The principal is that of St. Jean Pied de Port; on the French side of which is Roncesvalles, or Roncevaux, celebrated in history, and still more in romance, for the disaster which there befell Charlemagne and his knights. For many centuries it formed a separate little kingdom connected with France, until Ferdinand the Catholic succeeded in annexing to Spain all the part south of the Pyrenees. Navarre retains, however, privileges and customs peculiar to itself, and its governor bears the title of viceroy. The population is active, hardy, and brave. The bands of guerrillas under Mina proved the most formidable irregular force with which the French had to contend in the Peninsula. Pamplona, the capital, the foundation of which is ascribed to Pompey, is one of the chief bulwarks of the Peninsula, and one of the strongest fortresses in Europe. It was reduced by the Duke of Wellington, and by the French, in their last invasion, after a long blockade. There are also Tudela and Calahorra, little towns on the Ebro.

2499. *Aragon*, south from Navarre, is an extensive province, extending along the greater part of the course of the Ebro; whence it reaches on one side to the Pyrenees, and on the other to the chains which shut in the Castiles and Valencia. A great part of it is rugged and barren; though other tracts in the central plains, and along the rivers, are very susceptible of culture. Aragon, during the middle ages, was a powerful kingdom, comprising Catalonia and Valencia, forming the half of Christian Spain, then divided between it and Castile. Even after the union of the crowns under Ferdinand and Isabella, it still enjoyed its constitution and its cortes, which exercised higher prerogatives, and kept the power of the kings under stricter limitations, than any similar assembly in Europe. Of these it was deprived by the unfortunate issue of the civil war under Charles V., and more completely by the Bourbon succession, after Aragon had espoused the cause of Charles of Austria. The peasantry of this province are a fine body of men, stout, brave, and honest. Culture and population are generally in a backward state; yet the canal of Aragon, conducted parallel to the course of the Ebro, though it has not yet reached the sea, according to its destination, has given a considerable impulse to the agriculture of the district through which it is led.

2500. *Saragossa*, or *Zaragosa*, the capital of Aragon, is a large and celebrated city, situated amid a fine plain, on the banks of the Ebro and of the canal of Aragon. From Augustus, who enlarged and improved it, the city was called Cæsar-Augusta, corrupted into Saragossa. It is not well built, the streets being narrow and crooked; but there are several open market-places, and some very splendid religious edifices. The principal is that dedicated to the Virgin, under the title of "Our Lady of the Pillar;" an object of the most profound veneration to the citizens, and enriched by offerings from every part of Spain. The church of St. Engracia is also filled with relics and gifts; and each of the forty convents of Saragossa has its peculiar boast. A stone bridge, and the finest wooden bridge in Europe, are thrown over the Ebro. The university has 2000 students, but not much literature. Saragossa has earned an immortal name by her heroic resistance against the unprincipled invasion of Napoleon, in 1808. Without walls, except an old one of earth, which could not resist for an hour an attack conducted on modern principles; without army, arms, or artillery, it maintained a long and finally successful conflict with the French, in their first invasion. Afterwards, when assailed by an immense and overwhelming force, the flower of the French armies, without hope of relief, it made a mighty resistance; and it was only by mining operations, blowing up successively house after house, that the French finally became its masters, after having reduced it to a heap of ruins.

2501. *Aragon has some other small ancient towns*, ranking even as cities; Jaca and Huesca on the northern frontier among the Pyrenees, both episcopal seats; Daroca and Calatayud in the plain bordering on Castile; the former enclosed with large ruined fortifications, the latter industrious, and surrounded by a smiling country.

2502. *Catalonia*, to the east of Aragon, is one of the finest and most extensive provinces of Spain. It presents a remarkable variety of surface, from the steep and rugged heights of the higher Pyrenees, to the elevated valleys of Upper Catalonia, and the luxuriant though not very extensive plains that border on the Mediterranean. The Catalans redeem to a great extent the Spanish national character, uniting with its loftiness and energy a spirit and activity which are elsewhere wanting. They have been always commercial, industrious, and fond of liberty. After bearing successively the yoke of the Romans, the Goths, and the Saracens, Catalonia was long ruled by counts of French descent, whose posterity extended their sway over Aragon, and finally over the whole Peninsula, in which this principality merged. The Catalans, however, bore more impatiently than other Spaniards the loss of their privileges; and during the war of the succession, on receiving a pledge for their restitution, espoused with extraordinary ardour the cause of the Archduke Charles. Even after its unfortunate issue, when deserted by Britain and all the other powers, they made a last dreadful struggle, which ended, however, in the loss of all those rights for which they had so nobly contended. In the last two wars, Catalonia acted a most conspicuous part; maintaining an unremitted resistance to France, notwithstanding the close vicinity of that kingdom, and in the late constitutional struggle making efforts, both for and against liberty much greater than any other province.

2503. *Barcelona* is, after the capital, the largest city, and at the same time the most industrious and flourishing, of all Spain. It is situated about the centre of the Catalonian coast, and draws its subsistence from a fertile and extensive plain behind. It is said to have been originally a Carthaginian town, founded by Hamilcar Barcas; but rose to little distinction under the Romans, who made Tarraco the capital of all eastern Spain. It was not till the twelfth century that Barcelona began to be distinguished for its commercial spirit. It suffered severely during successive wars, particularly that of the succession; but in the course of the last century, the exertions of its patriotic governor, the Marquis of Mina, enabled it to retrieve all its losses, and become more prosperous than ever. The port is artificial, formed by solid and convenient moles, but has a bar at its entrance, which excludes vessels drawing more than twelve feet of water. It carried on a great and various traffic; had woollen, silk, and cotton manufactories, all on a considerable scale; about a thousand vessels annually entered its port; and the whole amount of exports was reckoned by Laborde at 1,750,000*l.* According to the latest account, however, by the author of "A Year in Spain," the late disasters and misgovernment have caused a great declension in the above branches of manufacture; and instead of the ranges of tall masts assembled within its mole, there are to be seen only a paltry assemblage of fishing-boats and feluccas. The ecclesiastical edifices of Barcelona are handsome, particularly the cathedral, though not of so grand a character as those in some other parts of Spain. The convent of the Dominicans has a singular series of ornaments, the sentences of five hundred heretics decreed by the Inquisition, and under each sentence a representation of the sufferer, whom the demons, in various shapes, are torturing and devouring. The walls of Barcelona are strong, but its chief dependence is upon the citadel of Montjuich, which commands it, and is considered almost impregnable, though the Earl of Peterborough took it by surprise. At the close of the war of the succession, when Barcelona was besieged by the Duke of Berwick, a terrible and almost frantic resistance was made in the streets, not by troops, but by priests, students, tradesmen, and even women: the consequences were terrible. Bonaparte, in 1808, obtained by treachery and threats the cession of this and the other keys of the kingdom; but in the late invasion, its resistance against Moncey was most gallant.

2504. *There are several other large, ancient, and strong towns in Catalonia.* Tarragona, the Roman capital of the east of Spain, has fallen into great comparative decay. It is situated on a rocky peninsula, and presents many traces of Roman antiquity, as of the palace of Augustus, the amphitheatre, and an extensive aqueduct. More recently, the harbour has been improved, and some new streets built; and in the war of 1808, the fortifications were restored, and the city made a brave defence against Marshal Suchet, who at length carried it by storm, with circumstances of great cruelty. Tortosa is also a considerable and ancient city near the mouth of the Ebro, which is there broad and navigable. It made a distinguished figure during the wars with the Moors, chiefly through the exploits of its heroines, to commemorate whose valour a military order was instituted by Raymond Berenger. Its position on the river affords scope for a considerable trade; and during the last war its fortifications were restored by the Spaniards. Between the two last-mentioned cities has arisen, within the last half century, Reus, a large flourishing industrious town, carrying on various manufactures, particularly of brandy and leather. All these are on the coast west of Barcelona. To the east the chief place is Gerona, a large gloomy town, in a fine situation. It is well fortified; and its resistance, protracted for more than half a year, to the unremitted efforts of Bonaparte's generals, formed one of the most glorious events of the peninsular war. Rosas, a little town, prettily situated in a fine bay, exports cork and other timber. In the interior, Lerida, distinguished as a Roman station under the name of Ilerda, is a large and strong town, situated in a most delightful country on the banks of the Segre. A considerable stand was made here by the patriotic armies during the French invasion. Mequinenza, at the junction of the Segre with the Ebro, is also an important military post. Cervera, the seat of a considerable university, and Igualada, are pretty large interior towns, supported by the produce of the rich vales in which they are situated. But the most striking feature in all Catalonia is the single, lofty, and precipitous mountain of Montserrat (*fig.* 270.). It consists of a crowd of conical hills piled over each other, broken into steep walls of white and variously tinted limestone cliffs, the interstices of which are filled with evergreen and deciduous trees and plants. The Benedictine monastery, an ancient and remarkable structure, stands on a cleft at the top of a high rock, where space is scarcely left for the edifice, while far beneath roars the Llobregat. Numerous hermitages pitched on the top of precipices, or in cavities hewn out of the rock, increase the singular and romantic appearance of the scene. This mountain, in the last war, was converted into an almost impregnable military position. On the highest of all the Catalonian vales, which is extensive, and rich in grain, stands Urgel, a small episcopal see, and a strong military post, the roads being almost impassable to artillery.

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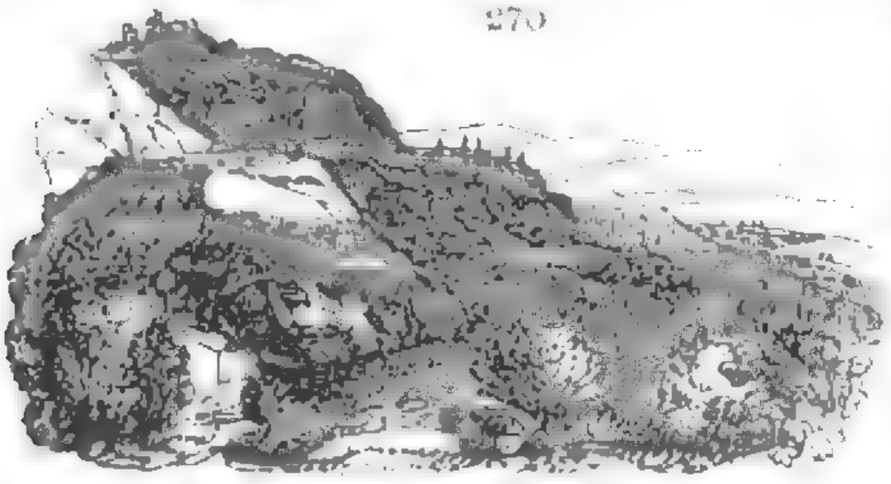

MONTSERRAT.

2505. *Valencia*, beginning from the border of Catalonia and Aragon, occupies an extensive coast running from north to south, and is the first of the southern provinces. The plain ranks as the garden of Spain, and almost of Europe. The fields of corn; the yellow green of the mulberry plantations, the pale hue of the olive; the woods, villages, and convents, thickly scattered over this great expanse, with numberless slender steeples, present, when united, an inimitable landscape. The country is finely watered by the Xucar, the Guadalaviar, and other rivers, numerous though not of long course. A great extent of artificial navigation was formed by the Moors, and is still kept up, though not in a very complete state. The province yields, in abundance, the usual products, corn, wine, oil, silk; with rice enough to supply the greater part of Spain, and barilla for exportation. The Valencians are very industrious, and of a gay disposition. Colonies from the south of France, introduced by the first Christian conqueror, brought with them a portion of the spirit of that nation.

2506. *Valencia*, at the mouth of the Guadalaviar, is one of the largest and most flourishing towns of the kingdom. It is of Roman origin, but its fame dates from the eleventh century, when it was conquered by the Cid from the Moors, and ruled as a fief by that greatest of the Spanish heroes. It was the scene, however, of long-continued contest; and its final annexation to Christian Spain did not take place until a century and a half later. The lofty walls and towers of Valencia are now nearly demolished, and in the war of liberty neither it nor the province made any very conspicuous figure. The silk manufacture is one of the most extensive in Spain, though checked by an absurd prohibition against the exportation of its produce. In a levy during the late war, exemption was granted to upwards of 3000 silk-weavers, that the trade might not be interrupted. There are also manufactures of woollens and paper. The Grau, or port of Valencia, is only an indifferent roadstead, and the commerce not nearly equal to that of Alicant. The city, though large and rich, is not handsome; the streets being narrow and winding, and bordered by high old houses. The churches and convents are of course numerous, and many of them richly ornamented, but none very prominent in architectural beauty. They are adorned, however, with numerous pictures by some of the most eminent Spanish painters, natives of Valencia; Juanes, Ribalta, and others, whose works are unknown in this country, but are admired by those who have visited Spain. The religious festivals of Valencia are celebrated with a childish pomp, in some degree disused in other parts even of this country. On these occasions, all the most memorable events and most illustrious characters in scripture history are represented either by figures in wicker-work, or by citizens fantastically attired. The exhibitions of this kind, amounting annually to a hundred and fifty, give great occasion to idleness and dissipation; yet the attempts to reduce their number have been hitherto unsuccessful.

2507. *Alicant*, situated at the bottom of a bay on the southern frontier, ranks high as an industrious and commercial town. Its prosperity is modern, chiefly owing to the refuge which its lofty castle afforded from the dreadful irruptions of the Barbary corsairs. Even since this danger ceased, Alicant has continued to be a fortified town; and none of the invading armies in the late war were able to obtain possession of it. About 1000 vessels annually enter its port, and are loaded with barilla, raisins, and a small quantity of wine and brandy. The import from England consists chiefly of salt-fish, the great article of consumption in Catholic countries. The herring and other fisheries are carried on with considerable activity on this coast. They are encouraged by the government, but with an absurd limitation to a body of enrolled fishermen, amounting to about 16,000.

2508. *Among other important towns* may be mentioned Elche and Orihuela, large and flourishing places, in the very finest part of the plain of Valencia. Segorbe and Liria are pleasant interior towns towards the frontier of Aragon. San Felipe, under the name of Xativa, made a distinguished figure in the war of the succession; when, after being demolished, it was rebuilt by Philip V. under its present name. Denia and Gandia in the south, and Peñiscola in the north, are sea-ports on a smaller scale. But all these places yield in ancient fame to Murviedro, occupying the rocky site of the ancient Saguntum, the siege of which formed the commencement of the career of Hannibal. The long resistance of this powerful and unfortunate city forms the first of the many remarkable sieges which have distinguished the Spanish annals, ancient or modern. The Romans restored and made it a great colony, and the Moors erected a range of fortifications on the summit of the hill; so that its mountain site is now covered with ruins of various dates and descriptions. Half-way up the eminence, the outline of a theatre capable of containing 9000 persons may still be traced; and a few ropemakers plying their trade alone break the silence of this august ruin. Murviedro is a small town still fortified, though the resistance made by it in the last war was not formidable.

2509. *Murcia* is a small province, partly bounded on the south-east by the coast, which here changes its direction from southerly to westerly. Its vale is almost without a rival for beauty and fertility, even in southern Europe. Its natural fruitfulness is greatly aided by the numerous canals of irrigation which the Moors drew from the river Segura. These advantages are little improved by the present inhabitants, who are noted as exhibiting, in a peculiar degree, all the blemishes of the Spanish character; its pride, its bigotry, and its laziness. Even the song and the dance do not inspire gaiety in its vales, as in all the rest of Spain; almost the whole time of the people being spent in eating, sleeping, and making cigars. A sullen and vindictive spirit is said to lurk under this outward apathy. Few Murcians have made a figure in literature, in the arts, or in public life.

2510. *The cities of Murcia*, if we except its port of Carthagena, do not merit particular notice. The capital, bearing its name, is an irregular, ill-built, ill-paved large town. The ecclesiastical edifices, however, are very costly, and the front of the cathedral, according to Mr. Townshend, produces a splendid effect with its sixteen Corinthian columns of marble, and thirty-two images as large as life. The interior does not possess equal elegance, but is chiefly distinguished by the proportion of gold, silver, and jewels, not to mention the relics, which are accounted by the faithful as of much superior value. Lorca is a large town, built with some elegance, and surrounded by fine promenades. It had extensive fabrics of silk and saltpetre, which were reviving, when a singular accident arrested their progress. A speculative individual had collected all the waters of the neighbourhood into an immense reservoir, whence he supplied them to the cultivators for purposes of irrigation; but this receptacle, not being fully secured, burst at one point, destroyed part of the suburbs of Lorca, desolated a great extent of country, and reached even Murcia. Totana, a populous village, is enriched by the copious production of barilla in its neighbourhood. The castle of Almanza (*fig.* 271.), picturesquely seated on a height, is celebrated as the spot near which, in 1707, was fought the celebrated battle which decided the Spanish succession in favour of the house of Bourbon.

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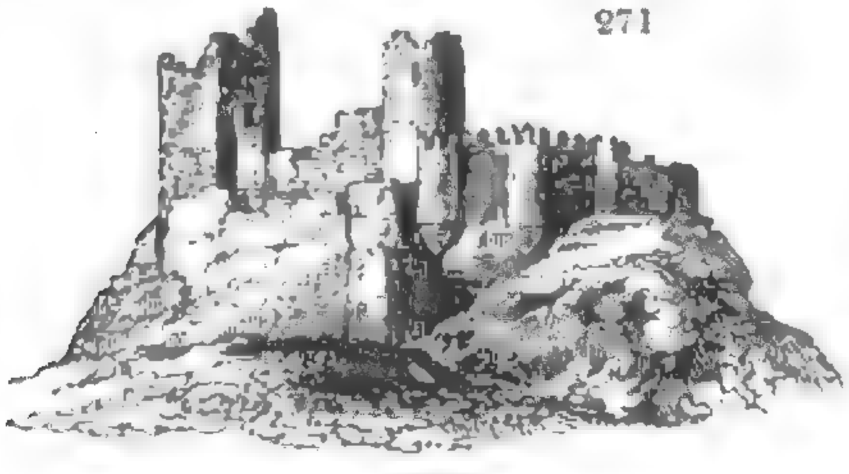

ALMANZA.

2511. *Carthagena*, situated in Murcia, though scarcely belonging to it, forms one of the few great Spanish emporia. This celebrated capital of ancient Spain was founded by Asdrubal; and when taken by Scipio, in the year of Rome 550, was considered one of the most opulent cities in the world. It was nearly destroyed by the Vandals, but was restored by Philip II., and has ever since continued to flourish. It enjoys one of the finest ports in Europe, consisting of a bay sheltered by high mountains from almost every wind. The staples are the same as at Alicant. The revenue, raised by a small though impolitic duty on the export of barilla, amounts to 25,000*l*. The fishery is also considerable. There are few Murcian residents, and the trade is carried on chiefly by English, French, and Italian houses. The streets are wide, and the houses agreeable, with terraced roofs, commanding a view of the sea; but neither here nor at Alicant are there any structures, even ecclesiastical, at all worthy of notice.

2512. *Andalusia*, taken in its most comprehensive sense, is the largest of the Spanish provinces, and, we may add, the finest and most remarkable, both as to nature and art. The Guadalquivir, with numerous and large tributaries, waters its whole extent. Its mountains, covered in many places with perpetual snow, are the loftiest, its valleys the most fruitful, in Spain. Andalusia, indeed, comprises four celebrated kingdoms; Granada, Seville, Cordova, and Jaen. They contain also great capitals founded by the conquering Moors, which were the seats of science and splendour, when the greater part of Europe was plunged in rudeness and barbarism.

2513. *Granada*, which is sometimes called Upper Andalusia, was the central seat of Moorish power and magnificence. Even amid the general decline of that power in Spain, Granada was still supported by the multitudes who resorted thither from the subdued provinces. Its fall, in 1492, was considered the most deadly blow which Islamism ever received; and in all the mosques prayers are put up every Friday for its restoration. Granada presents a wonderful combination of all that is most wild and sublime, with what is most soft and beautiful in natural scenery. North from the capital rises the Sierra Nevada, covered, as its name imports, with perpetual snow to a great depth. Mula Hasсen, the most elevated peak, is stated by Mr. Jacob to be 12,762 feet above the sea; while the line of perpetual snow begins at about 10,000 feet. The Alpujarras, a lower range, are cultivated with considerable diligence, by descendants of the Moors, a remnant of whom found refuge here, amid the general proscription of their race and nation. The Vega or plain of Granada, watered by numerous streams descending from the high regions, displays nature in her utmost pomp and beauty.

2514. *The city of Granada* is in the heart of the Vega, beneath the loftiest heights of the Sierra Nevada. This city still displays ample monuments to attest the period when it was the great western capital of the Moslem world. Nothing can exceed the beauty of its approach. "The rich and populous country well supplied with trees, the clear rivulets descending from the mountains, and artificially contrived to intersect it in every part; the splendid city extending in a half-moon from the river, on the gradual ascent of a hill; the streets rising above each other; the profusion of turrets and gilded cupolas; the summit crowned with the Alhambra; the background composed of the majestic Sierra Nevada, with its summit covered with snow; complete a scene to which no description can do justice." Mr. Jacob, who thus describes the scene, considers it not too much to have travelled two hundred miles of bad road to see it. The interior, as in most Spanish and especially Mohammedan cities, does not correspond to the approach. The streets are narrow, the walls high and gloomy; many quarters are now deserted; and marks of decay and splendid poverty are every where visible. But the eye of the curious traveller is soon attracted towards the Alhambra (*fig.* 272.), the ancient palace and fortress of the kings of Granada. It is the noblest specimen existing of Moorish architecture; and nothing perhaps in Europe, out of Italy and Greece, can come into competition with it. The site is fine, resembling that of Windsor, on a hill above the river. Its exterior structure, however, is the reverse of beautiful: a huge heap of ugly buildings huddled together, without the least seeming intention of forming one habitation; the walls only gravel and pebbles daubed over with plaster. On entering the threshold, however, the visiter seems transported into a fairy scene. He passes through a range of apartments; the baths, the Court of the Lions; the Hall of the Abencerrages (*fig.* 273.); the Golden Saloon, or Hall of the Ambassadors; the Gate of the Sanctuary of the Koran (*fig.* 274.); the Tower of the Two Sisters; with others, in which the various resources of Oriental pomp are displayed, along with all that can refresh the eye or the sense in a sultry climate. The courts are all paved with marble, and sur-

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THE ALHAMBRA.

rounded with marble pillars, in a pure and beautiful taste; and the walls and pavement are profusely ornamented with gilded arabesque and mosaic (*fig.* 275.), the colours of which, by an art which seems to have been lost with the Moors, are as brilliant as when they were first laid on, five hundred years ago. Water is made to spout into the air, or, in smooth sheets bordered with flowers, refreshes the interior of the apartments. After the expulsion of the Moors, Charles V. built on part of its site a new palace, the external architecture of which was much superior; but it was never finished. The Generalife is another Moorish palace, in a more elevated and finer situation; but its interior splendour, though great, is quite eclipsed by that of its neighbour. The cathedral, though it must yield to these Moorish structures, is yet of considerable extent and beauty. Granada is the seat of one of the two high courts of chancery, and of other tribunals of high jurisdiction. It retains a certain proportion of its former immense silk manufactures, with some of woollen and leather; and a considerable number of persons are employed in extracting the nitre with which the neighbouring soil is copiously impregnated.

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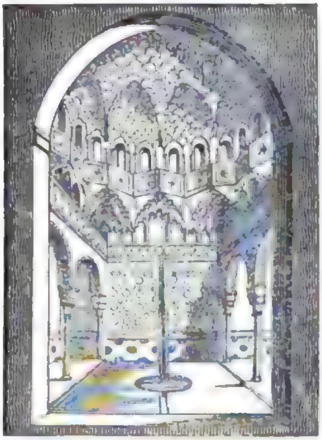

HALL OF THE ABENCERRAGES.

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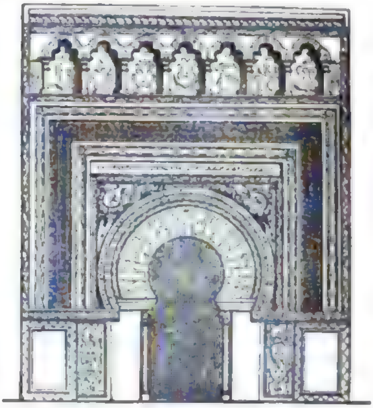

GATE OF THE SANCTUARY OF THE KORAN.

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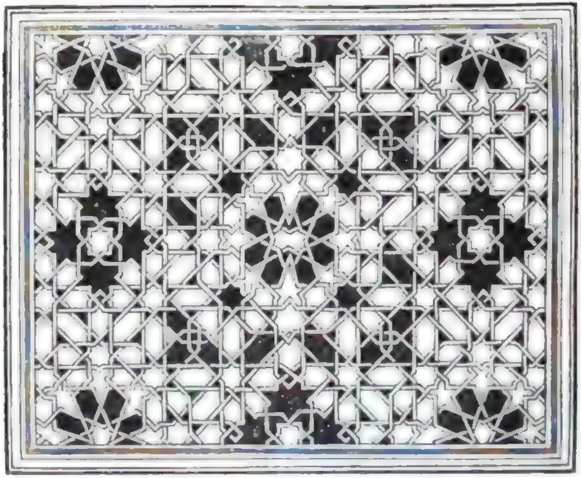

MOSAIC PAVEMENT.

2515. *Malaga* has in modern times attained a greater importance, and is reckoned the third port in the kingdom, ranking next to those of Cadiz and Barcelona. The chief foundation of its trade is the fine wine called Malaga or *mountain*, produced in the numerous hills behind it. It is raised at very great expense, and only upon the declivities which have an exposure to the sun. The country produces also very fine raisins and other fruits; and anchovies, caught and cured on the coast, have been sold to the annual extent of 20,000 quintals. Malaga is the only great Spanish port of which the exports have always exceeded the imports. Mr. Townshend estimated their annual amount at 375,000*l.*; Laborde at 560,000*l.* Malaga has a very secure though not extensive harbour, formed by artificial moles. It lies in a deep bay on a little plain overhung by lofty and craggy cliffs, which at a distance appear quite naked, but on approaching, every crevice is found to be filled with vines. This situation renders the heat very severe, and has aided in exposing the inhabitants to the destructive ravages of pestilential fever. The streets are close, narrow, and dirty; but the cathedral is a very noble pile, and contains paintings by great Spanish masters.

2516. *Other very considerable towns occur in Granada.* Five leagues to the east of Malaga is Velez-Malaga, most delightfully situated in a plain diversified by numerous gentle hills, clothed to the summit with vines, while the plains below wave with luxuriant harvests of grain. Farther east are the small ports of Motril and Almeria; the latter ancient, and celebrated in the history of the Moors, under whom it was highly prosperous and flourishing. Near it is the rock of Filabres, 2000 feet high, composed of a single block of white marble; and beyond it stretches into the sea the bold and huge promontory of Cabo de Gata. Guadix, Baza, and Purchena, are considerable interior towns, in the eastern part of this province, seated in valleys enclosed by the numerous ranges of hills which intersect it. Santa Fé, two leagues west of Granada, is remarkably exposed to earthquakes, which have split its cathedral in two, and laid open the cells of one of the convents; yet the citizens still inhabit and keep it in repair. Alhama is strikingly situated amid a circuit of precipitous rocks, through which dashes a rapid stream. It is frequented for the salubrity of its air, and for its medicinal springs and baths. Antequera is very ancient; filled with Roman and Moorish monuments, and still large; the adjacent country is very fertile, and distinguished for the variety both of its vegetable and mineral productions. Ronda, (*fig.* 276.) capital of a wide mountain district, is singularly situated on a rock with perpendicular cliffs and broken crags, through a deep fissure in which the river flows, and surrounds the city on three sides. It is crossed by a stupendous bridge 110 feet in diameter, and 280 feet in height. Stairs of 350 steps lead down to the river, and gardens have been formed on some level projecting points of the precipice. The mountaineers of Ronda are an honest, active, hardy race; and so healthy as to make it a proverb, that "at Ronda a man is a boy at eighty." The vicinity of Gibraltar gives them great opportunities for smuggling, which they carry on in large bands, and in open resistance to government, without, however, incurring any imputation on their general loyalty.

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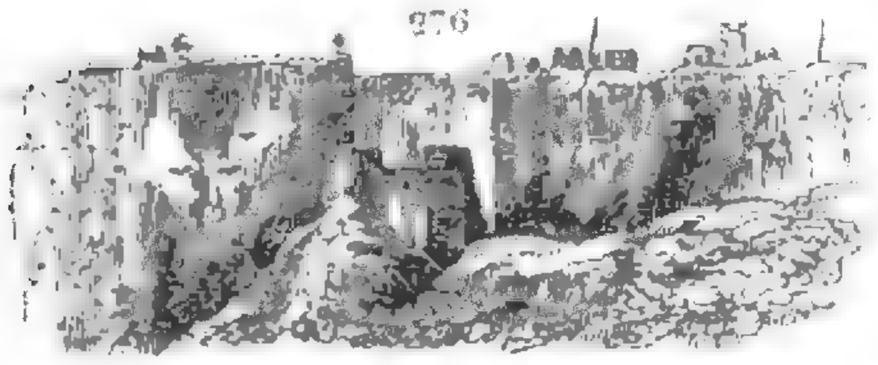

RONDA.

2517. *The kingdom of Seville*, east of Granada, is a still finer region, and perhaps superior to any other in the Peninsula. Its plains are the most productive in wine, oil, and fruits; the noble river Guadalquivir conveys its products to the sea; and Seville and Cadiz are, in some respects, superior to all other Spanish cities.

2518. *Seville* (*fig.* 277.) is situated in the midst of a fertile and delightful plain, and near the mouth of the Guadalquivir, which formerly admitted vessels of large size: it was a great city from the earliest period. By the Romans it was celebrated under the appellation of Hispalis: its foundation was ascribed to Hercules; and, with the neighbouring colony of Italica, it formed the capital of Bætica. Under the Moors it became an independent kingdom; and if it be true that, on its capture by Ferdinand the Catholic, 400,000 Moors marched out at one of its gates, it must indeed have been an immense city. Notwithstanding the depopulation thus occasioned by bigotry and treachery, it soon became more splendid than ever, in consequence of becoming the emporium of the wealth which flowed in from the western hemisphere. Its manufacturing industry was then also very flourishing. By a return made

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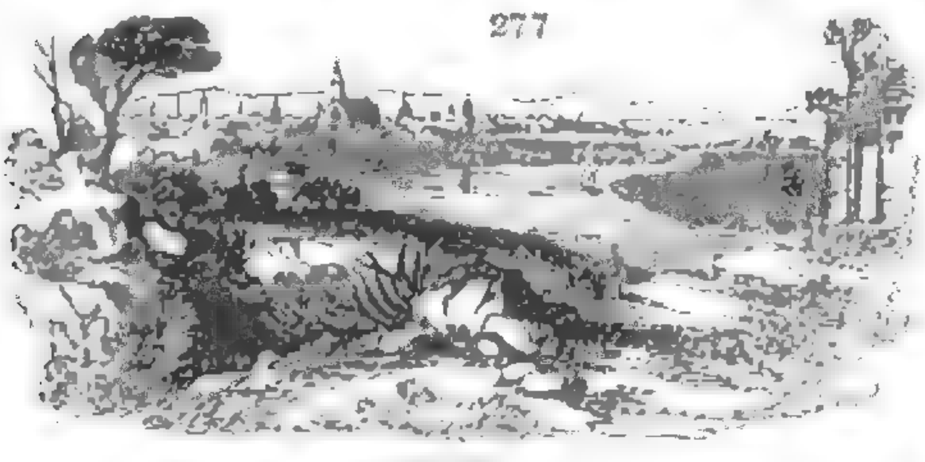

SEVILLE.

to government in 1601, Seville was said to contain 16,000 silk looms, giving employment to 130,000 workmen. It frequently received an increase of splendour by becoming a royal residence. Since the above period, Seville has not only declined with the gradual decline of Spain, but has suffered by the filling up of the channel of the Guadalquivir, which has rendered it navigable only for small ships, and has transferred to Cadiz the commerce of America. Seville is now a solemn, inert, gloomy city. Like other Spanish places, particularly those of Moorish origin, its streets are narrow, winding, and dirty; but it contains some splendid public edifices. Foremost stands the cathedral, the largest ecclesiastical structure in the Peninsula, 420 feet long within, and 373 broad; but the most striking feature is its tower, originally erected by the learned Geber or Guever, and used as an observatory, but raised by the Christians to the height of 350 feet. Many of the convents also are very splendid, and previous to the late invasion by the French contained numerous works of the greatest Spanish artists, of whom Seville was the chief nurse. There was, above all, a splendid collection of the works of Murillo, the prince of these artists, and a native of Seville. Of these treasures the city has been in a great measure despoiled by the ravages of the invader; Marshal Soult, in particular, has in his collection numerous master-pieces of Murillo, by which the convents of Seville were formerly adorned. Seville has still 2500 silk looms; and government maintains a cannon foundery and a tobacco manufactory. The Exchange and the Marine Academy are also handsome edifices.

2519. *Cadiz* (*fig.* 278.) is, in an equal degree with Seville, the boast of Spain. In the commercial annals of the world no city is of higher antiquity. Tartessus, occupying a site in its vicinity, was one of the earliest and most flourishing Phœnician colonies. Afterwards Gadeira, or Gades, was recognised by the Greeks and Romans as one of the chief European emporia. In modern times, when commerce did not form part of the European system, Cadiz declined into a secondary rank; and the intercourse with America was at first nearly monopolised by Seville. The circumstances which transferred it from that city to Cadiz took place early in the last century, when the latter rose to be the chief theatre of Spanish commerce. It enjoyed for some time the entire monopoly of the American trade; and even when, in 1778, it was thrown open to the whole kingdom, it had taken such deep root in Cadiz as to frustrate all competition. In 1784, when the entire imports from America were 12,630,000*l.* that city, for its share, had 11,280,000*l.*; and of the whole exports, amounting to 4,300,000*l.*, it had 3,600,000*l.* Notwithstanding severe shocks, in consequence of political revolutions, and the war with England, it always revived, and derived a temporary greatness from becoming the capital of the constitutional government. It received, however, its mortal blow by the separation of the colonies. The merchants, deprived thus of almost their only employment, have been reduced to the funds already accumulated, and have in a great measure retired from the confined situation of Cadiz to the pleasant sites and villages which are scattered round the bay. The city is situated on a small neck of land, at the point of the long Isle of Leon. It does not boast any remarkable structures, but the whole is elegantly built in regular squares, and streets with a square court in the centre and an awning over it.

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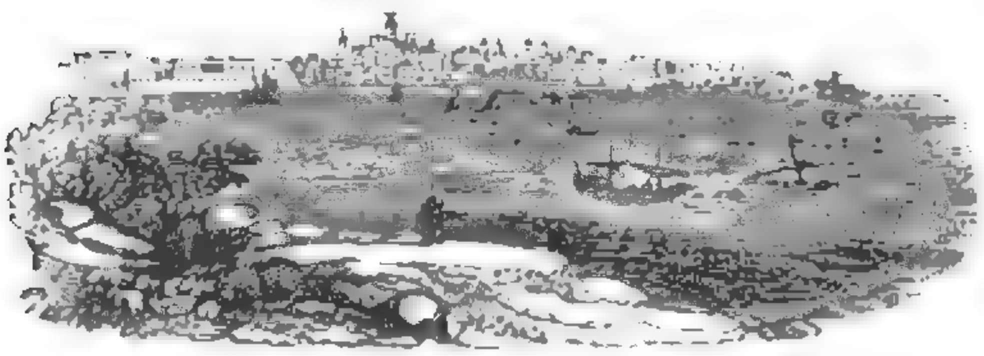

CADIZ.

2520. *Gibraltar* (*fig.* 279.), though no longer Spanish, forms also a striking and important feature in this province. This rock is celebrated from the earliest antiquity as one of the two "Pillars of Hercules," which guarded the entrance into the Mediterranean; though Mount Calpe, on the opposite side, is considerably loftier. In 1704, Sir George Rooke and Sir Cloudesley Shovel carried this fortress by a *coup de main*; since which time Spain has vainly attempted to regain possession of it. Her grand effort was towards the close of the American war, when the fleets of France and Spain rode masters of the sea. A combined attack was made on the 13th of September, 1782, by the two powers, with fifty sail of the line, 30,000 troops, and ten mighty floating batteries, which were expected to demolish all opposed to them. They kept up a tremendous fire from ten in the morning till mid-

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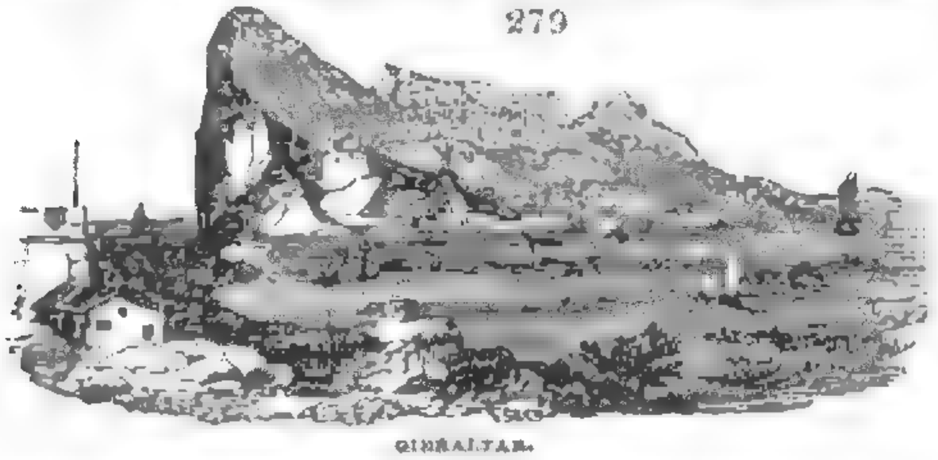

GIBRALTAR.

night, at which time smoke and fire were seen rising from the batteries, which before next morning were reduced to ashes, with a dreadful destruction of the assailants. No subsequent attempt has been made; nature, in fact, has rendered Gibraltar almost impregnable. The rock is precipitous on all sides, and is connected with the continent only by a narrow neck of marshy ground. The western front alone towards the sea is in any degree accessible; and this is defended by batteries cut in the solid rock, and by other works so extensive and so well planned as to bid defiance to any future effort. Gibraltar has one handsome street, the houses of which are built in the English style, with trees and flowers skilfully planted in scanty fragments of soil. The rest of the town is close, crowded, and dirty, inhabited by about 20,000 people, chiefly Moors and Jews, the latter of whom have sought refuge here in great numbers from Spanish bigotry, and have four synagogues. The expense of maintaining Gibraltar is considerable: but it forms an important naval station, a depôt for the commerce of the Mediterranean, and a channel for introducing into Spain great quantities of goods, declared contraband by the jealous policy of that country.

2521. *Among other places of some importance is Tarifa*, the most southern part of Spain, and even of Europe, and the probable place of the landing of Tarik, with the Saracen army destined for the conquest of that country. Seated on an almost insulated rock, it is still a fortress of some strength. Algesiras, on the opposite side of the bay, has grown up as a small rival to Gibraltar; its population consists chiefly of smugglers and adventurers. In the interior is the flourishing and populous town of Xeres, situated in a wide region of vineyards, producing the wine called Sherry, the consumption of which is so general in this country. Mr. Jacob supposes the entire produce to be 40,000 pipes, of which 15,000 are exported, one half to Britain. Ecija, a large town, was famous as a scene of contest between the Christians and Saracens, and afterwards as the head quarters of a most formidable band of robbers; but its walls are now in ruin. Lebrija and Carmona are ancient towns, containing Roman monuments of considerable grandeur. The districts to the north and west of the Guadalquivir are mountainous and rugged; though Huelva and Moguer, at the mouth of the Tinto, and Ayamonte, at the mouth of the Guadiana, derive some importance from their situation, and carry on a little fishery.

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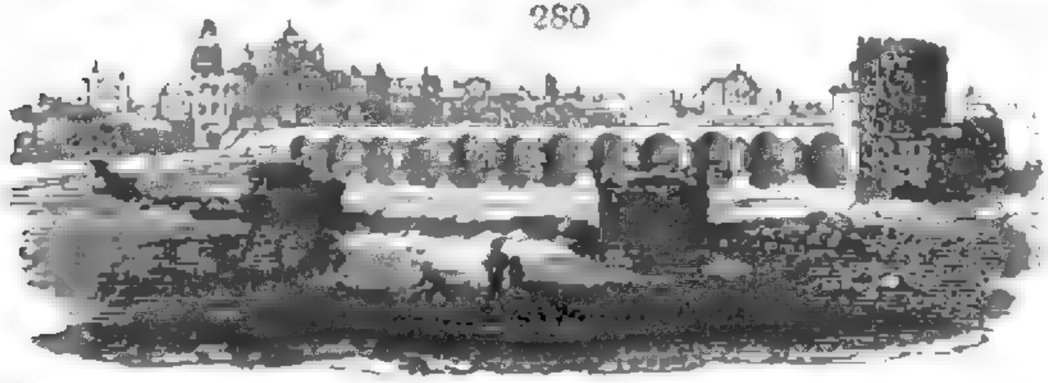

CORDOVA.

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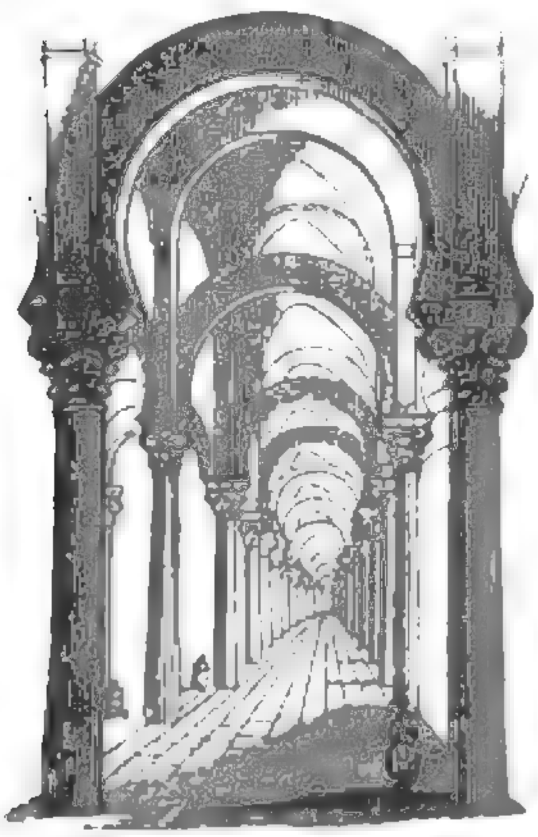

INTERIOR OF MOSQUE AT CORDOVA.

2522. *Cordova* (*fig.* 280.), on the upper part of the course of the Guadalquivir, is another kingdom of Andalusia, deriving its chief interest from the celebrated capital of the same name. Corduba, founded by the Romans, was not only a provincial capital, but the seat of an university, which could boast the great names of Seneca and Lucan. It displayed, however, a far higher pomp, when, after the Saracen conquest, it became the first capital of the Mohammedan empire in Spain. Under Abdelrahman and Almansor, it is represented as containing 1600 mosques, and nearly 1,000,000 people. Admitting a certain exaggeration, its past greatness is clearly attested by the vast and now almost empty circuit enclosed by its walls, in a great measure filled with palm trees and gardens, and by the astonishing remains of its mosque. This vast edifice presents nothing very striking in its exterior, which is in a great measure hid by the surrounding streets. But when the stranger enters any one of its nineteen gates, he is astonished and bewildered by the endless labyrinth of columns which stretch before him in every direction (*fig.* 281.). These columns have almost defied the attempts to number them; by one writer they have been estimated at 1400, but are generally stated as exceeding 400, dividing the mosque into nineteen aisles, and producing a perpetual and surprising change of scene to the visiter. The edifice, however, though it astonishes by its immensity, does not equal in elegance those erected during that more refined age when Granada became the capital. The Christians have converted it into a church, and erected in the centre a choir of great beauty, but quite out of harmony with the Saracenic part of the structure. Cordova, though its days of splendour are long departed, still enjoys delightful environs, producing a breed of horses the finest in Spain, of which a splendid stud was lately kept by the government. There is also some remnant of its once extensive manufactures, particularly of that fine species of leather called from it Cordovan. The population is supposed somewhat to exceed 30,000.

2523. *Jaen* ranks as a fourth kingdom, though it cannot enter into any rivalry with those already described. Its capital, of the same name, however, though little known, from its detached situation, is still a large city, the see of a bishop. Andujar is a considerable place, with a very ancient castle, at the entrance of the defiles of the Sierra Morena; and to the north of it is Baylen, where the Spaniards gained that signal victory which caused the surrender of Dupont and his army. In the upper part of this tract are the settlements of La Carolina, where an expanse of rude mountain waste has, by German and other colonists, been converted into a productive territory.

2524. *The Balearic Islands*, Majorca, Minorca, and Iviça, with the minor ones of Cabrera and Formentera, form an appendage to Spain of some importance and celebrity. The Balearian slingers are celebrated in the military annals of antiquity; but the islands in general followed the political fate of Spain. Majorca, the largest, about forty miles in length, and thirty in breadth, possesses very considerable natural advantages. Several mountain chains, varying from 1500 to 4500 feet high, penetrate its centre, and defend it both from the excess of the heat and the violent action of the sea breezes. Its summits are somewhat arid, but the intervening valleys are thickly clothed with olive trees; and corn and the vine grow luxuriantly, though with imperfect culture, on the plains below. Oranges and citrons flourish so abundantly in the northern district, that 20,000 mule-loads of them are exported to France and Catalonia. M. Cambassedes values the entire produce of the isle, in 1820, at 53,000,000 reals, about 660,000*l*. Of this, about 34,000,000 are in grain and pulse, 5,000,000 in oil, and 2,500,000 in wine, 1,500,000 in fruits, 3,000,000 in hops, and 2,000,000 in sheep. Palma, the capital of Majorca, is a considerable town, slightly fortified, inhabited chiefly by the nobles, who possess the greater part of the isle, and have rarely sufficient activity or curiosity to visit their estates. In no Spanish city are indolence and superstition more prevalent. There are thirty convents, some of which enjoy a revenue of more than 2000*l*. a year. Processions and religious festivals, celebrated often with great tumult, form the chief amusements. In these it is customary to deck up figures of Judas, with tablets containing the enumeration of his crimes, among which that of being "chief of the liberals" was lately included!

2525. *Minorca* is a much smaller island, more barren, covered with bare and rocky mountains, and destitute of any trees at all lofty, the growth being prevented by the violent winds from the sea. But it is distinguished for one of the finest harbours in Europe, Port Mahon, which being strongly fortified, has been a subject of eager contest to the maritime nations. Having been taken by England in the Succession War, it was recovered by the French in 1756, notwithstanding Byng's attempt to relieve it. After several other vicissitudes, it remained with Spain. The harbour is extensive, possesses deep water, and is sheltered by hills on each side from every wind. The town has nothing of a Spanish aspect; the streets being broad, the houses small but neat, the people a stirring and active race, who scarcely allow themselves to be called Spaniards. During the late French war, being protected by the English navy, they made considerable wealth by privateering. Cividadella, though of smaller extent, is the nominal capital, and the residence of the nobility. Iviça, or Iviza, is a small isle, of rugged surface, which forms one immense mountain, shooting up into a variety of summits. The island is thus refreshed by cool breezes and numerous streams, and yields readily all the productions of this climate, particularly figs. In the quarter called Las Salinas, salt is evaporated by the heat of the sun, and exported to the extent of 15,000 tons.

Chap. VII.

PORTUGAL.

2526. *Portugal* has by political causes alone been separated from Spain. There is no physical peculiarity by which the two kingdoms are distinguished. On the contrary, all the grand natural features of Spain are prolonged into Portugal, and become Portuguese.

Sect. I. *General Outline and Aspect.*

2527. *The boundaries* of Portugal are the Atlantic Ocean on the west throughout its whole extent, and also on the south; on the north the Spanish kingdom of Galicia; and on the east those of Estremadura and Leon. The greatest dimension is from north to south, or from 37° 3′ to 42° 12′ north latitude, and from 6° 15′ to 8° 55′ west longitude. Its surface has been reckoned at 40,875 square leagues.

2528. *The mountains of Portugal* may be considered as prolongations of those of Spain,

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chiefly of the chains of Guadarrama and Toledo, and those in the north of Gallicia. Those ranges, seldom rising to the first magnitude, cover almost the whole country, leaving between them many picturesque and fertile valleys. There are only two extensive plains, one on the south of the Tagus, and the other between the Mondego and the Douro.

2529. *The rivers of Portugal* consist chiefly of the spacious terminations of the greatest streams of Spain, in their progress to the ocean. The Douro forms the great maritime emporium of Oporto, and the Tagus that of Lisbon. The Guadiana, also, in its lower course, flows along the eastern frontier of Portugal. The Minho, a much smaller stream, comes down from Galicia; and the Mondego, alone, is entirely Portuguese, flowing nearly across the breadth of the kingdom.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2530. *This kingdom has the same general geognostical structure and composition* as Spain. The mountainous parts of the country are generally of gneiss, mica slate, and other Neptunian primitive strata, occasionally intermingled with Plutonian rocks of granite and porphyry. Secondary formations of limestone occur in the Sierra d'Estrella, and in the vicinity of Cape St. Vincent, and all around Lisbon and at Cape St. Vincent the strata are of rocks of the tertiary class, more or less intermingled with trap rocks.

2531. *Mines. It appears that the Carthaginians wrought tin mines* in this part of the Peninsula. It is asserted that there were formerly mines of tinstone in the granitic mountains of the neighbourhood of Viseu, in the province of Beira, at the place called Burraco de Stanno. Lead ores were worked in the last century, not far from Mogadouro, on the banks of the Sabour, in the province of Tras los Montes, and near Longroiva, on the banks of the Rio Prisco. Near Mogadouro, mines of graphite or plumbago occur. Iron mines also occur in the same country, near Felguiera and Torre de Moncorvo. They supply the iron forge of Chapacunha. Two very old establishments of the same kind occur in Portuguese Estremadura, one in the district of Thomar, the other in that of Figuero dos Vinhos. They are supplied by mines of red oxide of iron, situated in the frontier of that province and of the province of Beira. There is a deposit of cinnabar at Couna. The mountains of the neighbourhood of Oporto every where present indications of copper and of other ores. In Portugal, as in Spain, the sands of rivers were washed for the gold they contain; and it is said in this way large quantities of the precious metal were collected. At present there is but one gold mine in Portugal, at a place called Adissa, in the district of St. Ubes. Its annual produce is trifling: in the year 1815 it was 41 lbs. of pure gold; 1816, 18 lbs.; 1817, 11 lbs.; 1818, 12 lbs.; 1819, 13 lbs.; 1820, 12 lbs.; and in 1821, 18 lbs. Beds of coal occur at Vialonga, to the N. N. E. of Oporto; and there is a mine of coal at Cabo de Buarcos in the province of Beira.

Subsect. 2. *Botany.*

2532. The *Botany* of Portugal is included under that of Spain.

Subsect. 3. *Zoology.*

2533. *The zoology* cannot be very different from that of Spain; but no documents have appeared to illustrate either the one or the other. The horses are rather small, and altogether inferior; but the mules are fine, and nearly equal to those of Spain. Improvement, however, is neglected: nor have the indolent Portuguese profited by crossing their sheep from the merinos of Spain. A long-legged race of swine is common to both kingdoms, and furnishes excellent hams.

Sect. III. *Historical Geography.*

2534. *The Carthaginians and Romans,* who occupied the Peninsula, did not recognise Portugal as a distinct country. Their Lusitania included a part of Spain, and did not comprise the whole of Portugal: Merida, in Estremadura, was its capital. Portugal, like Spain, submitted successively to the formidable irruptions of the Goths and of the Moors.

2535. *The existence of Portugal as a distinct kingdom* dates from the commencement of the twelfth century. At that time, Henry, duke of Burgundy, having married the daughter of the duke of Castile, obtained as her dowry the northern part of Portugal, which had been rescued from the Moors. The capital, at that time, was Porto, or Oporto, whence the modern name of the kingdom appears to be derived. His successors gained a series of conquests, and obtained possession of Lisbon and the southern provinces, carrying their conquests to the frontier of Seville.

2536. *The fifteenth century,* and the reigns of John and Emanuel, formed the true era of the greatness of Portugal, when it outshone all the other kingdoms of Europe. Confined on the land side within narrow limits, it opened for itself a vast career of maritime discovery and conquest. Spain, indeed, shared this pursuit; but her first acquisitions were made by private individuals, partly foreign, with only faint assistance from the government; while the Portuguese expeditions were planned, fitted out, and all the resources for them supplied by the government. Their flag, at one time, floated victorious over all the eastern seas; while in the west, by the possession of Brazil, they came into some competition with Spain.

2537. *A disastrous eclipse of the Portuguese monarchy took place in the sixteenth century*, in consequence of the rash and romantic expedition undertaken by king Sebastian into Morocco, where he himself and the flower of his troops were cut off. Hereupon Philip II. of Spain, a powerful and ambitious prince, raised a claim to the succession, which the superiority of his arms enabled him to secure. Portugal, with all her eastern and western possessions, then became an appanage to the crown of Spain. The connection was every way unfortunate. Not only did she lose her political and civil liberty, but many of her finest foreign possessions were wrested from her by the Dutch, the spirited and active enemies of Philip.

2538. *The restoration of the monarchy*, in 1640, was still more sudden than its fall. The deep-rooted indignation of the people was combined into extensive conspiracy, which, having been concealed to the last moment, burst forth at once: the Spaniards were driven out, and the duke of Braganza raised to the throne, under the title of John IV. Yet Portugal did not thus achieve any revival of her ancient glory. The new monarch soon re-established absolute power: a sluggish and indolent character pervaded all the departments of government; its foreign possessions were lost or neglected; and Portugal continued a stranger to all the improvements and energies which raised Britain and France to the first place in the system of Europe. Yet, during this period, the elevation of our enemies, the Bourbons, to the Spanish throne, led to a very intimate alliance between this country and Portugal, the natural foe of Spain. It was cemented, in 1803, by a commercial treaty, in which Portugal secured an exclusive market for her wines, while Britain obtained a market for her woollens, and an arrangement by which the gold of Brazil might find its way into her ports.

2539. *The recent convulsions of the Peninsula have been very amply shared by Portugal.* Regardless of the neutrality which she had strictly maintained, Bonaparte, by a most unprovoked aggression, sent Junot, in 1807, to take possession of Lisbon. The king did not attempt a vain resistance, but sailed for Brazil, and established his court at Rio de Janeiro. The British arms, and the glorious achievements of Wellington, drove the French out of this part of the Peninsula, and finally out of the whole. Afterwards Portugal imitated the example of Spain in compelling her monarch to grant a representative constitution; but again, by a counter-revolution, she re-established an absolute monarchy. More recently, on the death of the late king, Don Pedro proclaimed the separation of Brazil from Portugal, reserving the former to himself, but granting to the latter a charter, the observance of which was made the condition of holding the throne. This charter has been rendered nugatory by the successful usurpation of Miguel, brother to Pedro, who, however, having occupied Oporto, has endeavoured to support the claims of his daughter, Maria de Gloria.

Sect. IV. *Political Geography.*

2540. *Portugal, after the downfall of the feudal system*, and especially after her subjection to Philip II. became one of the most absolute of European governments. The will of the sovereign, and a constant system of intrigue, directed all its operations. The Marquis of Pombal and one or two more enlightened men found their way into the ministry; but, in general, measures were as ill conducted as possible, and corruption prevailed in every department of the state. The course of justice was equally polluted; and, no adequate salaries being allowed to the judges, they were under an almost irresistible temptation to accept bribes. The pride of the nobles was nearly as great as in Spain, without being accompanied by the same lofty sentiments. They are divided into two branches, the *titulados* and the *hidalgos*, and have held the peasantry in a subjection little short of slavery.

2541. *The army of Portugal, prior to the revolution*, though composed nominally of 30,000 men, was in a most inefficient state, not through want of physical courage or discipline in the men, but from the incapacity of the officers, and the general defects of the military system. When the French, however, had been driven out of Portugal, an army of 40,000 men was levied, and disciplined by British officers, under the superintendence of Lord Beresford; and thus prepared, the Portuguese acted, during the eventful war which followed, in a manner that would not have disgraced any troops in Europe. The army is still maintained; and though the new government will not brook British command, yet, under its influence, Portuguese officers of merit have been formed.

2542. *The navy*, which was never considerable, was carried out with the royal family to Brazil, and has never been restored.

Sect. V. *Productive Industry.*

2543. *The industry and commerce of Portugal*, which presented so brilliant an aspect during her era of prosperity, have sunk lower than those of almost any other European nation.

2544. *Agriculture* did not, until very lately, experience any of the improvements which have become general in the rest of Europe. The plough is composed of three pieces of wood awkwardly put together, and imperfectly aided by the clumsy machinery of wheels. Though generally very fertile, this country did not produce a third of the grain necessary for the supply of its inhabitants. Of late some improvement has taken place, especially by the introduction of potatoes; and the dependence upon foreign supply has been considerably diminished. The chief object of attention is the vine, which, with the olive and other fruit trees, is cultivated with the utmost diligence in the valleys and on the sides of the hills, in the elevated province of Entre Douro e Minho. Here is produced abundantly the port wine, which forms the main basis of Portuguese trade, and finds so copious a market in Britain. The entire produce is estimated at 80,000 pipes. Of white wine Portugal produces about 60,000 pipes; but this is of inferior quality, and chiefly consumed at home. Sheep are bred on the hills, to a pretty large extent; but not so abundantly as in Spain, neither is their wool so fine.

2545. *The manufactures* of Portugal scarcely deserve to be named. Little is known beyond the working of their wool for domestic use by each family or neighbourhood; all their finer fabrics are imported. According to a late observant traveller, ignorance, or at least an imperfect knowledge of the commonest arts, is conspicuous among the Portuguese. Their carpenters are the most awkward and clumsy artisans that can be imagined, spoiling every thing they attempt; the wood-work even of good houses being finished in a manner that would scarcely have been tolerated in the rudest ages. Their carriages of all kinds, their agricultural implements, locks, keys, &c., are ludicrously bad. Working in gold and silver plate forms almost the only exception; cambrics also are well made in some places; and a few other local objects might be enumerated.

2546. *Of mines and fisheries*, the former is not at all cultivated, though great materials for it are said to exist; but in the absence of trial this may be only conjecture. Fish of the finest kinds, particularly tunny and sardinias, are caught in considerable quantity for immediate consumption; but the salt which the kingdom so abundantly produces is not used for preserving them; and a large import of salted fish is still necessary to meet the wants of a population so rigidly catholic.

2547. *The commerce*, which formed the greatness of Portugal, when her ports interchanged the products of the East and the West, is now a mere shadow. The loss of her Indian possessions, and the separation of Brazil, have reduced her to the common routine of export and import. The staple of the former is port wine, for which the market of England was secured first by favouring duties, and now seemingly by an established predilection. The wine is raised almost solely for the English market, and all of the best quality is bought up by English merchants residing at Oporto.

2548. *Another staple export* of Portugal is *salt*, evaporated by the heat of the sun in the bay of St. Ubes, or Setubal, which seems as if expressly formed for that purpose. It is carried off chiefly by the English, to be employed in curing the fish destined for the Portuguese market: the annual amount is estimated at 100,000 tons, value 300,000*l.* sterling. There is also a considerable surplus of wool, of which 1,000,000 lbs. weight have been imported into England in one year; but as it is not so fine as that of Spain, the duty imposed by the British landholders has greatly checked the importation. In return, Portugal takes grain, salt fish, and a variety of manufactures, chiefly from Britain; but as her imports cannot much exceed the exports, she cannot afford a very copious market.

2549. *The internal communications* of Portugal consist of the several noble rivers which traverse her territory, and which are navigable throughout. The intercourse by land is rendered very difficult by chains of mountains extending in the same direction. Nothing has been attempted on any important scale, either to improve these advantages, or to amend the defects; so that travelling is worse in Portugal than in any other European country.

Sect. VI. *Civil and Social State.*

2550. *The population* of Portugal, according to the last census, which was taken in 1798, amounted to 3,683,000; calculating at the somewhat high estimate of five to a family. Upon a surface of 40,000 square miles, this gives a density of about ninety-two to the square mile, which is remarkable, as exceeding that of Spain nearly in the proportion of three to two. The exemption from the *mesta*, and the high cultivation of the province of Entre Douro e Minho, appear to be the redeeming circumstances in her case.

2551. *No nation, as to character, owes less to the opinion of the world, than the Portuguese.* They are described as indolent, dissembling, cowardly, destitute of public spirit, and at the same time fierce and deeply revengeful. In Spain it is said, strip a Spaniard of his virtues, and he becomes a good Portuguese. From a late minute inspection, however, the peasantry (*fig.* 282.) have been pronounced to be a fine people; and, on repeated occasions, during the late war, they displayed energies not unworthy of their ancestors, in an age when their glory resounded throughout both hemispheres. Almost all, however, that floats on the surface is base and degenerate. There cannot be a doubt that this may be greatly ascribed to priestcraft, to the stupifying influence of a sluggish and tyrannical government, and to the general corruption which has pervaded all the branches of administration.

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PORTUGUESE PEASANTRY.

2552. *The established and exclusive religion is the catholic*, in its extreme and most degrading excess; and the body of the people are almost entirely under the thraldom of the priesthood. The burning of Jews continued till within the last half century. The physiognomy of a large proportion of the people shows their descent from this hated race, whose tenets many, it is probable, still cherish in secret. There are, in Portugal, about 550 religious houses, of which 150 are nunneries (*fig.* 283.). The number of two archbishops and thirteen bishops is not so disproportionate.

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FRIAR AND NUN.

2553. *The literature of Portugal*, during the period of its glory, was by no means contemptible. The genius and fate of Camoens spread his name throughout Europe, and entitled him to rank among the few modern epic poets. By the students of Portuguese literature, however, Sa Miranda and Antonio Ferreyra are reckoned scarcely second to him; and Rodriguez Lobo held the nation long enchanted by the sweetness of his pastorals. At the same time Di Barros, Castanheda, and Faria y Sousa, recorded, in magnificent though somewhat inflated historical narrative, the mighty exploits of their countrymen in the African and Indian seas. The subjection to Spain gradually divested Portuguese literature of its manly and energetic character. The muse of history was silent; poetry assumed the form only of the sonnet, and Gongora infected it wholly with a strain of false and meretricious ornament. The house of Braganza for some time did little for knowledge; but in the beginning of the last century, the Conde de Ericeyra introduced the French literature, and founded a royal academy. In the course of the century, Barros Pereyra, Antonio da Lima, Manuel da Costa, a Brazilian, Correa Garcas, and Paulino Cabral, a bishop, made not unsuccessful efforts to revive the ancient Portuguese poetry, and to introduce that of Italy. Portugal has two universities. That of Coimbra, founded at Lisbon in 1290, was transferred to Coimbra in 1308. It enjoys some celebrity, is divided into eighteen colleges, and is still attended by several hundred students; but the course of study is of that obsolete description which prevailed during the middle ages. A smaller university was founded at Evora in 1578.

2554. *For the minor particulars of amusement, dress, food*, &c., reference may be made to Spain, as Portugal has no peculiarities that are more than provincial.

SECT. VII. *Local Geography.*

2555. *Portugal is divided into the following six provinces*, several of which, like those of Spain, in reference to events in their past history, are sometimes called kingdoms: —

	Square Leagues.	Extent in English Acres.	Population.
Estremadura - - - - -	823	5,450,880	826,860
Alemtejo - - - - -	883	5,848,320	380,480
Algarve - - - - -	232	1,536,000	127,613
Beira - - - - -	753	4,994,600	1,121,595
Entre Douro e Minho - -	291	1,927,040	907,965
Tras os Montes - - -	455	3,007,760	318,665

2556. *Estremadura* occupies a great extent of coast, both to the north and south of the Tagus, without ever penetrating very deep into the interior. It presents a rocky, varied, and picturesque surface. It is chiefly important, however, as containing Lisbon, the capital.

2557. *Lisbon* (*fig.* 284.) is situated near the mouth of the Tagus, which may here be almost considered an arm of the sea, since not only the tide flows up, but the water is salt, and the swell often tempestuous. The approach to it presents a more magnificent spectacle than that of perhaps any other city of Europe. The city rises direct from the water, crowning the sides and summits of several hills; which, according to the Portuguese, are seven in number, like those of Rome. The palaces, convents, and churches, which crown this amphitheatre of buildings; the dazzling whiteness of the houses; the light appearance of the windows and balconies; the tasteful arrangement of plants, shrubs, and flowers on their roofs and terraces; the golden orange groves which adorn the suburbs, and the stately specimens of Indian or American botany which are scattered through the scene, produce an effect that cannot be described. The noble harbour, also, crowded with vessels; the numerous pilot and fishing-boats, with their large, handsome lateen sails, ascending or descending the river; and, nearer the shore, hundreds of small neat boats, with white or painted awnings, finely vary the scene. The moment, however, that the stranger lands, and enters the place, he finds that he has been imposed upon by a brilliant illusion; and the gay and glittering city is found to resemble a painted sepulchre. The streets are narrow and ill paved; the houses gloomy, with here and there a latticed window; filth and nuisances assault him at every turn. Lisbon does, indeed, appear to be the dirtiest and most noisome city on the face of the earth. In passing through the streets, a stranger encounters at every turn the most disgusting effluvia. Every species of vermin destined to punish indolence and slovenliness, the mosquito, the scolopendra, and a species of red ant, multiply to an extraordinary degree. Nor is Lisbon found, on inspection, to exhibit that architectural beauty which it promises on a distant view. It might have been expected, among forty churches and seventy-five convents, built by a superstitious people, that there would have been some signal display of this kind; but this is not found even in the cathedral. The defect seems partly owing to the mean taste of the Marquis of Pombal, who ordered them to be all built on a line with the street, to preserve a dull uniformity. Two handsome squares, however, have been formed, the Commercial and the Roscio, which are connected by well-built streets; but the absence of trees, or even shrubs, and the blinding sand that drifts through them, combine to produce a disagreeable effect. Lisbon derives an awful interest from the ruins still left of the great earthquake of 1755, the most dreadful catastrophe which ever befell a modern European city. Six thousand houses were thrown down, 30,000 inhabitants killed; and a conflagration kindled which spread a still wider destruction. The ruins are the more dismal, as they portend similar disasters, which the earth, still heaving from time to time, perpetually threatens. Meantime Lisbon displays one very grand feature; the aqueduct, to the construction of which, though it conveys the water only half a mile, peculiar obstacles were presented. It is carried in one place through a tunnel, and in another over a defile 230 feet deep, by arches, which are said to be the highest in the world. The width of the centre arch is 107 feet. It was built in 1738, by Manuel de Maya; and is of such solidity that it withstood the shock of the great earthquake, which only caused the keystone to sink a few inches.

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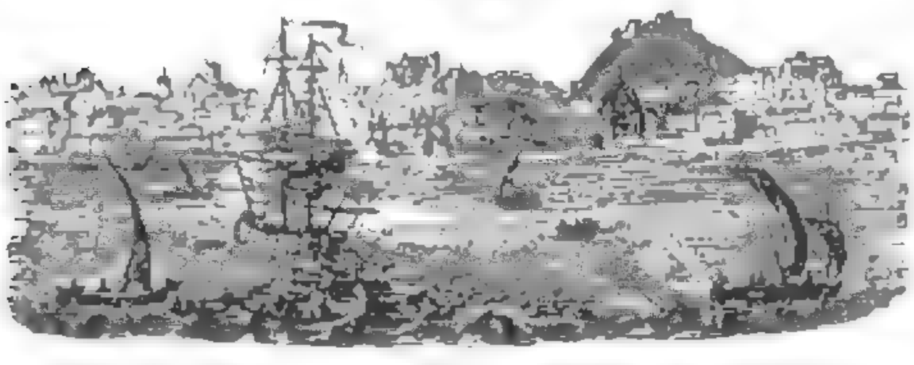

LISBON.

2558. *The vicinity of Lisbon* presents some beautiful sites and palaces. Cintra is the most striking, consisting of an immense mountain, partly covered with scanty herbage, partly with broken, huge, and varied piles of rock, elsewhere presenting thick groves of cork, elm, oak, hazel, and other trees. It includes many lovely and fantastic spots; but the view from it is naked and dreary. The town, at the bottom, with its old palace, has nothing remarkable; but the sides are covered with delightful villas, one of which is notorious for the signature of the unhappy convention of Cintra. Mafra is a royal convent built by John V., in emulation of the Escurial; but though a stupendous pile, 700 feet square, and containing numberless suites of ill-furnished apartments, it ranks far below its model. Only five miles below Lisbon, of which it is considered a suburb, is Belem, the site of a palace and a very magnificent monastery, founded by Emanuel, and in which many of the royal family have been interred.

2559. *There are several other towns of some note in Portuguese Estremadura.* St. Ubes or Setubal lies sixteen miles from Lisbon, on the coast south of the Tagus, on a long interior bay, the waters of which, evaporated by the heat of the sun, leave the excellent bay-salt, one of the national staples. The town is considerable, having been well rebuilt since the earthquake of 1755, when it was almost totally overthrown. The mountain of Ursabida, here extending into the sea, forms a bold and striking promontory, covered with trees and various vegetation. Ascending the Tagus, we come to Santarem, a considerable and ancient town, the Præsidium Julium of the Romans. It has an academy of history, established in 1747. Here the great French army, under Massena, remained long posted, unable to penetrate to Lisbon. Abrantes, higher up, is an important military position, situated on a height whence it commands the passage of the Tagus. Leiria, to the north, is an ancient town, in a most productive territory, and where a great annual fair is held for the supply of the peasantry of the neighbouring country round. At Batalha is a church (*fig.* 285)., and monastery which, united, form the finest structures in all Portugal. It is 541 feet by 416, and is considered by Mr. Murphy to be one of the noblest existing specimens of the Norman Gothic. It is constructed entirely of marble, and the front appeared to him almost unrivalled in chaste and delicate ornament. Among the different parts, the mausoleum erected in honour of King John, is pre-eminently beautiful (*fig.* 286). Vimiero is only a village, but celebrated for the signal victory gained by the British over the army of Junot. Three miles distant is Torres Vedras, a tolerable old town, but chiefly noted as the centre of the grand fortified lines formed by Wellington in 1810, which so completely baffled all the manœuvres by which the French had hoped to reconquer Portugal.

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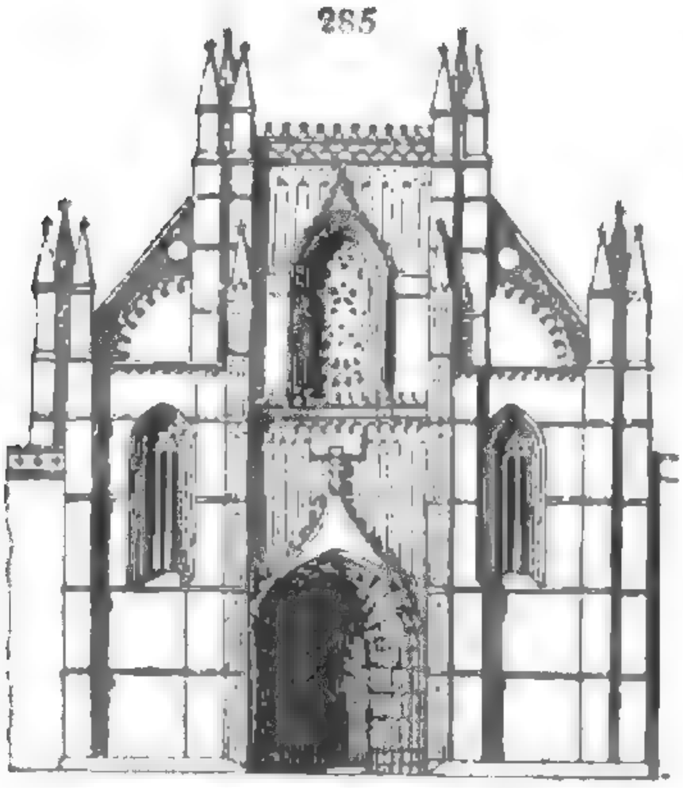

CHURCH OF BATALHA.

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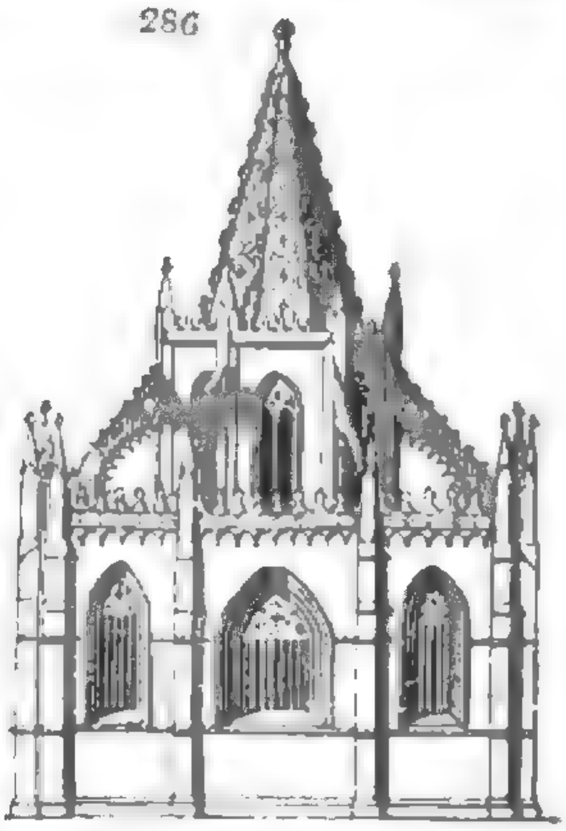

MAUSOLEUM OF KING JOHN.

2560. *Alemtejo* is an extensive province, comprising the greater part of Portugal south of the Tagus. The interior presents an extensive plain; but the frontier towards Spain is finely diversified with hills, wooded mountains, and deep valleys extremely well watered, and very fertile. It contains some large towns. Evora, the third in the kingdom, is situated on an eminence in a fine country, and is of great antiquity. Its origin has even been dated seven centuries before the Christian era. It is more clearly ascertained that the Romans made it a municipal town, and adorned it with some of their finest structures. There is a noble aqueduct, of which the piers are nine feet broad, and supported by buttresses; also a Temple of Diana built by Sertorius, in which great elegance is displayed. Elvas, on the Spanish frontier, immediately facing Badajos, is the strongest fortress in Portugal, and designed as the barrier of the kingdom. To render it such, Spain seems to have exerted all her strength, "as if, by this outward rind, she could conceal her interior weakness." The works were constructed under the directions of the celebrated Count Schaumburg-Lippe; and the fort, bearing his name, is considered a master-piece of the art. Olivenza, still closer to the frontier, is also a fortress, though not so strong. In this neighbourhood are also Villa Viçosa, a pleasant town, and a favourite country residence of the Portuguese monarchs, who have here a handsome hunting-park; and Portalegre, a handsome little town in a delightful country, with a good cathedral. Southward, in the interior, is Beja, a Roman colony, and subsequently a strong Moorish fortress. After being nearly demolished, it was rebuilt by Alfonso III., and fortified by King Diniz, and is still a considerable town.

2561. *Algarve* forms the extreme south of Portugal; and is a maritime province, bearing in an especial sense, the appellation of kingdom, since it long remained independent, and was a celebrated theatre of war between the Moors and the Christians. It is tolerably fertile in wine, fruits, and oil. Taro, the largest town, is also the principal seat of trade, and has a regular packet to Gibraltar. Lagos and Silves are also old little towns, the former on the sea-coast, with some shipping. Cape St. Vincent, the extreme point of Algarve, and the most south-westerly of the Peninsula, is celebrated for the signal victory gained by the British fleet over the Spanish, on the 14th of February, 1797.

2562. *Beira* is a very extensive province or kingdom, filling nearly the whole centre of Portugal, between the Tagus and the Douro. Its surface presents considerable variety; the interior part has the usual mountainous character of Portugal, being traversed by the great chain called the Sierra d'Estrella. On the sea-coast, however, there are plains of considerable extent. The province produces plenty of wine, oil, and chestnuts, and has extensive pastures; but the grain is not sufficient for its consumption.

2563. *Coimbra* (*fig.* 287.), the capital, is beautifully situated on the declivity of a hill, which rises above the Mondego; but the streets, as in other old Portuguese towns, are crowded, dirty, and very steep. In former times a residence of the kings of Portugal, it was strongly fortified, and has stood obstinate sieges; but the remains of its walls and towers are no longer sufficient to constitute it a fortress. It has been called the Athens of Portugal, from its extensive university, containing eighteen colleges, with forty professors, and about eight hundred students. Attached to it is a library of nearly 40,000 volumes, including numerous MSS.; but the actual value both of these and the printed works does not seem to have been fully investigated.

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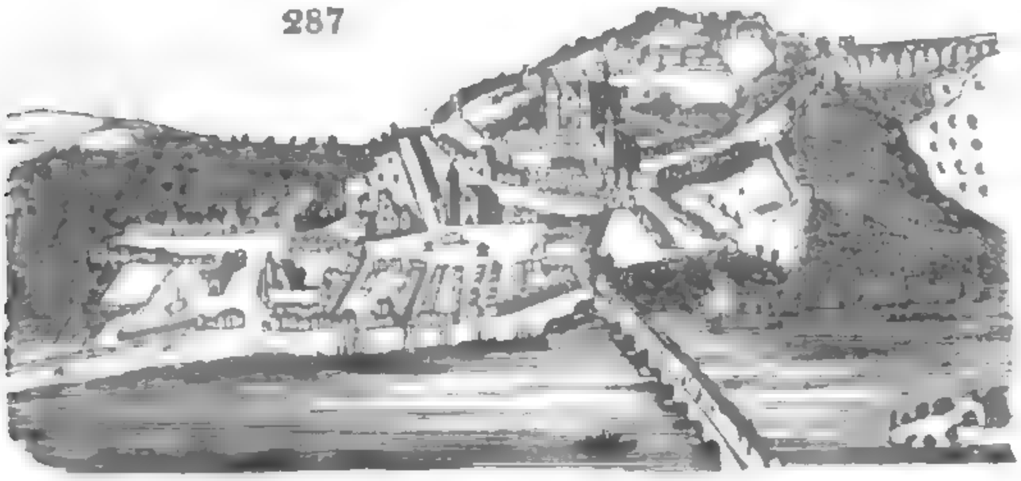

COIMBRA.

2564. *Beira has other towns* of some importance. Among these is Almeida, the northern barrier of the kingdom and a fortress of consequence, though not possessing the great strength of Elvas. It was twice taken in the last war, first by the French under Massena, and then by the British under Wellington. Castello Branco, on the southern frontier, notwithstanding its commanding situation, retains little importance. Lamego, near the southern bank of the Douro, is an ancient city, and the cradle of the Portuguese monarchy. Here, in 1143, the states-general for the first time met, recognised the fundamental laws, and acknowledged the sovereignty of Alfonso. Viseu, in the centre of the kingdom, is, like Lamego, an episcopal see, and has the greatest annual fair in Portugal.

2565. *Entre Douro e Minho* forms the maritime part of Portugal, north of the Douro. Though the smallest, it is considered the most valuable, populous, and productive of all the provinces. Its peasantry have done much to redeem the reproach of torpor and sluggishness generally urged against their countrymen. This district is entirely covered with mountains, partly rugged and barren, but generally separated by fertile and well-watered valleys, cultivated to the utmost possible extent; and which, besides oil, fruit, and flax, are made to produce most copiously the wine called *port*, for which so ample a market exists in England.

2566. *Oporto, or Porto* (*fig.* 288.), the ancient capital, and still the second city of the kingdom, is situated near the mouth of the Douro on the northern bank, though on the southern are two extensive suburbs, supposed to have constituted the ancient city. The modern town is well built, especially when compared with most others in the Peninsula. The river affords a tolerably secure harbour, without any artificial aid, except an elevated and walled quay, to which the ships' cables may be fastened during the floods. These often come down with such force, that, without such a support, the vessels would be inevitably carried out into the sea. The chief dependence of Oporto is its trade with England, which remains unimpaired amid the general diminution of that with America. There are about thirty English houses regularly settled here, besides a number of merchants who pay frequent visits to the place: The exportation of port wine, however, on which its trade rests, is generally cramped by

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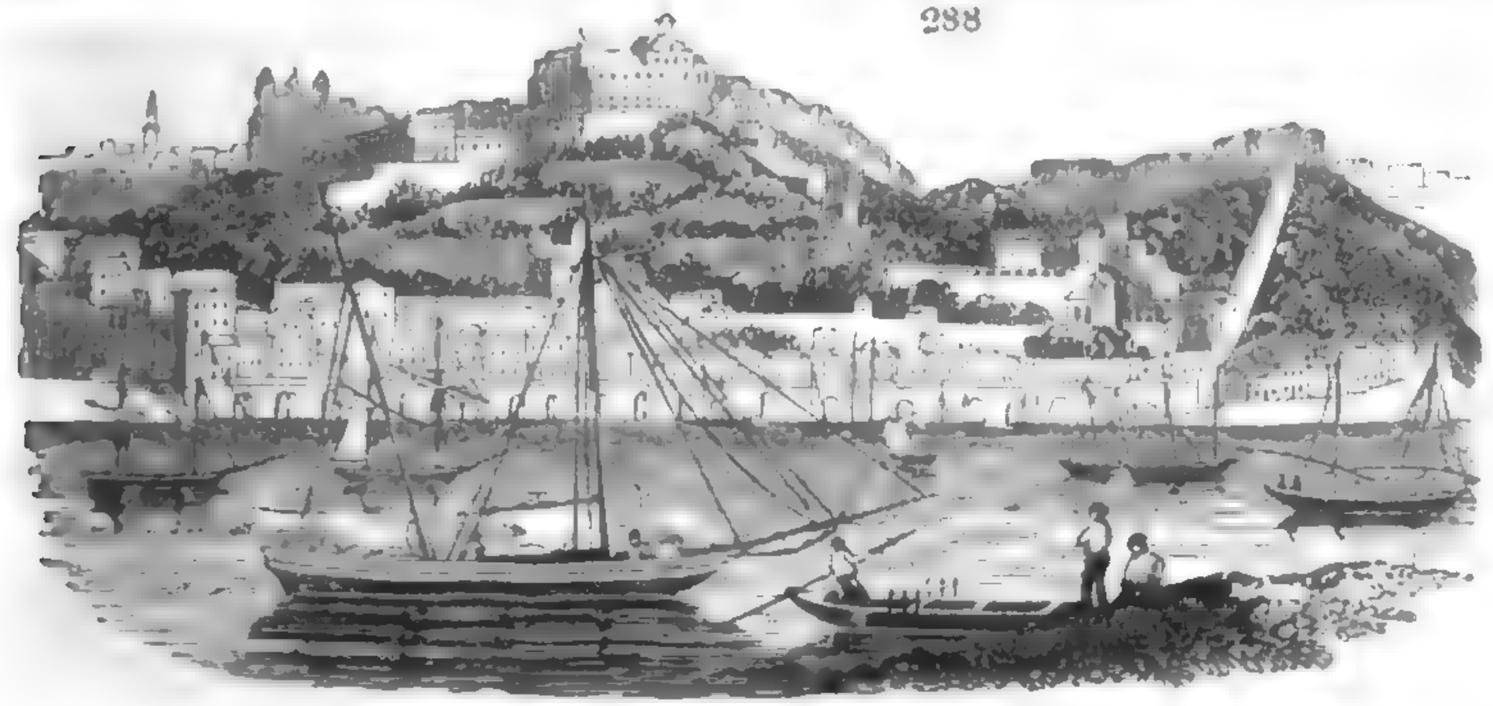

OPORTO.

the absurd policy of placing it entirely in the hands of an exclusive company, who hav adopted the pernicious practice of diluting the produce of the best vineyards with wine c those of an inferior quality, by which the character of the genuine port grievously suffers.

2567. *Braga*, farther north, ranks as the capital of the province; and, though now fa outstripped by Oporto, is of much more ancient fame. Under the Romans it was the metro polis of an extensive district, and its former greatness is still attested by numerous antiquitie It has made a distinguished figure in the ecclesiastical history of Portugal, and is the se of an archbishop, who is primate of the kingdom. Braga is a handsome town; well buil well paved, the streets spacious and clean. There is some industry, particularly a manufacture of small beaver hats, which supplies a great part of the kingdom. The adjacen country is hilly, but populous and pleasant. Valença is a small town, agreeably situate on the Minho, which separates it from Galicia.

2568. *Tras os Montes*, or the province beyond the mountains, is of great extent, occupyin the whole interior of Portugal south of the Douro. The Cantabrian chain, after traversin Asturias and Galicia, throws out branches which not only separate that territory from th rest of Portugal, but cover almost its whole surface. They leave only deep valleys, throug which considerable rivers, too rapid however to be navigable, pour down into the Douro It is much inferior to Entre Douro e Minho, both in populousness and cultivation; yet considerable quantity of the port wine produced grows on the sides of its hills. Th inhabitants are a race of active, hardy, and brave mountaineers. They rose in great forc against the French, and have since somewhat less happily distinguished themselves by th ardour with which they fought in the cause of absolute power, and in resistance to ever form of constitutional government.

2569. *The towns* are small, and not regularly fortified; though, from the nature of th country, they form defensible military positions. Braganza is a city of ancient note, an gave the title of Duke to the first nobleman in the kingdom, even before he was raised t the throne, by the appellation of John IV. The kings of Portugal still retain the title o Dukes of Braganza. Chaves, the Aquæ Flaviæ of the Romans, still exhibits two baths an a magnificent bridge constructed by that people. Chaves gives the title of Marquis to family, one of whom was the most active opponent of the French during their invasion while another has lately been at the head of the anti-constitutional army, of which the headquarters were always in Tras os Montes.

2570. *The Arabs in Spain*, like the Saxons in England, established a lasting memorial o their dominion by engrafting their own language on that of the country which they subdued Of this, the topography of the Peninsula exhibits innumerable instances. The names o rivers, mountains, towns, and places, were either totally or partially changed, by th victorious invaders; and, after the expulsion of their descendants, those names were perpetuated, though with alterations in some instances as arbitrary as those which were made i the ancient topography of the country: thus, the Roman station, *Pax Augusta*, was transformed by the Arabs into *Batalio*, and afterwards by the Spaniards into *Badajox; Cæsa Augusta*, by an abbreviation less violent, became *Saragossa;* and *Emerita Augusti* wa contracted into *Merida*.

2571. The Arabic term *Medina* (city) survives in two eminent instances among th titles of the Spanish nobility: *Medina Selim* (the city of Selim) is recognised in the dukedon of *Medina-Celi;* and the colony probably called New Sidon, is that of *Medina-Sidonia*.

2572. From the generic term *guad*, a river, and *velez* or *veled*, a landed estate or district many names may be explained which at first view appear capricious and arbitrary: —

Ex.	Guad-al-aviar.	The white river.
	Guad-al-quivir.	The great river.
	Guad-al-higiara, now Guadalaxara.	The river of rocks.

Velez and *Veled* are often conjoined with proper names, *Velez Malaga, Veled Vlid*, now Valladolid: thus Navarre, Leon, and their confines never having been occupied by the Arabs were called by them *Veled Arroum*, the land of the *Romans*.

2573. *Gezira* was applied indifferently to an island or a peninsula; hence *Algezira*.

2574. *Aldea* means what is comprehended under the English term *a farm*. It is o common occurrence in itineraries, as *Aldea del Rio, Aldea Gallega, Aldeas de Fonsso*.

2575. From *cántara*, a bridge, we account for the emphatic name *Alcántara*. *Calánto;* castle, enters more or less prominently into the composition of various names; as *Caláa Ayat*, the castle of Ayat, is now *Calatayud; Caláat Rabah*, the castle of Rabah, is nov *Calatrava; Al Caláat*, simply the castle, is now *Alcalá*.

2576. *Alcaxar*, a word of frequent occurrence in Spanish topography, is a fortified hous or small castle; *Almeria* is an observatory.

2577. See *Description of Spain*, by Gerif Albedris, in the translation of Don Jos Antonio Condé, whose *History of the Domination of the Arabs in Spain* is esteemed one of th most masterly works that have appeared in the present age.

Chap. VIII.

ITALY.

2578. *Italy* is an extensive region in the south of Europe, one of the finest in the world as to soil and climate, and noted as the theatre of many of the greatest events in history. It is now in a state of degradation and decline, but is filled with grand monuments, and scenes calculated to awaken the most lofty recollections.

Sect. I. *General Outline and Aspect.*

2579. *Italy* is bounded on the north, and partly on the west, by the vast and continuous range of the highest Alps, which separate her from what she disdainfully terms the ultramontane regions of France, Italy, and Switzerland. All the rest of her circuit is enclosed by the Mediterranean and its great gulfs, of which the Adriatic, in the east, separates her from the opposite shores of Greece and Illyria. On the west she borders on the broadest basin of the Mediterranean, beyond which are the shores of France and Spain. On the extreme south she almost approaches the African coast. The greatest length is north and south from about 36° 40′, or 700 English miles; the extreme breadth, between the Rhone in Savoy and the Isonzo, lies between 6° and 13° west longitude, and may comprehend 350 English miles. This applies only to the broad belt of Northern Italy, as all the rest of the territory stretches obliquely in the form of a long narrow boot, the average breadth of which does not exceed 100 miles. The whole extent may be reckoned at 117,090 square miles, including Sicily and Sardinia.

2580. *The surface of Italy* is the most finely diversified of perhaps any country in the globe. It has the loftiest mountains, and the most beautiful plains in Europe. All the chains of Alps, the Cottian, the Pennine, the Lepontine, the Rhætian, the Julian, which belong only in part to other kingdoms, range along her frontier. Some of their proudest pinnacles, indeed, Mont Rosa, St. Bernard, the Simplon, St. Gothard, Oerteles, are within the Swiss territory; but their white summits are seen amid the clouds in continuous grandeur along the whole extent of the plains of Lombardy and Piedmont. The Apennine is a chain purely Italian. It branches off first from the Maritime Alps on the western frontier, and runs for a long space eastward, leaving on the south only a narrow plain between it and the Mediterranean; while on the north it forms the boundary of Piedmont and Lombardy. On the Tuscan border it gradually bends round to the south and south-east, following, or rather prescribing the form of the Peninsula, of which it occupies the centre in one unbroken line. It does not aspire to the awful height, or wrap itself in the perpetual snows, of the Alps. Its highest pinnacle in the Abruzzo, called the great rock of Italy, does not rise above 9000 feet. These mountains are consequently, in this climate, throughout, covered with luxuriant foliage; on the lower slopes are the vine and the olive, higher up, the various forest trees, among which the chestnut affords copious food to the inhabitants. They enclose finely cultivated valleys, and are full of deep, intricate, and wooded defiles. As their branches, dividing into low hills of varied form, touch upon the fine plains along the Mediterranean, they produce a variety of bright and smiling scenes, which entitle Italy to be considered as the peculiar region of landscape. In the southern quarter they assume a very formidable and volcanic character, pouring deluges of burning lava from the cone of Vesuvius, and convulsing Calabria with the most terrible earthquakes. Their aspect in that country is peculiarly formidable and rugged (*fig.* 289.). Beyond the straits of Messina,

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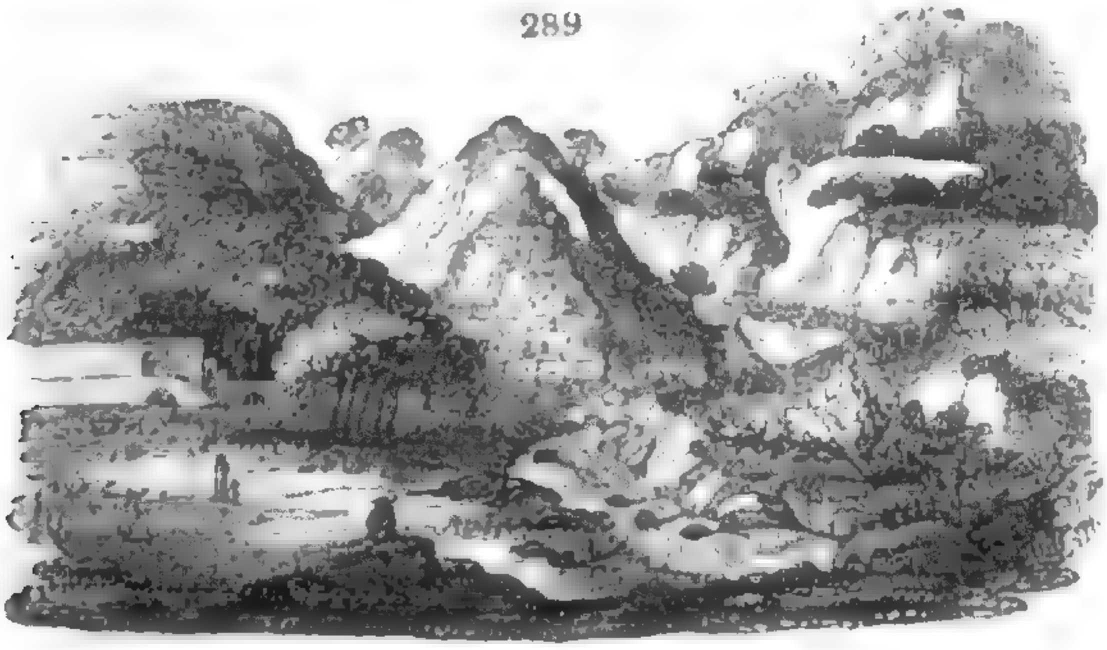


APENNINES IN CALABRIA.

by Google

MAP OF ITALY — NORTH PART. *Fig.* 290.

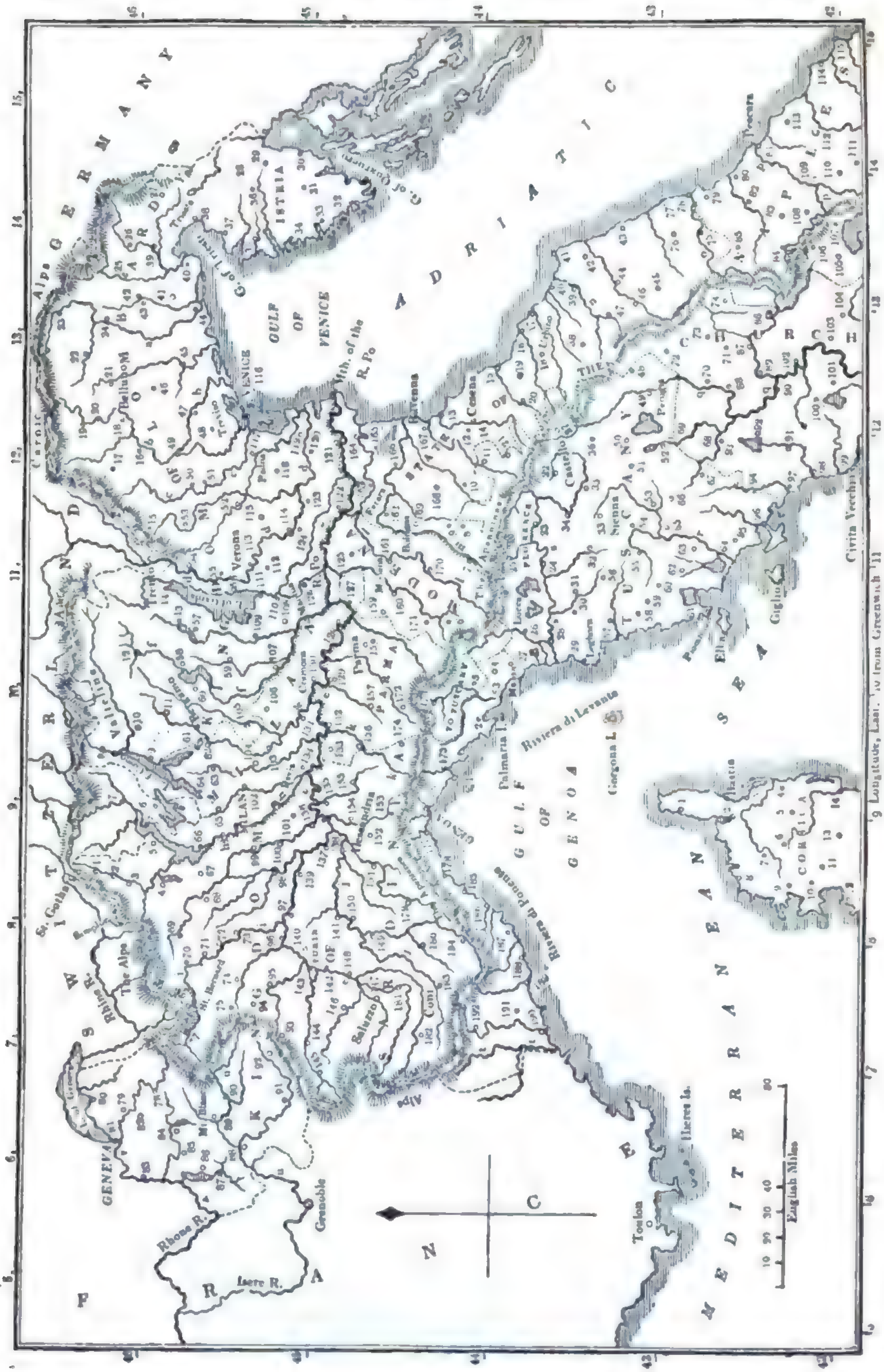
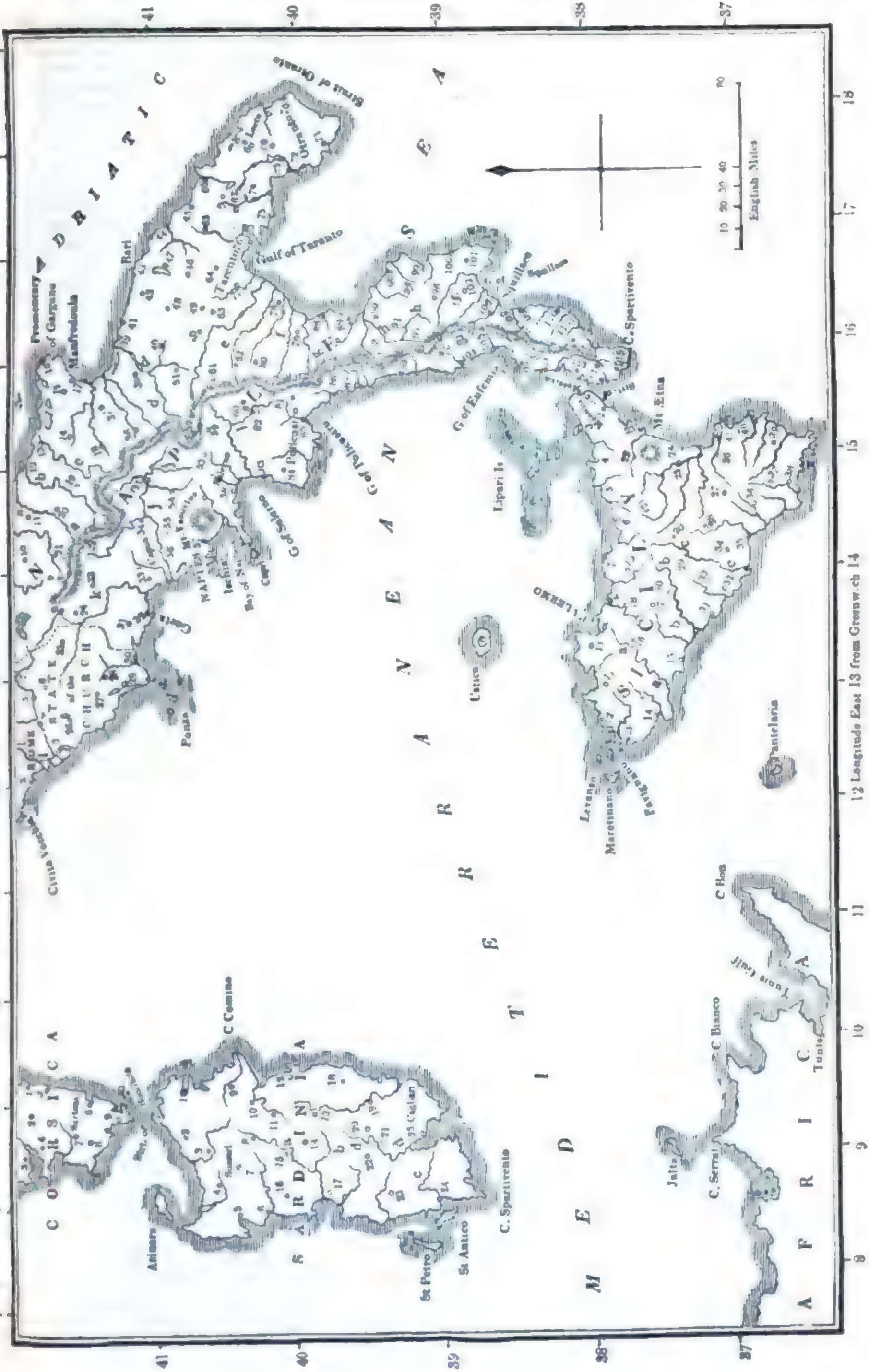


Fig. 291. MAP OF ITALY—SOUTH PART.



where they present to the mariner the perilous forms of Scylla and Charybdis, they cover Sicily with mountains, among which the celebrated peak of Etna (*fig.* 292.) rises to a height which only the Alps can surpass, while it throws out, amid the snows, volcanic eruptions as remarkable as those of Vesuvius.

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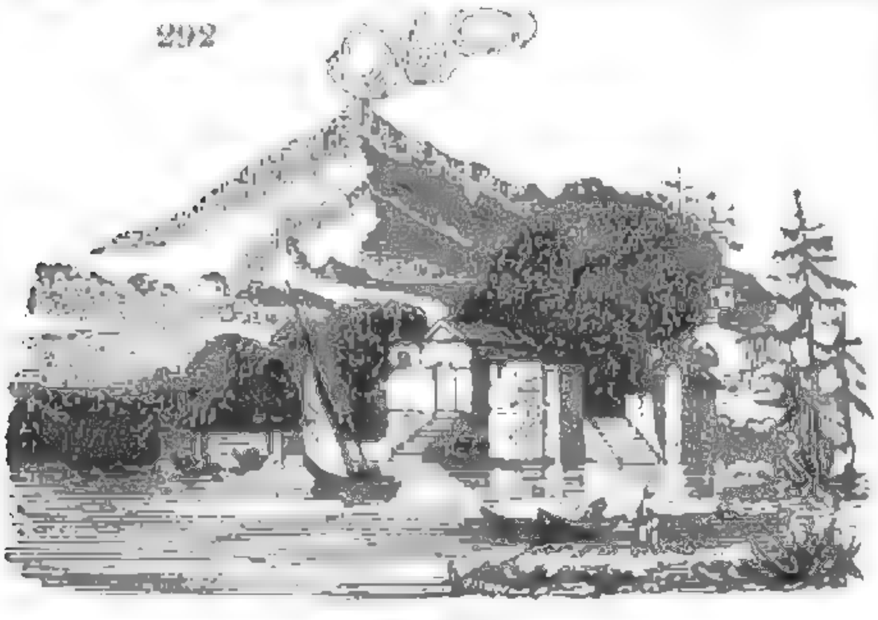

MOUNT ETNA.

2581. *The plains of Italy* are as remarkable for their extreme beauty as the mountains for their grandeur. The most extensive is that of the Po, or of Lombardy, between the Alps and Apennines, which, being profusely watered, highly cultivated, and under a genial climate, is, perhaps, the richest and most productive region in Europe. The Apennines, in their course southward through the centre of Italy, divide it into two plains, of which that on the east is narrow, and often crossed by branches from the main ridge, which present their bold cliffs to the Adriatic. On reaching the Neapolitan territory, the plain becomes wider and more fertile, being covered with rich pastures and vast plantations of olives. But it is on the western side that Nature most profusely displays her beauties, and that the grand seats of civilisation and power have been established. The Tuscan champaign is scarcely considered as composed of more than two broad valleys, those of Florence and of Pisa; but the *Campagna Felice* of Naples, the voluptuous environs of Capua, appear to unite all the richness of Lombardy with aspects much more varied and picturesque, and are usually considered the most delightful country in Europe. All this side of Italy, however, is subject to a dreadful scourge, the *maremma* or pestilential influence arising from a marshy and swampy surface. The Pontine Marshes are in this respect so dangerous, that in the hot season they can scarcely be crossed, even hastily, without the peril of death. But it is

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References to the Map of Italy.—North Part.

NORTH PART.
1. Valda
2. Crevola
3. Duomo d'Ossola
4. Omegna
5. Cannobio
6. Lugano
7. Bellinzona
8. Chiavenna
9. Bellono
10. Morbegno
11. Corvamena
12. Edolo
13. Bordon
14. Riva
15. Borgo di Valsugana
16. Feltre
17. Primero
18. Belluno
19. Longana
20. Rai
21. Ainano
22. Tolmezzo
23. Malborgheito
24. Osopo
25. Cividal
26. Canale
27. Resderta
28. Citta Nova
29. Rosso
30. Albon
31. Petina
32. Pola
33. Moncalvo
34. Parenzo
35. Buje
36. Saregna
37. Capo d'Istria
38. Trieste
39. Goritza
40. Aquileja
41. Casello
42. Udine
43. Campo Formio
44. Marano
45. Meduna
46. Cerneda
47. Maserada
48. Treviso
49. Fanara
50. Bassano
51. Cittadella
52. Vicenza
53. Cologo
54. Calzano
55. Ossenigo
56. Garda
57. Ano
58. Pisogni
59. Brescia
60. Endine
61. Bergamo
62. Trezzo
63. Monza
64. Como
65. Saronno
66. Angera
67. Bo. Manaro
68. Creuacore
69. Riva
70. Chatillon
71. Ft. di Bard
72. Ivrea
73. Tino
74. Ponte
75. Seresola
76. Aosta
77. Morge
78. Salence
79. Bonneville
80. Thonon
81. Geneva
82. Crusvilles
83. Seissel
84. Annecy
85. Rumilly
86. Aix
87. Chamberry
88. Aigue Belle
89. Conflans
90. Moutiere
91. St. Andre Medane
92. Termignon
93. La Novalesa
94. Balma
95. Lanzo
96. Chivasso
97. Crescentino
98. Vercelli
99. Novara
100. Zema
101. Dormo
102. Milan
103. Lodi
104. Paullo
105. Crema
106. S. Leone
107. Ponte Vico
108. Mariano
109. Monte Chiaro
110. Giota
111. Peschiera
112. Villafranca
113. Verona
114. Legnano
115. Cologna
116. Venice
117. Padua
118. Este
119. Cavarzere
120. Rovigo
121. Crespino
122. Ficarnola
123. Badia
124. Vigo
125. Mirandola
126. Mantua
127. Guastalla
128. Casal
129. Gibello
130. Cremona
131. Pizzighettone
132. Placentia
133. Arcello
134. Pavia
135. Voghera
136. Lumello
137. Valenza
138. Alessandria
139. Casale
140. Superga
141. Asti
142. Moncalier
143. Turin
144. Susa
145. Oulx
146. Pinerola
147. Saluzzo
148. Carignano
149. Cherasco
150. Alba
151. Aqui
152. Novi
153. La Bocchetta
154. Tarlana
155. Bagnara
156. Bobbio
157. Anresa
158. Parma
159. Reggio
160. Congiano
161. Modena
162. Pog
163. Ferrara
164. Codigora
165. Comacchio
166. Argento
167. Ravenna
168. Imola
169. Bologna
170. Guia
171. Castelnuova
172. Belfort
173. Pontremoli
174. Ascona
175. Rapalo
176. Genoa
177. Utre
178. Savona
179. Goregno
180. Mondovi
181. Savigliano
182. Bellino
183. Coni
184. Garessio
185. Finale
186. Albenga
187. Oneglia
188. St. Remo
189. Vintimiglia
190. Nice
191. Scarena
192. Tenda.

SOUTH PART.
1. Porto Fino
2. Spezzia
3. Sarzana
4. Strettoja
5. Capriala
6. Siliano
7. Riolo
8. Searicalasino
9. Lojano
10. Tossignans
11. Modigliano
12. Forli
13. Cervia
14. Cesena
15. Rimini
16. Pesaro
17. Fano
18. Urbino
19. S. Marino
20. S. Leo
21. Soria
22. Poppi
23. Florence
24. Empoli
25. Pistoja
26. Lucca
27. Massa
28. Pisa
29. Leghorn
30. Lari
31. Lojatico
32. M. Reggiore
33. Sienna
34. Figlino
35. Levane
36. Arezzo
37. Castello
38. Cagli
39. Terni
40. Sinigaglia
41. Ancona
42. Recanati
43. Fermo
44. Macerata
45. Gualdo
46. Camerino
47. Matelica
48. Gubbio
49. Perugia
50. Cortona
51. M. Pulciano
52. Chiusi
53. Buonconvento
54. Muciaretto
55. S. Galano
56. Volterra
57. Riparbella
58. Ribbona
59. Borghera
60. Campiglia
61. Piombino
62. Massa
63. Tatti
64. Grossetto
65. Porronia
66. Radicofani
67. Aquapendente
68. Orvieto
69. Citta Della Pieve
70. Itri
71. Spoleto
72. Assisi
73. Foligno
74. Norcia
75. Ascoli
76. Mt. Alto
77. Ripatransone
78. Tronto
79. S. Omero
80. Atri
81. Pescara
82. Teramo
83. Ofena
84. Aquila
85. Mt. Corno
86. Rieti
87. Terni
88. Todi
89. Narni
90. Orte
91. Toscanella
92. Montefiascone
93. Bolsena
94. Sovanna
95. Monteano
96. Orbetello
97. Montalto
98. Cornetto
99. Civita Vecchia
100. Sutri
101. Cesano
102. Magliano
103. Cretone
104. Virovaro
105. Albe
106. Ocra
107. Celano
108. Navelli
109. Pololi
110. Sulmona
111. Cansano
112. Mt. Marcello
113. Lanciano
114. Vastro
115. Termoli.

CORSICA.
(North Part.)
1. Pino
2. St. Florent
3. Bastia
4. Cervione
5. Arbitro
6. Corte
7. Prato
8. Calvi
9. Pinto
10. Viso
11. Lopigna
12. Alato
13. Tolla
14. Migliacciaro.

Rivers.
a Tagliamento
b Piave
c Brenta
d Adige
e Po
f Oglio
g Adda
h Ticino
i Baltea
j Tanaro
k Trebia
l Panaro
m Reno
n Esine
o Tronto
p Pescari
q Tiber
r Ombrone
s Arno
t Var
u Isere
v Rhone.

round the imperial city itself, and at its very gates, that the maremma appears peculiarly desolating. The campagna of Rome, which cultivation and draining rendered formerly one of the finest spots of Italy, has, under the present proud and indolent rule, been so far neglected, that the pernicious influences of its low and swampy soil have gained a fearful ascendency. They have rendered it uninhabitable for a great part of the year; and this "storied plain" is become a desert, covered with a few scanty herds; and a deep solitude now encircles the fallen metropolis of the world.

2582. *The rivers* of Italy scarcely correspond to their fame, or to the lofty and classic recollections attached to their names. The Po, which waters the plain of Lombardy, and drains all the waters of the Alps and northern Apennine, can alone be ranked among the great rivers of Europe. It rises on the frontier of France, amid the loftiest recesses of the Cottian Alps, and rolls due west the whole breadth of Italy to the Adriatic, a course of about 400 miles. Its tributaries on both sides are very numerous, though none have space to expand into great rivers. The alpine streams of the Tesino, the Adda, and the Oglio, are absorbed soon after they have left their deep mountain valleys or lakes. The Adige makes its way entirely over from Germany in the valley between the Rhætian and Julian Alps, and falls into the Adriatic not far from the Po. These rivers being always full, and crossing the main line of communication, form important military barriers. They preserve also the plain in a state of perpetual fertility, though they often cause considerable calamity by their inundations. The tributaries from the south are also numerous, but, with the exception of the Tanaro and the river of Genoa, of no remarkable magnitude. The rivers of Lower Italy would scarcely deserve mention, but for the high associations of history and poetry. The far-famed Tiber itself, which on this ground, "with scorn the Danube and the Nile surveys," is described by Addison as deriving its scanty stores from an unfruitful source. It drains, however, a considerable extent of the Apennine, and its entire course may be 150 miles. The Arno of Florence and the Lirio of Campagna are only distinguished for the beauty of the vales through which they meander.

2583. *Lakes* are not a feature very characteristic of Italy. Nevertheless, the waters which descend from the southern face of the Alps, spread into the long and winding lakes, Maggiore, Como, and Garda, which extend into the plain of Lombardy. The scenery of these lakes has not the grand and solemn character of those of Switzerland, which are enclosed in the depth of the highest Alps; but they are beautiful in the extreme. The lower banks are bordered by gentle hills covered with vines and luxuriant verdure; while their heads are crowned by the snowy summits of the Alps. The Apennine is not a lake-producing chain; it only forms on its eastern border a few that are small, and very beautiful, Perugia, Celano, Bolsena, &c.: Sicily is also without lakes.

Sect. II. *Natural History.*

Subsect. 1. *Geology.*

2584. *The geognosy* of this country has, of late years, engaged the particular attention of naturalists; consequently, numerous new facts and views have been added to those formerly known. The writings of Dolomieu, Hamilton, Von Buch, Spallanzani, Brocchi,

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References to the Map of Italy.— South Part.

NORTH PART.

1. Civita Vecchia
2. Palo
3. Ostia
4. Rome
5. Tivoli
6. Palestrina
7. Virovaro
8. Sora
9. Api
10. Canzano
11. Rca. Spinavisto
12. Termoli
13. Serna
14. S. Severo
15. Mt. Gargano
16. Viesti
17. Manfredonia
18. Lucera
19. Campobasso
20. Trivento
21. Sangro
22. Isernia
23. St. Germano
24. Arpino
25. Veroli
26. Albano
27. Cisterno
28. Sesse
29. Fogliano
30. Terracina
31. Fondi
32. Gaeta
33. Sessa
34. Cacasso
35. Benevento
36. Troja
37. Foggia
38. Cirignola
39. Barletta
40. Minervino
41. Trani
42. Bitonto
43. Bari
44. Monopoli
45. Ostuni
46. Le Noci
47. Conversano
48. Bitetto
49. Altamura
50. Gravina
51. Venosa
52. Conza
53. Quaglitto
54. Avellino
55. Caserta
56. Capua
57. Naples
58. Salerno
59. Moro
60. Marsico Nova
61. Potenza
62. Cavuno
63. Matera
64. Motola
65. Martino
66. Brindisi
67. Oria
68. Lecco
69. Veglie
70. Otranto
71. Ugento
72. Gallipoli
73. Nardo
74. Casalvolo
75. Monacisso
76. Taranto
77. Castellanela
78. S. Basilio
79. Tursi
80. Corneto
81. Lagro Negro
82. La Polla
83. Pesto
84. Torchiara
85. Policastro
86. Morano
87. Scalea
88. Crivole
89. Cassano
90. Bassano
91. Bisignano
92. St. Marco
93. Fuscaldo
94. Diano
95. Cosenza
96. Grenza
97. Umbriatico
98. Cariati
99. Sirongoli
100 Cotrone
101. Cutra
102. Belcastro
103. Nicastro
104. Castiglione
105. S. Eufemia
106. Cartanzaro
107. Squillace
108. Tropea
109. Isca
110. La Rocella
111. Siderno
112. Gerace
113. Scilla
114. Reggio
115 Melito.

Rivers.

a Trigno
b Biferno
c Fortore
d Ofanto
e Basiento
f Agri
g Sinno
h Crati
i Sele
j Volturno
k Sacco
l Tiber.

SICILY.

1. Messina
2. Scaletta
3. Melazzo
4. Patti
5. S. Marco
6. Mistretta
7. Cefalu
8. Termini
9. Palermo
10. Morreale
11. Alcamo
12. Trapano
13. Marsala
14. Mazzara
15. Sciacca
16. Corleone
17. Castro Novo
18. Vicari
19. Pire
20. Castello Giovanni
21. Nicosia
22. Rhandarzo
23. Taormina
24. Catania
25. Paterno
26. Lentini
27. Mineo
28. Piazza
29. Caltanisetta
30. Sutera
31. Gergento
32. Palma
33. Naro
34. Butera
35. Terra Nova
36. Chiaramonte
37. Modica
38. Scilici
39. Noto
40. Syracusa
41. Augusta.

Rivers.

a Belice
b Platina
c Salso.

SARDINIA.

1. Terranova
2. Tempic
3. Ochiri
4. Sassari
5. Alghero
6. Bosa
7. Osieri
8. Bora
9. Posada
10. Irgoli
11. Nuoro
12. Baunei
13. Gadoni
14. Teti
15. Sedilo
16. Cuglieri
17. Oristano
18. Tertenia
19. Ballan
20. Mandas
21. Guasila
22. S. Luri
23. Iglesias
24. Palma
25. Cagliari

Rivers.

a Tirsi
b Massari
c De Palma
d Manon.

CORSICA.

1. T. Capose
2. Zicavo
3. Ajaccio
4. Cagnacoli
5. T. Solenzaro
6. Pto. Vecchio
7. Bartena
8. Gunchetto
9. Bonifacio.

Breislac, Brongniart, Hausmann, Daubeny, Monticelli, Covelli, &c. are among the most interesting with which we are acquainted as illustrative of the mineral history of Italy and its islands; and to these we refer our readers. The following observations will convey a general idea of the geognostical structure and composition of this interesting country.

2585. *The geognostical structure* of the central part of the Apennines is very simple; the mountains of that division of the range being composed of a white limestone which rarely contains foreign beds, and but seldom fossil organic remains. It is there, too, that the range is loftiest, and is also the broadest. But this simplicity of construction does not continue throughout the whole Apennine range; for, from the point where it rises from the Alps to the country of Florence, it is composed of strata and beds of slate, limestone, and a magnesian rock, named in Tuscany *gabbro* and *granitello*. The summits of the mountains of the country of Genoa, which overlook the Gulf of Spezzia, are principally formed of this latter substance, which is the *euphotide* of geologists. Some geologists consider this part of the range as of primitive formation; while others, as Professor Hausmann, view it as belonging to the transition class of rocks, because he finds it containing, intermingled with the rocks just mentioned, extensive deposits of greywacke. A limestone, resembling that of the Jura, forms all the mountains extending from Florence to Abruzzo, and from Abruzzo to Calabria. It is only in the latter province that the central part of the chain is formed of granite, gneiss, mica slate, and other primitive rocks; resting upon which, in the lower parts of the country, there are deposits of tertiary rocks.

2586. *The sub-Apennine* hills belong to the tertiary series, and are composed of marls, slate clays, gravel, sands, and conglomerates. We observe also in these hills, but less frequently, gypsum, calcareous tuffas, and volcanic tuffas. A limestone of modern formation abounds in the neighbourhood of Rome, and is known under the name *travertino*, and of which the principal monuments of that city are built.

2587. *The Apennines are not rich in metals.* The most considerable mines are those of *iron*, which occur in Tuscany, and chiefly in the island of Elba, a tract composed of primitive rocks. The *coal mines* in this chain are of but little importance, but there are great deposits of *salt* in the province of Cosenza. The principal mineral treasures of the Apennines are the *marbles*, of which the most celebrated are those of Carrara, Seravezza, and Sienna.

2588. *Ancient volcanoes* do not occur in the central part of the Apennines; all of them, with one exception, the hill of Voltore, near to the town of Melfi, in the province of Basilicata, are situated on the south-western declivity of the chain. They form an interrupted chain, which is passed over on the road from Sienna to Rome. The most elevated spots of this district, such as the Monte Cimini near Viterbo, and the Monte Amiata, appear composed of trachyte. It is associated with basalt at Viterbo, where it is columnar, and rests on a bed of pumice and tuffa, containing the bones of quadrupeds. Near Viterbo is a small lake which is in a constant state of agitation, owing to the emission of sulphuretted hydrogen gas; and a little nearer, on the road to Rome, is the Lake of Vico, formerly the Lacus Cimini, which has all the appearance of a crater. The Lake of Bolsena, between Viterbo and Sienna, possesses the shape of an ancient crater, and its being bounded by volcanic rocks is consistent with this opinion. The country around Rome, and also the hills on which the city is built, is composed of tertiary marls, clays, and sandstones, intermixed with a preponderating quantity of granular and lithoidal volcanic tuffas. The marls and sandstones are partly lacustrine, partly marine. The many lakes around Rome, such as those of Albano and Nemi, are formed by craters of ancient volcanoes. In the vicinity of Modena there are many small *mud volcanoes*, called *salses*, which throw out salt water. These volcanoes give out carbonated hydrogen, which, sometimes catching fire, gives rise to the *natural fires* mentioned by travellers, of which there are examples at Velleja, Pietra Mala, and Barigazza. On the road between Rome and Naples, the first indication of volcanic action, after passing the Pontine Marshes, occurs a little to the south-west of Mola de Gaeta. We there find ourselves between two chains of hills, — that to our right, the Monte Massico, composed of Jura limestone; the other, on the left, of volcanic marls. The town of Sessa stands on volcanic tuffa. Several *coulées*, or streams of lava, which seem connected with the volcanic hill of Rocca Monfina, also occur near Sessa. Rocca Monfina retains the vestiges of the great crater from whence these coulées flowed. A few miles west of the Mola de Gaeta lie the *Ponza Islands*, four of which are composed of trachyte; in the fifth, Giannone, the trachyte overlies limestone.

2589. *Vesuvius.* — The only active volcano in Italy is Vesuvius, which shoots up in a country where the surrounding Neptunian strata belong to the tertiary class. It is composed of an older part, named Monte Somma, and the more modern Vesuvius properly so called. Somma is composed of alternating coulées, or streams of lava, and beds of volcanic tuffas, which are traversed by veins or dykes of lava. The modern part of the mountain is Vesuvius, exhibiting rocks of the same general description. The earliest recorded eruption of Vesuvius is that of 79, during which so vast a shower of ashes and scoriæ was thrown out, that the cities of Stabiæ, Pompeii, and Herculaneum were covered up, indeed fairly buried, by it. Many eruptions have taken place since that period, and they still continue.

In the country around Naples the land is by no means stable, as is proved by the submergence and emergence of the Temple of Serapis, near the town of Puzzuoli; and the rise of a new mountain, on the northern side of the bay, in the sixteenth century. Vesuvius had at that time been for a long interval tranquil, but a succession of earthquakes had taken place in the country for two years previously: at length, on the 28th of September, of the year 1538, flames broke out from the ground between Lake Avernus, Monte Barbaro, and the Solfatara, followed by several rents of the earth from which water sprung, while the sea receded 200 feet from the shore, leaving it quite dry. At last, on the 29th, about two hours after sunset, there opened near the sea a gulf, from which smoke, flames, pumice and other stones, and mud, were thrown up with the noise of thunder. In about two days the ejected masses, formed a hill 413 feet high, and 8000 feet in circumference. The eruption finally ceased on the 3d of October. On this day the hill was accessible, and those who ascended it reported that they found a funnel-shaped opening on the summit — a crater a quarter of a mile in circumference. This hill, named *Monte Nuovo*, is composed of fragments of scoriform matter, or of a compact rock of an ash grey colour, sometimes resembling trachyte, and at other times approaching to porphyry and calx.*

2590. *The nearest approach to the phenomena of Vesuvius* is exhibited in a hill between Monte Nuovo and Puzzuoli, called the *Solfatara*, which, though considered an extinct volcano, is continually giving off gaseous exhalations mixed with aqueous vapour. The gases are sulphuretted hydrogen and muriatic acid. The rock of the hill is trachyte. A vast coulée of trachytic lava appears extending from the Solfatara to the sea, forming the promontory called the Monte Olibano, on the road between Naples and Puzzuoli. The whole of this stream rests upon the extensive formation which reaches from Puzzuoli to Cumæ, and appears to be continuous with the rock found in the immediate neighbourhood of Naples. This, which has long been known by the name of *Puzzuolana*, is a formation of volcanic tuffa. The height of the tuffa, in many places near Naples, is very considerable; the pile of the Camaldulo, the loftiest eminence next to Vesuvius in the whole country, is composed of it, and to the west of Naples it forms a sort of wall, so lofty and abrupt, that the former inhabitants of the country apparently found it easier to avail themselves of the soft and friable nature of the stone, and to cut through, than to make a road over it. This is the origin of the celebrated *Grotto of Posilippo;* a cavern 2178 feet in length, 50 feet in height, and 11 in breadth. The *Lake Agnano* occupies the crater of an old volcano. The famous *Grotto del Cane*, situated on its borders, is perpetually giving out carbonic acid gas, containing in combination much aqueous vapour, which is condensed by the coldness of the external air; thus proving the higher temperature of the place from whence it proceeded. The mouth of the cavern being rather more elevated than its interior, a stratum of carbonic acid goes on constantly accumulating at the bottom, but, upon rising above the level of its mouth, flows like so much water over the brim. Hence the upper part of the cavern is free from any noxious vapour; but the air of that below is so fully impregnated, that it proves speedily fatal to any animal that is immersed in it, as is shown to all strangers by the experiment with the dog. The *Lake of Avernus* may likewise have been the crater of a volcano. The Monte Barbaro is probably the most elevated volcanic hill on this side of Naples: it has a crater on its summit, and its great antiquity is shown by the circumstance of its surface being covered with verdure. The perfect condition of the crater of Astroni has caused it to be selected by the King of Naples as a preserve for his wild boars and other animals destined for the chase: it is a circular cavity, nearly a mile in diameter, the walls of which are formed of a congeries of scoriæ, pumice, and other ejected materials. According to Breislac, the number of craters of which indications occur in the neighbourhood of Naples will amount to not less than 27; but we suspect the amount is much over-rated.

2591. *The middle and lower parts of the river district of the Po* is formed of tertiary rocks more or less deeply covered with diluvium. The tertiary deposits are intermingled in a very interesting manner, on the southern foot of the Lombard Alps, with various trap rocks. These arrangements are best seen at the following places: — in the Val Nera, Val Ronca, Montecchio Maggiore, Monte Viale, and Monte Bolca. South of Padua lie the Euganean hills, an isolated track of high ground, in the midst of a level tertiary country; consisting of a trachyte formation, not unlike that of Hungary, which, from its vesicular structure in some cases, and its semivitreous appearance in others, would at once be taken for a volcanic product. The tertiary deposits contain remains of whales of extinct species, also of the elephant, rhinoceros, hippopotamus, &c.; and fossil animal remains of the same description occur more abundantly in the diluvium. Tertiary and diluvial deposits also extend from Ancona along the coast of the Adriatic, with but little interruption, to the extremity of the Peninsula.

2592. *Italian Islands. — Islands of Procida and Ischia.* These islands are situated a short distance from Naples, and are entirely of volcanic formation. *Procida* consists of an alternation of beds of tuffa and of slaggy lava. *Ischia* is composed for the most part of a rock which seems to consist of finely comminuted pumice, re-aggregated so as to form a tuffa.

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* Daubeny.

2593. *Lipari Islands.* The Lipari Islands, between Naples and Sicily, are also composed of volcanic rocks. The island of *Stromboli* consists of a single conical mountain, having on one side of it several small craters, one of which is in a state of activity, the rest extinct. This volcano is remarkable, not for the intensity of its action, but for the circumstance of rarely enjoying periods of repose, no cessation in its operations having been observed from a period antecedent to the Christian era. Its action consists in ejections, repeated at very short intervals, of stones, scoriæ, and ashes, which either fall back within the crater, or are carried in another direction, according to the drift of the wind. The island abounds in volcanic tuffa, which is traversed by dikes of slaggy lava. The island of *Lipari* is remarkable for its splendid displays of the beautiful volcanic glass named *obsidian;* and for a profusion of pumice. The pumice of commerce is principally obtained in that island. Another isle of the Lipari group is *Volcano*, which appears, prior to the Christian era, to have been in a state of activity at least equal to that of Stromboli, and which still emits gaseous exhalations from the interior, as well as from several parts of the external surface of a crater situated in the highest part of the island. These vapours, acting upon the rock they penetrate, decompose it, and form with its constituents large quantities of *alum* and other sulphuric salts. This island also affords a very rare substance, viz., the *boracic acid*, which lines the sides of the cavities in beautiful white silky crystals, and combined, it is said, with ammonia. *Sal ammonia* also occurs in this curious spot; and in a mixture of this salt with sulphur the substance named *selenium* has been detected. Close to Volcano is an isolated rock called *Volcanello*, which, though without a crater, emits from its crevices vapours of a sulphureous nature.

2594. *Corsica.* The mountains of this island are principally primitive and transition, the rocks being granitic and ophiolitic. Their limit, ranging nearly from S. to N., passes near to, and to the west of the town of Corte. All that is to the west of this line is in general granitic, with subordinate rocks of porphyry, gneiss, mica slate, and limestone or marble. To the east of the same line, all the N. E. of the island is principally formed of talc slate, containing numerous subordinate beds of marble, euphotide, slate, &c. Jura limestone appears at the bottom of the Gulf of Saint Florent, and on the east coast, to the north of the Gulf of Porto Vecchio. No volcanoes occur in this island; and the ancient lavas mentioned by some authors are beds of euphotide. Hot springs, however, occur in Corsica; the principal ones being those of Orezza, St. Antonio di Guagno, and Fium' Orbo. The only mines are those of iron, copper, antimony; and argentiferous galena is also met with, but not in such quantity as to be of any importance in an economical view. Considerable deposits of diluvium occur in different parts of the island; and these, like other formations, are more or less deeply covered with alluvium.

2595. *Sardinia.* The predominating formations in this island are primitive and transition; the rocks being granite, mica slate, clay slate, and limestone. On the north-western part of the island there is a considerable deposit of tertiary limestone, and one of much greater dimensions in the southern division. Trachyte and other volcanic rocks appear in connection with the tertiary deposits; and Mr. de la Marmora observed extinct volcanoes on various points, and principally in the chain of mountains which extends across from the canton of Marghine from Milis to Bollotana. All these districts, of igneous origin, exhale pestilential vapours, which may assist in explaining the remarkable unhealthiness of this island. Caves occur in the limestone; and these, with the rents that traverse it, contain, generally embedded in a kind of breccia, bones of various kinds of quadrupeds, some of living species, but the greater number of animals which appear to be extinct. Metals are rare; there are but feeble traces of silver, copper, and mercury. Many mines, however, of lead and iron occur.

2596. *Sicily.* In this remarkable island the predominating rocks are tertiary, secondary, and volcanic; the older ones, or those of the primitive class, being less abundant. The primitive rocks are found at the north-east corner of the island, near Messina, where the prevailing kind appears to be gneiss. The transition constitute a chain of hills extending obliquely from Melazzo on the north coast, to Taormina on the east. They consist chiefly of mica slate, clay slate, with beds of glance coal, quartz rock, greywacke, sandstone, and limestone. Nearer than these is a great deposit of *sandstone*, with a few subordinate beds of marl and limestone, which occupies a great part of the central chain of the island, and extends along part of the northern coast. It first occurs to the east of Palermo, near the river Pilato, a few miles from Cefalu. It is older than the Jura or Apennine limestone. Resting apparently upon this sandstone is a formation of *limestone* and *dolomite*, composing the north-western part of the island, and which appears as the equivalent of the Jura or Apennine limestone. Caves containing bones occur in it. Resting upon this formation is a deposit of *marls* and *limestones*, containing nummulites and hippurites, which appear to belong to the chalk and green sand of English geologists. Upon these rest a series of *cretaceous limestones* and *marls* of the *older tertiary* epoch. The fifth formation is an extensive tertiary limestone, found both north and south of the grand central range. Above this rests a still newer deposit of a conglomerate, containing shells of species now existing in the Mediterranean: it is well seen on the north coast, and to the south of Syracuse. Of the same age with this deposit is a *bone breccia* which forms beds lying upon the preceding, and also occurs in caves; and in both situations contains bones of the elephant, hippopotamus, and deer, with a few of a carnivorous animal of the genus Canis. Still newer than this bone conglomerate is a diluvial deposit; of which there are two kinds: the oldest occupies considerable heights, the newest covers the bottom of valleys. The tertiary rocks, so abundant in the island, contain beds of *common salt, sulphur, gypsum, alum,* along with beautifully crystallised *sulphate of strontites.* Volcanic action appears to have been in operation from a very remote period in this island, as is evinced by the different sets of volcanic rocks which Etna affords. The oldest volcanic rocks of Etna are those in the Valle di Bove, where there is a magnificent display of trachyte, porphyry, and tuffa: the next in point of age are the basaltic rocks; and the newest of all are the coulées or streams of modern lava, with their tuffas, ashes, sands, and scoriæ. The trachyte and basalt seem to have been produced before the commencement of the present order of things, the coulées, &c. are the matters which have flown within the period of human history, and which still continue. It is probable that this mountain was burning at a period antecedent to the time of Homer. At Macaluba, a hill near Girgenti, consisting of blue tertiary clay, there is a continual disengagement of carbonic acid and carbonated hydrogen, from small cavities, shaped like craters, which are filled with muddy water mixed with mineral oil. When the quantity of gas emitted is great, it throws up the mud to the height of 200 feet: these are called *air volcanoes.*

2597. *Sicily is not rich in metals:* the mountains to the N.W. of Taormina present traces of a *gold mine,* said to have been worked at a very remote period. Some mines of *silver, copper, lead,* and *iron* are mentioned. Beds of *sulphur* occur abundantly in the blue tertiary clay; and though Sicily has long supplied Europe with that mineral, its stores are yet far from being exhausted. The blue clay also contains beds of *rock salt,* of which the most considerable are at Alimina, N.E. of Castro Giovanni, where this substance is found both massive and crystallised.

2598. *Malta and Gozo.* These isles consist entirely of tertiary rocks, closely resembling those of the south-eastern part of Sicily. The most common rock is a fine-grained straw-coloured limestone, which is often so soft as to be worn down rapidly by the weather; but in other instances, it is sufficiently hard to form an excellent building stone, to which circumstance these islands have been in a great measure indebted for the elegance of the numerous churches and palaces which are seen in every town and village. Harder and more crystalline limestones are also met with, but all of them are nearly of the same colour. Both these islands are of trifling elevation; the highest point of Malta, which is one of the hills to the west of Cività Vecchia, being only 590 feet above the level of the sea.

Subsect. 2. *Botany.*

> "The garden of the world, fair Italy!
> Thy very weeds are beautiful, — thy waste
> More rich than other climes' fertility!"

2599. *Italy and Sicily.* — These countries partake very considerably of the general character and aspect of the vegetation of the south of France; and the geographical distribution of the plants is well depicted by M. Mirbel.

2600. *The Sicilians* cultivate, with more or less success, the Sugar-cane, the Custard-apple, the Date, &c. The different enclosures are surrounded by the Agave americana, which forms an impenetrable fence. By the side of the Plane, Poplar, and Willow, grow the Cactus Tuna or Prickly Fig, the Orange, Citron, and Olive, the Myrtle (*fig.* 293.), Laurel, Carob-tree, and Pomegranate (*fig.* 294.); while Arbutus and Tamarisk abound upon the coasts. The Dates of the environs of Girgenti, situated on the southern coast, are said by Mirbel to be excellent; not so in the vicinity of Palermo, where the Date Palm is unknown except in gardens.

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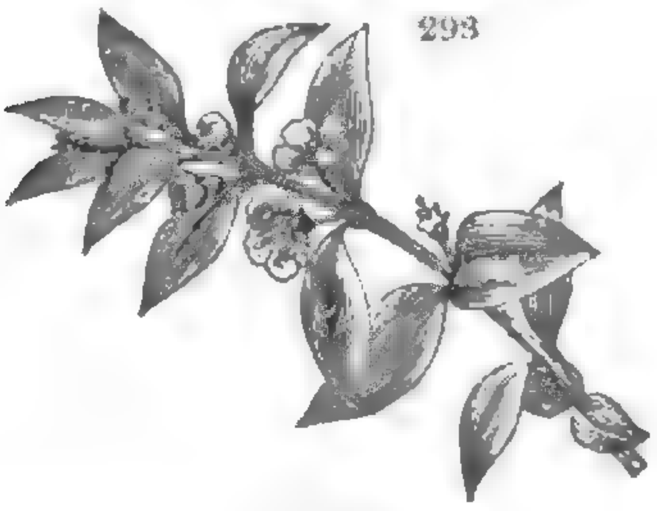

MYRTLE.

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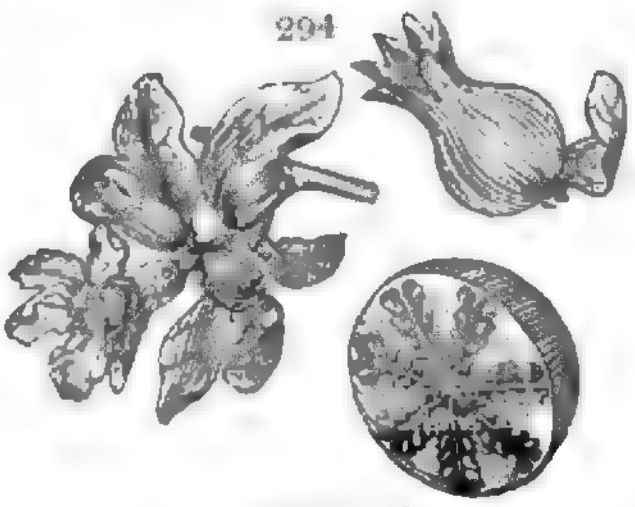

POMEGRANATE.

2601. *Of all the mountains of Sicily*, Etna, whose enormous volcanic mass rises to the height of more than 10,900 feet, is the most celebrated. Its base, whose circuit exceeds 80 miles, exhibits all the fruit trees peculiar to the transition zone: higher up is the forest region. It is said that two or three centuries ago this region ascended to the very summit: however this may have been, it now ceases at a considerable distance from it. The most remarkable trees there are the Oak (*Quercus Robur*), the Beech, the Ash, Horsechestnuts in the greatest abundance, and Plum trees: higher up are woods of Birch. These last, which form the upper zone, are scanty on the southern side, and very numerous on that exposure of the mountain which looks towards the north. Beyond this region every thing green disappears, and the only shrub is Spartium etnense *Bivona*. Mount Etna has no perpetual snow, unless we so consider those masses which lodge in shaded crevices, and there resist the heat of summer, at an elevation of nearly 9000 feet.

2602. *It is well ascertained by geological facts*, that *Sicily* and *Italy* once composed but a single continent, and that the mountains which cover so large a portion of the former, are but a continuation of the southern chain of the Apennines, which, interrupted by the Straits of Messina, re-appears in Calabria, and lifts its loftiest summits in the kingdom of Naples. Though some of these rise to 8000 feet, the snow nowhere remains permanently upon them. It is only in the southern part of Italy that the Apennines can boast of a rich vegetation; every where else this chain is of an arid and sterile character.

2603. *The temperature of Calabria* has much affinity with that of Sicily: its summers are intolerably hot, and frost is scarcely known during the winter. The numerous rivers and brooks which gush from the hills, abundant dews, and an astonishingly fertile soil, maintain, during almost all the year, in these favoured countries, a fresh and brilliant verdure. The plains, the slopes and eminences, produce Olives, Tamarisk, Arbutus, Myrtle, Jujube, Pistachios of both kinds, and Oleander (only in dry beds of torrents), the Sweet Bay, and Carob, the Palmetto, Rhamnus, and Phillyrea; the Pinus Pinea or Stone Pine (*fig.* 295.), — the tree, whose picturesque outline and dark hue have recommended it so much to the artist, that it forms a striking feature in almost all Claude Lorraine's and Gaspar Poussin's celebrated Italian landscapes; Manna Ash, Chestnut, Mulberry (*fig.* 296.), Plane, Willow, and Poplars, &c. In the warmer spots there are large groves of Orange and Lemon trees; those of the vicinity of Reggio being most esteemed. In the fifteenth century, the cultivation of the Sugar-cane was carried on with spirit in Calabria, and even on the coasts of Samnium: now, the red and white mulberry, which are grown for the silkworms. The barren rocks are covered with Agave, Cactus, and Capers.

2604. *That portion of the Apennines* which intersects Calabria is clothed from the base to the very summit with umbrageous forests of Oaks and Coniferous trees: especially consisting of the Common Oak, the Cork tree, the Quercus Cerris, Horsechestnut, and Yew, the Larch and Wild Scotch Fir, with the Pinaster, &c.

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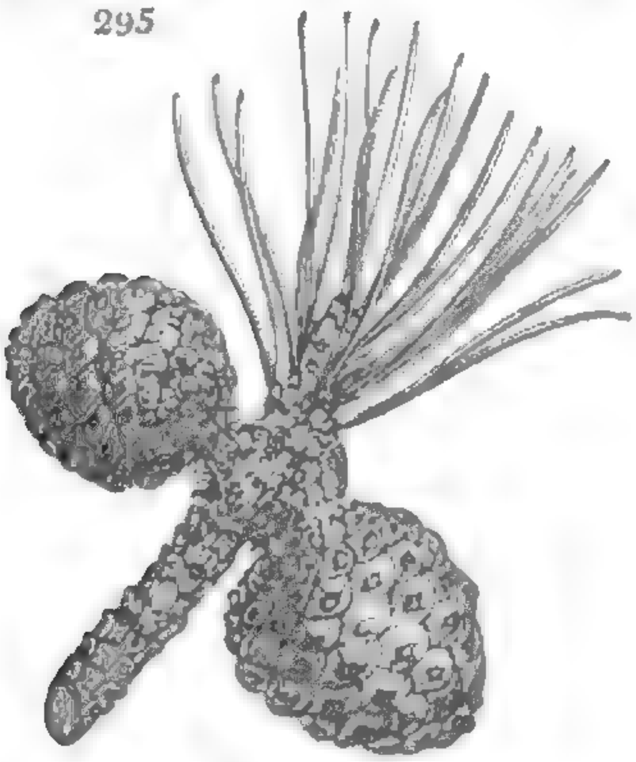

STONE PINE.

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MULBERRY

2605. *Most of the vegetable productions of Calabria* follow the line of the coast, and adorn the shores of the bays of Naples and of Gaëta. The Orange and Lemon reach the Gulf of Genoa, but the climate refuses to perfect the Sugar-cane. The French tried in vain to naturalise it, during the period of their sway in Italy. Snow rarely falls in Naples; still, instances of its having been seen for a few days are not unknown. Judging by the state of vegetation, the average heat at Naples is about one degree higher than at Rome. Winter begins in December; the first spring flowers are expanded by February; and in May the summer heats are already felt.

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MILLET.

298

RICE.

2606. *Throughout the country* in general, besides Maize, and Millet (*fig.* 297.), here, as in all the warmer parts of the northern hemisphere, Rice (*fig.* 298.) is extensively cultivated, especially in low flat lands, where the fields can be temporarily inundated. This operation, as may be supposed, occasions much pestilential fever; so that, in many districts of Italy, laws are enacted prohibiting rice-grounds within the distance of five miles from the large towns. Arundo Donax (*fig.* 299.) is a gigantic grass, frequent in Italy, which seems to take the place of our Common Reed (A. Phragmites). Of the A. Donax, fences are made, also walking-canes, fishing-rods, and a variety of articles which require strength combined with lightness. The Caper (*fig.* 300.) of commerce, too, is an object of considerable value. It is the Capparis spinosa of Linnæus, the Cappai or Kappai of the Arabians. It grows upon old walls, and in dry rocky situations. The buds of the flowers are gathered before expansion, put into vinegar, and, as is well known, are extensively employed in seasoning for various dishes.

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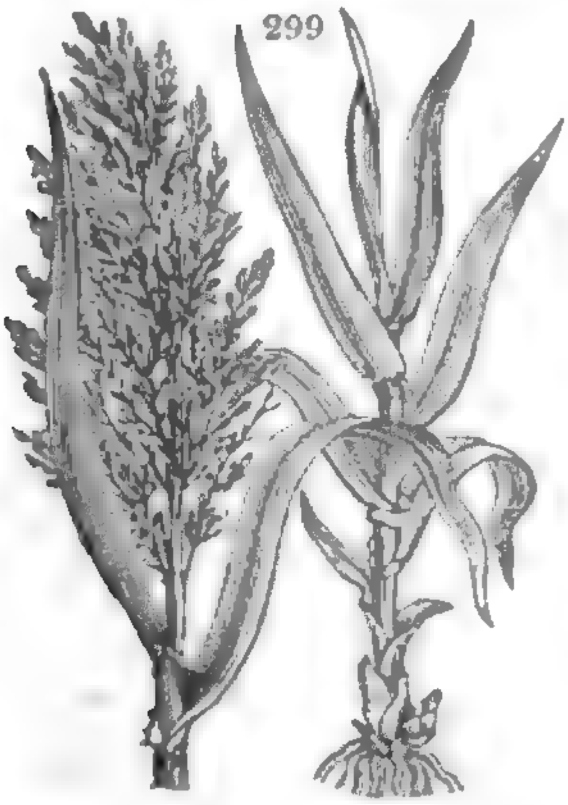

ARUNDO DONAX.

300

CAPER.

2607. *There is a wide difference* between the temperature of the more northerly and the southern provinces of Italy; owing as much to the increased height of the Apennines and their broader bases, as to the actual elevation of latitude. Beyond Samnium, the Orange and Lemon can no longer endure the climate. The plains of Abruzzo sometimes experience cold winters; and though the Oaks are seen on the sides of the mountains, they no longer reach their tops, and the Coniferous trees are as scarce here as they are abundant in Calabria. The Pinus Pumilio, which of all the genus is the one that grows at the greatest height, stops at 4800 feet; beyond it are only seen such shrubs, plants, and herbs as are peculiar to regions where the snow regularly falls during the whole winter.

2608. *The Olive tree*, and its common accompaniments, reaches to Rimini on the eastern coast, where the salt-marshes, perhaps, arrest its further progress equally with the colder temperature; on the western side it attains to the bases of the Pyrenees; and near Padua, in latitude 45°, and in sheltered spots about the lakes of Garda and Como, it also grows. At Verona, this tree is no longer seen: but the Pistachio, Pomegranate, Zizyphus vulgaris, Diospyros Lotos, Celtis australis, and Ostrya vulgaris are in abundance.

SUBSECT. 3. *Zoology*.

2609. *The zoology of Italy*, the garden of Europe, is peculiarly interesting both to the classic traveller and the scientific naturalist: its rich and sunny plains, intersected by wooded hills, and backed by the noble chain of the Apennines, terminated only by the sea, presents that diversity of temperature and situation so well suited to display a rich and varied assemblage of native animals. Hitherto this zoological field has been but imperfectly explored: hence it becomes extremely difficult, if not impossible, to give more than a slight and very general sketch of its leading peculiarities.

2610. *The native quadrupeds* have never been particularly enumerated; but wolves are still found among the Apennines, and the wild boar is not unknown in the forests of Calabria. The buffalo was once employed as a beast of burden, but is now rarely if ever seen; nor can it be numbered among the native animals.

2611. *The ornithology of central Italy* has very recently been ably illustrated by the Prince of Musignano (Ch. L. Bonaparte). Information from such a source is so highly valuable, as throwing so much light on the general distribution of the European birds, that we shall here introduce the results furnished by this eminent ornithologist.

2612. *The number of species* discovered in the vicinity of Rome, and which probably includes nearly all those found in the States of the Church, amount to 247: of these, 60 are also found in America; leaving 187 as exclusively belonging to the European fauna. The whole 247 species are arranged under the following heads:— stationary near Rome 43; permanent residents, but occasionally changing their station, 37; summer visiters, 40; winter visiters, 57; transitory visiters, 26; accidental visiters, or stragglers, 44.

2613. *The following list of Roman birds*, unknown as natives of Britain, will materially illustrate the geographic ornithology of the two countries; those marked * have occasionally been found, as stragglers only, in our islands:—

Cathartes percnopterus.	Slender-billed Vulture.
Falco nævius.	Rough-footed Eagle *Lath.*
Falco-brachydactylus.	Short-clawed Falcon.
—— Cenchris *Bonap.*	Little Kestrel.
—— rufipes *Tem.*	Rufous-thighed Falcon.
Strix Aluco.	
Pastor roseus.*	Rose-coloured Ousel.
Oriolus Galbula.*	Golden Oriole.
Coracias garrula.*	European Roller.
Cypselus melba.	Alpine Swift.
Muscicapa albicollis.	White-collared Flycatcher.
Lanius meridionalis.	Southern Shrike.
—— minor.	Italian Shrike.
—— rutilus.*	Woodchat.
Merula cyanea.	Blue Thrush.
—— saxatilis.	Rock Thrush.
Curruca turdoides *Sw.*	Thrush Sedgebird.
Sylvia ignicapilla.	Fire-crested Warbler.
Sylvia Cetti *Tem.*	Cetti's Warbler.
Sylvia melanocephala *Lath.*	Black-headed Warbler.
Sylvia cisticola *Tem.*	
Sylvia passerina *Tem.*	
—— Tithys* *Tem.*	
—— sibillatrix.	
—— rufa.	
Saxicola strapazina.	
—— aurita.	Golden Stonechat.
Anthus aquaticus.	Water Titlark.
Anthus rufescens.	Rufous Titlark.
—— arboreus *Bech.*	Wood Titlark.
Tichodroma muraria.	Wall Creeper.
Upupa Epops.*	European Hoopoe.
Parus pendulinus.	Pendulous Titmouse.
Alauda Calandra.	
—— cristata.	Crested Lark.
—— brachydactyla.	Short-clawed Lark.
Emberiza cia.	
Fringilla cisalpina.	
—— Serinus.	
—— petronia.	
Perdix saxatilis *Tem.*	Rock Partridge.
Charadrius minor.	Little Plover.
Ciconia alba.	White Stork.
—— niger.	Black Stork
Ardea purpurea.*	Purple Heron.
—— ralloides *Scop.*	Rail Heron.
Ibis falcinellus.	European Ibis.
Numenius tenuirostris.	Slender-billed Curlew.
Tringa subarquata.	
Totanus stagnatilis.	Pond Sandpiper
Platalea leucorodia.	Spoonbill.
Phœnicopterus antiquorum.	Flamingo.
Sterna leucoptera.	White-winged Tern.
Anas leucocephala *Lath.*	
—— leucophthalmos *Tem.*	
Pelecanus Onocrotalus.	White Pelican.

2614. *It must nevertheless be remembered, that this list*, numerous as it is, exhibits but a partial statement of Italian ornithology; as the birds of the western and southern provinces, as Naples, Calabria, and Taranto, still remain to be investigated.

2615. *A brief notice of the most remarkable birds* will satisfy the general reader: these appear to be the Slender-billed Vulture, the Rose-coloured Starling, the Blue Thrush, the Hoopoe, and the Wall Creeper.

301

ROSE-COLOURED STARLING.

2616. *The Slender-billed Vulture* (*Cathartes percnopterus*) is near two feet and a quarter long: its principal food is carrion: hence the bill is not adapted for vigorous offence against living animals; the face is bare of feathers, while those on the neck are pointed. The general plumage is pure white, except the quill-feathers, which are black. In Europe, this vulture is confined to the southern kingdoms, but is abundant in Egypt, where it is of essential use in devouring all putrid substances, which might otherwise infect the air. The *Rose-coloured Starling* (*Pastor roseus*) (*fig.* 301.) is one of the most elegant birds of Europe; it is about the size of a thrush. The general plumage is rosy; the wings, and a pendent crest on the head, are glossy black. This bird has occasionally been seen in Britain, and, although widely dispersed over the greater part of Europe, it is nowhere so plentiful as in Asiatic Russia. The Blue and Rock Thrushes are sweet songsters, and on that account are much prized, when in captivity, by the Italians. The Hoopoe, so rarely seen with us, is one of the common migratory birds; it usually arrives from the African coast very flat, and we can, from experience, state it to be delicious eating when cooked in the Italian mode. The *Little Wall-creeper*, Tichodroma muraria, with its crimson wings, is one of the rarest birds, but is occasionally seen on the lofty walls of St. Peter's Church.

2617. *Among the insects of Italy*, the Tarantula Spider and the Silkworm are equally celebrated. So much of fable and exaggeration has been mixed up with the history of the first, that it is difficult to separate truth from falsehood: it is even doubtful whether any spider of a decidedly venomous character truly exists in the country. During a residence of many years in different states of Italy, we never met with one answering such a description; and it is well known that the common people give this name indiscriminately to every large spider they happen to meet with. Much more real danger may be apprehended from a species of true Scorpion, which is by no means

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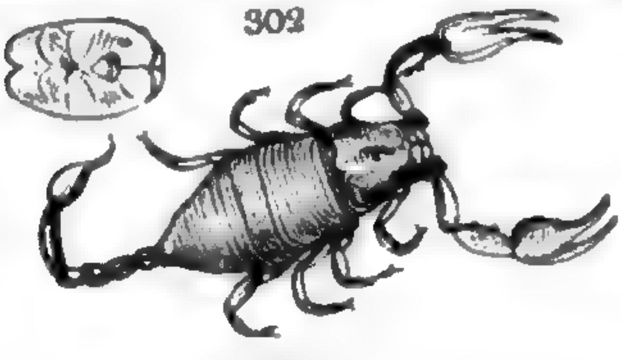

SCORPION.

uncommon in damp houses; and our own specimen (*fig.* 302.) we actually found one evening within our bed: its sting is venomous, and, we have heard, dangerous. May not the qualities of this insect have been exaggerated, and transferred to a spider? The Silkworm is too well known to require description. In some provinces, as Lower Calabria, &c., the insect is fed more upon the leaves of the red than on the white mulberry. It is not generally known that a species of true *Termites*, or White Ant, inhabits Sicily; it is found only in old houses: upon one occasion we discovered a nest established in a portmanteau of clothes, most of which had been destroyed by the perforated labyrinths of these destructive creatures.

2618. *The domestic animals* are not very remarkable; the climate, from its heat, being ill adapted for grazing. The common breed of oxen are among the largest known, and are furnished with horns of an immense size; but the animals are gentle, and much used for draught: there is also another race, principally found in Tuscany, much smaller, and esteemed for its fine form and pure white colour; and these are exported both to Cuba and Jamaica. The insufficiency of pasture accounts for the scarcity of sheep; and this is so remarkable, that in some of the distant provinces mutton is considered rather unwholesome, and is rarely, if ever, brought to market. During many years' residence in southern Italy, we never saw this meat exposed for sale; and in the island of Sicily sheep are nearly unknown. In the southern provinces the cheese, butter, and milk is derived from goats, which are kept in flocks of 100 or 150: they are driven out in the morning by the goatherd, and conducted to their pens towards sunset. The pigs are all of the long-legged, unimproved breed, and no care is taken in their fattening.

2619. *Sicily. The zoology of Sicily* has been hitherto so little known, that we shall take this opportunity of briefly illustrating its peculiarities. The following remarks have been the result of personal observations, made during a long residence in this celebrated island.

2620. *The native quadrupeds,* in former times, appear to have been much more numerous than they are at present: this diminution has not originated in the increase of population or of agriculture, for both of these, it is well known, have enormously retrograded since the splendid epoch of Sicilian history. The diminution of the larger animals originates in two causes: first, the scarcity of wood and shelter; and, secondly, the universal passion for shooting. The ancient forests of Sicily, which once sheltered the larger game, have been gradually diminishing; and the next century may possibly witness their total disappearance. The only fuel burnt throughout the island is wood and charcoal. Now, a Sicilian landed proprietor never thinks of planting any other trees than vines or olives; to benefit his estate for the sake of those who are to inherit it afterwards, never enters his imagination. With such a constant and universal demand for fuel, and with no measures being taken to provide a future supply, it may therefore be easily imagined that wood is already scarce. The vast forests of Etna, of which so much has been said, and which originally belted that stupendous mountain, have been so diminished in modern times, that they hardly exist but in name. In these regions immense quantities of charcoal are made, and sent to all parts of the island. Trees are felled every day, but not one is ever planted; in short, even in 1815, after the British troops had been in the island ten years, wood began to be so scarce, that their rations of fuel were principally brought from the opposite shores of Calabria.

2621. *The scarcity of wild animals* originates also in another cause: every Sicilian peasant carries his gun as constantly upon his shoulder, as he does his cap upon his head; and he shoots at every thing. With but little shelter for retreat, or for breeding, and perpetually exposed to destruction by the gun, it is not surprising that Sicily in general should be as remarkable for its paucity of resident birds and quadrupeds, as it is for its naked unwooded appearance. Its scenery is grand and magnificent; but every where it is deficient in wood and water.

2622. *In former times, it appears that several wild animals,* now seldom if ever seen, were met with in abundance. Authorities cited by Mongitore (*Sicilia Ricercata*, &c., 1742) show that the Wolf was always a scarce animal, and is now probably extinct. The Wild Boar was formerly common, and much hunted: and the earliest historians mention Porcupines (*fig.* 303.) or Spined Pigs (*porci spinosi, armatidi spine*), as being wild in the forests of Etna: that this animal should not have been originally a native of Europe appears, therefore, highly improbable. Fazello, one of the earliest Sicilian writers, asserts that Fallow Deer (*Dama*) were found wild in abundance on the lofty mountainous chain of the Madonia (*olim* Nebrodes), and on that of Dinamare (*olim* Neptuni). From the latter, owing to its vicinity to Messina, both deer and forests have long since disappeared. We do not believe, indeed, that this noble animal is any longer wild in this island; but large herds are stated to exist in the woods of Mimiano, belonging to the Prince of Paterno and the Duke de Montalto, where they are preserved. The same authors mention the Stag as being particularly numerous, both on the sides of Etna and in the forests of the Nebrodes. Upon these latter mountains were also found numbers of Wild Goats, whose teeth were tinged with a golden hue, probably originating from the nature of some particular plant there abundant. Hares and Rabbits are now almost the only native quadrupeds to be met with: the latter are not common; and the former are stated to have been introduced in the island by Anassila, tyrant of Reggio. (*Mong., Sic. Ric.*, vol. i. p. 283.)

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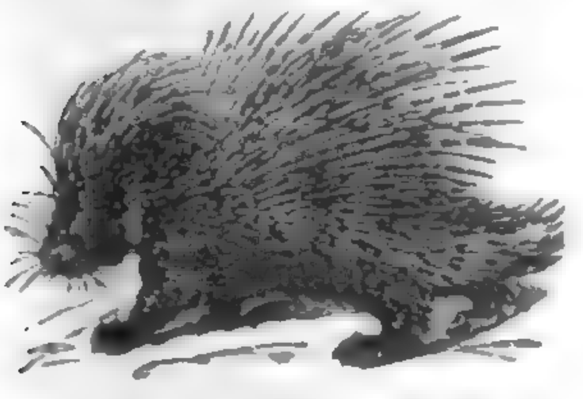

PORCUPINE.

2623. *Among the birds of Sicily* must be reckoned many species common to the opposite shores of Africa; these are principally of the wading tribe. The swampy lakes and inaccessible morasses of Leontini and Syracuse afford shelter to vast flocks of waterfowl, which arrive during the spring and autumnal migration. The *malaria*, a most virulent and fatal species of ague, engendered by these low lands, renders them almost unhabitable during the greater part of the year, and is a sure protection to the birds themselves. The immense flocks of quails (*fig.* 304.) which pass by the way of Sicily to the northern parts of Italy, during the month of April, is almost incredible: it is no uncommon thing for a good sportsman, with one dog, to bag from fifty to sixty brace the first day after their arrival. Bee-eaters, orioles, rollers, hoopoes are then common over every part of the island, and are pursued by numerous hawks and owls; but the whole disappear towards the beginning of May. The African Flamingo is not an uncommon bird in the solitary marshes of Syracuse; where the Pelican also is an occasional visiter. The beautiful Purple Heron, the Night Heron, the Little Bittern, the Long-legged Plover, the Glossy Ibis, the Pratincole, and several other rare European species, are among the common migratory visiters, and give to the ornithology of Sicily an interest which it would not otherwise possess.

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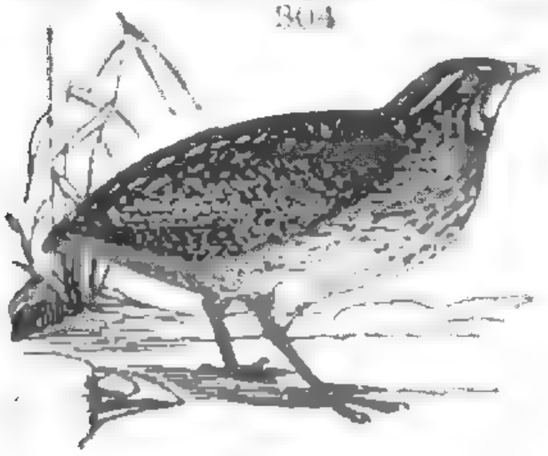
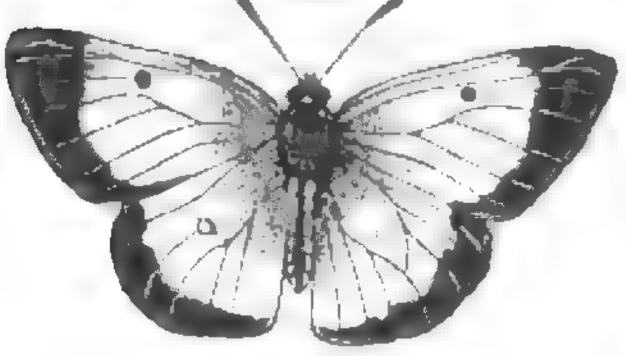


QUAIL.

2624. *The insects of Sicily* are more numerous than might be expected from the bare and unsheltered nature of its surface. The character of its entomology is decidedly more allied to that of northern Africa than of central Europe. All those genera which delight in a hot, sandy soil are particularly numerous: as Scarabæus (*MacLeay*) Trox, Pimelia, Scarites, Gryllus, Sphex, Amphicoma, Bembex, Chrysis, Osmia, &c. Sicily is very rich in hymenopterous insects; and of the genus Anthrax, or Sand Flies, we discovered near thirty species in the vicinity of Messina alone.

2625. *The Butterflies* (*Papilionidæ*) are numerous, and comprise the most elegant species known in Europe. Podalirius europæus *Sw.*, Gonepteryx Cleopatra, Eurymus hyale *Sw.* (*fig.* 305.), P. Daplidice, A. Lathonia, &c. are common. Africa imparts to Sicily one of her most superb and imposing butterflies in the rare *P. Jasius*, *Jasia europæa* Sw., which we have occasionally captured near Messina.

305



EURYMUS HYALE.

2626. *Flights of devastating Locusts*, unknown to the other parts of Europe, have occasionally afflicted this fruitful island. The earliest upon record is mentioned by Fazello, who says that (about the 15th of May, 1355) the heavens were darkened by vast clouds of locusts coming from Africa; that they spread over the island, and began to make all verdure disappear; but that a sudden change of wind taking place, as if by miracle, they departed in dense squadrons, and were driven into the Ionian Sea, where their bodies, being cast upon the shore, caused such putrefaction, that a grievous plague ensued.

2627. *More recent flights of locusts* appeared in 1637, and in the four years following 1656; also in 1687, 1688, and 1689. But the most destructive appears to have been that of 1708. These terrific insects, as Mongitore relates, first landed at Sicli; from whence, spreading themselves in vast armies over the whole island, they caused devastation and ruin, during the five following years. In modern times the island has happily been spared from this scourge.

2628. *Malta and Gozo*. *The animals of Malta and Gozo*, as may be expected, are few; yet, as we can write from personal knowledge, a few notes on the zoology of these detached islands, should not be neglected. Of native wild quadrupeds, we believe, there are none larger than a rabbit. During the spring and autumnal migration, Quails, for a short time, are in great abundance, and the beautiful Merops, the Golden Oriole (*fig.* 306.), and the elegant crested Hoopoe, are sometimes to be met with in the market. The large bird called the Maltese Vulture must be expunged from our systems, being no other than the Alpine Vulture (*Cathartes percnopterus* Tem.) in a young state: it was probably a straggler from Africa, or the lofty mountains of Sicily; for these birds could find no permanent habitation or shelter in the flat cultivated table-land of Malta. The little island of Lampidosa is remarkable for being the habitual residence of the most elegant of European birds, and one, also, which has never been recorded as such: this is the Coronated Crane, or L'Oiseau Royal of the French (*Ardea pavonia* Lin.): several of these were captured in 1812, at Lampidosa, and brought to Malta alive. To this solitary and nearly uninhabited island the Flamingo and many other wading birds of Africa occasionally resort.

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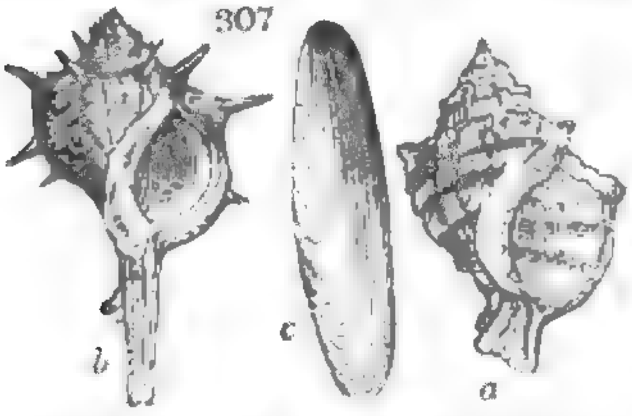
GOLDEN ORIOLE.

2629. *The fish* are in great variety, and at all times afford a plentiful supply for the table: yet the species are, for the most part, similar to those of Sicily. The inhabitants, being catholics, consume great quantities of shell-fish. The oyster is, indeed, unknown; but the harbour and coasts round La Valetta supply abundance of *Murex trunculus* (*fig.* 307. *a*), *M. brandanus* (*b*), both much better tasted than our whelks. Immense quantities of the *Lithodomus dactylus*, or Boring Muscle (*c*), are annually consumed. Indeed, the whole island, from its geological nature, is but a vast *nidus* for this singular shell-fish, which perforates the soft rock, below the water, with the smoothness and regularity of an auger. In the still inlets and recesses of the creeks and harbours, may be found a great variety of radiated Mollusca, which, from the pellucid nature of the water, may be clearly discerned at a depth of eight or even ten feet.

307



a, MUREX TRUNCULUS. *b*, MUREX BRANDANUS. *c*, LITHODOMUS DACTYLUS.

2630. *The domesticated animals*, and the uses they are applied to, excite the attention of Englishmen on first visiting the island. The oxen are large, and have enormous horns, being the same breed as that of Sicily: all the heavy draught work is performed by them, both in town and country. The horses are mostly imported from Barbary; and the breed of asses is not inferior to that of Spain. The mule is universally employed for lighter purposes; and the old Maltese families still adhere to the ancient custom of using them in carriages, in preference to horses. Cows are rarely seen, the artificial soil being too valuable for agriculture; but goats abound, as they thrive on the scanty herbage of the rocks, and supply all the milk and fresh butter which is required. Sheep may be considered a curiosity both in Sicily and Malta; for mutton is rarely seen, even at the highest tables. The Maltese dog is nearly extinct, the common breed being more like the pointer, and half spaniel. Rats are so large and numerous, that, during the famous siege of La Valetta, they became delicious food to the starving Maltese, and sold at a high price.

Sect. III. *Historical Geography.*

2631. *The history of Italy* is unrivalled in the magnitude of its events, and their influence upon the general destinies of the world. Our limits and plan can allow only a very hasty sketch of the mighty revolutions of which this country has been the centre.

2632. *Of the early nations of Italy but little is known.* The Etruscans, by the works of art handed down by them, especially in the form of terracottas, appear to have been a civilised as well as a powerful and free people. The south, colonised from Greece, and even denominated Magna Græcia, was the seat of the most celebrated of the early schools of science: Pythagoras taught at Crotona; and the Samnites, by their gallant resistance to Pyrrhus, and afterwards to the Romans, established their name as a military nation.

2633. *Rome sprung up amid these nations* rather as a band of refugees than as a regular state. The Romans then subjected, one after another, first the neighbouring tribes, then the whole of Italy; and afterwards crossed the seas, to conquer all the known world. Among their high and energetic virtues and daring exploits, they retained still a character of rudeness: and the first influence of their conquests was to extinguish in the subject nations the degree of civilisation they already possessed. Etruria lost her early arts, and Carthage that immense commerce which embraced all the known seas of the globe. But as the hardy captains of Rome penetrated to the cities of Greece, and saw the matchless works of architecture and sculpture with which they were embellished, their rugged pride was softened, and they were smitten with the love of these beautiful arts. The orators of the Forum sought next to transfer the splendid powers of eloquence which had given dignity and splendour to Athens. At last Cicero undertook to transplant the Grecian philosophy. Unfortunately, at the same time, the chiefs who returned laden with the spoils of so many nations introduced an unbounded luxury, which vitiated altogether the truth and simplicity of ancient manners.

2634. *The empire of Rome*, the most extensive and opulent ever established, was, after dreadful convulsions, erected on the mighty ruins of the senate and the republic; and the world became as it were the inheritance of a single man. On such a trying and perilous eminence, examples were presented of the most unbounded cruelty and dissoluteness; yet also of the most wise and enlightened humanity. During the Augustan age, poetry and all the fine arts were patronised and cultivated with ardour after the Grecian model, and carried almost to an equal pitch of perfection. The oppressive sway, however, of successive tyrants, and the brutal licence of the prætorian guards, soon left little more than that barbarous voluptuousness which generally characterises a purely despotic government.

2635. *The decline of the Roman empire* was attended with calamities to Italy and to mankind, still more dreadful than those with which its rise had been attended. The barbarians of the north and east of Europe, allured by the reported wealth and weakness of the empire, pressed continually closer on its frontier. They were kept in check for some time by the Danube and the Alps, and by the remaining strength of the legions. At length they burst all these barriers, and ravaged the beautiful plains of Italy. The transference to the East of the seat of empire left this portion with an unequal share of the common defence. Rome itself, the imperial capital of the world, became the prey of barbarians; it was successively sacked by the Goths under Alaric, and the Vandals under Genseric.

2636. *The sceptre was snatched from the feeble hands of Augustulus,* and the western empire was extinguished. The kingdom felt a gleam of reviving prosperity under Theodoric the Ostrogoth and Theodosius the Great, but was soon overwhelmed by fresh swarms of barbarians, among whom the Lombards were the most conspicuous, and have given their name to the northern plain watered by the Po.

2637. *The empire of Charlemagne* suspended the troubles of Italy, but formed the commencement of that long series of ultramontane dominion, to which she has been subjected. When the members of that empire, France and Germany, separated from each other, Italy fell to the lot of Germany, which retained the imperial name and dignity, but ever afterwards found this country a turbulent and precarious appanage.

2638. *The spiritual authority of the Popes* formed a new species of empire, which seemed to invest Rome with a grandeur almost equal to that which she had displayed under the Cæsars. After a gradual progress, it rose, under Gregory VII., to such a height, that Henry IV., the most able and powerful prince of his time, was fain to present himself bareheaded and barefooted, and on his knees implore forgiveness for having ventured to dispute the spiritual authority. From this time these proud pontiffs not only claimed the right of disposing absolutely, throughout the Christian world, of all the officers and ministers of religion, and of exacting from it the regular tribute of "Peter's pence," but even of excommunicating and deposing the greatest kings. As the emperors, however, did not tamely submit to these usurpations from a power which they considered in a temporal sense as subordinate, a series of struggles ensued, which scandalised the church and distracted Europe.

2639. *The rise of the commercial republics,* Venice, Genoa, and Florence, formed a brilliant era for Italy, enabling her almost to equal the most splendid ages of antiquity. Their navies, both for war and commerce, covered the seas, and set bounds to the all-grasping ambition of the Ottoman, which threatened to overwhelm the whole western world. By degrees, also, the lamp of learning, which had shed for ages only a dim light over Europe, broke forth here into full effulgence. The remains of Greek literature were conveyed over by the learned men who fled before the sword of the Turks; the writings of the ancients were drawn from the depth of convents, and eagerly studied and circulated. What was of more consequence, a race of enlightened princes and nobles arose, who sought glory in patronising knowledge, while a general taste for it was diffused among a wealthy and refined community. The arts of painting, architecture, and music, on which the wealth of the noble citizens was lavishly expended, rose to an eminence equalling, perhaps, that of the ancients, and surpassing that of any other modern nation.

2640. *The decline and degradation of Italy* rapidly ensued after this brilliant era. Her great republics lost the liberty which had rendered them so flourishing; their arts and commerce were transferred to the northern maritime states. The great monarchical powers, after long struggles, reduced her territory to a state either of subjection or vassalage; while they continued at the same time to make her soil one of the great theatres of contention. Italy had reason more and more to deplore "her fatal gift of beauty," which became so fruitful "a source of present woes and past;" she was branded even with the appellation of "slave of slaves." Rome herself lost her spiritual greatness, which was withered even in catholic countries by the progress of reformation. The late revolutions of Europe, though they produced in Italy many eventful scenes, can scarcely be considered as forming an era in her destiny. They had only the effect of sealing her degradation, by extinguishing what remained of the independence of her once great republics, Venice and Genoa. The Italians are said to regret the lost name of the kingdom of Italy given by Bonaparte to the northern districts, though accompanied not with any portion of political freedom, but with some beneficial regulations of law and police. In general a great body of the Italian people manifest a deep sense of the fallen state of their country, and an eager desire to seize any favourable occasion to revive its ancient glories; but as yet the iron hand of Austrian military power has crushed in the bud every tendency of this nature.

Sect. IV. *Political Geography.*

2641. *The political state of Italy* presents nothing on which the wellwishers of that country can look with much satisfaction. It is divided among five potentates: the Emperor of Austria, who holds Lombardy and Venice, to which may be added Parma and Placentia, the appanage of Maria-Louisa; the King of Sardinia, who has Piedmont, Savoy, and Genoa; the Grand Duke of Tuscany; the Pope, temporal ruler of the States of the Church; the King of Naples and Sicily. The constitutions of all these sovereignties possess an unhappy simplicity; the will of the ruler operating unchecked by any legal or constitutional limit. Neither the great civic nobles of the commercial states nor the feudal nobility of the country have any effective influence in the administration. They only exercise, by their immense fortunes, a pernicious influence in checking the operations of police, throwing the public burdens on the industrious classes, and depriving them of the just protection of the laws. The police over all Lower Italy is in the most imperfect state. Bands of almost licensed robbers occupy the mountain districts, and make frequent inroads into the plain; thus rendering a great part of their territory unfit for the residence of the cultivator.

2642. *The only tie between the separate governments of which Italy is composed* consists in the paramount influence of Austria; the power of all others which sets itself in the most fixed opposition to political reform. The Emperor of Austria has his brother Grand Duke of Tuscany, his father-in-law King of Naples, one of his daughters Duchess of Parma and Placentia, and the family of Sardinia bound to him by close ties of consanguinity. What is of more consequence, his troops also are in a position to overcome any one of them which should adopt measures contrary to the views of this high potentate. Being otherwise unconnected with each other, and none of them powers of the first rank, they present no political features which may not be exhibited in describing the local divisions of Italy.

Sect. V. *Productive Industry.*

2643. *The productive wealth of Italy* has suffered greatly in the decline of her other sources of prosperity. Yet such is the felicity of her soil and climate, and so considerable are the remains of her industry, that the entire produce of her land and labour is still ample and valuable.

2644. *Agriculture*, as Smith has observed, is one of those plants which take such deep root, that only extreme tyranny and misrule, and scarcely even these, can eradicate them. Italy is now dependent upon other countries for the superb fabrics with which she formerly supplied them; her ships no longer cover the Mediterranean; her merchants, who were once her nobles and her princes, retain only the shadow of mighty names. But the plains of the Po, the Arno, and the Garigliano are still cultivated like gardens; and the agricultural produce, after supplying a very dense population, affords a large surplus for export.

2645. *Culture in Italy* is conducted by a class of farmers to whom we have nothing analogous in our part of the world. The stock is furnished half by the landlord, and half by the tenant; and the produce is equally divided between them. The lease is only from year to year; but a tenant who pays his rent, and does not give any serious offence, is never removed: Mr. Forsyth considers the productiveness as being invariably in proportion to the smallness of the property; a result the reverse of what obtains in this country; but the cause probably is, that, under a system of management where the landlord co-operates, the part of those holding large estates committed to stewards and substitutes is commonly very ill done, and their avidity for money shows itself only in extortion. The property of the great ecclesiastical nobles of Rome has thus been converted into a pestilential desert. In Lombardy and Tuscany, however, the mercantile intelligence of the opulent owners has been employed in important rural improvements; the wealth of these districts is chiefly due to the astonishing works constructed at an early period for the purpose of irrigation. Several of them were executed at periods prior to the era of authentic record; others in the twelfth, thirteenth, and fourteenth centuries. The aqueducts, sluices, and other works connected with them, are still the admiration of engineers. They are now so divided and subdivided, as to convey the means of irrigation almost into every field; and in this southern clime, where nothing almost but water is wanted, the increase of fertility is almoct incredible. The produce is sometimes more than tripled; and grass may be mown three, four, and five times in the year. The property of water, thus the grand instrument of cultivation, is fixed and distributed by the minutest regulations. Every spring newly discovered belongs to the proprietor of the ground, and is by him immediately converted into a little canal. The enclosures are small, and surrounded, for the sake of shade, by poplars and mulberry trees, which give the country a rich wooded appearance. The farm-steadings are kept very neat and clean. In the Tuscan vale of the Arno, the irrigating system is practised on a different and still more elaborate method. The steeps of the Apennine, from which the waters poured down only in irregular torrents, seemed incompatible with such a process. Recourse was had to the terrace system, which, though not uncommon in Asia, is in Europe almost exclusively Italian. The processes by which level spots have been formed on the sides of the steepest mountains, naked rocks covered with earth, torrents confined within walls, and guided in little canals along almost every field, could only have been effected by the

Florentine merchants in their greatest prosperity. The people of the present age with difficulty support the heavy expenses of repairing and keeping up these most useful works. The cultivation in Naples does not require such elaborate processes. All that is there wanted is shade, which is procured by dividing the country into very small fields of less than an acre, and planting each side with high trees, round which vines are trained. The land is almost entirely tilled with the spade; but the poor cultivator is obliged to give two thirds, instead of one half, to the proprietor. The Neapolitan Apennine is not cultivated with the same elaborate care as the Tuscan; but nature profusely covers it with the chestnut and the olive. An entirely different system prevails in the great *maremmas* or plains along the sea-coast, which, from some cause not fully ascertained, are filled at a certain season with air so pestilential, that human beings cannot remain for any length of time without the loss of health, and even of life. These wide plains, surrounding the greatest cities of Italy, present a scene of the most dreary desolation, and are covered merely with wandering herds, watched by a few mounted shepherds, who, however habituated to the climate, labour under constant debility. Once in about six years each spot is brought under the plough, for which purpose numerous bodies of labourers are brought from Rome and Sienna; and sometimes a hundred ploughs are employed at once, in order to get over as soon as possible this dangerous operation. The farmers are few in number, not more than eighty in the whole Roman state. They reside constantly in the cities, have large capitals, and long leases; and some of them have live stock worth 16,000*l.*

2646. *The objects of agriculture in Italy* are numerous and important. They include grain of all the most valuable descriptions. The wheat of Sicily, and still more of Sardinia, is reckoned the finest in Europe. Maize is a prevalent grain, chiefly for the food of the lower orders; and even rice is raised with success, and to a considerable extent, in the inundated tracts of Lombardy. Silk is an universal staple, and of very fine quality. The export of it, in a raw or thrown state, since the decline of internal manufactures, has been the main basis of Italian commerce: it is sent to all the manufacturing countries, and shares with that of China and Bengal the market of Britain. The vine finds almost every where a favourable situation, and is cultivated; but the juice no longer preserves the fame of the ancient Falernian. It is in general too sweet, and too imperfectly fermented, to admit of exportation. Mr. Eustace endeavours to turn this circumstance to the honour of the national character, conceiving that the sober Italian, who drinks to quench thirst, has no motive to study the preparation of a delicate wine. The wines of Naples and Sicily are the best, and are sometimes seen at the tables of the great in foreign countries. The Muscatel and other Sicilian wines are so extremely luscious, that only one or two glasses can be taken at a time. That island, however, has another kind, the Marsala, often sent to America and the West Indies, where it passes for Madeira. The olive grows in very great luxuriance in Naples, on the eastern slope of the Apennines; and the oil made from it is more highly esteemed than any other, at least for use in the finer woollen manufactures, whence it finds in England a steady demand, under the name of Gallipoli. Cattle are not particularly numerous; but many of them, from their qualities, are singularly valuable. Pre-eminent among these are the cows fed in the pastures of the Parmesan, and the country around Lodi, which produce the cheese considered superior in richness and flavour to any other in the world. The cattle are of the Hungarian breed, crossed with the Swiss; they are fed in the stall upon mown grass; and numbers of the small proprietors keep a dairy in common, that they may conduct the process on a large scale. The cattle on the Apennines are of a small grey kind, which Mrs. Graham praises as the most beautiful of their species; but they give little milk, and after being employed in labour are driven down to the Maremma to be fattened for the city markets. The sheep abound in all the mountainous districts, and their wool is generally esteemed. That of the Venetian hills has, by crossing with the merino, been rendered almost perfect; and that of the mountains of Rome and Naples, though not so fine, is valued for the equality of its texture. A great part is black, and woven undyed, for the clothing of the galley slaves and of the friars. Goats are reared in great numbers amid the Apennine cliffs; and their flesh and milk is the animal food chiefly used by the cultivators, with the addition, however, of fresh pork. Hogs are reared also in great perfection: they are not pent up, and fed on refuse, but wander at large through the woods, where they feed on nuts, mast, and roots; and become even somewhat intelligent and sprightly animals. The hams and bacon thus produced are considered at Rome as a great luxury. The fruits of Italy are various and delicious, but none are of such value as the chestnuts, which in the upper regions constitute the food of a numerous body of mountaineers, who even dry and convert them into bread. The Apennine timber, consisting chiefly of oak and chestnut, is little used except for barrels. The saline plants of Sicily yield a barilla which rivals that of Spain. Among partial objects we may mention cotton in the southern provinces of Naples, which was produced in 1812, to the amount of 60,000 bales, and the hemp of Bologna, which is of peculiar excellence. The Neapolitan manna, which exudes from a species of ash, is made a royal monopoly.

2647. *The manufactures in Italy*, once remarkable for their elegance and variety, are now every where in a state of decay, and present only specimens on a small scale of what formerly existed. The great and opulent citizens, after the military revolutions which deprived them of influence and security, seem every where to have retired to the country, and invested their capitals in land. Silk was formerly the grand staple, particularly in the form of velvets and damasks, richly adorned with gold and silver embroidery. This manufacture still exists in most of the great cities, though on a reduced scale. The Venetian States, in 1795, had only 2701 silk weavers, and 1163 gold and silver spinners. In 1802, the number of weavers in Turin had been reduced from 1400 to 500. The Lombard peasantry, however, still carry on the throwing of silk upon their farms, and it is exported in the shape of organzine for the use of the foreign manufacturer. The woollen manufactures of Florence were once immense, giving employment to 30,000 persons; but they are now both few and coarse. Linen is considerable, and is often combined with cotton, which flourishes tolerably in the southern provinces of Naples, where the muslins of Tarento enjoy a good deal of reputation. Glass, in brilliant and curious forms, was once a celebrated and admired article; and there are still made at Venice, on the island of Murano, mirrors, glass beads, and tubes; at Florence, the flasks bearing the name of that city. It seems doubtful if the art that produced the ancient earthenware of Etruria still exist. In the Florentine and Roman states are made, without the use of the wheel, numerous jars of red earthenware for holding oil; probably on a very antique model. The works of Doccia, near Florence, produce goods resembling those of Staffordshire. The only fine porcelain of Italy is that made at Naples, which may vie with any in Europe. The potteries at Terramo, in the Abruzzo, are also very extensive. Some curious works, inlaid agate tables, cameos, mosaics, &c., which elsewhere rank with the fine arts, are carried to such an extent, at Florence and Rome, as to be articles of trade. The paper of Italy had formerly a high reputation; and that of Belluno, and some parts of Tuscany, is still in repute. Extremely fine soap is made generally throughout Italy, but more particularly in Sicily. We must not omit the Tuscan manufacture of straw hats, which affords a most valuable employment to the country girls in that neighbourhood, and yields a produce of about 130,000*l.* a year. In general, Italian statistics are in so low a state, as to make it scarcely possible even to conjecture the amount of these various articles.

2648. *Minerals*, especially metals, are deficient to a degree remarkable for a country so very mountainous. The Alps, which are so rich on the side of Germany, produce on that of Italy only iron in the districts of Brescia and Bergamo, and copper in that of Belluno. The Brescian iron has been worked with considerable diligence, being formed into the steel celebrated under the name of Brescian, and into various descriptions of hardware, which, however, have shared the general decline of Italian industry. Notwithstanding the boasts of some native writers, no mines of importance seem to exist in any part of the Apennines, or of the rest of Italy, except the island of Elba, long celebrated for its fine iron. The cliffs of this great calcareous chain, however, produce valuable stone, and particularly several species of beautiful marble, among which that of Carrara is conspicuous; nor are there wanting agates and other ornamental stones. The sulphur of Sicily is an article of importance.

2649. *The mercantile transactions* of Italy have declined in a still more remarkable degree. The discovery of America, and the passage to India by the Cape of Good Hope, transferred the most valuable trade of the world into channels from which she was excluded. The restrictive, and in many respects oppressive system adopted by the Spanish and German princes, chilled the spirit of enterprise; and the great capitalists of Venice and Genoa preferred investing their money at high interest in foreign funds. The only great commercial activity now existing is at Leghorn, which carries on not only the commerce of Tuscany, but that of Naples and Sicily, and keeps even a regular depôt of all the commodities of the Levant. Mr. Jackson reproaches the English as acting against both their honour and interest in receiving these goods at third or fourth hand, and at an advance of 35 per cent., from traders who make it a religious duty to cheat the infidels; but the merchants find, probably, an extreme convenience in having one port where they can make up a complete assortment of Mediterranean goods. The exports from Italy consist almost entirely of the articles of raw produce already enumerated, of which the leading articles are raw and thrown silk and olive oil; to which may be added Parmesan cheese; marble; almonds, and raisins, from Sicily and Lipari; Bologna hemp, barilla, sulphur, liquorice, paste, straw hats, and a great quantity of rags. The staple import is salt-fish for the use of the devotees during the fasts of the church. It is chiefly cod-fish from Newfoundland, called here *bacallo*, and pilchards from Cornwall. All kinds of colonial produce and spices find a market; also iron, lead, hardware, silks, woollen, and, still more, cottons from France and Britain. Leghorn also imports wheat from Odessa, beans from Egypt; the fruits, cotton, and drugs of the Levant; but more for the accommodation of Britain and the other northern nations than for the use of the country.

2650. *Fishing* is a pursuit for which the extensive coasts of Italy as well as its lakes and rivers furnish ample scope, as they abound with fish of the most excellent quality. It is carried on with sufficient diligence for immediate consumption, but not so as either to furnish objects of trade, or to dispense with a large importation. Anchovies, however, are shipped in large quantities from Sicily for Leghorn; and it seems to be from some defect in the mode of cure that they do not equal the Gorgona anchovies. On the western coast of the same island is a considerable coral fishery. Amber, as a marine production, may also be mentioned as found more abundantly on the Sicilian than on any other coast. The tunny fishery of Sardinia is the most extensive in the Mediterranean.

2651. *The canals*, constructed during the period of the glory of Italy, are very numerous and valuable. The plain of Lombardy is intersected by twelve on a large scale, connected by innumerable minor channels. But though many of these are navigable, their primary object has been to communicate to the country on both banks of the Po its unrivalled fertility. This is still more decidedly the case in the Florentine canals, which are merely broad ditches cut along the terraced sides of the mountains. The only canals of the south appear to be those which have been formed at different times with a view to the draining of the Pontine marshes. Commercial canals do not seem to have yet entered into the system of Italian economy.

2652. *The roads of Italy* were carried to the highest perfection under the ancient Roman empire and republic. From Rome, as a centre, five great ways branched off to the different frontiers. All obstacles were removed, rocks levelled, hollows arched over, in order to form routes the most direct, level, and commodious. They were constructed in a peculiar manner with large blocks of stone wedged together so as almost to resemble a flat surface of rock; and such is the durability thus produced, that several large portions remain, after the lapse of two thousand years, in as entire a state as at their first formation. The lines of these great roads still continue, and are kept by the existing governments in very tolerable condition; so that travelling in Italy is obstructed only by the occasional inundations of the rivers, and the still more perilous assaults of banditti, who occupy many of the Apennine recesses.

Sect. VI. *Civil and Social State.*

2653. *The national character and the state of society in Italy* are marked by prominent and striking features. The people, in some respects, are perhaps the most polished and refined of any in the world. While the German and many English nobles placed their enjoyment in hunting and the pleasures of the table, music, painting, poetry, and assemblies for conversation formed the delight of the Italians. The one spends much of his fortune in keeping a splendid table, stud, and pack of hounds; the other in building palaces, and adorning them with masterpieces of painting and sculpture. The French are, perhaps, still more gay and social; but their gaiety is more of a noisy, empty, and animal kind; while the Italian derives his delight from objects of taste, and feels them with deeper sensibility. The nobles of this country were from the first civic; and all their habits have continued to be those of a city. What they call the chase has no resemblance to the bold adventurous field-sports of England, but consists merely in driving a number of animals into an enclosed place, and shooting them at their ease. No pains are bestowed on the improvement of their estates, which are managed according to a mechanical routine, under the care of stewards, who often embezzle a great part of the produce. Being excluded also from all concern in public affairs, and from the administration of the state, they have become estranged from habits of manly and energetic exertion. They pass their lives in a listless and lounging apathy, making it their sole object to while away the hour in the most easy and agreeable manner. Their day is spent in a regular routine of attendance on mass, on their lady, on the theatre, the Casino, and the Corso. As the title and rank of a noble descends to all his posterity, the great increase in their number, by reducing them to a miserable and proud poverty, tends still more to degrade them in the public eye. Certain remains of mercantile habits are offensive to English observers. Ostentatious magnificence is combined with sordid economy; the most superb equipages and apartments are let out to foreigners, who are not even quite sure of honest dealing. Attached to many of the Florentine palaces is a little shop, where wine is retailed in the smallest quantities. But the deepest reproach of Italian manners seems to be the established system of cicisbeism, by which every married lady must have her lover or *cavaliere servente*, who imposes on himself the duty, wherever she is or goes, to dangle after her as her devoted slave. This connection is said to be not decidedly, or at least certainly, criminal, as our manners would lead us to suppose; but rather to form an *état* into which it is necessary to enter, on pain of expulsion from the fashionable circles, and which is continued according to a routine of almost mechanical observance; the gallant speaking not of the mistress whom he loves, but of her whom he serves. It is obvious, however, that it must, at the very least, imply the sacrifice of all that is happy or respectable in domestic life, attended as it is with an anathema against the married pair, if they show the slightest symptoms of respect or regard for each other. Still charity and humanity appear conspicuous virtues in these nobles.

The *misericordia*, an institution diffused throughout Tuscany, consists in Florence of four hundred persons, many of high rank, who devote themselves to personal attendance on the sick, superintending the hospitals, distributing food to the patients, and watching the manner in which they are treated. These duties, indeed, they perform under the disguise of long black vestments, which cover and conceal the face. There is another society for searching out and relieving the poor who have seen better days, and are ashamed to beg: but in Mr. Forsyth's time their zeal had so far relaxed, that they bestowed alms only upon application; and Mr. Williams considers their original object as wholly lost sight of. The charitable institutions of Naples, Rome, Milan, and Genoa, appear also to be most extensive; and the bounty bestowed, especially at the convents, is considered as one of the chief causes of the idleness and mendicity which prevails in the great cities. Temperance must be admitted as another virtue of the Italians. Notwithstanding the abundance and cheapness of wine, intoxication is scarcely known, even among the lowest ranks. English visiters complain that, amid the profusion of other forms of courtesy, little food or drink is vouchsafed to them, even by the most opulent. A dinner is an event of the rarest occurrence; and the amusements of the evening are only those of intellect or society, without any refreshment whatever. The accompaniment of real politeness and civility, however, shows that this proceeds not from want of hospitable feelings, but of that importance which is attached to good cheer by the English nation.

2654. *The lower ranks form the mass of the Italian population*, with scarcely any intervening class between them and the nobles. They share, in some degree, the refined tastes and manners of the higher ranks. The common shopkeepers of Florence and Rome possess a taste in the fine arts, and sometimes even in poetry, which is unknown in the most polished circles beyond the Alps. They delight also in conversation, which they support with peculiar animation, and with gesticulations the most varied and expressive of any European people. The peasantry are, on the whole, a poor, quiet, contented orderly race; spending, not very wisely, all their little savings in finery for their wives and daughters. But the populace of the great towns display a character peculiarly idle, tumultuary, and unlicensed. They seem to combine the characters of citizens, beggars, and bandits. The lazzaroni of Naples, in particular, form a numerous body, who exist almost wholly out of the pale of regular society. The climate enables them to live without houses, — almost without clothes, and with only a daily handful of maccaroni. Having obtained this by theft, by begging, or some little occasional work, they abandon themselves to luxurious indolence, or the indulgence of wayward humours. They are a set of wild merry rogues, with all the rude energy of savages, full of humour, address, ready argument, and quick repartee. In political convulsions they have made very signal displays of energy, usually in defence of the reigning family, to whom they are strongly attached. The practice of assassination, whether for hire or on the impulse of passion, which was long peculiarly Italian, is said to have been considerably reduced by the French. They deprived the sanctuaries of their right to protect the assassin; and that right has not since been restored to them. Another too numerous class are the bandits, who, established in the recesses of the Apennines, form a sort of separate people, and carry on their vocation on a great and regular scale. The strength of their line of mountain positions, which runs close and parallel to that of the high road through Italy, affords them opportunities of which they know well how to profit. The road from Rome to Naples is their favourite haunt, and even when guarded by piquets of soldiers at the distance of every mile, it cannot always be travelled with safety. They carry on their trade in a systematic manner, and not without some adherence to the principle of honour when it has once been pledged. Their grand aim is to carry off some person of distinction, and then to exact a ransom proportioned to his means and dignity. The French and even the German troops stationed in Naples rooted out some of these dens of banditti; but, under the supine indolence of the Neapolitan government, they are again recruiting their strength.

2655. *Religion* still forms a prominent feature in Italy, the centre of that great spiritual dominion which for so many ages held unbounded sway over Europe. The pope, as spiritual head of the catholic church, maintains an establishment rather suited to his former supremacy, than to the limited and almost nominal jurisdiction which he now exercises. The great council of the church consists of the college of cardinals, who, according to the regular establishment, amount to seventy: they are chosen by the pope, and on their part they elect him out of their body. Every fortnight they are assembled in a consistory, to deliberate on the general affairs of the church. Particular departments are also administered by congregations, which have not the signification which we attach to them, but signify public boards. There is a congregation *de propagandâ fide*, for missions to foreign parts and the conversion of heretics; the congregation of the *index*, for making up the list of prohibited books. The Jesuits, since their re-establishment in 1817, have also their head-quarters at Rome, where their *general* resides. The inquisition, now much mitigated in its rigour, forms one of these congregations. There are thirty-eight archbishops in Italy; and the number of suffragans varies according to the pleasure of the pope. The clergy, both secular and regular, were, prior to the Revolution, very numerous; and their possessions were immense, consisting chiefly in land. The tithes were not very severe, and in Tuscany had been altogether abolished. During the French revolutionary sway there was an extensive confiscation of ecclesiastical, and especially of conventual property; and though this has been partly restored, much still remains in the hands of the lay purchasers. It is said that not much benefit has thence accrued to the cultivators, who have merely found a new and often more rigid landlord. Another means of support to the church is from alms; and the two most powerful modern orders, the Dominicans and Franciscans, have expressly announced themselves as mendicant; but the spirit of the times renders this source of wealth much less productive than formerly.

2656. *The ceremonies of the Roman catholic church* are exhibited at Rome in all their imposing splendour. Mr. Eustace considers the pontifical service at St. Peter's, and the procession on Corpus Christi day, as, perhaps, the most magnificent spectacles that are exhibited in the universe. All the parade of dress, the blaze of light, and the pomp of music, are united in the magnificent hall of the Vatican, and the vast area of the church of St. Peter, to produce the most imposing and brilliant effect: one of the most striking scenes is said to be in St. Peter's, on the night of Good Friday, when the hundred lamps that burn over the tomb of the Apostle are at once extinguished, and in their stead a stupendous cross of light appears suspended from the dome: in one part of the ceremonies the Pope makes a show of washing the feet of pilgrims, while in another he bestows his benediction on the assembled multitude. These great days are preceded by periods of severe fasting, and followed by a carnival, or interval of almost unbounded licence. The gloom of the first period is described by Lady Morgan as enlivened by busy preparation in draping the churches, clothing altars, and forming festoons; also in preparing dresses, crowns, necklaces, and cradles for the Madonna and Child of the respective churches. Sometimes the Virgin blazes in pearls and diamonds; sometimes she can only get a tin crown, set off with gilt paper and glass beads. Mary, according to Mrs. Graham, is the goddess of Italy: even the robbers, who are generally devout, never go forth on a marauding expedition, without her image carefully tied round the neck; they consider it even as a spiritual benefit to be hanged, as they then get absolution immediately before they drop, and can commit no further sin. We can scarcely, however, believe, with Mrs. Graham, that it is customary with the Italians to commit capital offences with the sole view of securing their salvation. According to Mr. Matthews, there appears to be some good preaching in Rome: one friar he compares to Dr. Chalmers for vehemence and enthusiasm, though without the same rich variety of knowledge and illustration; but he employs himself very laudably in attacking the prevalent faults, and particularly that attachment to the outward forms of religion which is here so generally substituted for its essential duties.

2657. *In literature and science,* the world is deeply indebted to Italy; first for the classical works which she produced during her Augustan age; and then for the brilliant revival of literature, under her auspices, after a long night of ignorance. In the fifteenth and sixteenth centuries she could boast of Petrarch, Dante, Tasso, and Ariosto, as standing in the first class of poets; Guicciardini, Fra Paolo, Machiavel, unrivalled among the historians of their own and several succeeding ages; and Galileo as attaining the highest distinction in astronomy and physical science. Along with the political ascendency of Italy, her literary greatness has suffered decay; the magnificent patronage of the Medici and the Estes was no longer extended to it; and the national enthusiasm, by which it had been fed, was depressed by slavery and adversity. Italy, however, has not ceased from time to time to produce distinguished works. The lyrics of Giridi, Chiabrera, Filicaja, have attracted admiration; and the drama, which had been wanting in its fortunate age, was brought forward in a very imposing manner by Alfieri and Monti. At the same time the political works of Filangieri, Beccaria, and Verri, have displayed highly enlightened views; and Spallanzani, Fontana, and others have acquired distinction in medical and physical science.

2658. *The literary collections of Italy* are of singular value: the library of the Vatican, if not the most extensive, is probably the most valuable, in Europe; the number of volumes (a simple fact, which might be easily ascertained,) has been left to conjecture, which fluctuates, according to Mr. Eustace, between 200,000 and 1,000,000: he advises to take the middle, which makes a very vague kind of estimate. The manuscripts, the most curious and valuable part, are reckoned by him at 50,000, but by Mr. Cadell only at 30,000. They comprise very early copies of the gospels, the classics, and writers of the middle age. The French extorted the surrender of 500, to be selected by themselves; but if (as reported by Lady Morgan) the choice was capriciously made by illiterate officers, it may not have materially reduced the value of the collection. The Ricciardi and Magliabecchi libraries, at Florence, and that of the Institute of Bologna, though secondary to the above, contain, however, a rich store of ancient manuscripts and early printed works, formed by the munificent princes who once reigned over these cities. The riches of that of Milan have been sufficiently proved by the learned researches of M. Angelo Mai, who has retraced the lost works of Cicero and other classic authors, erased in order to make way for monkish legends that have been written above them. The library formed by the house of Este, at Modena, notwithstanding severe and repeated losses, possesses still considerable wealth. At Naples, the papyri, dug out from the ruins of Herculaneum, present still one of the greatest modern literary curiosities.

2659. *The fine arts in Italy* have attained a splendour quite unrivalled in any modern country, and have even flourished in that region as their chosen and peculiar soil. An aristocracy living in cities, and estranged from rural habits, naturally centered their pride and gratification in covering their country with this species of embellishment. The houses of the Medici and of Este, with the nobles and senate of Venice, vied with each other in raising such monuments.

2660. *Painting*, in the sixteenth century, and in the Roman and Florentine schools, reached a height of perfection unequalled, perhaps, even in ancient times. In all the qualities of form, design, and expression, which constitute the highest excellence of the art, no names can yet rival those of Michael Angelo and Raphael. A school nearly contemporaneous was formed at Venice, which, as to the beauty of colouring, stands unrivalled. It is remarkable that, ever since this early period, the art has been in a state of gradual decline. The school of Bologna, however, which immediately succeeded, attained to very great excellence, just below that of its predecessor. But, for more than a century, though Italy has had some showy and popular painters, there have been none who could establish any classic reputation: at present, notwithstanding the respectable names of Camuccini and Naldi, the general character of art is very secondary. An ingenious writer complains of the cold, glaring, hard style adopted by those who have the opportunity of studying the most masterly of the ancient works. Indeed, Mr. Williams suspects that the constant copying of these works, and often for the mere purpose of sale, deadens the invention of the Roman and Florentine painters.

2661. *The sculpture* of Italy, even during its happiest ages, did not equal that of the ancient schools; though Michael Angelo and Bandinelli, combining it with painting, produced some very splendid specimens. In the present age the genius of Canova has burst forth with a brilliancy which has enabled modern times in this art almost to rival antiquity. Thorwaldsen, also, though a Dane, having been completely formed and fixed at Rome, has generally been considered as Italian.

2662. *Engraving* is an art subsidiary to painting and sculpture, and naturally following in their train. Notwithstanding the interesting school formed by Raphael, and the valuable etchings by the Bolognese painters, Italy seems, in this department, to have long remained behind France and Flanders. This reproach has been removed in the present age, when the patronage afforded by an association of nobles has produced Volpato, Bettelini, Gandolfi, and above all Morghen, justly, perhaps, considered as the greatest engraver that ever existed. The talent of these artists also having been employed solely on the finest pieces of the early masters, has rendered their engravings of peculiar interest and value.

2663. *Architecture* is another art in which Italy has no modern rival. Though some of the northern nations may have erected more huge and more costly structures, none of them display the same high, pure, and classical taste. Besides Palladio and Bramante, who hold the foremost place among professed architects, Michael Angelo employed himself in designing several great edifices, which are stamped with all the grandeur of his genius. Hence, notwithstanding the astonishing magnificence of the architectural remains of ancient Rome, they are completely matched by St. Peter's, the Lateran, S. Maria Maggiore, and other modern churches.

2664. *The collections of art in Italy* are of a splendour surpassing even that which might be inferred from the great works produced by its artists. Of the masterpieces of the ancients which were either saved from the desolation of the Eastern empire, or dug up from the ruins of temples and palaces, by far the greater part were either found in Italy, or brought into it; and that country became the grand depository alike of ancient and modern art. Even at the time when French rapacity had stripped it of all its moveable treasures, the grand productions of Michael Angelo, Raphael, Caracci, and Titian, painted upon the walls of temples and palaces, remained immutably fixed. Italian pictures form still the brightest ornament of all the collections beyond the Alps; yet the multitudes which have been purchased out of Italy, seem scarcely missed amid the profusion of those which remain. Rome continues still the great *studio* of all the nations of Europe: no painter is considered fully accomplished until he has spent a year or two in that capital; and many from the most remote countries, enamoured of its beauties and advantages, make it their residence for life.

2665. *In music*, Italy has boasted a similar pre-eminence; and for a long time all the great composers in the high style of art, Pasiello, Cimarosa, and Salieri, were exclusively Italian. Of late, however, Germany has come forward as a powerful rival; Vienna especially has produced several composers of the first class. Yet Italy seems still to be regarded as the chief home of the musical art; thither all the students repair; and its vocal performers are considered over all Europe as superior to those of any other country.

2666. *The amusements of Italy* have been already touched upon, in estimating the character of a people, of whom so large a proportion live only for amusement. The arts now enumerated; as brought to such perfection, furnish a great part of their daily recreation; to which they add a still more refined one, improvisatory poetry. In all the societies of Italy, there are bards who are ready to recite a crowd of verses, upon any subject proposed, on the spot; and many have been celebrated as of great excellence. We are not aware, however, that any of the productions of these improvisatori have obtained the notice of the world in general; and it seems on the whole to be rather a process for the display of quickness of fancy, than one by which works of superior merit can be produced.

2667. *The mansions of Italy* are celebrated for the splendour and art displayed both in their form and interior decoration. Those built by the nobility in Rome, Florence, Genoa, and Venice, are usually dignified with the name of palaces; and their classic exterior, spacious apartments, and the works of painting and sculpture with which they are adorned, render them often more interesting to the spectator than those of the greatest monarchs beyond the Alps. They are maintained, however, rather for show than use; all the finest apartments being employed as galleries of exhibition, while those in which the family reside are of small dimension, in the upper stories, and destitute of many of the comforts which, to an English gentleman, appear indispensable: in short, to him they appear little better than garrets. The taste for architectural beauty descends even to the lower ranks. The houses of the little farmers in Tuscany and Lombardy are adorned with porticoes and colonnades, and often display a classic aspect (*fig.* 308.).

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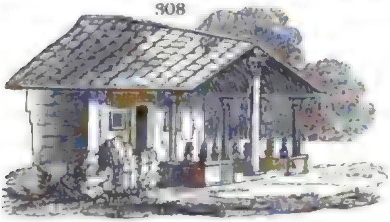

TUSCAN COTTAGE.

2668. *The dress of the Italians* does not seem to have any features peculiar or strictly national. Among the upper ranks, French fashions prevail; many of those in the country, and especially of the hilly districts, display a picturesque variety, which, being not unaccompanied with taste, produces often a very pleasing effect (*fig.* 309.).

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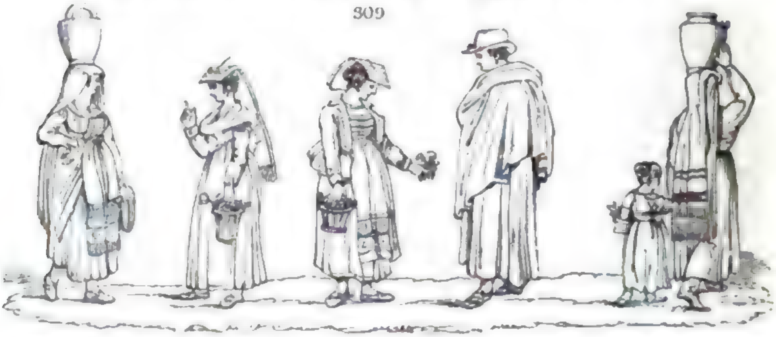

ITALIAN COSTUME.

2669. *In the food of the Italians,* who are generally very temperate, we know not any very characteristic article, except maccaroni. In the rest of Europe it has not been generally adopted as an article of diet, but it is presented as a delicacy at the tables of the opulent.

Sect. VII. *Local Geography.*

2670. *The local divisions of Italy are more than usually prominent;* for though the country is united by name, by a common language, and by a strong national feeling, it has yet been partitioned into a number of states, politically independent of each other. The numerous little republics, indeed, which once made so brilliant a figure, and disputed for supremacy, have, in the late convulsions, lost the feeble remains of their existence, and merged into the great states. Italy is thus divided into five great portions: 1. The Ecclesiastical States; 2. Tuscany; 3. Lombardy, or the Austrian States; 4. The States of the King of Sardinia; 5. Naples and Sicily.

Subsect. 1. *Ecclesiastical States.*

2671. *The Ecclesiastical States* have lost that paramount importance which they once possessed, and are the least flourishing and powerful of all the divisions of Italy. Nevertheless, as they contain Rome, with all its stupendous monuments, and were the central theatre of all the ancient grandeur of Italy, they still excite an interest superior to that of any other of these celebrated regions. They form a central band, extending entirely across the country, and separating the north from the south of Italy. Since the acquisition of Ferrara, their eastern portion shoots a large branch northwards as far as the Po. They are thus in contact on one side with Tuscany and Lombardy, on the other with Naples. The Apennines pass entirely through them, producing on their borders some of the most beautiful scenery in Europe,—the lake of Perugia, the falls of Terni, the magic scenes of Tivoli and Frascati. These mountains divide the states into two unequal plains, of which the eastern is the most extensive, and contains the city of Rome; but it is in a great measure waste and pestilential. The western, comprising the Bolognese and the March of Ancona, is more fertile and better cultivated, but much narrower, being closely hemmed in by the Apennines and the Adriatic. The mountains produce timber, chestnuts, fruits, and even silk, wine, and oil, though not equal in quality to those of the Florentine and Neapolitan territories. There is very little manufacturing industry of any description. The annats, contributions, and indulgences, which anciently maintained the pontifical sovereign in such pomp, have disappeared with the decaying faith of the catholic world. He maintains about 6000 or 7000 troops, which are little better than a species of militia.

2672. *The population* of the Ecclesiastical States is about 2,600,000. Principal towns: — Rome, 150,000; Bologna, 65,000; Ancona, 30,000; Perugia, 30,000; Ferrara, 24,000; Ravenna, 24,000; Forli, 16,000; Pesaro, 14,000; Benevento (in Naples), 14,000; Ascoli, 12,000; Viterbo, 12,000; Macerata, 12,000; Urbino, 11,000; Loretto, 8000; Città Vecchia, 7000.

2673. *The revenue* is in a great measure conjectural, from the want of any official statements. M. Balbi, in a communication to the *Bulletin Universel*, states it to have amounted, in 1818, to 1,720,000*l.*: of which there was derived from land-tax, 400,000*l.*; from customs, 300,000*l.*; monopolies, 190,000*l.*; registers, &c., 200,000*l.*; lottery, 135,000*l.* At present the same writer estimates it only at 1,237,000*l.*, burdened with a debt of 24,700,000*l.*

2674. *Rome* (*fig.* 310.) is the capital of the Ecclesiastical States. This ancient city, still great in its decline, presents to the reflecting mind a more interesting spectacle than the proudest capitals of the modern world. It holds enshrined, as it were, all the sublimest monuments of history and antiquity. Every spot is rendered sacred by awful names and heroic actions. The memory of those who rose in genius and glory above the rest of mankind, and of those whose nod fixed the destinies of the world, seems to hover around the "eternal city." Gibbon, while he disclaims enthusiasm as a part of his character, admits that it never left him during the weeks which he spent in wandering through the streets and monuments of Rome. Independent even of these high associations, Rome contains the most perfect works in architecture, painting, and sculpture, produced in the ages both ancient and modern, when those arts had reached their proudest height. Even now, all who wish to attain taste or perfect skill in those refined and beautiful arts, flock to Rome as their school. To celebrate Rome as it was, and as it is, libraries have been written; but we can merely mention those grand features which render it the admiration of the world.

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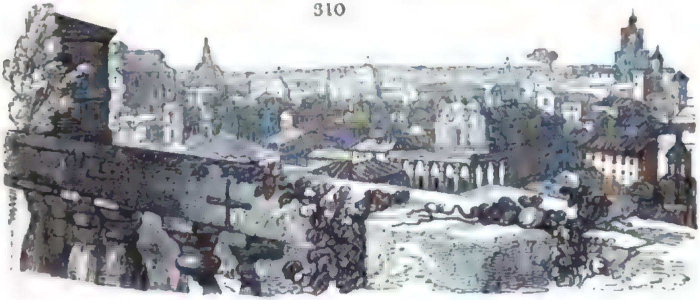

ROME.

2675. *The outlines of ancient Rome, and its relation to the modern city*, may be distinctly traced. Forsyth distinguishes three cities called Rome; that which the Gauls destroyed, that which Nero burned, and that which Nero rebuilt. The walls begun by Servius Tullius, and completed by Aurelian, present specimens of all the successive forms of construction which prevailed in Rome. The modern city is still enclosed by them; but it covers only a portion of the vast site occupied by the mistress of the world. It extends chiefly over the Campus Martius and along the Tiber, forming a curve round the base of the Capitol. The spectator must turn to the other side of that hill before he is met by the genius of ancient Rome. There, scattered in vast and shapeless masses over the seven hills, appear its ruins. They stand in lonely majesty, with groves of funereal cypress waving over them. Its palaces, its tombs, its baths, its temples with their pointed obelisks, stand majestic but solitary monuments amid the extensive waste of time and desolation. The Palatine, which originally contained the whole city, which remained always its chief and most populous quarter, and is represented by Cicero as crowded with the senate, the orders, and with all Italy, presents a mere landscape with two solitary villas and a convent. The temples, palaces, and porticoes lie in such shapeless heaps, that the utmost learning of the modern architect and antiquary have been wasted in fruitless attempts to discover their plan and their site. Of the imperial palace only some vaulted subterraneous chambers of one wing remain. In general, it may be observed, that, with the exception of a few grand objects, the details of ancient Rome have escaped the most anxious researches of the learned. We cannot tell the site of many of the objects even most famous in antiquity. We cannot say, " Here stood the house of Mæcenas, of Cicero, of Horace." However, the Capitol, the Forum, the hills, are stamped with those characters of antiquity that cannot be mistaken: " a walk from the Capitol to the Coliseum comprises the history of ages." The leading features in Rome are the ancient edifices; the modern edifices; the works of painting; and the works of sculpture.

2676. *Of the ancient edifices*, though many retain only their rude foundations, and others have been so shattered, that their original form cannot now be traced, enough yet remains to inspire the most solemn emotions, and to give a full idea of the perfection of ancient architectural design. The monuments of Rome are divided by Forsyth into the works of the kings, of the republic, and of the empire. The first are of the solid and rude Tuscan order, with large uncemented blocks; but only a few detached specimens of them can now be traced. The works of the republic were almost strictly limited to objects of utility and power, — aqueducts, bridges, roads. It was not until the period of the empire, or at least until the liberties of Rome, undermined by the vast wealth of conquered kingdoms, were rapidly falling, that the arts of Greece, admired and imitated, enabled Rome to produce her perfect specimens of architecture. The orders were Grecian; but it is remarkable that, while the Doric and Ionic predominate in the original country, in Rome the highly ornamented Corinthian, of which the Composite is only a variety, was employed in all the principal edifices. Of these, the Pantheon and Coliseum remain nearly entire, or with only such touches of ruin as render them more awful and picturesque. The Pantheon (*fig.* 311.), whose portico, it is said, " shines inimitable on earth," preserves uninjured this feature, its graceful dome and its pavement, and the rich fluted marble pillars that line its walls; while the deep tints of age only serve to render it more venerable. Yet Mr. Eustace laments it as shorn of its beams by the disastrous twilight of eighteen centuries; he regrets its proud elevation, the statues that graced its cornice, the bronze that blazed on its dome, the silver that lined the compartments of its roof within: but, on the whole, Mr. Forsyth conceives no monument of equal antiquity to be so well preserved; which seems owing to its fortune in having been converted into a Christian church. The amphitheatre, called the Coliseum (*fig.* 312.), that spacious structure

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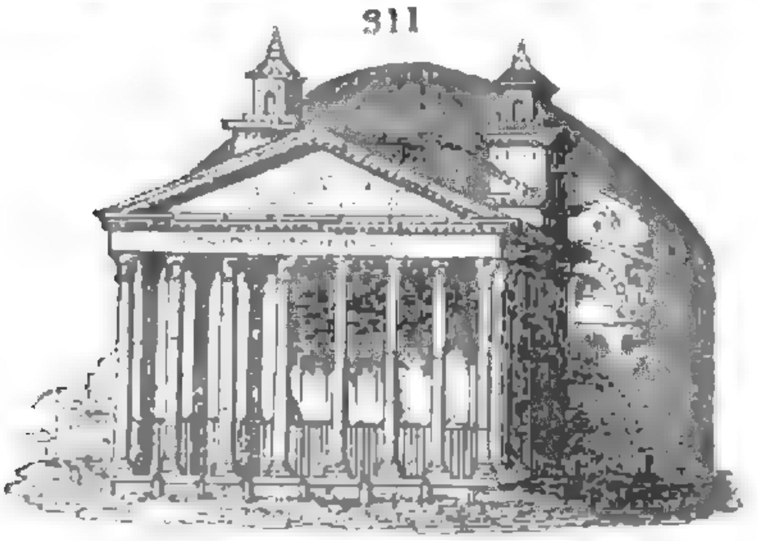

PANTHEON.

> " Which, in its public days, unpeopled Rome,
> And held uncrowded nations in its womb,"

presents still the most gigantic monument of the Roman world. Fifty thousand people could find seats in it; yet this huge space was, it appears, sometimes insufficient for the multitudes who thronged to witness the cruel spectacles there exhibited. This edifice, by its circular form, and the solidity of its materials, was enabled to defy the effects of barbarism; but it fell a victim to the hand of taste. The modern nobles, in seeking to adorn Rome with palaces, used the Coliseum as a quarry out of which the materials might be drawn. The Farnese palace, one of its most boasted structures, is entirely built out of it.

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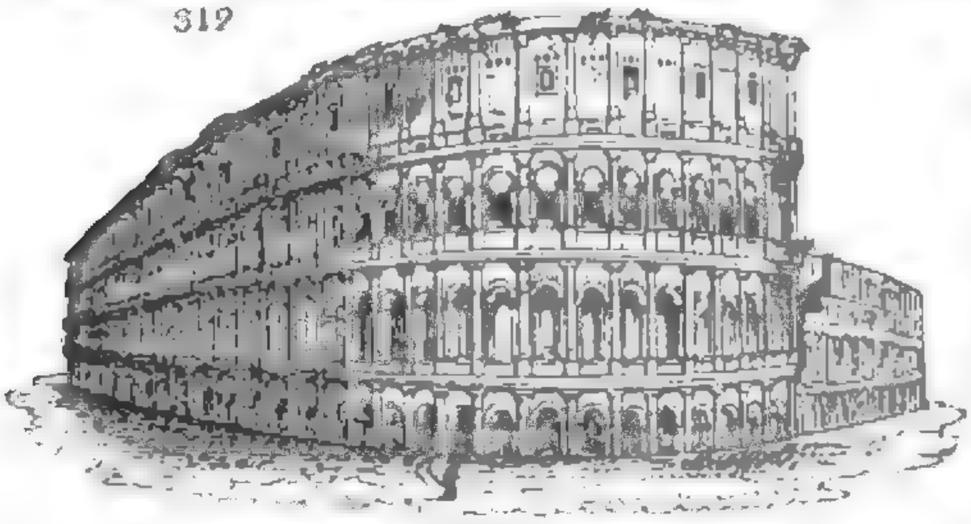

COLISEUM.

The work of spoliation was arrested before it had stripped off more than half of this august edifice; and from the frequent repetition of its parts enough remains to enable the architect to design a complete restoration. Some criticisms have been made on its details; but on the whole it is allowed to be the most magnificent, and to excite the most solemn emotions, of any existing monument of antiquity. Baths form another most superb class of Roman monuments. Those of Caracalla resemble the ruins of a city rather than of any single structure. They afforded, in fact, every variety of recreation; containing temples, porticoes, libraries, and theatre. It is supposed that there might be accommodation for three thousand persons to bathe at a time. The numerous columns, paintings, and statues, have been obliterated; though, of the latter, the Hercules and the Toro Farnese were dug up from beneath. But the walls and many spacious apartments remain, and the general outline may still be distinguished. There are traces of a mosaic pavement, which appears to have extended over the whole. The baths of Diocletian are almost equally vast, but show a decline of the art; a considerable portion of them is now converted into a convent of Carthusians. The baths of Titus are smaller than either; but they appear to have been constructed in a purer taste, and beneath them was found the Laocoon, and the finest remains of ancient painting. The column of Trajan (*fig.* 313.) and that of Antoninus (*fig.* 314.) survive as magnificent examples of this description of edifice. They are of the finest white marble, about one hundred and twenty feet high, and decorated with a series of sculpture, which winds in a spiral line from the base to the capital of each, representing their respective wars and triumphs. That of Trajan, in particular, contains 2500 figures; forming a complete system of Roman antiquities, and a mine from which all modern painters have drawn materials. The two emperors have been deposed from their lofty shrines, and in their room have been elevated, with very bad taste, representations of St. Peter and St. Paul. Triumphal arches formed with the ancients a favourite mode of commemorating great actions and signal achievements Of these, Rome still exhibits some splendid remains. The Arch of Constantine (*fig.* 315.) is the loftiest, the noblest, and in the purest style of architecture. That of Titus is richer, but is considered by Mr. Forsyth as too much crowded with sculpture. Those of Severus and Gallienus are decidedly inferior. The tombs are lastly to be mentioned, as an object on which art and pomp were lavished by the ancients. Those of Augustus and of Adrian are on the most gigantic scale, and resemble subterraneous cities. The lower vaults of the former are large enough to serve for a modern amphitheatre; but they were tombs on a hospitable system, destined to contain not himself and his relations

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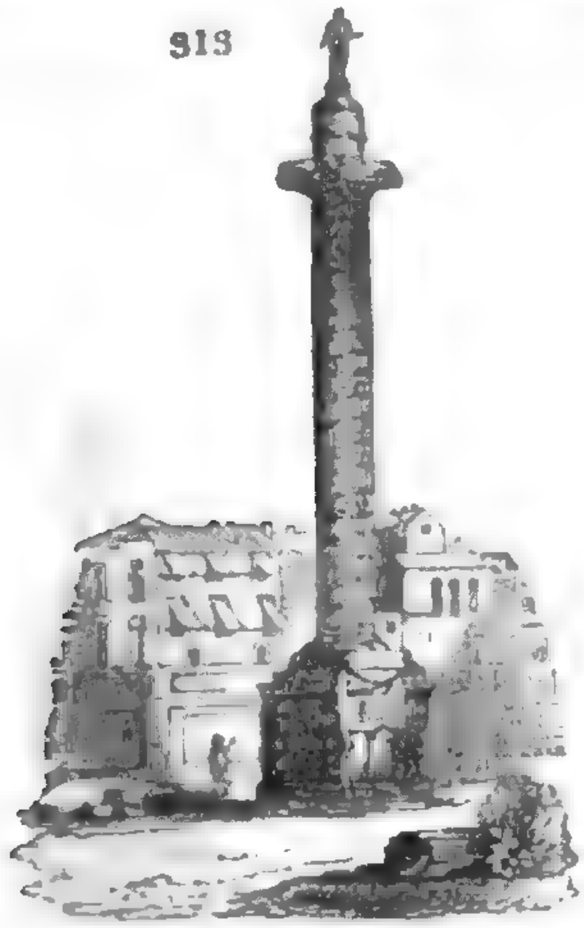

COLUMN OF TRAJAN.

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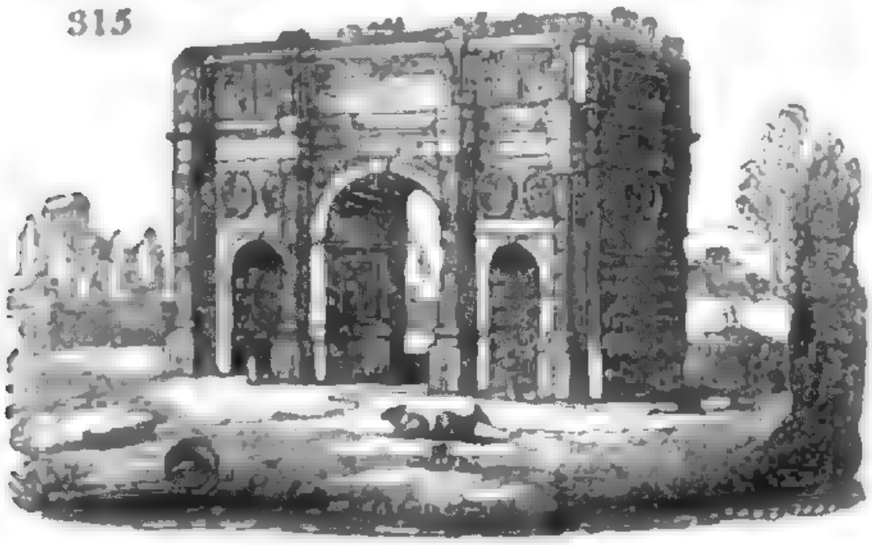
COLUMN OF ANTONINUS.

315



ARCH OF CONSTANTINE.

only, but his freedmen and all their families. That of Adrian, reduced to half its dimensions, still forms the Castle of St. Angelo, the spacious citadel of Rome. Greater elegance appears in the tomb of Caius Cestius, a lofty pyramid, which rises in lonely pomp, looking upon a hundred humbler tombs in the neighbouring grove, and supported on either side by the ancient walls of the city venerable in decay.

2677. *Of the modern edifices of Rome*, those devoted to ecclesiastical purposes are by far the most conspicuous; for, though Venice and Genoa may compete in the splendour of palaces, in churches no other city can be compared with this metropolis of the catholic world. They present also specimens of successive styles of architecture; many of them having been begun in the first centuries, and enlarged and embellished by a long line of pontiffs, till they have become perfect treasuries of wealth and art. Some of the series were not in the very purest taste; but as, even in the dark ages, they were often modelled after ancient structures which were always present to inspire ideas of grandeur, none of them exhibit marks of total degeneracy and deformity. " He, therefore," says Eustace, " who delights in halls of an immense size and exact proportion, in lengthening colonnades and vast pillars of one solid block of porphyry, of granite, of Parian or Egyptian marble; in pavements that glow with all the tints of the rainbow, and roofs that blaze with brass or gold; in canvass warm as life itself, and statues ready to start from the tombs on which they recline, will range round the churches of Rome, and find in them an inexhaustible source of instructive and rational amusement." Foremost among the churches of Rome, and of the world, stands the majestic front and sublime dome of St. Peter's (*fig.* 316.). On its site has always been the principal church of Rome, erected by Constantine, and rendered sacred by containing the ashes of the apostle from whom the bishops of Rome claimed their descent and authority. After being embellished during successive ages, it began to threaten its fall, when Nicholas V. and Julius II. conceived the project of erecting in its stead a new and nobler structure. It was carried on for a hundred years, by eighteen pontiffs, all devoting to it a large portion of their treasure, and employing upon it the talents of Bramante, Michael Angelo, Bernini, and other artists, the greatest of that most brilliant age. It is surprising with what unity the successive artists worked over each other's plans. The first, indeed, is liable to criticism; but the colonnade and the dome are perfectly unrivalled, and render it the most magnificent structure that ever was reared by mortal hands. The Basilica of St. Paul's is still more ancient, having been built by Theodosius, and presents great vestiges of ancient magnificence, consisting in painted walls, and long ranges of marble and porphyry columns. Though several times repaired, it has still, however, a forlorn, unfinished, and almost ruinous appearance; presenting the aspect of a desolate and melancholy monument. The church of St. John Lateran claims a still higher dignity; being, in preference to St. Peter's, the regular cathedral church of Rome; on which ground it assumes the lofty title of mother and head of the churches of the city and the world. It was, in fact, adorned with three hundred antique pillars, which would, it is supposed, have formed the finest pillared scenery in existence; but, unhappily, it came into the hands of a modern architect who seems to have been actuated by an antipathy to pillars, and who walled up a great proportion of them. The S. Maria Maggiore is another church, of which Eustace doubts if any architectural exhibition surpasses or even equals it. The two magnificent colonnades, and the canopy which form its interior, constitute its prominent beauties. Besides these four principal churches,

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ST. PETER'S.

Rome contains numerous others, distinguished by their antiquity and embellishments, especially of painting and sculpture. The other leading ornament of modern Rome consists in its palaces. A fondness, and almost a rage, for erecting magnificent structures generally possesses the Italian nobles, and displays itself peculiarly in their town residences, which are hence usually dignified with the appellation of palace. So vast are those of Rome, that, with their appendages, they cover more ground than the modern habitations. They do not in general display the same lofty style of architecture as the churches or temples. Their place in the street does not allow room for the open gallery and spacious colonnade; and the external ornaments, even of the most splendid, consist chiefly in pilasters. Their chief attraction is in the spacious courts and porticoes within, the vast halls and lofty apartments, with the pillars, the marbles, the statues, and the paintings that furnish and adorn them in such profusion. Indeed, they are maintained in a great measure as galleries of painting and sculpture. These superb mansions are now in a state of decay: two of the most splendid, the Farnese and the Medici, belong to foreign princes, and are left under the care of stewards; while many of the great nobles, suffering under the hardships of the times, can no longer support the expense of keeping these vast mansions in repair, and have been obliged to dispose of some of their most valuable contents. The Barberini palace, erected by the cardinal of that name, with a noble library, opened on certain days to the public, contains many statues and pictures. The Farnese palace is considered the first in Rome for its architectural beauties, plundered, however, from the Coliseum: on its walls are painted the Gallery of Annibal Caracci, and the Galatea of Raphael; but its Torso and Hercules have been carried away to Naples. The Colonna, illustrious for the heroism and virtues of the family whose name it bears, is distinguished also by a gallery, the finest, perhaps, in Europe, adorned with Corinthian pillars and *giallo antico*; but the paintings of Claude, which formed its chief ornament, have been sacrificed amid the late distresses. The same fate has befallen the Claudes of Altieri. The Borghese has been celebrated for its profusion of works of art, particularly in sculpture; but these last, having been purchased by the Bourbons, remain at Paris. The Giustiniani, built on the site of Nero's baths, contains a vast profusion of statues dug up from beneath them. The Corsini is noted by its vast extent, its having been the residence of Christina queen of Sweden, and by its library, said to have amounted to 400,000 volumes. The Doria has a magnificent gallery, with many paintings, by the first masters; the Rospigliosi has the Aurora of Guido painted in fresco on its walls; and the Spada has the colossal statue of Pompey. The pontifical palaces, however, eclipse them all. The Vatican is pre-eminent, not by its external structure, which is simple, and not very uniform, but by its vast extent, being 1200 feet by 1000; by the number of its apartments, which have been estimated at 11,000; and, much more than all, by its contents, which are more precious and interesting than those of any other palace or edifice in existence. It contains the most valuable library in Europe, the finest works of Raphael and Michael Angelo, and a vast collection of ancient sculpture, including several of its choicest specimens. The thunders of the Vatican have ceased to agitate Europe, and this palace is now prized only as the great school of the peaceful and elegant arts. The summer palace on Monte Cavallo, the ancient Quirinal, is very extensive, but of simple structure, and has spacious and fine gardens. The Lateran is an elegant but smaller edifice, only used when service is to be performed in the neighbouring church.

2678. *The works of painting and sculpture* with which Rome is adorned, excel, as already observed, those of any other city in the world. The Roman school surpasses any in modern times in force and expression, the qualities which constitute the highest excellence of art; but, besides the works of Raphael, its leader, and of his disciples, the munificence of the pontiffs enabled them to attract the great masters from other cities of Italy. Michael Angelo, though a Florentine, executed scarcely any of his works at Florence; his Last Judgment, his Creation, his Prophets, are all painted on the walls of the Vatican. Of the school of Bologna, the Farnese Gallery by Annibal Caracci, the St. Jerome of Domenichino, the Aurora and Magdalen of Guido, rank as the best works of those respective artists. The series of Raphael's frescoes in the Vatican is probably the grandest in the world; for his Cartoons, preserved at Hampton Court, though equal in design, are comparatively unfinished. The choicest works of ancient sculpture having been employed to adorn the Roman temples and palaces, were dug up from beneath them to adorn the modern city: these, however, being all moveable, suffered still more than the paintings by the French system of spoliation, and all those which were of any value were carried away, that the Louvre might be made the centre of art. Even in the course of the restoration, several have been withdrawn. The Borghese collection, with its Hermaphrodite and Gladiator, remain, as already stated, at Paris; the Venus has been taken to Florence, and the Hercules to Naples. Rome, however, retains the Laocoon, the Gladiator, and a profusion of other works, still much superior to those found in any other city.

2679. *Modern Rome*, taken altogether, and independent of the many single majestic objects, cannot be called a fine city. The streets are narrower than those of London, though wider than those of Paris, and are covered with a reticular pavement, well suited for carriages, but annoying to the foot passenger. The houses are built of stone plastered with a species of stucco, which is extremely durable, yet can never convey to our minds the same ideas of richness and solidity. But the deadliest charge brought against Rome is its excessive dirt, in which it may vie with Lisbon itself. Filth is accumulated even in presence of the most majestic piles, to such an extent as renders them unapproachable to a nation so punctilious in this particular as the English. The whole pavement around the Pantheon is revolting to every sense, sprinkled with blood and filth, entrails of pigs, or piles of stale fish. Few vestiges remain of the 144 cloacæ, which were so salutary to the ancient city. The Roman Forum, which especially recalls such high associations, and is adorned with the most majestic ruins, being now converted into a cow-market, makes a profuse display of every description of filth. The population, however, has increased, in consequence of the resort of strangers, and is supposed to be nearly 150,000.

2680. *The villas in the vicinity of Rome* form an additional ornament to the city, especially the extensive gardens which surround them. The gardens of Lucullus, of Mæcenas, of Sallust, were peculiarly spacious and magnificent; and those of the modern palaces, though on a scale less vast, partake of the same character. Several command extensive views over Rome, anciently adorned with those stupendous edifices which were the wonder of the world, but now, perhaps, more interesting when the same edifices are lying on the ground, and overgrown with cypress. No spot commands so fine a view over these awful and immortal remains as the Farnese gardens on the Palatine Mount. Of these villas, the Villa Borghese (*fig.* 317.) is the finest and most ornamented, and its walks, which, however, are too much in the old formal style, are open for the recreation of the public. The Villa Ludovisi contains the Aurora of Guercino; and the Villa Aldobrandini has the representation of a Marriage, which is viewed as the finest relic of ancient painting.

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VILLA BORGHESE.

2681. *The more distant environs of Rome* consist, in the first instance, of that wide *campagna* or plain, which its pestilential air has devoted to almost total desolation. In approaching, however, to the branches of the Apennine, a singular variety of picturesque scenery begins to open. Gentle hills, with little lakes embosomed in them, and swelling into bold and lofty mountains, crowned with extensive forests; cascades dashing down their steeps, and smiling plains intervening; — these, with brilliant skies and balmy airs, are common to this region with many others; but it derives peculiar interest from the edifices, noble in ruin, which adorn the brow of almost every hill, and from the recollection of the many illustrious ancients who in these shades wooed the Muses, and sought recreation from the toils of war and of empire. These features render this the peculiar region of the grand landscape, the scenes in which Poussin and Claude found the materials of their sublime compositions. An ingenious lady observes, that when she viewed these in England, she only exclaimed, "How grand!" but after seeing Italy, she added, "How natural!" Tivoli, (*fig.* 318.) the ancient Tibur, the residence of Mæcenas, and Horace's favourite haunt, is celebrated over all Italy for its natural beauties. They consist chiefly in the windings and falls of the Anio, now Teverone, particularly the great fall, whose summit is crowned by the Temple of the Sibyl, a small edifice, but one of the most elegant and finely proportioned, which has been transmitted from antiquity. The river pouring down in two broad sheets, the rocks fringed with shrubs, and crowned with forests, and with this beautiful ruin, produce a combination scarcely to be equalled. The temple stands, not very appropriately, in the court-yard of the inn, and the late Lord Bristol had made arrangements for purchasing and conveying it to England, when the Roman government prohibited the removal. The range of smaller falls, (*fig.* 319.) called Cascatelle, are equally beautiful, and adorned with the ruins of Mæcenas's villa, which still presents traces of its former magnificence. The country round Tivoli is as fertile

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TIVOLI.

as beautiful, and still supports in the town a population of about 10,000 souls. There are several fine villas round it; but the Italians in general have little taste for rural scenery. Horace's villa stands higher up the river, amid the recesses of Mount Lucretilis, which Mr. Eustace considers so beautiful a combination of groves, rocks, hills, flocks and herds, as Arcadia itself could scarcely rival. Only part of a wall and some mosaic pavement indicate the spot. In a different direction is Frascati, on a hill near which Cicero had erected that beautiful villa, which was boasted as one of the eyes of Italy: it commanded a noble view of the plain of Rome, with the conspicuous and majestic feature of the Alban Mount rising behind. Not a vestige remains, except some pillars, which have been employed to adorn a monastery built on its site. The ruins of Tusculum appear scattered in long lines of wall, and of shattered arches intermingled with shrubs and bushes over the summit and along the sides of a mountain, on the lower declivity of which stands the modern town of Frascati. In this vicinity is the Lake of Albano, with waters clear as crystal, finely surrounded with steep and richly wooded banks, and adorned by the noble edifice of Castel Gandolfo. Farther on is a solemn scene, the Lake of Nemi, anciently Nemus Dianæ, from the grove sacred to that goddess: it is small, seated in a deep hollow of the mountain, which it partly fills; the banks are not only wooded, but highly cultivated. In the centre of this lake, Trajan had moored a floating palace in the form of a ship, of which some fragments were dug up in the sixteenth century. We may also class with Roman picturesque scenery, though at a greater distance, the fall of Terni on the declivity of the Apennines. Here, as generally in Apennine scenery, the bold and grand are finely combined with the soft and the beautiful; the steep and rugged rocks being mixed with the verdure of the acacia, the laburnum, and a variety of other trees. The whole valley of the Nar, with the neighbouring one of Clitumnus, presents the Apennine in its mildest form, adorned with rich vegetation and beauty. The ruins of the ancient colony of Narni stand most romantically bosomed in groves on the top of a very high and steep hill, at the foot of which are some fragments of the proud arches thrown over it by Augustus.

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CASCADE AT TIVOLI.

2681. *Bologna* is by much the most important city of the Ecclesiastical State east of the Apennines. It is one of the most ancient and venerable places in Italy: its university, once said to have contained 10,000 students, and its school of painting, scarcely second to those of Rome and Venice, have raised it to distinction as a seat of learning and art. After passing in its republican state through many turbulent revolutions, it voluntarily, in the thirteenth century, united itself to the Roman state; stipulating, however, for the preservation of many of its privileges. It had still a senate of forty hereditary nobles, presided by a gonfaloniere, besides a popular body, which superintended matters of revenue and police. A republican spirit, however, always prevailed in Bologna; and in 1796, it gave to the French army a welcome, which met with the usual return; the city being deprived of all its constitutional rights, and assimilated to the despotic sway established in the kingdom of Italy. The Pope, in 1815, was reinstated in possession of it by the arms of the Allies; but, to the just discontent of the city, he declined restoring any of its privileges, and continued the same absolute sway which had been established by Napoleon. However, though oppressed and fallen, it retains still many features of the learned and opulent Bologna of the middle ages. Its territory forms a continuation of the great plain of Lombardy reaching to the Apennines; and it is as laboriously cultivated, and the peasantry are apparently in a more joyous and happy condition. The city is well built, with long lines of arches and columns, affording beneath a paved walk to foot passengers; an accommodation rare in Italy, and an object of envy. The principal church is that of St. Petronius, a spacious, though not a beautiful Gothic edifice. That of St. Dominic is celebrated for its shrine, which occupied the chisel of Michael Angelo and Nicolo; and for a collection of pictures, which have since, however, been transferred to the Institute. There is also a highly ornamented church, dedicated to the Virgin, situated about five miles from the city. The palaces are spacious, and distinguished both for their architectural beauty and the works of art which they contain; but those of the Zampieri, the richest of all, have been transferred to the Brera collection at Milan. The university does not at present number more than 500 students; yet its professors are still eminent, and most of the science which still exists in Italy centres at Bologna. But the great modern boast of this city is the Institute, formed in the seventeenth century, chiefly through the exertions of two of its noble citizens, Count Marsigli, a general in the imperial service, and Count Manfredi. At their instance, the city purchased the palace *Cellesi*, one of the most spacious in Bologna, in which are now accommodated the Academy of Sciences founded by Manfredi, which has brilliantly maintained its reputation; a library of 150,000 volumes; various scientific collections; and a gallery of paintings, in which, as well as in the churches, are seen numerous specimens of the great Bolognese masters; the three Caraccis, Guido, Domenichino, and Albano. Here instructions are also given to young artists.

2682. *Ferrara*, the celebrated seat of the princes of Este, who made themselves so prominent as the patrons and persecutors of the learned, is large, dark, and antique. "The long and spacious streets, silent, solitary, and grass-grown, give it the solemn air of a deserted city." The castle of the duke, that grand theatre of feudal pomp, is a vast structure, with lofty towers, and surrounded by a broad ditch, in the very heart of the city. Ferrara has many spots which recall interesting but painful recollections: the cell of the hospital of St. Anne, in which Tasso was so barbarously immured; the dungeons in which several votaries of the Reformation perished; the tomb of the oppressed and injured Ariosto.

2683. *Other considerable and interesting cities* distinguish this coast. Ancona, the principal naval station of the Romans on the Mediterranean, retains its admirable port, capable of accommodating commerce of any extent, and in fact carrying on most of the little which belongs to the patrimony of St. Peter. The magnificent mole erected by Trajan to cover the port still remains, and is considered the finest work of the kind extant. Rimini is a place of high historical memory. It was conquered by Belisarius, and in the middle ages was one of the chief stations of the predatory bands. The city is still standing. Condottieri with its castle, converted into a Roman barrack, presents still a romantic aspect. Fano, the scene of Asdrubal's defeat, Pesaro and Sinigaglia, are agreeable country towns, rendered gay by the residence of numerous nobles. Loretto has long excited the admiration, and been the resort of the whole catholic world, from a legend reckoned among the surest in the Roman calendar. The house of the Saviour's nativity, after Palestine fell into the hands of the infidels, was, it seems, carried miraculously through the air by angels, and established in this favourite city; princes, prelates, and princely dames, undisturbed by any profane doubt, flocked from every part of Europe to contemplate and pay their adoration to so holy an object; the sacristy was heaped with treasures; the mean hovel was encased in sculptured marble, and the black wooden Madonna loaded with gold and jewels. Her crown of diamonds, however, and all her accumulated treasures, were plundered by the impious hands of the French republicans, and appropriated to the military chest. She was reinstated after the battle of Waterloo, when the Pope and the king of France gave her a new velvet grown, and a considerable number of diamonds. Loretto, however, is no longer enriched by pilgrims, most of those who now resort thither beg their way, and must be supported at the expense of the church. A pretty brisk trade is, however, driven in beads, rosaries, crucifixes, and relics. The town is otherwise poor, and swarming with beggars. We must not quit the papal territory, without noticing what has been called the freest and most virtuous of all commonwealths, that formed on the insulated rock of San Marino. Founded by a man of low rank, and having become a refuge for those who sought peace amid the turbulence of the feudal ages, it has remained inviolate for thirteen centuries, either respected or overlooked by the proudest and most mighty oppressors of Italy. It has still "Liberty" inscribed on the gates of its little capitol, and exemplifies, in the virtue, simplicity, and happiness of its people, the powerful influence of free institutions.

Subsect. 2. *Tuscany.*

2684. *The Duchy of Tuscany* ranks next to the Roman states as the theatre of great historical events, and has surpassed Rome itself as the seat of modern learning. Its first glories even preceded those of the metropolis. The Etruscans, the earliest masters of Italy, were found by the Romans divided into ten powerful, brave, and, in some respects, civilised commonwealths. They were vanquished, however, and so completely destroyed, that the antiquary seeks in vain to fix the site of Veii, Fidenæ, and of the other large and strong cities, on which flocks have now fed for more than 2000 years. Under Rome, Etruria, though held in some veneration as a seat of early religion and learning, never reached any political importance. Amid the tumult of the middle ages, however, there arose in it a cluster of proud republics. Florence, Pisa, Sienna, Pistoia, acquired distinction for their wealth, their valour, their lofty spirit of independence, and their zealous cultivation of the arts and sciences. Under the influence of freedom, they performed achievements and erected monuments on a scale much beyond their narrow territory and limited population. By a series of revolutions, internal and external, these states have been stripped of all their greatness and glory, and united, notwithstanding their deadly hatred of each other, under the sway of a prince of the house of Austria. The yoke, however, has been mild, and, under Leopold, was singularly beneficent. Little, indeed, remains of the commerce and industry by which Florence was formerly so distinguished; but the vale of the Arno, the plain of Pisa, and the environs of Sienna, are still as highly cultivated and productive as any part of Europe. The arts of painting and architecture are fallen from their ancient eminence, but the monuments of them remain, and are rendered more interesting by the tints which time has thrown over them. Tuscany contains about 1098 square leagues; and in 1826 had 1,275,000 inhabitants. Principal towns:—Florence, 80,000; Leghorn, 66,000; Pisa, 20,000; Sienna, 18,000; Prato, 10,000; Pistoia, 9000; Arezzo, 7000; Cortona, 5000.

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FLORENCE.

2685. *Florence* (*fig.* 320.), *which attained so great a name under the humane and enlightened sway of the Medici*, is still a delightful city. Its situation is peculiarly happy, in the vale of the Arno, which forms one continued interchange of garden and grove, enclosed by hills and distant mountains. Its public buildings are fine, though all modern. Being surpassed by those of Rome, they no longer excite any peculiar interest. The cathedral, however, while St. Peter's was not yet constructed, ranked as the most majestic edifice in Italy; and the form of its dome is supposed to have at least suggested that of the other more majestic one. The palaces, also, with the same character, have a similar uniformity; and many of them, erected during the ages of dire and deadly feud, exhibit, in their approaches at least, an attention to strength rather than to beauty. The Gallery is the chief pride of Florence, both as to its structure and contents. It has twenty apartments branching off from it, in each of which the productions of a particular school or class of art are exhibited. In ancient sculpture this collection has perhaps no rival, since it contains the Venus brought from the Medici palace, the group of Niobe, the Faun, and many other masterpieces. The paintings are so arranged as to form a complete history of Italian art, from the era in which it was a mere object of curiosity to that when it was displayed in its full splendour. It comprises also some of the greatest masterpieces of Raphael, Titian, Andrea del Sarto; and is adorned with some of those belonging to the principal schools beyond the Alps. The French, having selected and carried off sixty-three, left it completely shorn of its ornaments; but those have now all resumed their places. There are few paintings, but pretty numerous sculptures by Michael Angelo, especially those which adorn the tomb of the Medici.

2686. *The environs of Florence* are nearly as romantic as those of Rome, and not separated by any intervening desert, but rising in its close vicinity. Vallombrosa, a grand and solemn scene, where "Etrurian shades high over-arched embower," has been rendered classical by the immortal verse of Milton, who is supposed to have drawn from it his picture of Paradise, when he describes it —

> ——— "shade above shade,
> A woody theatre of stateliest view."

Fiesole, on an eminence, commands an enchanting view of Florence and the vale of Arno. Once the rival of that city, it is now a lonely and delightful village, and was the favourite spot to which the greatest men of Florence retired for the enjoyment of rural contemplation. Milton refers to the top of Fiesole as a happy point for observing the phenomena of the heavenly bodies. More remote, and approaching to the greatest height of the Apennine, the sacred hermitage of Camaldoli stands in a valley; but on the hill above, are twenty-seven little mansions, each the abode of one monk, who, detached from the abbey, spends two years in austere and lonely retirement. Fourteen miles higher up, amid the most solitary and savage recesses of the Apennine, is the Franciscan convent of Lavernia, containing eighty friars. It is seated on a lofty rock, broken into numberless pinnacles, while thick groves, rising to the summit, and nodding over the steeps, cast a rich and mellow shade upon the whole scene.

2687. *Pisa*, situated in a fertile and beautiful plain, was long one of the proudest and most prosperous of the commercial republics of Italy. Subjected by Florence, after a long contest, and now involved in the same common slavery, her wealth has disappeared, and her population has been reduced from 100,000 to 17,000. A solemn character of fallen grandeur still invests her. Her four edifices, the cathedral, the baptistery, the leaning tower, and the Campo Santo, form one of the grandest existing ranges of architecture, all built of the finest marble. The style is not altogether pure, being usually termed the Moresco Gothic; but Mr. Forsyth is rather of opinion that it is a mere corruption of the Greek model, retaining, however, much beauty. The cathedral is the most spacious and splendid of these edifices; but the campanile, or belfry, is the most remarkable. It is a tower of six successive stories of arches, supported by pillars. But its grand peculiarity is, that it has actually deviated fourteen feet from the perpendicular, yet has thus stood for 300 years, without the slightest tendency towards a fall. The deviation appears to have been in consequence of the softness of the ground, but it is a striking proof of skilful and solid construction, that this lofty edifice has not only remained firm for so long a period, but does not even now give the least menace of ruin.

2688. *Sienna*, after acquiring a great name among the Italian republics, sustained a fate similar to that of Pisa. It is situated in a hilly and even mountainous country; which, however, yields abundantly the olive, the vine, and in many places grain. The Monte Pulciano and Chianti grapes give a wine superior to what is usually found in Italy. The southern district, however, consists of maremma, connected with the great Roman one. The nobles reside chiefly in the city, in the usual effeminate manner, and still retaining a remnant of those deadly feuds by which their order was formerly rent. It has some remains of the once extensive silk manufactory. Sienna had a respectable secondary school of painting, of which Vanni and Peruzzi were the heads; but its most remarkable monument is the pavement of its cathedral, the work of Micarino and other artists, who, by the mere combination of white and grey marble, hatched with mastic, produced the effect of the finest mosaic.

2689. *Leghorn* is almost the only modern and prosperous town in the compass of the Tuscan territory. When ceded by Genoa in 1421, it was only a petty village; but the able arrangements of the Medici raised it to the rank it has since held as the first commercial city of Italy, and the great centre of Mediterranean commerce. It is airy and well built, with broad streets, fourteen churches, one Armenian, and two Greek chapels, and even a magnificent synagogue; the necessary toleration of commerce overcoming even Italian bigotry. There are, however, no edifices which excite any recollections of antiquity, or can compare with those which adorn the other cities of Italy.

2690. *In the rest of Tuscany we may remark Cortona*, the ancient capital of Etruria, supposed to be the most ancient city of Italy. The antique walls still remain as the substruction of the modern ones; and their vast uncemented blocks, which have subsisted for ages, mark the solidity of Etruscan masonry. Cortona is now reduced to 4000 inhabitants; but it is distinguished by the Tuscan Society, which has done much to illustrate the antiquities of Etruria. Perugia, also an ancient Etrurian state, is still a clean pretty town, delightfully situated on the lake of that name. Arezzo is a name rendered classic by the birth of Petrarch, of Redi, and of Pignotti. Bibbiena is a thriving little town, in the centre of the Casertine, inhabited by an industrious peasantry, who are reckoned to have the best hogs and the best chestnuts of all Italy.

2691. *Lucca*, though an Etruscan city, is now governed by a duke of its own. It is one of the few Italian republics which, amid the revolutions of 800 years, maintained its independence. The Lucchese reaped the benefit of this, in the superior education and more decent deportment of her nobles; in that agricultural industry which, in a degree even beyond what appears in the rest of Italy, has converted a land liable to inundation, and destitute of many natural advantages, into a complete garden. The territory, though only forty-three miles in length and twelve in breadth, two-thirds of which consist of mountain and defile, reckons a population of 140,000, being 328 to the square mile; a density which has no parallel, even in the most fertile plains of the rest of Italy.

SUBSECT. 3. *The Lombardo-Venetian Kingdom.*

2692. *Austrian Italy, or the Lombardo-Venetian Kingdom*, consists of the great plain of the Po, bordered on one side by the highest ranges of the Alps, on the other by those of the Apennines. It has not the classic sites and monuments of Rome, nor the brilliant skies of Naples; yet it would be difficult to find on the globe a territory of the same extent equally fine. The luxuriant fertility of this vast plain; the grand, almost magic, landscapes presented by the southern declivity of the Alps, and the lakes which spread at their feet; the fine shores of the Adriatic, unite in making it one of the most desirable regions of Europe. It is an aggregate of several portions that were politically very distinct. The duchies of Milan and Mantua were always ruled by feudal sway, and under a dependence on the German empire; but Venice, the greatest and mightiest of the republics which rose when Europe began to emerge from the darkness of the feudal ages, continued long the equal and rival of the greatest monarchies. This high pre-eminence gradually departed with the energies by which it had been supported; and Venice, as a republic, was little more than a phantom, when the French revolutionary force first subverted it, and afterwards basely, but in just reward of its pusillanimity, delivered it over to Austria. Afterwards, through the ascendency of Bonaparte, the whole of Lombardy was absorbed in his kingdom of Italy, of which Milan was made the capital seat. Subsequent and well-known events reversed all these arrangements; and this part of Italy was restored entire to Austria. That power, in 1815, erected the whole into what was called the Lombardo-Venetian Kingdom, and granted to it a certain form of representative constitution. The members are chosen partly by the landed proprietors, and partly by the nineteen royal cities: they form two central congregations, meeting one at Milan, and the other at Venice. The election, however, is limited, the government choosing out of a list of three presented to it, and even claiming the right of expunging from the office of elector such as it deems unworthy to exercise it. This body has the distribution of the taxes, and also of the military levies over the different districts; though the general amount of both is determined, without any reference to them, by the court of Vienna. It has the superintendence of public works, charitable establishments, and other local objects; and may propose the means of raising funds for their support. These privileges, such as they are, no doubt produce great benefits to the country; though, as the congregation has not even a negative voice in the making of laws and imposing taxes, it can fulfil very imperfectly the representative functions. It is also a subject of complaint, that all offices, even judicial, are exercised by Germans, a nation whom the Italian hates and despises as barbarian. The state of agriculture, and of the other branches of national industry in Lombardy, has been sufficiently illustrated in describing those of Italy in general, in which it forms so prominent a part.

2693. *Government of Milan.* Population, 2,280,063. Principal towns.—Milan, 151,000; Brescia, 31,000; Cremona, 26,000; Mantua, 25,000; Pavia, 21,000; Lodi, 18,000; Como, 7600.

2694. *Government of Venice:* 1,957,229. Principal towns:—Venice, 101,000; Verona, 48,000; Padua, 35,000; Vicenza, 19,000; Udina, 18,000; Treviso, 15,000; Belluno, 8000; Rovigo, 7000.

2695. *Parma:* 440,000. Towns:—Parma, 30,000; Placentia, 28,000; Guastalla, 5000.

2696. *Modena:* 350,000. Towns:—Modena, 27,000; Reggio, 18,000; Mirandola, 6000.

2697. *Milan* is a noble city, which ranks almost as the modern capital of Italy. Its situation in the middle of a superlatively rich and beautiful plain, watered by the Po, at a point where all the great canals meet, and on the high road from Germany by the lakes Maggiore and Como, render it a sort of key to the northern part of this kingdom. Its modern greatness preceded that of most of the other cities; and under the Sforzas and Viscontis it became the grand theatre of debate between France and Austria. Its greatest splendour, however, was attained under the régime of France, when it became the capital, first of the Italian republic, and then of the kingdom of Italy. Napoleon spared no expense in erecting edifices which might dazzle the eyes of his new vassals. The Duomo, (*fig.* 321.) begun in the fifteenth century, under the Viscontis, and slowly carried on by successive benefactions, had been left more than half unfinished; so that the French had the greater part of its magnificent front to execute. It is the only very superb edifice of this description which may be said to belong to the present age. In extent and pomp it ranks second to St. Peter's; though the design has been criticised, especially as to the four hundred statues which are ranged along the façade. It is 454 feet long, 270 wide, the height of the cupola is 232, and that of the tower 335 feet. The French have also erected a very magnificent amphitheatre, completely on the antique model, in which from 30,000 to 40,000 spectators can be accommodated. Chariot races and national games have been repeatedly performed within its precincts. A superb triumphal arch was commenced on the Simplon road, in commemoration of the stupendous labours by which that passage over the Alps was formed; but since the fall of Napoleon no further progress has been made. The theatre Della Scala is the only very fine one in Italy, as it was only in Milan, and during the last century, that the Italian drama acquired any degree of splendour. The opera of this city is accounted inferior to that of Naples; but the ballet is the finest in Italy, and consequently in the world. A more interesting and classical scene is presented by the Brera, or palace, formed out of the ancient convent of the Humiliati. Here the French deposited the finest paintings which could be procured by purchase or otherwise from every part of Italy, including those brilliant productions of the Bolognese schools, which had adorned the Zampieri palace. The Last Supper of Leonardo da Vinci, one of the greatest masterpieces of modern art, and long the pride of Milan, is now almost entirely faded, and scarcely known but by engravings, and by a very fine copy, in mosaic, made by the French. The Ambrosian library, formed by Cardinal Frederic Borromeo, on the basis of the Benedictine collection, consists of 90,000 volumes and 15,000 manuscripts, and is well known to the world by the learned researches and discoveries of Angelo Mai. Milan has an infirmary for 3600 sick,

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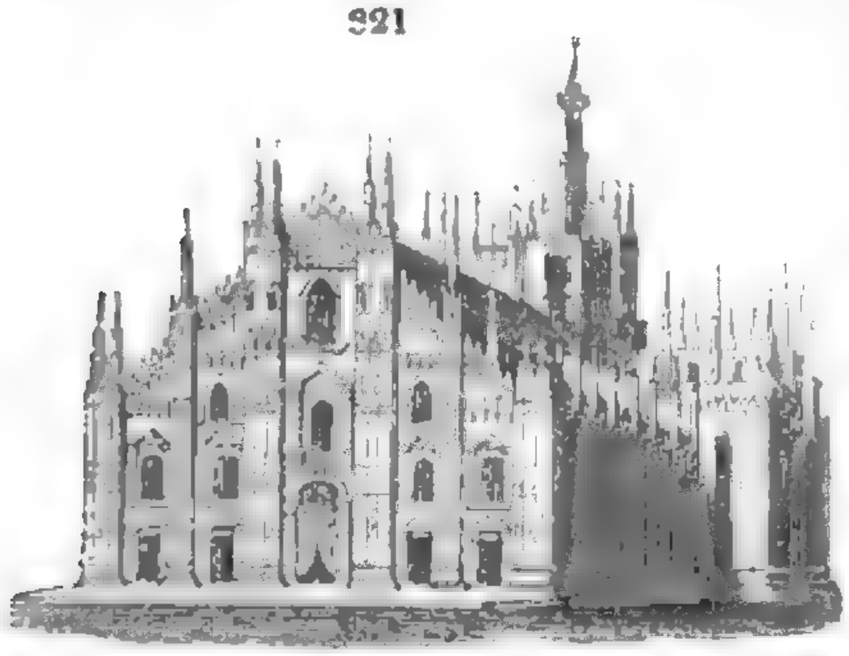

MILAN CATHEDRAL.

and a foundling hospital for 4000 children. It covers a great space of ground, and has some very spacious squares; but the streets in general, like those of other old cities, are narrow and crooked, and far from handsome. Several of those called *corsos*, however, which form the entrance into the city, have been greatly improved.

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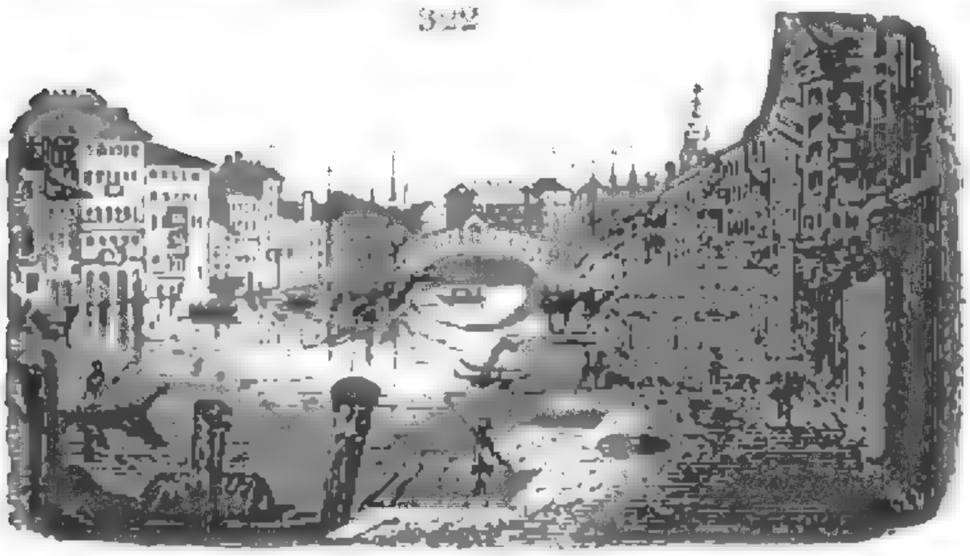

VENICE.

2698. *Venice* (*fig.* 322.), though now reduced to a secondary rank, compared with Milan, is a more celebrated and still a much more beautiful city. This once great republic, into which flowed the commerce and wealth of the East, which ruled the Mediterranean, sacked the imperial city, and set bounds to the Ottoman power, at a moment when it seemed ready to overwhelm all Europe, is now, after a duration of thirteen centuries, for ever extinguished. Its fall without a struggle was, doubtless, prepared by a decay of its moral energies. The nobles who once swayed the councils of Venice, and commanded her fleets, had no longer any object but to attend public processions, to pay court to their lady, to while away the evening at her casinos, and to heighten the gay licence of the carnival. The people, enslaved, had lost all national spirit. The republic of Venice, with all its bright series of triumphs, is now an empty name; it remains, however, next to Rome, the finest of all the Italian cities. It cannot, indeed, boast of any classic monuments, nor are its churches built in so lofty a style; but its palaces, the gay architecture of Palladio, present a range of the finest private mansions that were ever erected. The effect is greatly heightened by its situation, on seventy islets of the Adriatic, partly on the rock, partly on piles sunk into the sea, and a marine channel, instead of a pavement, perforating every street. Scarcely is there room left for a foot passenger; the Venetian is conveyed in the gay gondola from palace to palace. Thus Venice appears rising from the waters, with its numberless domes and towers; and, attended by several smaller islands, each crowned with spires and pinnacles, presents the appearance of a vast city floating on the bosom of the ocean. The row of magnificent but decaying palaces which extend along the grand canal, with their light arabesque balconies and casements, their marble porticoes, and peculiar chimneys, present one of the most superb and singular scenes in the world. They stand in majesty of ruin, and exhibit the most affecting combinations of former splendour and present decay. The most commanding objects are those round the square of St. Mark, the most magnificent public place in Italy. The church of St. Mark rivals in splendour any edifice in that country, or in Europe. But this pomp is gloomy and barbaric: the five domes which swell from its roof, the crowded decorations which cover its porticoes, give it the appearance of an Eastern pagoda. Its mixed orders, Greek, Saracenic, and Gothic, are beautifully but barbarously blended, and glitter with incrustations of gold, gems, and marbles. The interior is enriched with the spoils of Constantinople and the East, the monuments of long ages of glory. The most classic plunder is that of the four bronze horses of Lysippus, which stand on the portico facing the piazza. After remaining there six hundred years, they were removed to the Tuileries, but are now replaced. The figure of a lion, emblematical of the evangelist St. Mark, stands on the second arch. One side of the square is lined by the ducal palace, a fabric of vast extent and solidity, built in the Gothic and Saracenic style. The stranger beholds with emotion the halls where the senate, and the dreadful Council of Ten formerly sat; and which, as well as the other apartments, are adorned with the finest works of the Venetian painters. The Rialto, a bold marble arch thrown over the most magnificent part of the great canal, excites universal admiration. The arsenal occupies an island by itself, and is strongly fortified, spacious, and commodious, wanting nothing but shipping and naval stores. The churches, the palaces, and the *scuole* or halls of the different corporations, are embellished with the finest paintings, both in oil and fresco, of the great Venetian painters, Titian, Paul Veronese, Tintoretto, and the Palmas. This school, as is well known, surpassed all others in colouring, though it did not reach the grand design and expression of the Roman. Venice is the birth-place of Canova, the greatest of modern sculptors, and contains some of his works.

2699. *The Venetian territory* can boast several renowned cities. Padua, which is said to have been founded by Antenor, and to have attained considerable magnitude before the existence of Rome, gained celebrity in modern times as a seat of learning. Its university was only rivalled by that of Bologna, and attracted 18,000 students; yet, though it has still forty-five professors, and affords ample means of acquiring knowledge, the scholars were in Eustace's time reduced to 600; and, according to Hassel, in 1817 they did not exceed 300. Galileo, Vesalius, and Morgagni were among its professors; Livy and the modern historian Davila were born there; and Petrarch is buried at Arquà, in the vicinity. The city is divided into two parts: the old, composed of dark narrow streets, and high old palaces; and the modern, adorned with the splendid architecture of Palladio. The university, and the church of Justina belong to the latter, and are fine edifices. Vicenza, the birth-place of Palladio, has been adorned by him with about twenty palaces, perhaps the most beautiful in Italy, besides other public buildings, among which the Olympic Academy, founded for the cultivation of literature, deserves particular mention. Verona, an ancient and still a large city, the close ally rather than the subject of Venice, attracts admiration by its ancient amphitheatre, the largest remaining except the Coliseum, to which it is inferior in size only. In recent times Verona has attracted notice as the seat of a congress, which disposed of the fate of Italy. Brescia and Bergamo are considerable towns in the lower Alpine districts, but more remarkable for industry and manufactures, of which they still retain a considerable share, than for splendour or embellishment.

2700. *Among the other cities of Lombardy,* Mantua takes the lead: it is still large, and forms one of the strongest fortresses in Italy. Pre-eminently classical as the birth-place of Virgil, it made a considerable figure in modern times, both as a republic and under its dukes of the house of Gonzaga. Cremona, the birth-place of Vida, is a large and well-built city, containing many handsome edifices. Pavia is the seat of an ancient university, supported and attended by 600 or 700 students. It is still better known by the great battle fought in its vicinity between the French and Germans, in which Francis I. was totally defeated and taken prisoner. Lodi is a large fortified town, distinguished as the seat of one of Bonaparte's most splendid victories.

2701. *Parma, Placentia, and Guastalla,* though they have been nominally formed into a state for the ex-empress of France, form in reality a complete appendage of Lombardy, and a continuation of its great plain, to the foot of the Apennines. They abound in the richest pastures, from which is produced that most celebrated of cheeses, to which Parma gives its name. The dukes of Parma, and especially the celebrated Alexander Farnese, have ranked among the first generals of Europe. The city of Parma, on a small river of the same name, is large, populous, airy, and clean. It does not contain any remarkable architectural features, except the theatre, modelled on the ancient plan, and perhaps the noblest in the world, but now in a state of decay; but Parma can boast a school of painting, one of the finest and most interesting that ever existed; in which grace was the predominant feature. The chief masters were Correggio and Parmegiano, whose works in fresco adorn the walls and cupolas of the churches in Parma; and the oil pictures, which the French carried off, have now been restored. Placentia is also a large and well-built city; but its celebrated amphitheatre, which surpassed that of Verona, was burnt to the ground in one of the furious civil contests which laid waste Italy. The banks of the Trebbia, in its vicinity, have been the scene of two of the greatest battles recorded in history; one gained by Annibal over the consul Sempronius; the other by Suwarrow over Marshal Macdonald, which decided for a time the fortunes of Italy. *Modena* is a fine small domain, composed of a rich plain at the foot of the Apennines. It is held as a fief of Austria, and by a branch of that family, with the title of duke. The city of Modena, the ancient Mutina, is extremely handsome, though without any objects peculiarly striking. It was enriched by the family of Este with splendid collections of books and paintings; but the latter have been now removed, by purchase, to adorn the Dresden gallery. The territory of Massa-Carrara, held at present by the Archduchess Maria Beatrix, will on her death fall in to Modena.

Subsect. 4. *States of the King of Sardinia.*

2702. *The Sardinian States* are of very dissimilar character, but united by political circumstances under one government. The dukes of Savoy, founders of the Sardinian family, made a conspicuous figure in European history, especially during the war of the Spanish succession. In return for their services to the cause of the allies, they were recompensed with the island of Sicily. That island was afterwards, in consequence, it should seem, of a very bad bargain, exchanged for Sardinia, from which the house assumed the royal title. Under the domination of Napoleon, the king was expelled from all his Italian territories, and owed to British protection alone the preservation of Sardinia. After the triumph of the allies, he was not only replaced in all his former possessions in Italy; but the state of Genoa, instead of being restored to its lost independence, was subjected to his sway. The kingdom of Sardinia consists, therefore, of four distinct parts, — Piedmont, Genoa, Savoy, Sardinia.

	Population.	Principal Towns.
Savoy -	467,080	Chambery, 12,000. Annecy, 5500. Morienne, 2500.
Piedmont	2,363,170	Turin, 114,000. Alessandria, 80,000. Asti, 20,000. Mondovi, 17,000. Vercelli, 16,000. Nice, 15000. Novara, 13,000. Voghera, 10,000. Coni, 9000
Genoa -	539,150	Genoa, 80,000. Savona, 10,000. Novi, 8000.
Sardinia -	461,950	Cagliari, 27,000. Sassari, 19,000.
	3,831,350	

2703. *Piedmont*, or "the foot of the mountains," is the most valuable possession of this crown. It forms a continuation of the plain of Lombardy, somewhat narrowed, and more closely bounded by the mightiest ranges of the Alps and Apennines; the former on the north and west, the latter on the south. The Po, running through its centre, divides it into two nearly equal parts, and receives here all its early tributaries; which, being so near their mountain sources, are liable to sudden and terrible inundations, distressing to the agriculturist and dangerous to the traveller. The chief produce is silk, which is reckoned superior to any other in Italy, and consequently in Europe; and in Turin and some other cities remains exist of very extensive silk manufactures; but the greater part of the produce is exported raw. The government is absolute, but tolerably mild; and a recent attempt to establish a constitutional form was speedily crushed by Austrian interference.

2704. *Turin* maintains its place among the beautiful cities of Italy. Its situation is as fine as possible, amid the rich valley of the Po, surrounded by an amphitheatre of vine-covered hills; while lofty mountains, with their summits clad in perpetual snow, tower in the distance. The streets are long and regular, ornamented with lines of porticoes, and opening at their terminations to fine views over the surrounding country: it is a little city of palaces. The churches and mansions are spacious, and of rich materials; but few display that classic taste in which real beauty consists, and which ennobles the Roman and Venetian structures; the vases of pure gold, the silver images, and the crosses of ruby, were all converted by French avidity into current coin. The most striking edifice is the church of the Superga, built on the steepest hill which crowns the city. The ancient palace of the dukes of Savoy is a huge brick edifice, resembling a fortress rather than a palace. Turin has a considerable number of paintings, not marking any particular school, as none ever arose in this part of Italy, but chiefly composed of Flemish and other ultra-montane productions. The university is very extensive, and contains important collections, among which those of natural history, natural philosophy, medals, and antiques, are particularly noticed. The library is also rich in curious works and valuable manuscripts. The citadel of Turin forms a very strong fortress.

2705. *The other cities of Piedmont* are chiefly remarkable for their strength, having been erected when this country was a seat of almost perpetual war. The strongest is Alessandria, built in the twelfth century, at the junction of the Bormida and the Tanaro. It is large and very strong; besides which, the town is the seat of extensive fairs. Near it is the celebrated field of Marengo. The once strong fortifications of Tortona have been demolished. Vercelli, the former capital of this part of Italy, and distinguished by some fine structures, is now thinly inhabited and dreary. Novara is a gloomy antique frontier town towards Lombardy. Coni, among the Alps, is considered the bulwark of the kingdom on the side of France. Susa, once the capital of Piedmont under its marquises, is a retired pleasant little town, on the immediate frontier of France. Nice is the capital of a little country scarcely Italian, being beyond the Alps. Though it cannot be said to be well built, it is agreeable; and, as the environs are beautiful, and the air mild, it is a frequent resort of English invalids.

2706. *The territory of Genoa* is situated on the sloping steeps of the Apennine, where it separates from the Maritime Alps, and stretches eastwards; not separated from the sea by a broad plain, as in the rest of its line, but presenting to it narrow valleys and mountain declivities facing the south. These steep barriers are passable only at a few points; and the Bochetta, a very steep and lofty defile, forms the only practicable approach to Genoa from the interior. This district, the country of the ancient Ligurians, is not favourable for the operations of the plough; but olives in abundance, silk, and tolerable wine, are advantageously produced from it.

2707. *Genoa* (*fig.* 323.), *surnamed the Superb*, the great naval republic which, in the annals of Italian wealth, commerce, and splendour, ranked only and scarcely second to Venice, presents but a shadow of her former greatness. Her navigators were of a peculiarly bold and adventurous character; and she was the native city of Christopher Columbus. Her settlements in the remote peninsula of the Crimea enabled her to bring into Europe, by a peculiar and circuitous route, the commodities of India. Depressed by a once haughty and now indolent aristocracy, and eclipsed by the rivalry of the northern nations, Genoa had lost all her principles of prosperity, before her independence was crushed by the revolutionary arms of France. Yet it seems impossible to applaud the conduct of the Allies,

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GENOA.

in annexing her to Sardinia, though with permission to preserve her senate and outward forms of administration. Genoa ranks now below Leghorn as a port; yet her industry is not wholly extinguished. She still manufactures rich velvets, damasks, and satins, to the value of from 200,000*l.* to 300,000*l.*; and about a hundred and fifty vessels are employed in exporting these, with the produce of her own territory and of Piedmont. The wealth of the great days of Genoa was as usual embodied in palaces. These are arranged in one continuous line of street, extending under three different names through the city, all the rest of which is a mere chaos of dark and dirty lanes. These palaces are boasted as being, for richness of materials and profuse ornament, the most splendid in Italy, and many of them are every way fit to be the residence of the greatest monarchs. They have one ornament peculiar to themselves, which consists in fresco paintings on the exterior of the walls, many by masters of some eminence; and, in this fine climate, these remain unimpaired for centuries. The design, however, both here and in the churches, wants that elegance and purity of taste by which the structures of Venice have been rendered so admirable. Ornament and glare seem to have been the ruling passion of the Genoese. Her nobles, though all sunk, and many reduced to poverty, would spend their last farthing in supporting the pomp of their ancient mansions. Hence these have now a silent and desolate aspect, and have been compared to the ruined monuments of an excavated city. They are filled with pictures, gilding, arabesques, frescoes, dust, moths, and dirt; exhibiting a combination of ancient splendour and present decay. Genoa has not altogether the magical effect produced by the long lines of canal which intersect Venice; but her position, occupying one side of the spacious amphitheatre which forms the harbour, and spreading her streets and churches, and then her suburbs and villas over a vast semicircular tract of crags, rocks, and declivities, gives her, towards the sea, a highly magnificent and imposing aspect. The city has also the disadvantage of being so closely bounded by rocks, that no level spot is left on which a carriage can drive; and the neighbouring villas can be reached only in chairs carried by a species of porters, endowed with singular agility and alertness.

2708. *Savoy* is a province of considerable extent, which in its surface and aspect is much more analogous to Switzerland than to Italy: it consists of rugged rocks, and mountains rising into the regions of perpetual snow; interspersed, however, with a number of fertile and agreeable valleys. Some of the principal passes over the Alps into Italy are through Savoy, which till lately was the only one from France or Switzerland that was passable for carriages. The Little St. Bernard, by which Hannibal is now generally supposed to have passed, is also situated in Savoy. It was much improved by Napoleon. Many of these rocks, composed of loose limestone strata, are perpetually crumbling. In 1248 a great part of Mont Grenier, near Chamberry, fell, burying a village and church, and overspreading the surface of five parishes, which are still covered with the fragments piled in small conical hillocks. Mont Blanc, the loftiest mountain in Europe, is within the limits of Savoy; but as it is approached by way of Geneva, and forms part of the most elevated range of the Alps of Switzerland, we prefer including it in the description of that country. The Savoyards are brave, industrious, poor, more social than the Swiss, though less noted for cleanliness. The towns in this elevated district are agreeable and rural, situated in its most fertile and open plains, but do not attain to much magnitude or importance. Chamberry, on the high road into Italy, is an old town, somewhat gloomy, but not ugly, and in the midst of a variegated and beautiful country. Moutiers, capital of the high district of Tarentaise, and Annecy, at the extremity of a picturesque lake of the same name, are pleasantly situated, though not well built places.

2709. *The island of Sardinia* is one of the least valuable portions of the kingdom, though possessed of advantages which should render it very much the reverse: few regions exceed it in natural fertility; the surface is finely variegated with gentle hills, which only along the western coast assume the character of mountains. Grain, notwithstanding the most wretched cultivation, affords a surplus for export. The wines are reckoned equal to those of Spain, and the olives to those of Genoa and Provence. The salt-works and the tunny fishery are very important objects; and the situation of Sardinia, in the heart of the Mediterranean, and with a number of fine harbours, might afford the opportunity of an extensive commerce. Yet the population is in the most uncultivated and savage state, perhaps, of any in Europe. The peasantry in the interior are clothed, in a great measure, in shaggy goat or sheep skins; they subsist chiefly by the produce of their flocks, and by hunting; and go constantly armed, for their own defence against the numerous and desperate banditti, by whom the mountains are infested. The Sardinian government appears really to have made very extraordinary exertions for this its rude appanage. The want of roads, and the extensive commons, were considered the two chief causes which perpetuated its evils. A plan was, therefore, traced to form one great road across the kingdom from north to south, between the two leading points of Cagliari and Sassari, from which eight cross roads might branch off so as to embrace the most important points in the east and west. The principal road was begun in November, 1822, and was expected to be completed in December, 1826. Laws were also passed to authorise and encourage the division of commons. The good effects of these measures, however, are as yet only prospective. At present, Sardinia has the tunny fishery, the produce of which varies much with the state of the wind, and other circumstances. In 1816, it amounted to 17,500 fish; in 1822, to only 3500; in 1823, to 11,000; and in 1824, to 5300. Sea salt, evaporated by the heat of the sun in the shallow bays near Cagliari, Palmas, and Oristano, is employed in salting both meat and fish, and as an object of direct exportation. Grain, produced to the amount of nearly 3,000,000 bushels, was formerly the principal object of export; but its value has, of late, been greatly reduced by the competition of Odessa. The horses are of a good breed: according to M. Cibrario, 32,000 only are tame, and 20,000 wild. He gives a still more striking picture of the rude state of the country when he adds, that of the cattle, 120,000 are tame, and 350,000 wild; and that, of 840,000 sheep, the whole belong to the latter class. There is, however, a considerable export of salted meat and cheese. About a third of the surface consists of forest, a considerable portion of which is oak, and well adapted for shipbuilding. Cagliari and Sassari are both considerable cities; the former having a considerable trade, but crowded, ill built, and ill paved; the latter smaller, but more elegant: both have universities, with tolerable libraries. Oristano has a fine harbour, and flourishes by the tunny fishery, and by the culture of wine in its neighbourhood.

Subsect. 5. *States of the Kingdom of Naples.*

2710. *The kingdom of Naples*, or, as it is called, of the Two Sicilies, is the most considerable in Italy for extent and population; in which respects it approaches to the rank of the great monarchies; but the supine and indolent character of its government almost prevents it from having any weight in the political system. Neapolis, though a place of some consequence under the Romans, was not until the middle ages a kingdom, in which the republican spirit, so active in the north of Italy, was early subdued. Naples was successively governed by branches of the house of Austria, and of the Spanish Bourbons, which last is now on the throne. On the approach of the French revolutionary army in 1795, Naples yielded without any resistance, except that spontaneously made by the despised lazzaroni. During the greater part of the revolutionary war, the king was supported in Sicily by a British fleet and army, and on the triumph of the allied cause, was reinstated in all his territories. With the exception of a short and abortive attempt to establish a constitutional system, the government has always been absolute; yet the people suffer less from the oppression of the crown, than from the exorbitant privileges of the nobles. The accession of Sicily, in exchange for Sardinia, effected in 1720 through Austrian influence, rendered the kingdom much more valuable and compact. These two members are, however, so very distinct, that it will be necessary to consider them separately.

2711. *Naples*, the southern extremity of Italy, after forming for some space a continuation of the long narrow peninsula which comprises most part of that country, branches finally into the two smaller peninsulas of Otranto and Calabria. The Apennines fill its interior, shooting out branches to its bounding promontories; they in many places spread wider, and assume still more rugged and awful forms than in the northern part of their line; and they harbour the most formidable troops of banditti which infest Italy. They leave, however, along the coast, wide plains and extended valleys, blessed with the most genial climate, and the richest soil of any country in Europe, or, perhaps, in the world. The culture, also, notwithstanding various administrative defects, is so diligent as to support a very numerous and very dense population.

2712. *Naples* is divided as follows: —

	Population.	Principal Towns.
Napoli -	819,000.	Naples, 354,000. Castellamare, 15,000
Terra di Lavora	668,000.	Terra del Greco, 15,000. Capua, 8000. Aversa, 13,000. Gaëta, 15,000.
Principato -	1,086,000.	Avellino, 13,000. Salerno, 11,000. Nocera, 9000.
Abruzzo -	716,000.	Aquila, 13,000. Chieti, 11,000.
Capitanata -	289,000.	Foggia, 21,000.
Molise -	234,000.	Campobasso, 800.
Bari -	375,000.	Bari, 15,000. Barletta, 17,000. Trani, 14,000.
Otranto -	324,000.	Tarento, 18,000. Lecce, 14,000. Gallipoli, 8000. Otranto, 3000.
Calabria -	1,433,000.	Reggio, 16,000. Catanzaro, 11,000. Cosenza, 10,000.

2713. *Naples* (*fig.* 324.) *is the largest city in Italy*, and fully maintains its place among the most beautiful European capitals: this is not owing to its architecture; for though the edifices are lofty and solid, the streets tolerably wide, particularly the Strada de Toledo, which is a mile in length, yet all the particular buildings are characterised by that bad taste which has always ruled at Naples, and to compensate for which, marbles, gilding, and decoration, have been vainly lavished on its churches and palaces. Taken collectively, however, Naples presents to the sea an immense line of lofty edifices, producing a general pomp of effect, and forming a commanding feature in the matchless landscape. Its bay, occupying a wide circuit of sixteen miles, every where bounded with vineyards, hills, woods, convents, villages; the golden shores of Baiæ, the beautifully variegated islands of Ischia and Procida, with the verdant sides and lofty cone of Vesuvius: all these, viewed under a brighter sun than

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ever shines in the regions beyond the Alps, have been considered as composing the most splendid picture which nature presents to the human eye. The interior of Naples exhibits a most singular living scene; every trade and every amusement being carried on in the open air. "The crowd of London," says Forsyth, "is a double line in quick motion; it is the crowd of business. The crowd of Naples consists in a general tide rolling up and down, and in the middle of this tide an hundred eddies of men. You are stopped by a carpenter's bench, you are lost among shoemaker's stools, you dash among the pots of a maccaroni stall. Every bargain sounds like a battle: the popular exhibitions are full of grotesque; they consist of Punch held as the representative of the nation; of preaching; selling Agnus Deis; dancing to the guitar; or listening to old tales." The higher classes are generally accused of licentiousness, though Eustace thinks the charge somewhat exaggerated. A very literary spirit prevails; the Neapolitans boast that as many books are published at Naples as at Paris; and that, if the world would judge impartially, they would find the one as good as the other: but this opinion does not prevail in other countries. Most ample opportunities of study are certainly afforded, by four libraries open to the public; one of which, compounded of the Farnese and other libraries transported from Rome, comprises many curious and valuable works. With these were conveyed some of the finest specimens of ancient sculpture, the Torso, the Hercules, the Urania; and some fine specimens have been appended from the greatest Italian schools; but Naples could boast no great painters of its own, and has, therefore, no frescoes of any importance. One bright redeeming quality in the Neapolitans is charity: their hospitals are numerous, richly endowed, and supported by ample benefactions; and persons of the first rank, assuming the dress of religious fraternities, not only superintend these establishments, but watch the sick-bed of the patient. The Neapolitans set an example, which seems worthy of imitation, in having a rural hospital for recovering the health of invalids. They have also *conservatorii* or schools, where the children of the lower ranks are initiated in trades, by which they may gain their subsistence. A great part of these is devoted to the teaching of music; and is unfortunately combined with that horrid mode of attaining excellence in it which is peculiar to Italy, and which, though prohibited by the government, continues still to be practised. Naples may be considered as the musical capital of Italy: the greatest composers have been its citizens; and its opera is unrivalled.

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NAPLES.

2714. *The environs of Naples* present a combination of all that is most beautiful and all that is most terrible in nature; they extend along the western shore from Naples to Miseno, which forms the termination of the bay. One of the chief ornaments is the mountain of Posilippo (*fig.* 325.), which spreads its varied outline for several miles along these enchanting shores. Its promontory is variously broken into bays, islands, and caverns; but the object which above all attracts the traveller, is the Grotto. In one of the wildest and most picturesque recesses of its romantic defiles opens this famous artificial excavation, which penetrates through the mountain for three quarters of a mile on the way to Puzzuoli. Baiæ, viewed by the Romans as the most enchanting spot on earth, was absolutely crowded with the villas of their great men. Here was the academy of Cicero, the favourite haunt of Virgil, the palace of Lucullus, and afterwards, unfortunately, the scene of the brutal voluptuousness of Tiberius and Nero. The lake of Avernus,

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POSILIPPO.

and the Elysian fields are neither so dreadful nor so beautiful as their names would import. The tomb of Virgil (*fig.* 326.), on one of the most beautiful heights of Posilippo, excites, perhaps, stronger emotions than any other of these objects. This, however, is the subject of a serious controversy: Addison, Forsyth, and Matthews reject it as wholly apocryphal; but Eustace contends that the long and constant chain of tradition cannot be disproved by the doubtful authority which places it on the opposite side of the bay. Farther on, the village of Puzzuoli occupies the celebrated site of the ancient Puteoli, where the remains of an amphitheatre and of a temple of Jupiter almost vie with the monuments of Rome. The beauty of this region, however, is gloomily mingled with the terrible indications of ancient conflagration. The Solfatara, a naked plain, surrounded by a rampart of shattered hills, is evidently heated by a subterraneous fire, sensible to those who pass over it, by whom the workings of the furnace beneath are distinctly heard. When struck, it re-bellows in hollow murmurs; sulphureous exhalations rise from the crevices; and a pale blue flame is seen issuing by night from an orifice in this ever-burning plain (*fig.* 327.). The quarries of the peculiar stone called Puzzolana, which is used in several manufactures, present a striking and picturesque aspect (*fig.* 328.). The Grotto del Cane is a small aperture, whence issues a vapour so strongly impregnated with carbonic acid as to be deadly to all who breathe in it. Near it are several natural vapour baths, used with success in the cure of diseases. The Lucrine Lake, on which the ancients had erected several magnificent edifices, was nearly filled up in one night by the Monte Nuovo, a black mass of scoriæ and ashes, which rose suddenly from the bosom of the waters. The city of Cumæ is now a miserable village; but the celebrated grotto of the Sibyl may still be discovered, with some remains of those subterraneous galleries, by which she was enabled to form the awful sounds which in the moment of inspiration issued from the depths of the cavern. Sorrento (*fig.* 329.), a little port on the extremity of the bay, is admired for its beautiful scenery, and the striking aspect of its volcanic rocks.

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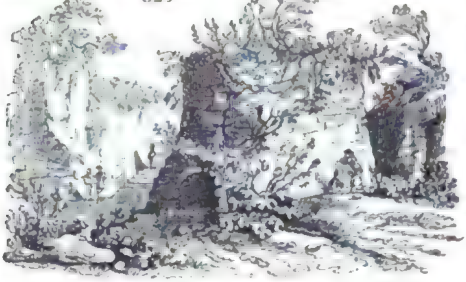

VIRGIL'S TOMB.

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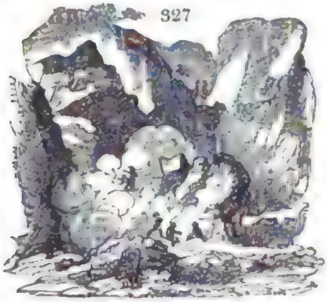

WARM SPRING OF SOLFATARA.

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QUARRY OF PUZZOLANA.

2715. *Vesuvius,* about eight miles from Naples, with an arm of the bay interposed, rears her majestic cone, the only volcanic mountain on the continent of Europe, and one of the most active in the world. From the earliest ages on record, its eruptions have occurred at intervals of a few years; and those of 1794 and 1822 caused a considerable diminution of its height, large portions from the sides of the crater having fallen in. On these occasions the lava issues forth in vast streams, overspreading the country for miles, and burying even cities. The town of Torre del Greco was overwhelmed in 1794; but the most memorable catastrophe of this nature was that which, in the first century, befell the two cities of Herculaneum and Pompeii, which were completely buried beneath torrents of lava. They remained entombed for ages, till the beginning of the last century, when a peasant, in digging a well, discovered some fragments of marble, and by degrees a small temple, and some statues; but this observation was neglected till the king, in 1736, designing to erect a palace at Portici, purchased the ground, and began to make large excavations, in consequence of which the entire subterranean city appeared beneath (*fig.* 330.). Numerous paintings, in perfect preservation, and manuscripts written on papyrus, have been found

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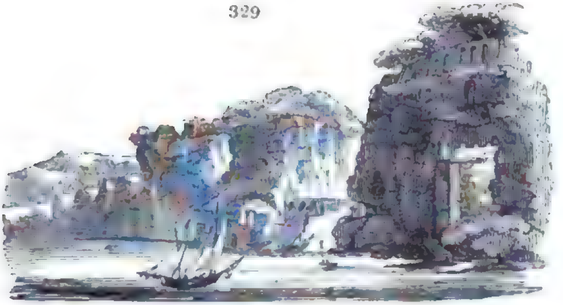

SORRENTO.

amid the ruins. The operations have been limited by the depth of the lava, and by the city of Portici being built above. About 1750, Pompeii was discovered; and being found much more accessible, very extensive excavations have been effected, particularly by the French; and travellers may now walk through a great extent of the ancient Pompeii (*fig.* 331.). It exhibits the full picture of what a Roman city was: habitations, temples, theatres, baths, the shops of the different trades, the implements they used, and even the materials on which they were employed.

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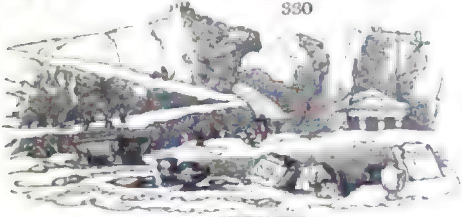

HERCULANEUM.

2716. *Salerno* (*fig.* 332.), on the opposite side of the bay, is a pretty large town, in a beautiful and fertile territory, enclosed by ranges of lofty mountains. Considerably to the south, on a plain near the sea, appear the remains of Pæstum, the ancient capital of Lucania. They consist of three temples, which form perhaps the purest and most perfect specimen extant of the Grecian Doric order. They stand solitary near the sea-shore, without the least remains of Posidonium, the city to which they belonged.

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ENTRANCE TO THE PRINCIPAL STREET OF POMPEII

2717. *The northern part of Naples* is divided between the Campagna Felice of the ancients, now Terra di Lavoro, and the rough mountain territory of the Abruzzo, the ancient Samnium. Campania is still both fruitful and highly cultivated, though it no longer produces the Falernian wine, so boasted of by the voluptuous poets of Rome. Capua, which almost disputed the title of capital of Italy, and whose voluptuous pleasures ruined the army of Hannibal, after it had vanquished all the armies of Rome, is now only a consider-

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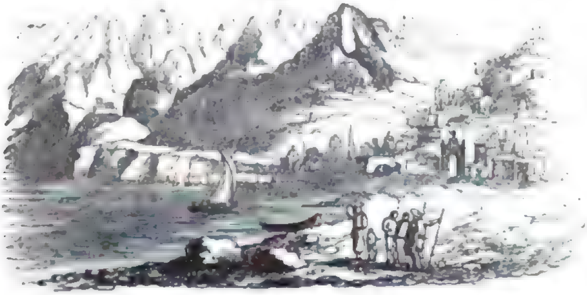

SALERNO.

able but dirty town, with a strong castle. Gaëta has derived great importance from its position on an almost peninsular neck of land, the approaches to which are so strongly fortified, as to render it almost impregnable. Benevento, a town of ancient celebrity, afterwards the seat of a Lombard dukedom, which extended over almost all Naples, is filled with monuments interesting to the antiquary. The people of the Abruzzi, higher and lower, the descendants of the ancient Samnites, who made such a formidable resistance to Rome, and repeatedly sent her armies under the yoke, are still a brave and laborious race. The capitals, Aquila and Chieti, are considerable country towns, without any thing remarkable. Foggia, in Capitanata, is a considerable market for wool and corn, which are exported at Manfredonia. In the southern provinces, the mountains take an easterly direction towards Calabria, and have between them and the Adriatic the plains bearing the classic appellation of Magna Græcia. This region, once the combined seat of learning, greatness, and voluptuous effeminacy, is now almost unknown to the rest of Europe. Yet the scenery possesses a softness and beauty, mingled with grandeur, that is scarcely equalled elsewhere; and the towns, though they cannot be compared with the great capitals of Italy, present striking and interesting monuments. Tarento (*fig.* 333.), once rival to Rome, is still a considerable sea-port. Brindisi retains only a small remnant of the importance which it derived from being the port of passage from Italy into Greece. Bari and Barletta are modern and rather handsome and flourishing sea-ports. Polignano, to the south of Bari, is also considerable, and its vicinity is marked by some very singular and beautiful grottoes (*fig.* 334.). Gallipoli is the chief mart of the oil produced in this region, which is esteemed above every other for the manufacture of fine woollen cloth. Corigliano (*fig.* 335.), nearly on the site of Sybaris, presents an aspect strikingly picturesque. The plain of Sybaris, behind it, the abode of a people noted for voluptuous indulgence, appears, by the description and delineation of St. Non, to be of almost unrivalled beauty. It is diversified with rich groves of orange and citron, above which rise finely cultivated hills; while the distance is formed by the mountains of Calabria, capped with almost perpetual snow (*fig.* 336.).

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TARENTO.

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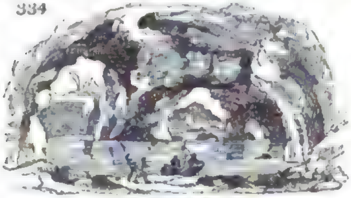

GROTTOES OF POLIGNANO.

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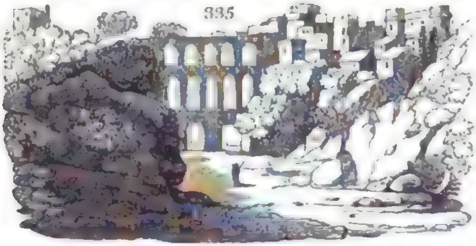

CORIGLIANO.

2718. *Otranto* (*fig.* 337.), the ancient Hydruntum, is a small town, distinguished only by its spacious castle, which has been celebrated even in romance.

2719. *Calabria*, on the opposite side of this southern extremity of Italy, is a striking and singular region. The Apennines here tower to a stupendous height, and leave between them and the sea only a narrow but extremely fertile plain. The inhabitants bear in a great

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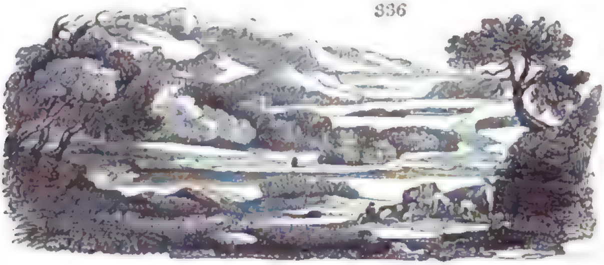

PLAIN OF SYBARIS.

measure the character of mountaineers: they are poor, brave, rude, and almost bandit. They are often in opposition to the government in its attempts to maintain order and peace; yet, when they saw it invaded, and even conquered, by a foreign enemy, they opposed a formidable resistance, after all the regular troops and ordinary resources had failed. Calabria possesses a fatal distinction, in having exhibited the phenomena of earthquake on a more terrible scale than in any other part of Europe, or perhaps of the old world. During successive weeks the whole ground heaved with a perpetual agitation: hills were levelled, and plains raised into hills; lakes were filled up, and new ones formed. An unfortunate party, which sought refuge on the sea-shore, were overwhelmed, in consequence of the sudden partial fall of a high mountain. Reggio, the ancient capital of the Rhegians, situated almost directly opposite to Messina, presents interesting remains of antiquity, and derives also a considerable animation from modern commerce. Squillace (*fig.* 338.) is antique and picturesque; but Catanzaro is the largest town in Calabria, and possesses some manufacturing industry.

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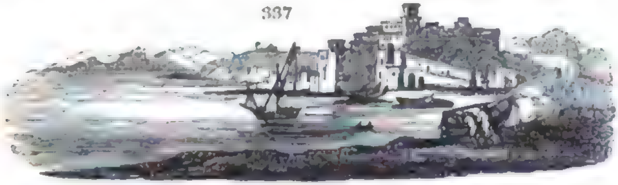

OTRANTO.

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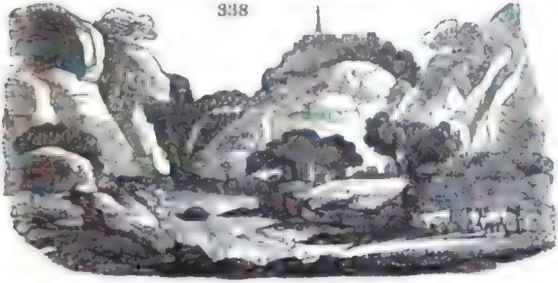

SQUILLACE.

2720. *Sicily*, the finest and most beautiful island in Europe, forms a valuable appanage to the kingdom of Naples. From the south-eastern extremity of Italy, this island extends eastward in an irregular triangle, about 180 miles long and 150 broad. Immediately beyond the narrow strait which separates it from the continent, the surface begins to rise into the lofty heights of Etna, a mountain higher than any of the Apennines, and which strikes admiration and terror by the streams of volcanic fire which issue from it. Its branches overspread nearly the whole island, but on the northern and southern coasts they descend into gentle and cultivated hills. From these elevated regions descend numerous and rapid streams, which profusely water every part of the territory. Sicily possesses thus all the beauties and benefits of a warm climate, without even the partial aridity to which it is exposed. Its soil yields abundantly all the products of the finest temperate and even tropical climates. Its most uncultivated spots are covered with groves of fruit trees, and decked with beautiful flowers, such as elsewhere are carefully reared in gardens.

2721. *In its historical character*, Sicily possessed anciently the highest distinction; and perhaps no country in the world has suffered a greater reverse. Greece early established here the most flourishing of her colonies; Syracuse and Agrigentum vied in power, learning, and wealth, with the mother country. Even when no longer able to maintain her own independence, she became the brightest prize for which Carthaginian and Roman contended. Reduced finally under the Roman empire, Sicily became one of its most valuable provinces, and the granary of the capital. In the early part of the middle ages, the Saracens founded here a flourishing state. After the establishment, however, of the Norman adventurers in the south of Italy, Roger, brother to Robert Guiscard, by a series of gallant exploits, drove out that powerful people. Sicily was then united with Naples, to which it has generally continued attached, though held occasionally by Spain and Savoy. It was also separated for a considerable time, when the French became masters of Naples, while the old family were maintained in Sicily by British protection; but on the fall of Murat, in 1815, the Two Sicilies became again one kingdom.

2722. *Sicily at present*, notwithstanding its fertility and varied natural advantages, has sunk into a state of extreme poverty and degradation. The supineness and tyranny of the government, and the exorbitant privileges of the grandees, have reduced the body of the people to a state of the utmost penury. The varied and often rugged surface of the country, intersected by numerous torrents, would require considerable efforts to form communication by roads; but this has been entirely neglected, and a line of twenty miles into the interior from Palermo is the only route practicable for carriages. In Agrigentum, once the mart of all the commodities of the Mediterranean, M. Kephalides could not procure a pair of gloves; and in Modica, a town of 11,000 people, a bit of soap was not to be obtained. Sicily, however, produces some wines that are esteemed; her raw silk is also fine, and with olive-oil, fruits, and salt, affords some materials for exportation. In return, she receives manufactured goods in great variety, though small quantity, their consumption being much limited by the poverty which pervades the great body of the people.

2723. *Sicily* is divided into the following intendancies:—

		Population.	Principal Towns.	
Palermo	-	409,000	Palermo, 168,000.	
Trapani	-	147,000	Trapani, 24,000.	Marsala, 21,000.
Girgenti	-	291,000	Girgenti, 15,000.	
Caltanisetta	-	156,000	Caltanisetta, 17,000.	
Syracuse	-	194,500	Syracuse, 15,000.	
Catania	-	292,500	Catania, 45,000.	
Messina	-	240,000	Messina, 60,000.	

2724. *Palermo*, though it can boast neither monuments of antiquity nor classic modern edifices, such as adorn the cities of Italy, is yet a spacious and handsome city. It is traversed by broad streets crossing each other, and producing at their point of junction a striking effect. Many of the quarters, however, are ugly and dirty. The cathedral is a large ancient edifice, with some striking features; but the different styles of architecture are injudiciously blended. The palace of the viceroy is a splendid building, but not in good taste; its most interesting object is the ancient chapel of king Roger. Some of the country seats in the vicinity command delightful views. The favourite resort of the Palermitans is a public garden called the Flora, which is not well arranged, but is rich in flowers and fruit.

2725. *Messina* (*fig.* 339.), though smaller, is almost equal in importance, since from it is carried on almost the whole commerce of Sicily. Its wines, silk, fruits, and other articles produced for exportation, are mostly shipped at Messina. It has also a considerable silk manufactory. The city is beautifully situated on a bay, formed by the opposite coasts of Sicily and Calabria, and enclosed by lofty hills on each side. A century ago, Messina was much greater, and more flourishing; but it has passed since through calamities almost unparalleled. In 1743, the plague swept off half its population; and in 1783, the great earthquake, which was desolating Calabria, crossed the strait, and in a few minutes converted Messina into a heap of ruins. Most of the inhabitants effected their escape; but the finest streets were overthrown; precious commodities, libraries, works of art, were destroyed in vast numbers. From this fatal blow Messina has only imperfectly recovered.

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PORT OF MESSINA.

2726. *Southward from Messina*, the coast begins to display the remains of great ancient cities, which were built chiefly on the eastern and southern coasts. Taormina, the ancient Tauromenum, now a small place, contains, among other ruins, a theatre, considered one of the most perfect monuments of antiquity, and in a most commanding site, between the mountains and the sea. Catania (*fig.* 340.), at the foot of Etna, is the finest city in the island. It is filled with Greek, Saracenic, and modern structures, all handsome. Yet it has passed through fearful vicissitudes. Overwhelmed by the volcano of 1669, almost de-

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CATANIA

stroyed by the earthquake of 1693, it has risen from these disasters with undiminished beauty.

2727. *Proceeding southward* along the coast of the Val de Noto, we reach Siragusa (Syracuse). This ancient capital, so celebrated for power, learning, and splendour, presents now a striking example of the changeful character of human things. Of its vast ruins only some imperfect fragments can with difficulty be traced, scattered amid vineyards, orchards, and cornfields. The present town, which contains nothing remarkable, occupies only a very small portion of the ancient site. Near the south-eastern cape of Passaro are Noto and Modica, two large towns, one well built, the other very indifferently.

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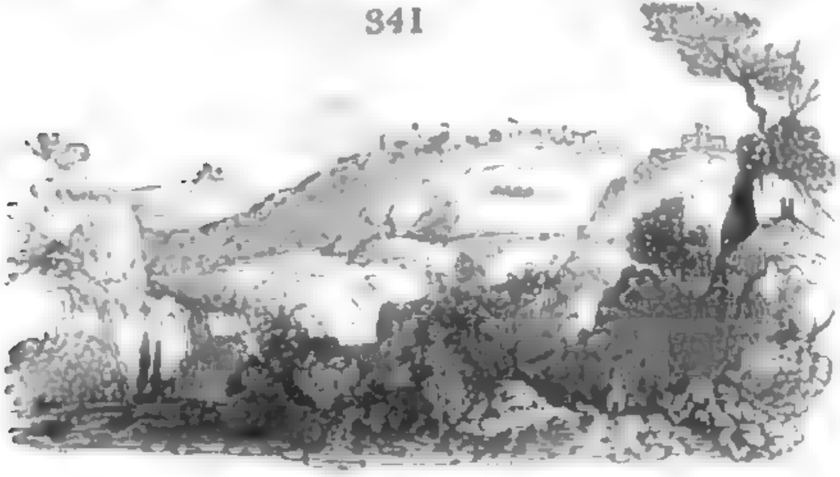

ENVIRONS OF GIRGENTI.

2728. *On the southern coast*, Girgenti (*fig.* 341.), now a large poor village, presents monuments worthy of the ancient Agrigentum, when it was the greatest city of Sicily, and fit to contend with Carthage. The temple of Jupiter Olympus (*fig.* 342.), an immense structure, 368 feet long by 188 broad, is almost quite in ruins. It has been called the Temple of Giants, from huge forms of this description that are lying either entire or in fragments. The Temple of Concord (*fig.* 343.), with its thirty-four columns, is considered one of the most perfect specimens extant of the Doric order. Farther to the east at Selinunti, the ruins of Selinus present a scene still more striking and awful. Here may be distinctly traced three noble temples, of which the materials still remain, but only a few solitary columns are standing; all the rest lie on the ground, in huge and shapeless blocks, forming the most stupendous mass of ruin to be found in Europe. It is generally supposed that an earthquake has been the cause of this extraordinary destruction, — that, as Mr. Swinburne expresses himself, nature has been chiefly concerned in this triumph over the pride of art (*fig.* 344.).

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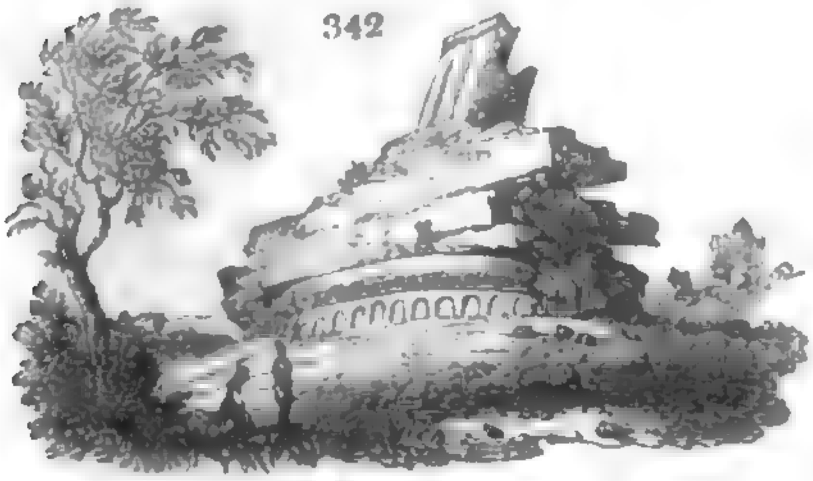
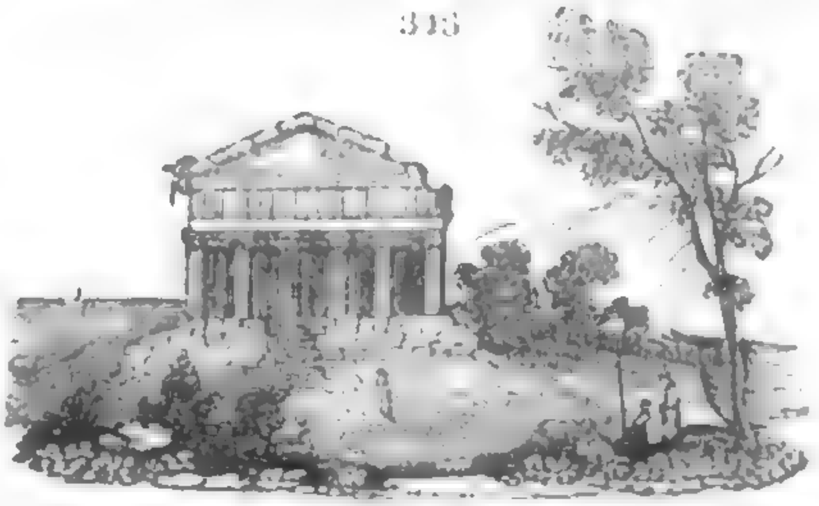


TEMPLE OF GIANTS.

343



TEMPLE OF CONCORD.

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RUINS OF SELINUS.

2729. *Trapani*, the ancient Drepanum, poetically distinguished as the place where Anchises died, and where Æneas celebrated his obsequies, is still a considerable town, near the western promontory of Sicily, the ancient Lilybæum. It is well fortified, and has a good harbour, where there is a considerable trade in the export of salt made in its vicinity, and of barilla. It carries on briskly the fisheries of tunny and of coral, which last is obtained both from the coast of the island and that of Africa. Not far from Trapani is Segeste; a simple, grand, and almost entire edifice, standing on a solitary hill (*fig.* 345.).

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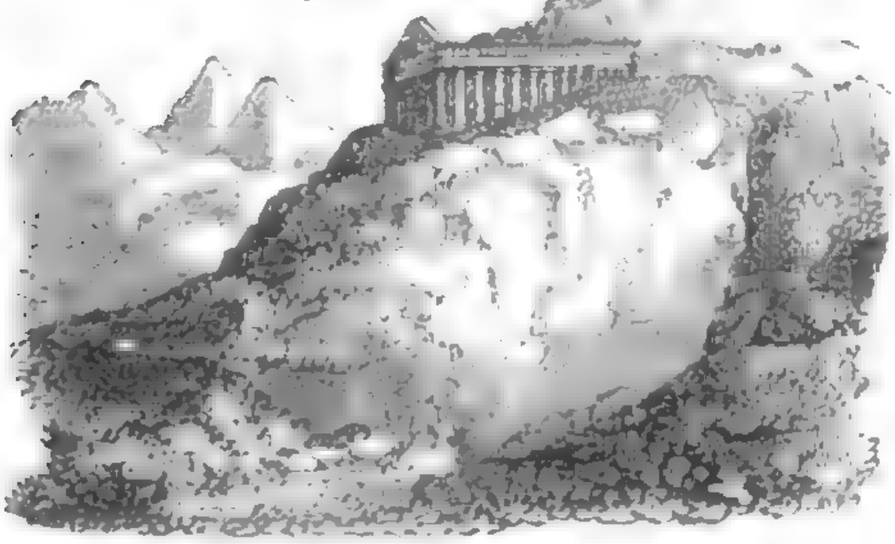

TEMPLE OF SEGESTE.

Marsala, almost on the very site of Lilybæum, is a considerable town, exporting wine that is much esteemed. Near it the quarries of Mazzara appear to have furnished the stone of which the edifices in this part of Sicily have been constructed.

2730. *The ascent of Etna* is a general object with Sicilian travellers. In proceeding from Catania, they pass through three successive zones: first that of rich cultivated fields, then that of plants and aromatic shrubs; and, lastly, the region of scoriæ, ashes, and perpetual snow. On reaching the summit (*fig.* 346.), they view the crater filled with vast volumes of smoke, and obtain a fine panoramic view over all Sicily and the adjoining shores of Italy.

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SUMMIT OF ETNA.

2731. *The Lipari Islands*, twelve in number, and situated from twelve to thirty-five miles northward from the Sicilian coast, are entirely volcanic, and appear to have been thrown up from the sea by the action of fire. Lipari itself contains a hill of white pumice, which forms an article of trade, and its crater displays various specimens of beautifully crystallised sulphur. Stromboli has a volcano, remarkable for being in perpetual activity. Every day, at short intervals, the eruptions issue forth like great discharges of artillery, and the sides of the mountain are covered with the red-hot stones that are ejected, and rush down into the sea. The inhabitants of these islands are a bold, active, and industrious race. The activity of submarine fires has been manifested on another side of Sicily, by the recent rise of Graham's Island; only, indeed, a volcanic rock, which has again sunk under water.

2732. *Malta* (*fig.* 347.), an islet in the Mediterranean, about fifty-four miles to the south of Sicily, though imperfectly connected with Italy, belongs more to it than to any other country. It obtained little notice in antiquity; and, when St. Paul was shipwrecked there, is described as inhabited by a barbarous people. Its importance began in the sixteenth century, when it was ceded by Charles V. to the Knights of St. John of Jerusalem, as a compensation for the loss of Rhodes. Its fortifications were then greatly strengthened, and it was considered the last maritime bulwark against the Turks. In 1565, Solyman sent against Malta a most formidable fleet and army; and the siege which ensued is one of the most celebrated in history. After prodigious efforts, the Ottoman armament was completely repulsed, and the knights were left in the unmolested possession of the island, till 1798. Napoleon then, with the expedition destined for Egypt, suddenly appeared before La Valetta, and took possession of it without resistance. Britain afterwards reduced it by blockade; and, notwithstanding a stipulation in the treaty of Amiens, has since retained possession of it. In 1825, the native population of Malta amounted to 99,600; the garrison and strangers to 3200. On the neighbouring smaller island of Gozo there were 16,800. The people are industrious; and, notwithstanding the barrenness of their soil, raise grain, cotton, and excellent fruits, particularly oranges.

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MALTA.

2733. *La Valetta*, the capital and port of Malta, being situated on a narrow tongue of land, with a noble harbour on each side, forms an admirable naval station, deriving great importance from its position in the heart of the Mediterranean. It serves also, especially during war, as a commercial depôt, whence goods may be introduced into Italy and the Levant. The exports from Britain, in 1829, amounted to 505,250*l.* while the imports were only 20,780*l.*

Chap. IX.

SWITZERLAND.

2734. *Switzerland* forms a mountainous territory in the centre of Europe, occupying the west of the great range of the Alps, which divides France and Germany from Italy. It is remarkable for the grandeur of its natural features and scenery, and for the freedom of its political institutions.

Sect. I. *General Outline and Aspect.*

2735. *Switzerland is bounded by the great kingdoms of France, Germany, and Italy*, whose frontiers enclose it on all sides; France on the east; Germany, and more particularly Swabia and the Tyrol, on the south and west; the Italian states, Milan, Piedmont and Savoy, on the south. In general, Switzerland terminates where its mighty mountain heights slope down to the vast plains which extend over the surrounding regions; but on the side of the Tyrol on the west, and of Savoy on the south-west, the line is drawn across the crest of the Alps themselves, which stretch away with almost undiminished grandeur towards opposite seas. Its position is nearly between 46° and 48° north latitude; and 6° and 11° east longitude. It may be about 200 miles in length, and 140 in breadth, and comprises an area of 19,000 square miles.

2736. *The surface* of Switzerland, bounded and traversed as it is by the highest ranges in Europe, consists almost wholly of mountains and lakes. The Alpine chains, however, do not swell, like those of America and Asia, into mighty and continuous table-lands; they are separated by deep valleys or narrow plains, which form the basin of large rivers, or the bed of extensive lakes; hence arises a singular variety of climate and aspect; for while the valleys beneath are scorched by the intensest rays of the sun, perpetual winter reigns in the heights above, and the vegetation of the arctic circle passes into the snows of the polar world.

2737. *Of the mountains* of Switzerland, Mont Blanc stands at the head; being the loftiest in Europe, and supposed, before the late observations on those of Asia, to surpass all the heights of the old continent.

2738. *Mont Blanc* is within the limits of Savoy; but forming, as it were, the key of the great Alpine chain, and all its approaches being on the side of Switzerland, it has always been regarded by Europeans as decidedly Swiss. The scenery to the west of Mont Blanc, in the approach from Geneva, presents the most striking display that is to be found in Europe, of whatever is wild, wonderful, and sublime in Alpine scenery. The Valley of Chamouni, the Glacier of Bossons, and the *Mer de Glace*, present, in particular, scenes of the most astonishing grandeur. The upper regions of the mountain were long considered as inaccessible to the foot of mortals; but Saussure first, and several English travellers since, have, by fearless enterprise and adventure, succeeded in penetrating across the steeps covered with ice and snow, the perilous chasms, the narrow and slippery paths along precipices, and all the other dangers which beset this daring ascent. North-east from Mont Blanc extends the line of those amazing Alps which form the Italian boundary: the Great St. Bernard; Monte Rosa, which ranks second in height to Mont Blanc; the Simplon, across which such an astonishing military road has been excavated; Mount St. Gothard, the route over which, however rugged and dreary, was, previous to the formation of that of the Simplon, the most frequented of any from Switzerland into Italy. Beneath this range extends the deep valley of the Rhone, from the northern side of which again shoots up another series of peaks, or horns, as they are here termed, which, though they nowhere attain the unrivalled height of Mont Blanc, present a more continuous elevation, and a more imposing mass, than even those which border on Italy. Among these peaks, the most memorable are the Schreckhorn or Peak of Terror, the Wetterhorn or Peak of Storms, the Gletscherhorn or Glacier Peak; and, peering above all, the Finster-Aar-horn, which ranks third in height after Mont Blanc and Monte Rosa. Down the prodigious steeps which these present to the plain of Berne, descend the glaciers, or great fields and plains of ice, which, sliding down from the upper region of the mountains, reach the lower valleys, where they remain unmelted, and even accumulate in successive seasons, and are often seen bordering on the cornfields and vineyards. The whole of southern Switzerland is covered by these great ranges; but the northern part presents a somewhat different aspect. In the east, the territory of the Four Cantons is diversified, indeed, by several very high and picturesque single peaks, as Mount Righi and Mount Pilate; but the general ranges which enclose its lake vary from 2000 to 4000 feet. The north-west district, consisting of the canton of Friburg, with great part of those of Berne and Soleure, composes an extensive plain, the only one which exists in Switzerland, and from which the mountains are only seen in white and distant lines; but the whole frontier of this side towards France is barred by the steep though not very lofty ridge of the Jura.

2739. *The great rivers* which water the surrounding regions either take their rise in Switzerland, or are swelled by tributaries from that country. The Rhine and the Rhone have both a long course, and have risen to streams of the first magnitude before they pass its frontier. These, with the Aar, the Reuss, and the Tesino, rise from the vicinity of each other, where the two great chains nearly unite, and where the Schreckhorn, the Finster-Aar-horn, and St. Gothard tower above the wild valleys of Urseren and the Upper Valais.

2740. *The Rhone* flows through the deep valley between the Italian chain and that of the central peaks, and is swelled at every step by numberless torrents dashing down their sides. At length, emerging from this mountain region, it diffuses the huge mass of waters thus collected into the ample expanse of the Lake of Geneva. At the opposite extremity, near the city of that name, it bursts out, and rolling towards the frontier, becomes finally a French river. The Rhine has its first course along the most obscure Grison and Tyrolese frontiers, but on touching the German plain it spreads into the wide and beautiful Lake of Constance. Thence emerging, it flows nearly due east, forming the almost continuous northern boundary of Switzerland on the side of Germany; till, at Basle coming into contact with France, it strikes suddenly to the north, and bids a final adieu to its parent country. The Aar, the only large river exclusively Swiss, descends from the Finster-Aar-horn, rolls along the foot of the glaciers, collecting all their waters, which it distributes among the lakes of Thun and Brientz; after which it passes by a circuitous course along the level tracts of Switzerland, till it joins the Rhine on the German frontier. Almost immediately before this junction, it has received the Reuss (*fig.* 348.), from a source in the heart of the wildest scenery of St. Gothard, and which in its northern course has formed the great Lake of the Forest Cantons. The Limmat, also, after forming the Lake of Zurich, enters nearly at the same point. To the Danube Switzerland also contributes the Inn, through the valley of Engadine, while it gives to the Po the Adda from the Valteline, and the Ticino from the heights of St. Gothard.

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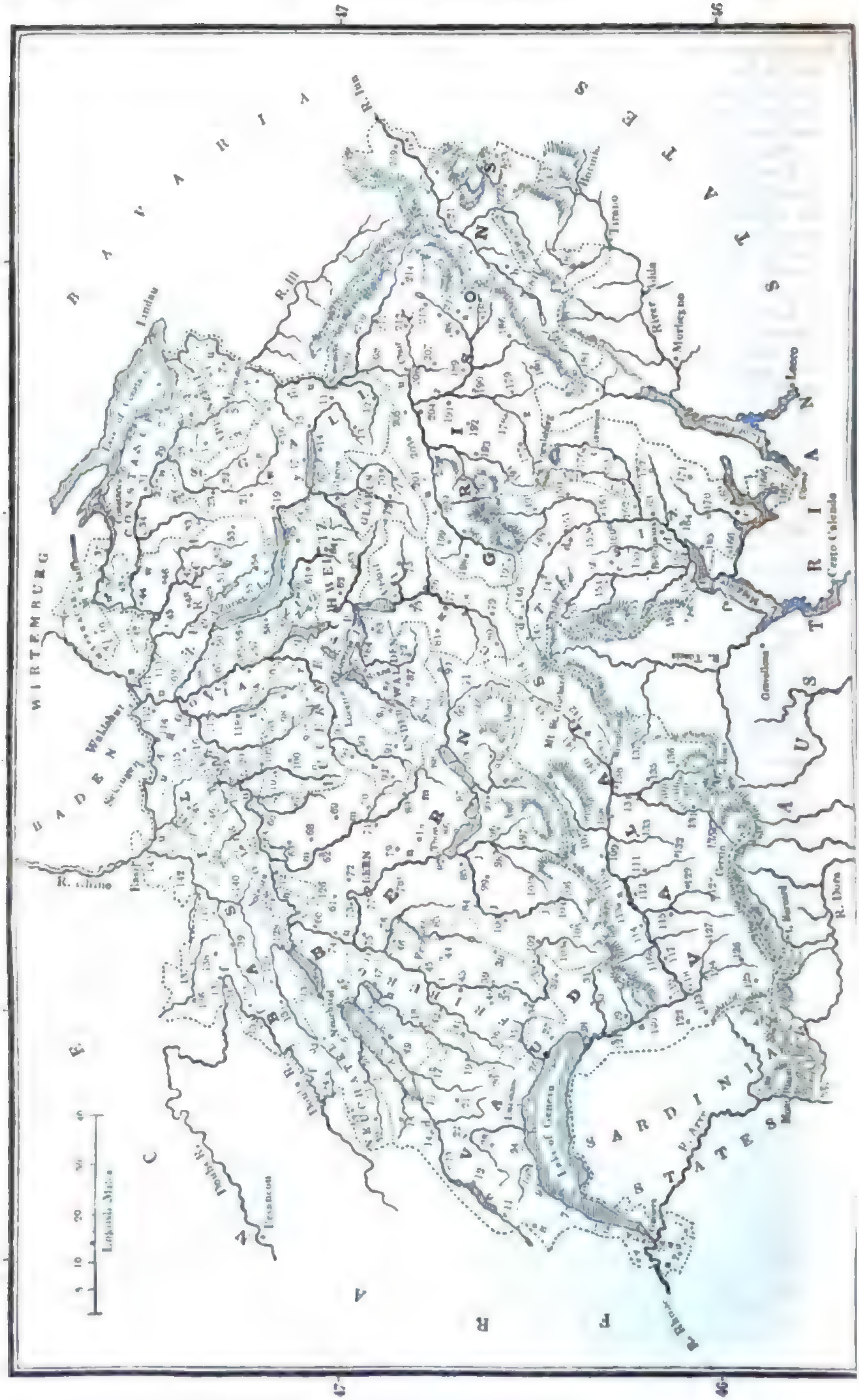
SOURCE OF THE REUSS.

2741. *Lakes* form a conspicuous feature in the physical structure and scenery of Switzerland. Its rivers, after rolling for a considerable space through mighty mountain valleys, accumulate a mass of

MAP OF SWITZERLAND. *Fig.* 349



waters which, when they reach the plains, no longer find a channel capable of containing them, but spread into wide watery expanses. The lakes of Switzerland are large, though none of them have that vast extent which could entitle them to be classed as inland seas. The smiling valleys and cultivated hills which form their immediate border, with the mighty mountains which tower behind in successive ranges, till they terminate in icy pinnacles rising above the clouds, produce a union of the sublime and beautiful which no other part of Europe, or perhaps of the world, can rival.

2742. *The Lake of Geneva*, or Leman Lake, is the most extensive, being about fifty miles in length, and twelve in its greatest breadth. The varied beauties of its northern bank, the opposite heights of Meillerie, and Mont Blanc rising behind in the distance, render it perhaps the most beautiful lake in the world. The Lake of Lucerne, or of the Four Forest Cantons, has, from its winding form, and the great variety of its scenery, sometimes been considered as superior. The Lake of Zurich does not offer the same sublime beauties; but the gentle elevations by which it is diversified form many scenes of extreme beauty. That of Constance has none of the mountain grandeur of interior Switzerland, but its extended banks present many pleasing cultivated and pastoral scenes. The southern lakes, Maggiore, Como, Lugano, which half belong to Italy, exhibit many magical scenes, combining the gay splendour of the Italian plain with the grandeur of its mountain boundary; yet they do not possess that deep stillness and solemnity which gives a peculiar charm to the lakes that are entirely enclosed within the Alpine barrier.

References to the Map of Switzerland.

NORTH PART.

Canton of Appenzell.

1. Herisau
2. Umaschen
3. Appenzell
4. Trogen.

Canton of St. Gall.

5. Altstetten
6. Dieboldsau
7. Kobelwies
8. Salez
9. Wildenhaus
10. Werdenberg
11. Sargans
12. Vattis
13. Weissannen
14. Mols
15. Wallenstadt
16. Starkenbach
17. Quinton
18. Krumenau
19. Uznach
20. Rapperschwyl
21. Bildhaus
22. Lichtensteig
23. Dietfurt
24. Wyl
25. Gossau
26. St. Gall.

Canton of Constance.

27. Arbon
28. Utwyl
29. Bischofszell
30. Constance
31. Weinfelden
32. Schönholzer-schwyl
33. Dusslingen
34. Frauenfeld
35. Schreckhorn
36. Diessenhofen.

Canton of Schaffhausen.

37. Stein
38. Schaffhausen
39. Bargen
40. Neunkirch
41. Osterfingen.

Canton of Zurich.

42. Eglisau
43. Trullikon
44. Flach
45. Bulach
46. Winterthur
47. Fehr Altorf
48. Bassersdorf
49. Zurich
50. Alstetten
51. Greiffen
52. Pfaffikon
53. Fischenthal
54. Gruningen
55. Meilen
56. Adlischwyl
57. Ottenbach
58. Husen.

Canton of Zug.

59. Zug
60. Egeri.

Canton of Schweitz.

61. Einsiedeln
62. Schweitz
63. Muotta
64. Rutli
65. Waggithal.

Canton of Glarus.

66. Bad
67. Mollis
68. Glarus
69. Schwanden
70. Elm
71. Wichlen
72. Matt.

Canton of Uri.

73. Unterschachen
74. Altdorf
75. Erstfeld
76. Amstag
77. Gurtnellen
78. Goschenen
79. Andermatt
80. Realp
81. Pernigen.

Canton of Unterwalden.

82. Holz
83. Ematten
84. Rochs
85. Stans
86. Sarnen
87. Melk
88. Giswyl
89. Lungern
90. Oberwyl.

Canton of Lucerne.

91. Glasshutte
92. Meischachen
93. Schupfen
94. Romos
95. Malters
96. Lucerne
97. Sempach
98. Sursee
99. Nothwyl
100. Welliau
101. Antiffen
102. Reiden
103. Triengen
104. Hallwyler.

Canton of Argovia.

105. Sins
106. Wierd
107. Bremgarten
108. Mellingen
109. Baden
110. Kaiserstuhl
111. Klingnau
112. Mandak
113. Brugg
114. Lauffenburg
115. Herznach
116. Aarau
117. Lenzburg
118. Lutwyl
119. Aarburg
120. Zofingen.

Canton of Soleure.

121. Olten
122. Hagendorf
123. Beinweil
124. Lambersdorff
125. Soleure
126. Schnottwyl
127. Selzach.

Canton of Basle.

128. Bienne
129. Colebert
130. Neustatt
131. St. Imier
132. Gomoy
133. Vellier
134. Cernière
135. St. Ursanne
136. Porentrui
137. Mircour
138. Montavon
139. Bassecour
140. Bepraon
141. Delemont
142. Hoffstettin
143. Basle
144. Liechstall
145. Teningen
146. Wallenburg.

SOUTH PART.

Canton of Geneva.

1. Arcamp
2. S. Julien
3. Geneva
4. Meirin
5. Cord
6. Versoy

Canton of Vaud.

7. Nyon
8. St. Sergue
9. Rolle
10. Aubonne
11. Brassu
12. Abbaye
13. Vallorbe
14. Orbe
15. Yugelle
16. Yverdun
17. Molondin
18. Peterlingen
19. Moudon
20. Carrouge
21. Essertine
22. La Surra
23. Grancy
24. Morges
25. Lausanne
26. Vevay
27. Montreux
28. Reville
29. Bex
30. Sepey
31. Vers l'Eglise
32. Etivaz
33. Rougemont.

Canton of Friburg.

34. Albeuve
35. Châtel S. Denis
36. St. Martin
37. Greyerz
38. Tour la Joque
39. Cresut
40. Bulle
41. Romont
42. Autigny
43. Pont
44. Giffers
45. Friburg
46. Wunewyl
47. Morat.

Canton of Neufchâtel.

48. Cudrefin
49. Estavayer
50. Boudry
51. Travers
52. St. Sulpice
53. Brevine
54. Le Loch
55. Les Loges
56. Neufchâtel.

Canton of Berne.

57. Anets
58. Nydau
59. Buren
60. Buetigen
61. Buchsee
62. Burgdorf
63. Seeberg
64. Wangen
65. Wittispach
66. Arwangen
67. Hutwyl
68. Wynigen
69. Sumeswald
70. Langau
71. Signau
72. Belligen
73. Bremgarten
74. Arberg
75. Cappelen
76. Riederen
77. Berne
78. Gerzen
79. Diesbach
80. Tschangnau
81. Schwarzenegg
82. Thun
83. Guggisberg
84. Oberwyl
85. Reutigen
86. Ralligen
87. Unterseen
88. Brienz
89. Muhlithal
90. Gadmen
91. Boder
92. Hasli
93. Iseltwald
94. Grindelwald
95. Wilderschwyl
96. Kienthal
97. Kandersteg
98. Frutigen
99. Dientigen
100. Weissenbach
101. Schwanden
102. Gestade
103. Im Grung
104. Ander Lenk
105. Lauenen
106. Oberreid.

Canton of Valais.

107. Ferden
108. Turtia
109. Leuk
110. Salgesch
111. Niasye
112. Gradets
113. Lens
114. Sion
115. Heremence
116. Ardon
117. Riddes
118. Martinach
119. Cologne
120. St. Maurice
121. Murat
122. Finio
123. Trient
124. St. Branchier
125. Ferret
126. St. Pierre
127. Morgne
128. Barthelémi
129. Evolena
130. Zmutt
131. Matt
132. Ayer
133. Gruben
134. Stalden
135. Hollerbool
136. Almengal
137. Simplon
138. Vispach
139. Brigg
140. Naters
141. Lax
142. Aernen
143. Biel
144. Im Loch.

Canton of Tessin.

145. Ronco
146. Airolo
147. Ambri
148. Faido
149. Olivone
150. Letigna
151. Chiggiogna
152. Lavorgo
153. Pusio
154. Cevio
155. Comologno
156. Borgnone
157. Brissago
158. Locarno
159. Brione
160. Tragna
161. Biasca
162. Castiglione
163. Bellinzona
164. Cadenazzo
165. St. Nazaro
166. Sessa
167. Riva
168. Capo Lago
169. Lugano
170. Tavarne
171. Val Colla
172. St. Antonio.

Canton of Grisons

173. Cama
174. Roveredo
175. St. Domenica
176. St. Giacomo
177. Hinterheim
178. Suvers
179. Farrera
180. Bergala
181. Castaregna
182. Vicosoprano
183. Puschlau
184. Samaden
185. Scanf
186. Stalla Bivia
187. Bergun
188. Wiesen
189. Lenz
190. Zillis
191. Tusis
192. Plaz
193. St. Martin
194. Zavreila
195. Buzasch
196. Mompemedels
197. S. Maria
198. Sedrun
199. Dissentis
200. Sumvix
201. Ruvis
202. Ilanz
203. Sagens
204. Bonaduz
205. Tamins
206. Coire
207. Parpan
208. Zizers
209. Mayenfeld
210. Schiers
211. Fideris
212. Peist
213. Dorrfli
214. Unter
215. Glarus
216. Cinuscel
217. Susa
218. Ardetz
219. Strada
220. Tarasp
221. Zernetz
222. Cierf
223. Munster.

Rivers and Lakes

a Rhone, R.
b Lake of Geneva
c Lake Joux
d Orbe, R.
e Lake of Neufchâtel
f Doubs, R.
g Lake Bienne
h Lake Morat
i Saône, R.
j Simmen
k Lake of Thun
l Lake of Brientz
m Emmen, R.
n Aar, R.
o Lake Sempach
p Lake Lucerne
q Lake Zug
r Reuss, R.
s Lake Baldegger
t Lake Halwyler
u Rhine, R.
v Lake of Constance
w Thun, R.
x Lake of Zurich
y Lake Wallenstadt
z Upper Rhine, R.
a* Albula, R.
b* Inn, R.
c* Lake Lugano
d* Ticino, R.
e* Maggia, R.
f* Lake Maggiore.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2743. *The geognosy* of this magnificent country, although it has engaged the attention of geologists from the time of Saussure up to the present period, is far from being well understood. We cannot here enter into the discussions connected with the age, characters, and distributions of its formations, which now occupy the talents of so many distinguished observers; but refer our readers to the writings of Saussure, Ebel, Escher, Von Buch, Necker, Boué, Kefferstein, Brongniart, Murchison, Buckland, Sedgwick, Brochant, Hugi, Studer, and others. Switzerland is principally composed of Neptunian deposits; the Plutonian rocks occupying a comparatively small portion of the country.

2744. I. *Primitive and transition rocks.* (1.) *Neptunian.* These form the more central part of the country, and consist of the following rocks: — 1. *Gneiss.* 2. *Mica slate.* Where the mica disappears, *quartz rock* is formed, which sometimes occurs in beds of considerable magnitude. When the quartz of the mica slate disappears, there is formed a slaty rock entirely composed of minute scales of mica, forming the *primitive clay slate* of authors. 3. *Talc slate.* This rock, which is a slaty compound of quartz and scales of talc, was long confounded with mica slate. Sometimes the quartz disappears, when a talcy rock with slaty structure is formed, known under the name *slaty talc;* which passes into the rock named *potstone,* and also into another well-known magnesian or talcy rock, named *chlorite slate.* But by far the most interesting of the rocks of this deposit is that named *protogine,* which is a slaty or granular compound of quartz, talc, and felspar. The granular varieties have been described as granite; the slaty as gneiss, or under the name *veined granite.* Nearly the whole of Mont Blanc, as far as visible to the eye, is composed of protogine. 4. *Limestone.* Beds of this rock occur in the preceding rock, and especially in the talc slate. The limestones in the latter rock are frequently *dolomites* or magnesian limestones, and afford marbles valued by the statuary. *Gypsum* and *Karstenite* also occur in the talc slate districts. 5. *Hornblende rock.* Of this rock, the principal varieties, namely, hornblende rock properly so called, and also *hornblende slate,* occur in the gneiss, mica slate, and talc slate mountains. (2.) *Plutonian rocks.* True Plutonian, or ignigenous primitive and transition rocks, are not very abundant any where in Switzerland. The following are particularly noticed by authors: *granite, syenite,* and *porphyry;* which latter contains quartz, and seems to be a mere modification of granite. These rocks appear to have given the Neptunian strata not only their inclined position, but also to have fractured, contorted, and variously altered their individual characters.

2745. II. *Secondary deposits.* (1.) *Neptunian.* These are disposed in the following order: the lowest or oldest is, 1. *Red marl, sandstone, gypsum,* &c., containing occasionally large subordinate masses of *magnesian limestone.* This deposit some consider to be equivalent to the *red marl* and *keuper.* 2. *Inferior or older Alpine limestone.* This, from its organic remains, is considered as representing in Switzerland the lias of English geologists. 3. *Alpine limestone,* with *subordinate saliferous beds.* This deposit is considered as a portion of the oolite limestone, not far from the Oxford and Kimmeridge clay. 4. *Newer Alpine limestone.* Under this head are included those portions of the oolite series higher in the order than that just mentioned, and which therefore rests upon it. 5. *Green sand and chalk.* Resting upon the newer Alpine limestone there are beds of *green sand,* and of a rock which contains fossils identical with those found in *chalk:* hence it is by geologists considered as belonging to that formation. (2.) *Plutonian rocks.* The principal Plutonian rock is a *porphyry* without quartz, named *melaphire;* also augite porphyry and black porphyry. It is observed rising among the secondary deposits, and is viewed as the agent to which the strata owe their highly inclined position, and the mountain ranges their present situation. Serpentine and dolerite, also ignigenous rocks, occur among the secondary strata.

2746. III. *Tertiary deposits.* In the great valley on the north side of the Alps, which separates them from the Jura chain, there is a vast deposit of tertiary rocks, of which one of the most prominent kinds is the conglomerate named *molasse.*

2747. IV. *Alluvial deposits.* The older diluvium, which contains remains of extinct quadrupeds, as the elephant, &c., is abundant. The numerous rolled blocks of rock scattered over the country, far distant from their native places, and which appear to owe their distribution to the upraising of the mountains, are well known to travellers and geologists.

Subsect. 2. *Botany.*

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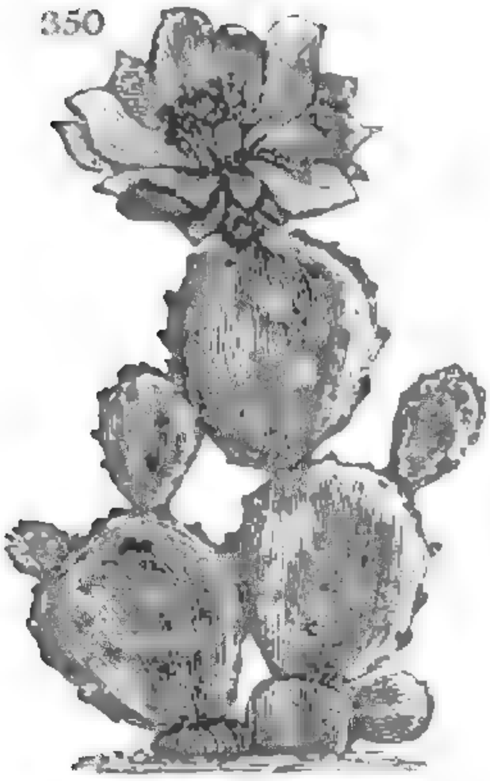

CACTUS OPUNTIA.

2748. *This may well be called a land of mountains;* consequently, its vegetation partakes very much of the alpine or arctic character; but as a great portion of its valleys resembles the climate of Italy, on the one hand, (even producing, in the warmer valleys, and in a state that may be reckoned completely naturalised, the Cactus Opuntia (*fig.* 350.), or Small Indian or Prickly Fig,) and the climate of France and Germany, on the other; so does the nature of its vegetation vary in consequence, and the flora is extremely rich and beautiful. To afford any thing like a correct idea of this, is far from our object; we must content ourselves, in this place, with giving an account of the cultivated and most striking of the spontaneous vegetation, according to its elevation above the level of the sea; and this we are aided in doing, by an interesting statement, which appeared in an early number of Black and Young's *Foreign Review,* "upon the state of cultivated and spontaneous vegetation in the higher parts of Switzerland." The elevation above the level of the sea is given in French feet: —

Place.	Elevation.	
Embs - - -	2200.	Buckwheat (*fig.* 351.), sown after Rye is reaped, ripens; at Ilanz it does not come to maturity; and a little higher the forty-days Maize (*quarantino*), a variety of the Zea Mays, is very precarious: at the same height, in the valley of the Upper Rhine, the vegetation of this plant ceases altogether.
Costasegna - -	2300.	At this place, near the borders of Lombardy, is the limit of the cultivation of the White Mulberry; at a greater elevation, neither this tree nor silk-worms are seen.
Travanessa, between Ilanz and Truns		The last Walnut trees (*fig.* 352.) are seen: it is remarked that this tree thrives better in valleys with an east exposure, than in those with a north, even though elevation and other circumstances are the same.
Ilanz.		
Truns - -	2400	

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BUCKWHEAT.

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WALNUT.

Place.	Elevation.	
Santa Maria -	2750.	The growth of Chestnut trees ceases near this place.
Porta - - -	2810.	The limit between the vegetation of the northern and southern districts is generally fixed here: a little higher, towards Bergonoro, a few straggling and stunted Walnut trees are seen, while at the base of the rock whereon the ancient and lofty town of Porta is built, Walnut and Chestnut trees flourish in luxuriant fruitfulness; and at a short distance from Porta, the Fig adorns and enriches the gardens, and the flanks of the mountains are clothed with the Cytisus and Broom.
Churwalden -	3800.	Here Flax, Hemp, and Barley are grown with success; Winter-Rye is not so certain a crop. Cherries ripen, but fruit with pips (*Apples, Pears,* &c.) is not grown. At Parpau, a village 600 or 700 feet higher than Churwalden, the inhabitants do not cultivate any species of grain: many kinds of trees, as the Italian Poplar (*fig.* 353.), Ash, and Wild Cherry, which grow at Churwalden, will not vegetate at Parpau; the only cultivated herb at this latter place is a variety of the Rumex alpinus, or Sorrel.
Vilo - - -	3800.	Different kinds of Firs compose the entire and exclusive vegetation. A little lower, Larches, intermixed with some of the Pinus Cembra (*fig.* 354.), or Siberian Pine, commonly called Alvier, are seen: all the more common species of grain are sown, and Potatoes generally diffused. Maize, which

Place.	Elevation.	
		succeeds perfectly a little lower, ripens here also in ordinary seasons. In another part, however, our author seems to fix an elevation of 2000 or 2500 feet as the boundary of the productive cultivation of Maize. He also remarks, that a height of 3000 feet, with a southern exposure, will allow the cultivation of Buckwheat (*blé sarrasin*), even after the Winter-Rye has been reaped. It will be curious, and may be instructive, to compare the limit, in point of elevation, that bounds the profitable growth of maize in this part of Switzerland, with the limit, in respect to latitude, that arrests its profitable culture in France. According to A. Young, the line of separation between maize and no maize is first seen on the western side of the kingdom, in going from the Angoumois, and entering Poitou at Vérac, near Ruffec: in crossing Lorraine, it is first met with between Nancy and Luneville: in passing from Alsace to Auvergne, the limit is at Dijon. Hence it appears that the boundary of the maize culture is two degrees and a half farther north on the eastern than on the western side of France; the northern boundary on the west side being about 46½ degrees, and on the east side about 49 degrees. From this fact, connected with the two other facts, that the northern limits of the vine and olive culture in France are parallel to the northern limit of the maize culture, Mr. Young inferred that the eastern districts of France are 2½ degrees of latitude hotter (or, if not hotter, more friendly to vegetation) than the western.
Isola - - -	3900.	Potatoes are fit to be taken up, and Barley to be reaped, here, a month earlier than in the Oberland, where the elevation is only 3400 feet, but where there is a northern exposure. Flax and Hemp succeed here; and in the small sheltered enclosures the Sunflower expands in all its magnificence, while in the meadows the Maple and Ash exhibit every symptom of healthy and luxuriant vegetation. Our author justly remarks, that the ripening of the seeds of trees is a surer criterion of the comparative temperature of different situations and climates, than the maturing of grain or cultivated vegetables; since the perfection of these must often depend on fortuitous circumstances; as on the skill, labour, manure, &c. bestowed on them.
Wiesen - - -	4400.	Near this village, on the declivity of a mountain facing south, Rye sometimes arrives at maturity, provided it is sown immediately after harvest, and Hemp not unfrequently succeeds.

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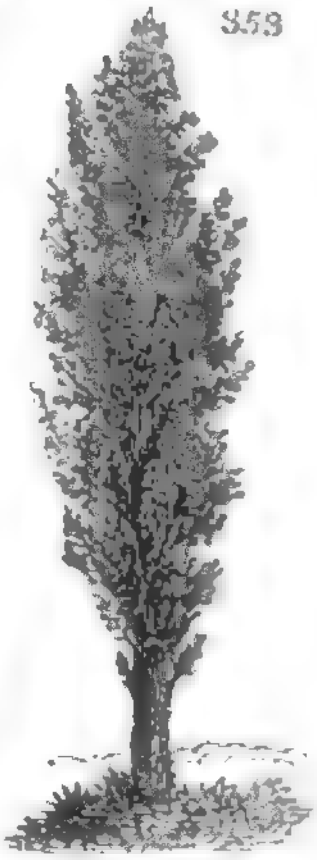

ITALIAN POPLAR.

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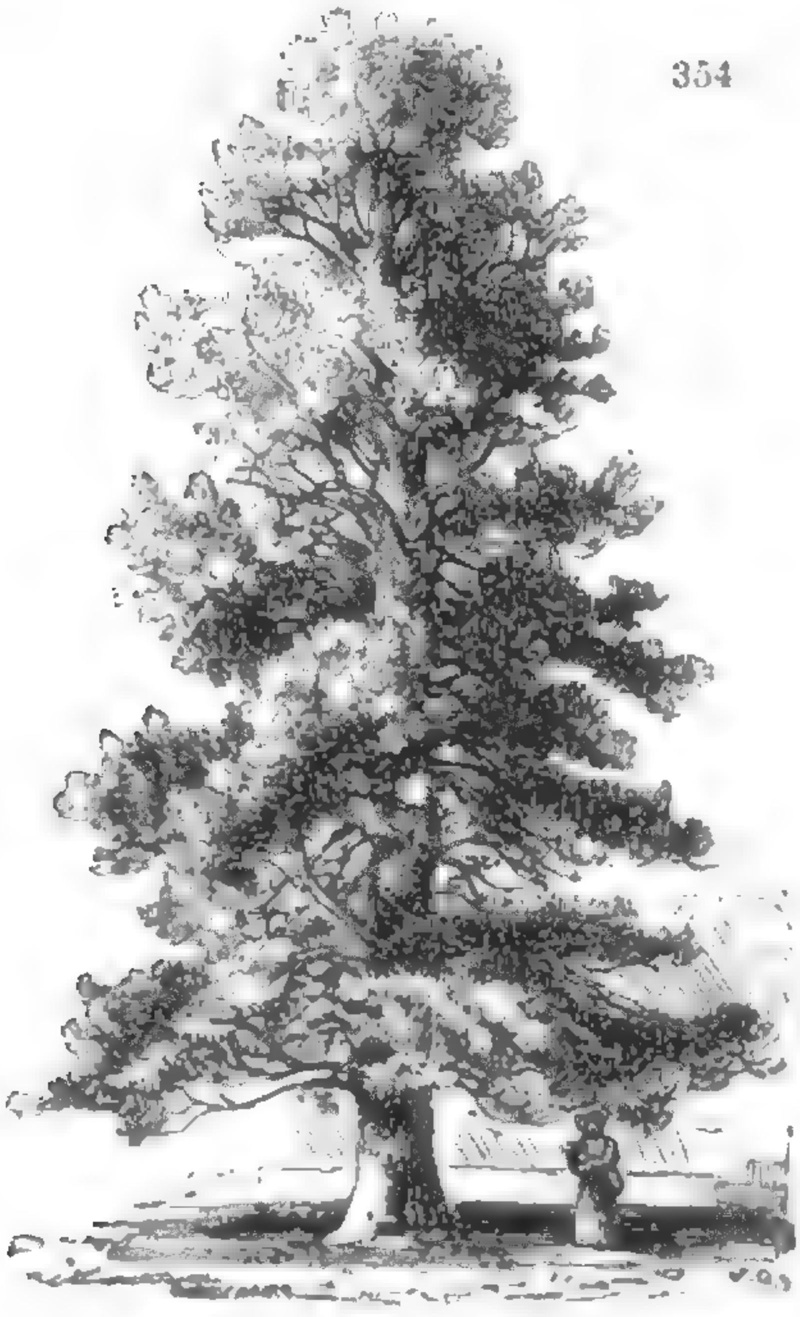

SIBERIAN PINE.

Place.	Elevation.	
Zernetz.	4400.	The inhabitants obtain a crop of Rye; but, in order to succeed, it must be sown in a particular manner; viz., in the spring, along with March Barley: after this is reaped, the rye is mown, and at the next harvest of the barley it also has reached maturity: the rye is occasionally sown with peas instead of barley. Potatoes were not tried till after the scarcity in 1817: they grow well: Hemp also thrives; but Flax, being more delicate and susceptible of cold, is not cultivated at Zernetz.
Casaccia	4600.	On the higher grounds in this neighbourhood the Pinaster or Cluster Pine tree prevails, the Larch being seldom seen, though this and the Siberian Pine constitute the chief part of the forests of the Higher Engadine. At a lower elevation, the Service tree flourishes; and lower still, near Casaccia, the Alder (*Betula Alnus viridis*) covers the side of the mountain. No description of Corn is grown. Our author observed a small patch of Potatoes, which seemed planted solely as an experiment, and did not appear as if they would ever come to perfection.
Selva	4900.	The stalk as well as seed of Flax attains perfection here. Hemp, also, has occasionally succeeded. Between 100 and 150 feet higher up, that is, at an elevation of more than 5000 feet, Barley ripens on the sides of the mountains exposed to the sun. Some Cherry trees grow at Selva, and occasionally ripen their fruit.
Valley of Au	5270.	In the inn garden were Carrots, Cauliflower, Radishes, a kind of Turnip with a carrot root, long, thin, and poor; and the White Cabbage; the last, however, not well hearted. Potatoes are not grown.
Samaden	5300.	Radishes succeed here, as well as Turnips. Potatoes do not. At 100 feet higher, towards Celerina, Barley and Oats ripen. This fact excites the author's surprise; but he does not account for it. He informs us that, in the upper district of Berne, neither one nor other of these grains will grow at a higher situation than 4000 feet; and that in a Bernese valley, with only 3400 feet of elevation, the Turnips sown in spring perish with cold; whereas the Navets d'hiver (a species of Rape?) do not suffer, and yield abundance of oil.
St. Maurice	5500.	In the kitchen-garden grow the Turnip-rooted Cabbage, Carrots, Radishes, Lettuces, and Cabbages, very indifferently hearted: the Pease were in flower.
Scarla	5580.	Notwithstanding this great height, a considerable quantity of Corn is cultivated: barley alone proves very successful; and often the premature frosts of August and September destroy it.
Campfer,	between 5600. and 5700.	Barley and Potatoes sometimes come to perfection in this district. Our author regards this as the limit of their vegetation. Trefoil will not grow higher than at Luts, 5300 feet; and in 1822, there was no barley harvest higher than Celerina.
Sertig	5650.	Near the church of this place a few Raves were growing; but no Potatoes nor Grain. About 200 feet lower, in a sheltered situation, is a forest of Firs. Potatoes and barley often attain maturity here. In consequence of the northerly exposure of the ground near the church, Carrots will not grow, though they thrive in a loftier situation than where potatoes and barley usually ripen. At the same height, and with the same exposure, Melilot (a species of *Trefoil*) flourishes. As this plant is indigenous to Libya, and yet thrives in the cold climate of the Alps, it suggests the idea that it might be practicable to enrich the mountains of Switzerland with the native productions of warmer climes, especially among the Papilionaceous tribes. The plant in question (*Libyan Trefoil* or *Melilot*) growing at the foot of the Glaciers of Scalitta, and the Apricot tree acclimated in the Grindenwald, an elevation of 3180 feet, would seem to justify his suggestions and hopes.
Maloya	5730.	No Grain, Flax, or pot-herbs will grow here.
Splugen	5800.	The elevation of the hospice on this mountain is equal to that of the hospice on the Grimsel in Oberland; but vegetation is here far more varied and luxuriant.
Tehugen	5900.	At this high elevation the only plant cultivated is the Rumex alpinus, a species of Sorrel much grown in these mountain districts, for fattening swine in winter. The roots are prepared by twisting them till the cellular tissue is detached: then they are put, with a small quantity of salt, into a trench, lined and covered with planks, over which stones are placed. About 300 feet lower, the Siberian Pine and Larch present a healthy and vigorous appearance; the seed of the former ripening early in October. This tree, the Pinus Cembra, or Siberian Pine, is one of the most useful in Switzerland, though its growth is so slow, that one of them, about 19 inches in diameter, presented, when cut down, 353 concentric circles. Its usual increase of height is a span in six years. The timber of this tree has a most agreeable perfume, and is much employed for domestic purposes, as well as for wainscoting rooms. When our author visited the château of Tarasp, he was struck, in almost every apartment, with the scent of this wood; and he remarks it as a singular and inexplicable circumstance, that it should have thus exhaled its fragrance for some centuries in undiminished strength, and without the wood itself having suffered any decrease of weight. This timber possesses the additional recommendation that its perfume is an effectual preservative against bugs or moths. The seeds of the Siberian Pine are esteemed a delicacy, and eaten in great quantities during the winter festivals: yet this use of them is considered pernicious to health, and the writer rather recommends applying them to the same purpose as in Siberia, where, according to Pallas, a valuable oil is extracted from them, which is eaten at table, and might be employed in manufacturing soap. This species of pine is unfortunately becoming very scarce, and its cultivation is therefore strongly recommended. In order to secure and expedite its growth, and thus remove the principal objection to its culture, it would be desirable that the seeds were deposited in a compost made of earth and the clippings and leaves of the pinaster or larch, or that this compost be laid round the roots of the young plants. The Larch is also a valuable tree to Switzerland; not only for the purpose of affording manure, but because of its durable timber. This lasts four times longer than common pine timber grown at an equal elevation. If, therefore, the larch be planted where the common pine now grows, it is evident that much of the forest ground might be gained, and applied to pasture. The foliage of the larch, Siberian pine, and several other

Place.	Elevation.	
		trees, is carefully collected by the Swiss peasantry on the mountains, being put into large bags for winter fodder, and then hurled downwards into the valleys below. Near Seldun, the leaves of Nut and Elm are used in a particular manner: being gathered in their prime, they are dried, and ground to powder, and in this state given to swine, mixed with their customary drink in winter; and our author was assured that this diet fattened the animals as well as barleymeal; an assertion that sounds almost incredible to British ears! In the Oberland, the bark of the young Oak, peeled off in the spring, dried and ground, is found to be equally healthy and nourishing for all kinds of cattle. A knowledge of these facts may prove useful, as affording hints for the owners of property in the mountainous districts of Scotland. For the same reason, we relate the following application of Sage (*Salvia glutinosa*) in the Oberland: they spread the stalks of this plant under the beds, or draw a broom, made of them, gently and slowly along the floor: by this means the unpleasant insects that sometimes harbour in such situations are destroyed, as they get fastened to the glutinous surface of the plant.
Berenboden -	- 6925.	Though neither the soil nor exposure were favourable, Larches, a foot and half in diameter, and sixty feet high, grew here; the Siberian Pine and common Fir also flourished; 600 feet higher, some of these trees were seen growing on the top of a rock, probably the loftiest spot at which they will vegetate. Neither the Alpine Pine nor Aquatic Alder were to be found here; only some wild Medlar trees. None of these, with the exception of the larch, appeared degenerated; while on the mountains of Berne, forest trees grow stunted; and perish gradually, in proportion to the height at which they are found.
	7400.	At the highest point of the Pass of Fluella, forest vegetation had ceased. Abundance of Poa alpina, however, was growing; and this is invaluable in a country where, owing to the mountainous nature of the pastures, the crop of fodder is always small and precarious, and every blade of grass has to be collected with the utmost care. It is common to plant those kinds of trees, whose foliage and young branches afford the most nourishing food. In places inaccessible to cattle, the Swiss peasants may be sometimes seen making hay with crampons (hooks to prevent them from falling) on their feet.

2749. *The grass* is cut, not three inches high, in some places three times a year, and in the valleys the fields are as close shaven as a bowling-green, all the inequalities being cut as with a pair of scissors. In Switzerland, as in Norway, for the same reason, the art of making hay seems to be carried to its highest state of perfection. In Iceland, the poor people are often seen on their knees scooping out the grass with a clasp-knife, from between the interstices of the rocks. A little below the highest point of the Pass of Fluella, in a southern aspect, the first Firs, mixed with Juniper plants, were to be seen; whereas, on the northern side, only Azaleas grew, whose rusty-coloured foliage indicated the extreme severity of the climate.

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ALP ROSE.

2750. *The distance* which usually intervenes on the Alps between the growth of trees and the limits of perpetual snow, is 2700 feet; the tree that is found nearest the snow being the Pinus Abies, or Spruce Fir. The Ericineæ and Rhododendron ferrugineum (*fig.* 355.), commonly called the Alp Rose, do not attain a greater height than 7020 feet, and the distance between the snow and the culture of corn is 4200 feet. Plantations on mountains in England seldom succeed at a greater elevation than 1200 feet.

Subsect. 3. *Zoology.*

2751. *The zoology of Switzerland* participates in the singularity of its geographic features, and exhibits several native animals designed by Providence to live only in the wild recesses of mountainous districts. Among these, the Ibex (*Capra Ibex*) (*fig.* 356.) is the most singular, and deserves particular notice. Although not much larger than a domestic goat, its horns are enormous, measuring sometimes two feet and a half long; and are so formidably robust, that the observer wonders how an animal apparently so heavily encumbered, can at the same time be possessed of such surprising activity. Around these horns are cross ridges, or knots, the number of which generally indicates the age of the animal. The Swiss hunters assert that the horns do not reach their full size until the twelfth year. The Ibex dwells only among the highest and most inaccessible precipices of the Alps, particularly those of

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IBEX.

the Tyrol, and appears to delight in frequenting the frightful regions of eternal snow; yet even here they are pursued by their adventurous hunters; and their numbers both in Savoy and Switzerland are much diminishing, while they are almost extinct in the Pyrenees. The chamois, somewhat less wild, yet apparently formed for more activity, inhabits the same mountainous ridges. The descent of the domestic goat from the Ibex has been asserted with too much confidence: it rests, like many other similar questions, on mere supposition.

2752. *The Alpine Marmot* (*Arctomys marmotta*) is another of the most remarkable European quadrupeds. Although thick and ungraceful in appearance, it is endowed with surprising instinct. These animals live among the mountains in families, and form under-ground burrows; when they quit these retreats for procuring food, one of the number, as a guard, ascends an elevated spot near their common habitation. If this sentinel observes an enemy, or any unusual object, he utters a shrill cry, upon which the whole company run to their retreat; or, if too far, instantly seek a hiding-place in an adjacent cleft or hole. Such and so various are the modes by which Almighty Providence enables its weakest creatures to guard against dangers they are otherwise unable to escape from. These marmots pass the whole winter in a deep lethargy, during which time they take no nourishment. The fur is thick, warm, and well known as a valuable article of dress. The wolves of the Alps are both numerous and formidable, and the foxes live undisturbed by the huntsman.

2753. *The ornithology of Switzerland* has received much attention from the naturalists of Geneva; among whom Professor Bonelli is most celebrated. The large vultures of Germany are occasionally seen; but there is another, called the Bearded Vulture, or Vulture of the Alps (*fig.* 357.), more peculiar to this country. It is a noble bird, partaking more of the courage and sanguinary nature of the true falcons, than of the vultures, to which group, from the structure of the bill, it nevertheless more strictly belongs. Its length is above four feet seven inches; the neck is covered with pointed feathers, and under the bill there is a tuft of stiff setaceous feathers, not unlike a brush. Its strength is so great, that it attacks sheep, lambs, and young stags, and even the chamois and ibex fall victims to its rapacity. It builds in such inaccessible precipices that its nest is very rarely seen. A smaller species of the same family, the *Vultur percnopterus*, although more properly an inhabitant of the south, extends its range to Geneva, where it is not uncommon.

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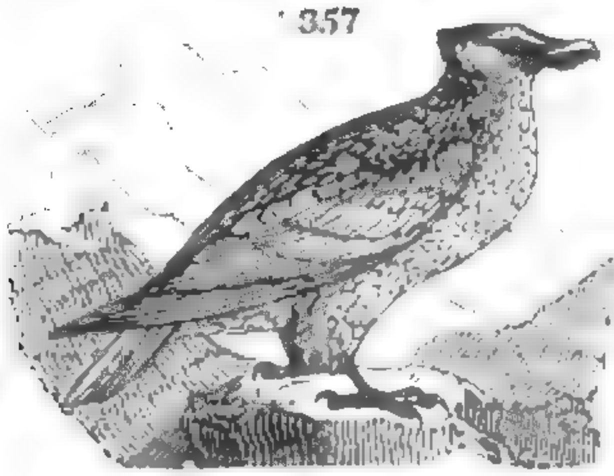

BEARDED VULTURE.

2754. *The insects of Switzerland* are more numerous than the face of the country, so thinly clothed with wood, might lead us to suppose; and many peculiar species of trout and salmon abound in the lakes.

2755. *Of the domestic animals*, there is a good race of draught horses, some being not unfit for the carriage. They are generally compactly made, vigorous, and sober; while, to fit them for enduring the severe cold they are so frequently exposed to, nature clothes the head, limbs, and feet with an unusual quantity of long hair. The cattle are said to be of a large size, but the particular breed has not been mentioned.

2756. *The alpine Spaniel* (*fig.* 358.) is a remarkable variety of the Spanish breed, preserved with much care by the humane monastics on Mount St. Bernard. These beautiful dogs are generally two feet high, and full six feet long; the eyes have a peculiar appearance, attributed by some to the snow, and the high windy regions they inhabit. They are kept for the preservation of those unfortunate travellers who are so often lost in crossing the pathless snows of these dangerous mountains. Two of these dogs are sent out in severe weather, to scour the mountains, one with a warm cloak fastened to its back, the other with a basket holding a cordial and provisions. Their instinct and sagacity is so great, that it is said they will discover persons perishing with cold and fatigue; and if too exhausted to proceed, they will lie close to these unfortunate travellers, to afford them warmth from their own bodies, and assist their resuscitation.

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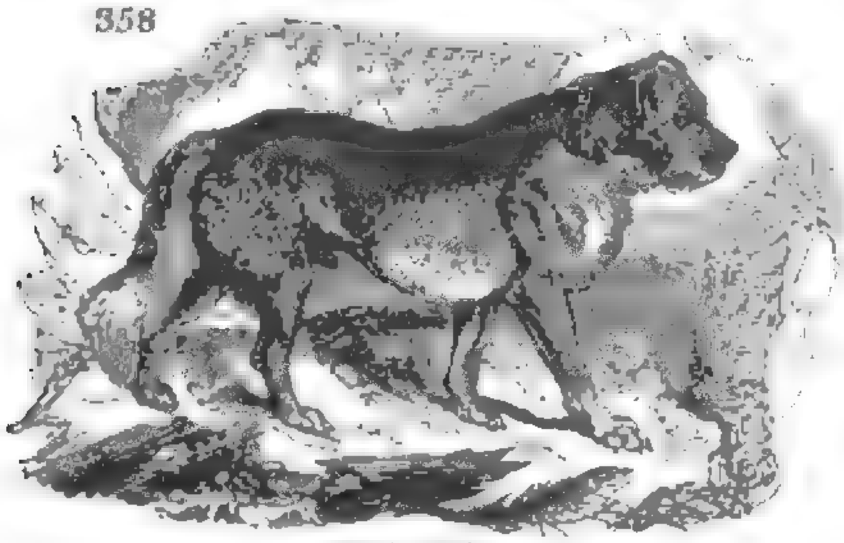

ALPINE SPANIEL.

Sect. III. *Historical Geography.*

2757. *Ancient Helvetia* was celebrated among the Romans for the boldness of its natural features, and the rude valour of its people. The Helvetians were fully made known by the grand expedition undertaken with a view to make themselves masters of Gaul, and the discomfiture of which formed the first military exploit of Cæsar. They were soon afterwards reduced to the state of a conquered people, when, like the rest of their neighbours, they found compensation for the loss of their valour and liberty by a culture and civilisation which had before been unknown to them.

2758. *During the middle ages,* Switzerland shared the fate of the rest of Europe, being over-run by the Huns, Burgundians, Franks, and other barbarous invaders. By them it was formed into a number of feudal possessions, under the supremacy, first of Charlemagne, then of the house of Burgundy, and lastly of the house of Hapsburg, which, having seated itself on the imperial throne, rendered Switzerland an appanage of the German empire. These invasions, and this degree of subjection, were, however, chiefly confined to the plain east of the Aar, on which are situated the cities of Berne and Friburg; while the regions of the Forest Cantons and the higher mountain valleys remained in a state of rude and pastoral independence, and their vassalage to the empire was little more than nominal.

2759. *The era of Swiss independence* had been prepared by the rise of the free cities, Berne, Friburg, and Glarus, which, surrounded by walls, began to defy the power of their liege lord. While the emperors, however, proceeded with discretion, their rights of feudal supremacy were not contested; but the violence of Albert, who endeavoured to make the whole of Switzerland an hereditary domain of his family, brought on a crisis. The most heroic resistance was made by the Forest Cantons, under the impulse received from the daring courage of Tell. A long struggle ensued; but the battle of Morgarten, in which the Austrian forces were completely routed by the mountaineers, secured the independence of Switzerland, though an hundred years elapsed before a full recognition of it could be extorted. A confederacy of thirteen cantons was formed; and the Swiss, engaged in wars among themselves, and with the neighbouring powers, soon acquired a high military reputation. Their infantry, an arm hitherto of little account, established its character as the first in Europe; and the battle of Morat, in which the duke of Burgundy was defeated and slain, spread the terror of their name throughout Europe. When they came into collision, however, with the great powers, and especially France, united and organising its force into regular armies, they could not maintain their ground; and in the battle with Francis I., at Marignano, their military strength was completely broken. Their reputation for valour, however, and the jealousy of powerful neighbours, secured them from any foreign invasion, till that great convulsion which shook the whole of Europe.

2760. *The French revolution* agitated all the monarchical states, to which it was in open and entire opposition; but Switzerland, which had so long presented to Europe a model of the purest forms of liberty, had seemingly nothing to fear. The Directory, however, soon showed that they employed the name of liberty chiefly with a view to the general subjection of Europe. They presented to the cantons a new form of constitution, which was called *unitaire,* and which the latter were required to adopt. As the Swiss clung to their old and venerated forms of freedom, an army was led into their territory, which, after a brave and even enthusiastic resistance on the part of the Forest Cantons, succeeded in compelling the whole to submit to French dictation. Switzerland became a new theatre of war between the French, Austrians, and Russians; but the first were finally triumphant. After the accession of Napoleon, the cantons made an attempt to regain their independence, which was repressed, though with some popular concessions; but the country was held as a vassal state; and Geneva and the Valais were incorporated with France. On the downfall of Napoleon's power, Switzerland again became an independent state, though the new division into twenty-two cantons has been retained, and the distinction of sovereign and subject states, certainly an odious feature of the old system, has not been resumed.

SECT. IV. *Political Geography.*

2761. *That free constitution,* which formed the boast of the cantons, was, in Berne, Friburg, and some others, modified by a large and somewhat severe mixture of aristocracy. Admission to public offices was limited to a few privileged families; and the sway over the Pays de Vaud, the Grisons, and other subject states, was somewhat rigorous. This distinction of sovereign and subject territories has now been happily obliterated, and even the interior predominance of aristocratic principles is much broken up; but each of the states has a particular constitution of its own, though all are united by the common tie of the federal government.

2762. *The Helvetic diet* consists of deputies from the different cantons, which meet once a year. Extraordinary meetings may also be called, on the requisition of any five cantons. This assembly takes cognisance of every thing that concerns the foreign relations and the general defence of the country. The diet has been much occupied by the unwelcome remonstrances made by the great sovereigns respecting the liberties taken by the press in regard to the conduct of foreign powers, and the refuge allowed to individuals who have become obnoxious through their support of liberal opinions. On these points, the diet, conscious of their own inferior power, have been generally obliged to yield.

2763. *The army of the Helvetic confederacy* is formed out of contingents which each canton, in proportion to its population, is obliged to furnish. From these are made out an entire amount of 33,000 men, which, if judiciously posted in the strong approaches to the country, might, it is supposed, secure them against almost any attack. But this, though seconded by the *levée en masse* of a brave peasantry, would not probably avail Switzerland in an unsupported contest with any of the great powers. In consequence, also, of the modern principles of war, which require the equal support of every point of an immense line of operations, it is supposed that a country holding this limitary position with regard to so many of the great powers cannot escape the occupation of its territory by one or other of them. A remarkable peculiarity in the military system of Switzerland is also the employment of its citizens in the service of foreign powers as a stipendiary force. This system has long prevailed, and is regularly authorised by the government. The number in 1816 was estimated at 30,000. The singular consequence follows, that these subjects of the most democratic state in Europe, form, in many cases, the main instrument in supporting the arbitrary power of foreign princes.

Sect. V. *Productive Industry.*

2764. *In the economy of Switzerland,* poverty must of necessity be a prominent feature. Many portions of its surface are absolutely inaccessible; a considerable portion of the remainder is incapable of yielding any thing that can conduce to the support of man; while even its most favoured spots are far inferior in productiveness to the fine plains of the neighbouring regions. Human industry, however, is employed with laudable zeal in extracting from an ungrateful soil the utmost possible amount of produce.

2765. *Agriculture* here is necessarily and strictly limited by nature. Wheat can be produced only in the finest plains of the low country; maize ceases to grow at the height of 2500 feet; potatoes, barley, and rye can only in favourable exposures be raised so high as 4000, though there are a few instances of their reaching above 5000 feet. The country is thus in a great measure dependent on its neighbours for the supply of grain; and its chief wealth consists in its pastures. The meadows are mown with peculiar care and diligence. In stormy nights, amid the rugged heights of the Alps, herdsmen watch in the châlets or rude log-houses, and call out continually to the cattle, otherwise they would take fright, and fall down the precipices. The produce of the dairy has been carried to great perfection in many districts, particularly those of Glarus, the Upper Engadine, and the plain of Friburg; and their Gruyère and other cheeses approach to the excellence of those of Lombardy. The Swiss cows give more milk than the Italian; nine cows producing daily a cheese of twenty-five pounds' weight. The people of Bergamo are celebrated for their management of sheep fed on the fine pastures of Mount Splugen. Generally, in these upper districts, the owner pastures his own little field; and a village in many cases holds one in common. But the increased population, and the consequent subdivision of property, has reduced them in many instances to severe distress. Wine, sometimes of considerable value, is made on the lower declivities of the hills, particularly in the Pays de Vaud, and there is an ample growth of timber, chiefly of fir and pine.

2766. *Manufactures in Switzerland* were long confined to rude products for domestic supply; but about the end of the last century, the cotton manufacture, in some even of its finer forms, was introduced into St. Gall and several of the southern cantons, and the looms, dispersed through the hills and upper valleys, enabled the peasantry to live in plenty, and caused an increase of population. In St. Gall alone, there are said to have been at one time from 30,000 to 40,000 females employed in embroidering muslin. Since the peace, however, the general and remarkable decline in the demand for manufactured goods has thrown many out of employment, reduced the wages of others, and produced great individual distress. Geneva has a long established and still extensive manufacture of watches. The number of workmen, indeed, which in 1782 was 5000, is now reckoned at 2027; but the value of watches exported is 3,000,000 francs, while in 1802 it was only 2,375,000. The improvement of skill and machinery seems to have increased the produce, while the number of workmen has diminished. There is also an extensive manufacture of this commodity in Locle, and other districts of the principality of Neufchâtel.

2767. *The commerce of Switzerland,* from its inland situation, is of course very limited, and consists chiefly in the exchange of its cattle for corn, colonial produce, and fine manufactures. Its central position occasions some inland transit trade between France, Germany, and Italy. The great road over the Simplon, though constructed by Napoleon for military purposes, produces very important commercial advantages. A wonderful combination of industry and boldness has been displayed in carrying roads across the most rugged and precipitous Alpine barriers. Such are the Devil's Bridge (*fig.* 359.), thrown over a fearful chasm, through which the Reuss thunders; the bridge over the Tesino; the road cut along the precipitous side of the Gemmi, about 1600 feet high. Across the great and rapid rivers several large wooden bridges have been constructed; but the largest, that at Schaffhausen, was destroyed by the French. The roads are generally good, especially in the canton of Berne, where they are carried to the tops of the highest mountains. Canals are scarcely known, or indeed compatible with the structure of the country. The one began near a century ago, to connect the lakes of Neufchâtel and Geneva, remains unfinished. The two cantons of Uri and Tesino completed in 1830 a very fine road over the St. Gothard, the passage of which was before only practicable for mules and horses. In traversing the Schellenen, it has opened a winding passage through enormous masses of granite, so as nowhere to produce any laborious ascent. A new bridge is substituted for the famous Devil's Bridge, and the gallery of the Urnerloch is widened. The emperor of Austria has opened a superb route over the Splugen, with a view of facilitating the communication between Lombardy and the Tyrol, from which Switzerland derives great advantages.

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DEVIL'S BRIDGE.

SECT. VI. *Civil and Social State.*

2768. *The population of Switzerland* has not been ascertained by any very accurate census. The number upon which the contingent of the cantons has been calculated is 1,687,000; but this is now undoubtedly too small. The actual amount in 1827 was reckoned by Bernoulli at 1,978,000; but, by a careful estimate, in the learned Prussian work entitled *Hertha*, it is raised to 2,013,100.

2769. *As to national character*, the Swiss enjoy the reputation of being a plain, honest, brave, and simple people, among whom linger the last remnants of antique and primitive manners. Their fond attachment to their native country is conspicuous, even amid the necessity which compels them to abandon it, and to enter the service of the neighbouring powers. It is observed that no sooner is the *Ranz des Vaches*, a simple mountain air, played in their hearing, than the hardy soldiers melt into tears. An ardent love of liberty, ever since the grand epoch of their liberation, has distinguished the Swiss people. Now, indeed, the influx of strangers, and the general mixture of nations, is said to have broken down much of what was antique and peculiar in Swiss manners; and travellers have complained that every mode of turning to account their temporary passage is as well understood as in the most frequented routes of France and Italy. The manufacturing districts also have undergone a great change; but in the higher pastoral valleys there may still be traced much of the original Swiss simplicity.

2770. *The religion of Switzerland* is divided between the protestant and the catholic. Schweitz, Uri, Unterwalden, Lucerne, Zug, Friburg, Soleure, Valais, and Tesino are catholic: St. Gall, Appenzell, Aargau, and Grisons are mixed. The others may be ranked as protestant; though even in Geneva there are 15,000 catholics. The protestant churches were at first strictly Calvinistic, both as to doctrine and discipline; but the Genevan church has in a great measure renounced the tenets of this school of theology, and those who continue to profess them are even exposed to some degree of persecution. The presbyterian form of church government, however, still prevails throughout protestant Switzerland. The catholic religion exhibits this peculiar feature, that, instead of being, as usual, combined with high monarchical principles, it is established among the most purely democratic of the Swiss republics. The protestant cantons, however, are observed to be decidedly the most flourishing and industrious.

2771. *Learning*, though not very generally diffused throughout Switzerland, has been cultivated with great ardour at Geneva and Zurich, both of which have a character more decidedly intellectual than most European cities. The names of Haller, Lavater, Rousseau, Gessner, Zimmermann, and Sismondi throw lustre on Swiss literature. The great printing and bookselling trade which Geneva enjoyed while the French press laboured under severe restrictions, has been diminished. Elementary knowledge is general throughout the protestant population; and the systems of education established by Pestalozzi at Yverdun, and Fellenberg at Hofwyl, have drawn general attention. The habits and general forms of life are substantially German, modified, in the western cantons, and especially in Geneva, by a somewhat intimate communication with France.

Sect. VII. *Local Geography.*

2772. *The following table* exhibits the extent of the different cantons, and their population, according to an estimate formed in 1827: —

	Square Leagues.	Contingent.	Population.		Square Leagues.	Contingent.	Population.
Geneva - -	8	880	51,940	Zurich - -	90	3700	221,370
Vaud - - -	140	2964	175,350	Friburg - -	70	1240	83,700
Valais - -	184	1280	71,300	Soleure - - -	26	904	52,030
Tesino - -	106	1804	101,000	Basle - - -	24	918	54,380
Berne - - -	350	5824	357,710	Schaffhausen -	16	466	32,140
Lucerne - -	72	1734	118,500	Appenzell - -	20	972	54,300
Uri - -	48	236	14,240	St. Gall - -	80	2630	148,250
Schweitz - -	44	602	36,170	Grisons - -	280	1600	87,900
Unterwalden - -	24	382	25,220	Aargau - -	72	2410	151,510
Glarus - -	42	482	27,660	Thurgau - -	32	1520	80,730
Zug - -	11	250	14,800	Neufchâtel - -	30	960	51,880

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GENEVA.

2773. *Geneva* (*fig.* 360.), though a small canton, is the most interesting of any, from the intellectual culture of its citizens, and the moral influence which they have exercised over Europe. It is situated at the western extremity of the lake bearing its name, where the Rhone, which has entered as a turbulent mountain torrent, issues a broad and pellucid stream. Geneva is not a handsome or well-built town: the lower streets are shabby, dirty, and ill paved; and the houses, four or or five stories high, are overshadowed by awkward projections supported by wooden props. In the upper quarters there are some ranges of good houses; but the Genevans bestow their chief study on their country residences, which, commanding the most magnificent views of the lake and the Alps, are their constant abode, unless during the depth of winter. The government of Geneva is less democratic than formerly, the elections being no longer direct, but taking place by two stages: the aristocratic party also maintain their point of keeping up a small garrison, and shutting the gates of the city nightly, though the last is attended with considerable inconvenience. Geneva is a sort of literary capital, not only of Switzerland, but of this part of Europe. Both sciences and arts are cultivated with peculiar ardour. Even the ladies attend lectures, read, and draw, more than in any other city of Europe. The names of Calvin, De Luc, Saussure, Bonnet, Tissot, and other eminent men, adorn its literary annals.

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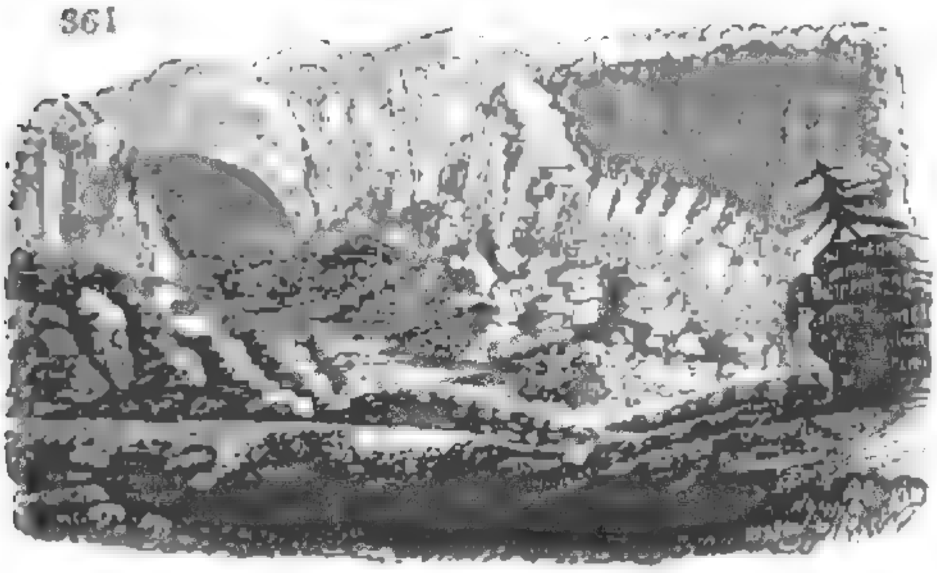

SOURCE OF THE AVEYRON.

2774. *The approaches to Mont Blanc*, through the districts of Chablais and the Faucigny, belong politically to Savoy; but as they are usually made from the side of Geneva, the idea of Switzerland is invariably excited by this mountain and its mighty appendages. A journey of eighteen leagues leads the traveller to the Vale of Chamouni, one of the most remarkable spots in Europe, and where the fullest display is made of all the features of savage and Alpine grandeur. This valley was only discovered in 1741, by Pococke and Windham, but has since been visited by numerous admirers of the sublime in nature. It forms a long and narrow dell, through which the Aveyron (*fig.* 361.) dashes its impetuous waves, and above which rises, like a stupendous wall, Mont Blanc, with all its train of attendant mountains. Numberless glaciers, which have descended in successive ages, hang from its sides in the most varied and irregular forms. The valley being only 3000 feet above the sea, Mont Blanc towers more than 12,000 feet perpendicularly above it, and with its attendants of Dôme du Gouté, Col de Géant, and La Côte, shoots numberless pinnacles or needles into the region of clouds, which alternately hide and disclose this awful range. By these gigantic objects Chamouni is as it were enclosed from the rest of the world. The first object of the traveller is to ascend Montanvert, where he enjoys a comprehensive view of these extraordinary scenes, and is on the borders of the "sea of ice," which spreads from this point for many leagues, with its surface broken like the waves of a stormy ocean. The bold traveller, exerting alike hands and feet, traverses these rugged masses, and in so doing, enjoys a variety of the most striking scenery. To behold, however, Mont Blanc in all its glory, it is necessary, by a rugged and even somewhat perilous route, to ascend the Breven; from which this loftiest of the European summits appears in full view, and its snows shine with a lustre which the eye can scarcely endure. The neighbouring summits of the Col de Balme and the Buet afford also fine views of Mont Blanc. For a few daring adventurers, a mightier task remains, that of scaling the sides of this king of mountains, and reaching its long unapproached pinnacle. It was not till about 1760 that Saussure, having his attention strongly directed towards Alpine phenomena, formed the daring conception of passing those walls of ice, those immense glaciers and unfathomable snows, by which it was guarded. He offered a reward to those who should trace before him this arduous path, or should even make an attempt, though abortive. Repeated efforts were made, but in vain, till 1786, when Dr. Paccard and James Balmat, having left Chamouni on the morning of the 7th of August, and spent the night on the mountain of La Côte, happily reached the summit at half past six on the following evening. At eight on the ensuing morning they reached Chamouni, with their faces and eyes swelled, and overwhelmed with fatigue. Saussure then determined, under the guidance of Balmat, to undertake the expedition in person. On the 1st of August, 1787, he formed a caravan of eighteen, furnished with provisions, poles, ropes, ladders, and scientific instruments (*fig.* 362.). They left Chamouni at seven in the morning, spent their first night on the mountain of La Côte, and the second on the Dôme du Gouté, 11,970 feet above the level of the sea. Next day the declivity was found so steep, and the snow so hard, that they were obliged to cut steps in it with hatchets; but at eleven they had reached the summit, in the view of all the inhabitants of Chamouni, among whom Madame Saussure and her two sisters were observing them through a telescope; at which moment all the bells of the village were rung. The travellers near this highest point felt a quickening of the pulse, a burning thirst, extreme debility, and difficulty of respiration. At every ten or twelve steps they were obliged to pause for breath, and spent two hours in going over the last 150 paces. These unpleasant symptoms have always been experienced by those who encountered the very rarefied air of the higher atmosphere. The next ascent was made by Colonel Beaufoy, and the most recent is that by Mr. Auldjo, who has published an interesting narrative of his route.

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ASCENT OF MONT BLANC.

2775. *The canton of Vaud* formed originally part of the duchy of Savoy, from which, about the time of the Reformation, it was conquered by Berne; but that state, imbued with aristocratic ideas, communicated to its new acquisition few of the privileges which it had acquired for itself. It ruled the Pays de Vaud as a subject state, and with some degree of severity. In the shock occasioned by the French invasion, this territory obtained its emancipation, and exists now as a separate and independent canton. It occupies the whole northern border of the Lake of Geneva, which does not, like the southern, consist of Alps piled on Alps, but of gentle hills and smiling valleys, gradually sloping upward to the moderate elevation of the Jura. The vines of this region are considered equal to any in Europe; and the wine made from them has a very considerable reputation. Lausanne, the capital, enjoys perhaps the finest site of any city in the world. Placed in the very centre of the Leman Lake, it commands a full view over that noble expanse, and those ranges of mightiest Alps, on the opposite shore, which are terminated by the awful and snow-clad pinnacles of Mont Blanc. These attractions, heightened by those derived from the adventures of Rousseau, and his celebrated romance, have drawn a multitude of visiters and residents from all parts of Europe, who seek there an agreeable and beautiful retirement. The town, however, is neither large nor well built, though it has a fine Gothic cathedral. The house of Gibbon, and the cabinet where he wrote the last lines of his history, are visited by travellers. Vevay, farther up the lake, is a somewhat thriving little village, almost equal in beauty to Lausanne, and commanding singularly fine views towards the head of the lake. The house where Ludlow resided and died, the Castle of Chillon, and the Clarens of Rousseau, give to this place a classic character.

2776. *The canton of the Valais* extends from the head of the Lake of Geneva along the upper valley of the Rhone, which almost wholly composes it. The Valais is one of the most singular, picturesque, and romantic regions that are to be found on the globe. It consists of a deep valley, 100 miles long, and from two to twelve in breadth, shut in on both sides by the most enormous mountains that are to be found in Europe; on the south by the Italian chain, St. Bernard (*fig.* 363.), Monte Rosa, the Simplon, and St. Gothard; on the north by the Schreckhorn, the Wetterhorn, the Grimsel, the Gemmi. The lower districts, extending along the Rhone, are sheltered from every wind, and sometimes exposed to a scorching heat, like that of the centre of Africa. Their plains produce grain, rich pastures, and even luxuriant vines; but these gifts of nature are not improved with the same diligence as in the neighbouring cantons of Berne and Vaud. Till lately there was no road by which a carriage or waggon could pass, except one from the west, which, at St. Maurice is so straitened, as to leave barely room for the river; and the gate of the Roman bridge there might shut in the whole Valais; but Napoleon formed a magnificent route by Meillerie, to lead to his great military line over the Simplon, which will favour indeed the commerce of the Valais, but will expose it to become the theatre of war. This territory is exposed above all others in Switzerland to the goître, that dreadful and disgusting malady, which at once deforms the body and destroys the faculties of the mind. The Valais is quite a rural district; yet its little capital, Sion, affords a market where its peasantry can exchange their cattle and the produce of their fields. This place, the Sedunum of the Romans, is picturesque and antique; its castle is perched on a pyramidal rock; and its old-fashioned walls, towers, and gates, suggest the idea of a fortified monastery. The baths of Leuk are situated 5000 feet up the declivity of the Gemmi. They are considered of great virtue in cutaneous disorders, and are therefore frequented, though little provision has been made for the comfort and accommodation of the visiters; nor do they find any of the usual amusements of watering-places; but they may enjoy the extraordinary grandeur of the views from the neighbouring summits, extending over the most elevated of the Alpine ranges.

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CONVENT OF ST. BERNARD.

2777. *The canton of Berne,* separated from the Valais by the great chain of the central *horns* or peaks, though shorn of its subject territories, holds still somewhat the most prominent place among the Swiss republics. Berne is divided into two parts, of which the northern, comprising a great part of the plain of Switzerland, is well cultivated by a laborious peasantry. The southern consists of the Oberland, or the declivity of the mountain range, a tract entirely employed in pasturage, where 300*l.* to 500*l.* is esteemed a fortune, and tiled dwellings and glass windows give to their owners a reputation of wealth. The pressure, however, of a redundant population has lately reduced them to severe distress.

2778. *The city of Berne* (*fig.* 364.), generally considered the capital of Switzerland, is situated in the centre of the plain, in a commanding position above the Aar, which nearly encircles it on all sides. Fine and ancient woods reach almost to the gates of the city, bearing a noble and even majestic aspect. It suggests the idea of a Roman town; yet its handsomest houses and most sumptuous edifices date all since 1760. The Gothic cathedral of the fifteenth century, the church of St. Esprit, the mint, and the hospital, are among its principal public buildings; while the private mansions are handsome, and solid rather than showy. But the magnificence of Berne is mainly derived from its wide and lofty terraces, commanding the most superb views over

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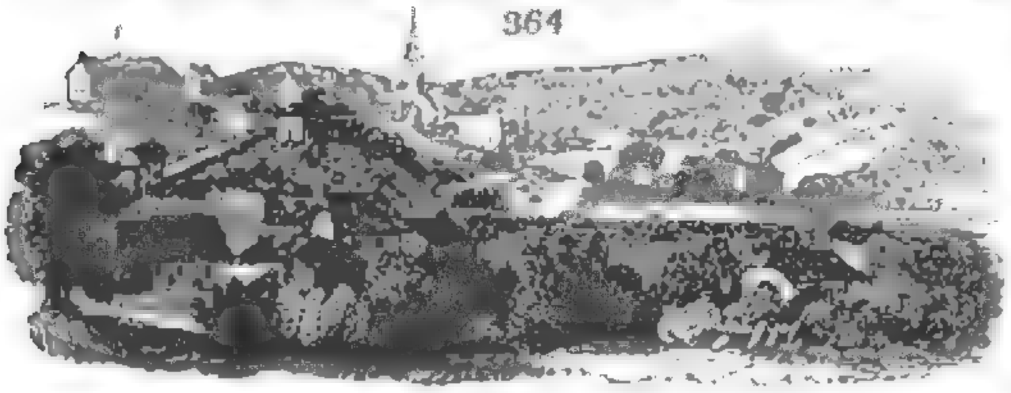

BERNE.

the plain beneath, and the entire range of the Alps; from the spacious fountains by which its streets are supplied and refreshed, and from the fine avenues of trees which penetrate through the city. The constitution of Berne is the most aristocratic in Switzerland; and notwithstanding the diminished power of the state, this spirit is still in full operation. The scramble and contest for office, even among the nearest relations, is said in this small sphere to be as eager as in the greatest capitals. Berne is not, nor ever was, a literary town; yet it has a public library, to which some valuable collections are attached.

2779. *The region of the glaciers*, extending along the southern border of the canton, is, next to Mont Blanc, that where Alpine scenery is displayed on the grandest scale, and in the most awful and picturesque forms: the approach is by Thun, situated on the lake of the same name. This little city, more ancient than Berne, and still showing its strong castle seated on a rock, is interesting only by its vicinity to these sublime phenomena of nature, which the valleys of Lauterbrunn and Grindelwald (*fig.* 365.) afford the most favourable opportunity of viewing. These valleys contain rich pastures, and a considerable population; good roads, carried through every part of the canton of Berne, extend a considerable way up the mountains. They thus afford advantageous spots for viewing those vast scenes of ice, snow, and desolation, which are in their immediate vicinity. Here woods and meadows border close on immense glaciers, which, descending from the upper regions, cover an extent of about 1200 square miles of territory. From various points are descried those gigantic peaks which overlook this part of Switzerland, the Jungfrauhorn or Virgin Peak, the two Eighers, the Wetterhorn, the Schreckhorn, the Finster-Aar-horn, and many others almost as lofty. Occasionally only, amid the clouds and mists which float continually around them, these mountains show the grandeur of their forms, and the pure white of the eternal snows with which they are covered. The scene is rendered more awful by the sound of the avalanche, which, in the higher Alps, is repeated at short intervals, like peals of thunder. Numerous and lofty cascades dash continually down these immense steeps; of which the most celebrated is the Staubbach (*fig.* 366.), formed by the Luschine, a tributary of the Aar: the stream falls from the height of 800 feet, but as the mass of water is not very great, it spreads out in its descent into a species of white vapour, which, when illumined by the rising sun, produces very brilliant effects. Other falls in the interior of the mountains are represented as equal or superior to the Staubbach. Two passages from this canton lead into the Valais; that over the Gemmi is one of the most remarkable of the Alpine passes. A great part of the road is cut in the face of a perpendicular rock 1600 feet high, and so smooth, that from below no vestige of a track can be discovered. Strangers, who are carried in a litter, must have their eyes bandaged, to prevent their growing giddy by looking down upon so fearful and dizzy a height. The passage of the Grimsel is not so perpendicular, but it is longer and more generally rugged, through a wondrous succession of peaks and glaciers. Near the summit is erected an *hospice*, where a man is stationed, with an allowance for receiving and entertaining travellers.

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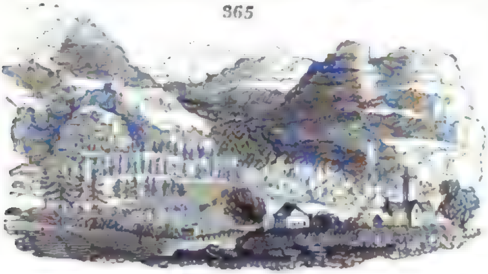

GLACIER OF GRINDELWALD.

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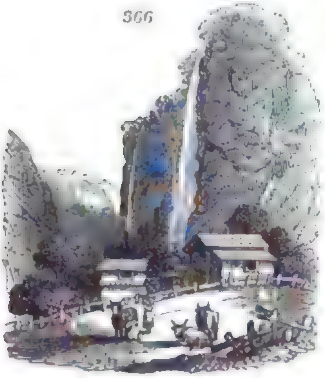

FALL OF STAUBBACH.

2780. *The Four Forest Cantons*, Schweitz, Uri, Unterwalden, and Lucerne, the cradle of Swiss liberty, form a territory situated to the east of Berne, and south of the Valais. Here Nature begins to lay aside that awful and rugged character which she wears in the southern chains, and in those enclosing the Rhone. The mountains are not so continuous, or so lofty; their upper regions are not covered with eternal snow, nor do fields of ice, descending from their sides, cover the surrounding plains. The two chief heights, those of Pilate and the Righi, rise solitary, like columns, to the height of 6000 or 7000 feet, above ranges which do not exceed half that elevation. This country is crossed in all directions by the Lake of Lucerne, or of the Four Forest Cantons, of great extent, and shooting branches in every direction, which form each as it were a separate lake. Although the objects are not so grand as in the valleys of Chamouni or of the Rhone, yet the great variety of aspects, the interchange of rural and Alpine scenery, the numerous villages and farm-houses perched on the cliffs, render the banks of this lake, in the opinion of many, the most pleasing portion of Swiss landscape. Some of the mountains, from their solitary elevation, and the crumbling materials of which they are composed, inspire a constant apprehension of their breaking down; a dread which was realised about twelve years ago, by the fall of the Rossberg, which covered eight or ten leagues of territory with a chaos of ruins, and buried several villages, with 457 of the inhabitants, who were unable to effect their escape. All this territory is marked with spots memorable in the annals of history and patriotism; the scene of the exploits of Tell, and of the glorious resistance made by the little cantons to the overwhelming power of the house of Austria. Among the mountains, the most lofty and remarkable is Mount Pilate, about 7000 feet high, rising in seven peaks around a little lake, in which, according to the fanciful tradition of the country, Pontius Pilate drowned himself. It contains calcareous substances, with numerous shells and petrifactions. The Righi, however, though little more than 5000 feet high, is the summit most frequently ascended by travellers. From its southern position, between the lakes of Lucerne and Zug, it forms a sort of outpost of the great body of the Alps, whence the entire middle chain of snowy peaks is seen from end to end, and behind them many summits of the Italian range, though those of Mont Blanc and Monte Rosa are hidden by the enormous masses in front of them. To the south appear the plains and lower vales of Switzerland, stretching away to the frontiers of France and Italy; and the view is so extensive, that from a cottage recently erected on this summit, the sun may be seen every day to rise and set over all Switzerland.

2781. *The cities in this pastoral region* do not attain to any important magnitude. Schweitz, the cradle of the Helvetic confederacy, to which it has given its name, is little more than a handsome village, situated amid the finest mountain pastoral scenery, rich meadows, and verdant knolls, embosomed amid rugged cliffs and Alpine peaks, tinkling with the sound of innumerable cow-bells, and echoing with the tune of the Ranz des Vaches. Lucerne, on the west, is considerably larger, and may be considered the capital of the Forest Cantons. It is nobly situated on an arm of the lake enclosed by Mount Pilate, and others of the loftiest heights in this part of Switzerland. The city itself is adorned by some ancient and venerable structures, and its different parts, separated by branches of the lake, are connected by wooden bridges of remarkable length and peculiar structure. The cabinets of Lucerne contain some interesting Swiss antiquities; but the object which especially attracts the attention of strangers, is the great model of the Four Cantons and the bordering tracts of Switzerland, which the late General Pfeffer spent a laborious life in framing. On a scale of fifteen inches to the square league, and of ten inches to the height of 9700 feet, he has modelled in relief all the objects of nature and art, every valley, every mountain and mountain path, every village, steeple, and even every cottage. The traveller here sees beneath his eye, in a narrow compass, all those mysteries of the Alps which it has cost him so much labour personally to trace.

2782. *The canton of Unterwalden* is likewise entirely mountainous and pastoral, enclosed by the high chain of the Surren Alps which surround it with an almost inaccessible rampart. They form a decided contrast to the soft pastoral valleys of the interior, particularly that which surrounds the little lake of Sarnen. Here all that is gloomy and rugged in Alpine scenery, its peaks of naked rock, its glaciers, its snowy mountains, and roaring torrents, disappear, and are succeeded by rounded hills of the most graceful form, covered with woods and the freshest verdure, and interspersed with rural abodes, which soften without impairing that character of stillness and solitude which reigns through every part of this romantic valley. Sarnen is the capital of what is called the Obwald; but Stantz, in the Nedwald, is the chief city of the canton. Uri, which only touches the lake at the south-east point by its little capital of Altorf, composes the fourth democratic canton. It extends to the south over a wild and awful range of the loftiest Alps, including that mass named Mont St. Gothard, which was supposed, till within this half century, to contain the most elevated peaks in Europe.

2783. *Zug is a little lake,* with an encircling canton, the smallest and least populous in Switzerland. The lake, whose waters are the deepest of any except Constance, is surrounded by pleasing pastoral hills, of but moderate elevation; on the south, however, the colossal heights of Righi and Pilate are reflected in its waters, and the dim forms of the glaciers appear in the distance. The town is seated on a hill so immediately above the lake, that in 1435, a whole street fell in, with its walls and towers, and sixty persons perished. The place is ancient, and has produced many warriors, who distinguished themselves both in the native and foreign service.

2784. *Zurich,* to the south-east of Zug, and approaching to the German border, is one of the most interesting of all the cantons, by its intelligence, industry, and prosperity. The long lake on which it is situated partakes not of the grand and awful character which marks the scenery of the High Alps. Its hills, green to the summit, are covered with villages, culture, and habitations; nature appears only under a soft and pleasing aspect; though still, to the south, a dim view is obtained of the snowy ranges of the High Alps. The city of Zurich is situated on the Limmat, where it issues out of the northern extremity of the lake. Zurich is the literary capital of German Switzerland. Even in the middle ages it was called "the learned;" and the exertions of Zuinglius at that era to restore the lost rights of religion, reason, and humanity, threw a lustre on its name. In modern times its fame has been chiefly poetical and imaginative; and the works of Bodmer, Gessner, Zimmermann, and Lavater have excited interest throughout Europe. Painting and music have also been cultivated with greater ardour and success than in any other part of Switzerland. Zurich possesses a library of 40,000 volumes, with some manuscripts of importance: it has also valuable collections in the different branches of natural history.

2785. *The three cantons of Glarus, St. Gall, and Appenzell,* which extend along the eastern frontier towards Germany, present a somewhat different aspect from those of the west and centre. They are covered to a great extent with mountain ranges, which, rising to the height of 7000 or 8000 feet, do not reach the regions of perpetual snow, or pour down avalanches or glaciers into the plains beneath; but rise in varied shapes, dark, rugged, and awful. One of the leading features is the Lake of Wallenstadt, twelve miles long and three broad, where the naked cliffs rise in picturesque grandeur to an amazing height, and dip so perpendicularly into the water, as to leave very few points at which a boat can approach. These mountain walls elsewhere enclose luxuriant valleys, which open as they proceed north toward the Lake of Constance; and a great part of St. Gall and Appenzell presents a level surface. Into these cantons the cotton manufacture has been introduced on a great scale, and has converted the hardy huntsmen and husbandmen of the Alps into weavers and embroiderers. For some time a great increase of wealth was thus produced. On the return of peace, however, the stagnation of demand, and the formidable rivalry of Britain, threw a great number out of employment. When M. Simond passed through in 1817, he witnessed extreme distress; beggars swarmed every where, and many were suspected to have died of famine, or at least of deficient nourishment. A considerable revival, however, is said to have recently taken place. At the same time, the original simplicity and honesty of the Swiss is supposed to have been greatly impaired by this change of habit.

2786. *Among the small capitals of those three cantons,* St. Gall is the most important and the most ancient. During the ninth and tenth centuries, it was considered as the greatest seat of learning in Europe. This ray of light emanated, it is said, from Icolmkill in Scotland, of which the patron saint of this place was a native. Many of the manuscripts used in the early editions of the classics were drawn from the archives of its monastery. Its abbots were princes of the German empire, through whom and its nobles the city was involved in war and politics; and, being eclipsed by more modern schools, lost its fame for learning. The monastery was suppressed in 1798; and the canton is divided between Catholics and Protestants, the former being 99,000, and the latter 58,000. Appenzell has adopted the manufacturing system in its fullest extent; and on its limited territory maintains the most dense population of any part of Switzerland. Though removed beyond the domain of the Higher Alps, it has several steep summits, which command extensive views over the neighbouring territories of Tyrol and Swabia. The population of Appenzell is divided into two quite distinct portions: the rural, which is almost all catholic; the manufacturing and commercial, almost wholly protestant. Glarus is situated among the most rugged and rocky tracts of this part of Switzerland. The town lies deep in a valley, overhung by ramparts of rock so elevated, that the sun in winter is seen only for four hours of the day. This buried situation, narrow crooked streets, its diminutive and antiquated houses, with low entrances, heavy doors, and walls painted in fresco, the silence and stillness which prevails, unite in suggesting the idea of a city dug out of the earth, like Pompeii or Herculaneum. Near the place is a mass of rocky fragments, which fell in 1593 from the top of the Glarnisk, a height of about 8000 feet.

2787. *Thurgovia,* or *Thurgau,* which stands on the Lake of Constance, and on the Swabian border, is a tract in which Switzerland loses almost entirely its peculiar character. Only to the south, on the side of the Tockenburg, rise hills of 2000 or 3000 feet high, covered with rich meadows and Alpine pastures. The rest consists of valleys and plains of extreme fertility, covered with vines and rich harvests. Two crops of flax are raised in the year, and an extent of several leagues is covered with plantations of pears and apples, from which excellent cider is made. There are manufactures of very fine linen, which are still carried on, though the trade is injured by the general use of cotton stuffs. This territory, previous to the late revolution, was in a very oppressed state. Eight of the other cantons had possessions within it, which they ruled by bailiffs with great severity; and numerous lords and convents had seignorial rights, rendering those liable to them little better than slaves. It is now erected into a separate and independent canton, of which the little city of Frankenfeld, the ancient residence of the bailiffs, is the capital.

2788. *The city of Constance,* though now belonging to the Grand Duchy of Baden, is locally attached to Thurgau and to Switzerland. Constance, during the middle ages, was one of the great imperial cities, possessing a population of 36,000 souls, extensive linen manufactures, and a great inland trade. In the fourteenth century it became more celebrated by the great council, which attracted 2300 princes and nobles, 18,000 ecclesiastics, 80,000 laymen, and, it is added, 1500 courtesans. The Romish church was then in its utmost height of power; the archduke of Austria was put to the ban of the empire; John Huss and Jerome of Prague, the early movers of the Reformation, after having appeared under a safe-conduct from the emperor, were ignominiously kicked out of the council, and hurried to the stake. This spiritual tumult seems to have banished from Constance the industry by which it had flourished; and when, in 1548, it fell under the yoke of Austria, its decline became still more rapid, and its population is now reduced to 2000 souls: the grass grows in the streets, the iron doors turn on plated hinges, and have the figures of warriors carved on them; and the great hall, 158 feet long and 60 broad, in which the council met, is now employed as a yarn market. Constance is, however, beautifully situated on the lake of that name, called by the Germans the Boden See. This wide expanse appears divested of all the awful grandeur which marks the interior regions; but the wide circuit of its cultivated shores, swelling into gentle hills, bears an aspect peculiarly soft and pleasing. Although this lake be every where surrounded with level country, it has the deepest water of any in Switzerland.

2789. *Schaffhausen* is a small canton, which, situated entirely on the north or German side of the Rhine, scarcely belongs to Switzerland, unless through political ties arising out of peculiar circumstances. The capital was originally an imperial town; its burghers extended their possessions till, with a view to security, they sought and found admittance into the Helvetic League. The territory of Schaffhausen is diversified by hills of moderate elevation, thickly planted with vines, the produce of which is held in estimation. The town of Schaffhausen was distinguished by a magnificent wooden bridge over the Rhine, constructed in 1758 by an artist of the canton of Appenzell; but this celebrated erection was burned down by the French in April, 1799, when the Austrians obtained possession of Schaffhausen. It is still, however, distinguished and visited on account of one of the grandest phenomena of nature, the great fall of the Rhine (*fig.* 367.); to which Europe presents nothing equal, and which disputes, in some points, the pre-eminence with that of Niagara. Neither its height, indeed, which does not exceed sixty feet, nor the mass of its waters, can enter into comparison with its rival; but in the violence of its fall, the sound of its thundering waves, and the cloud of foam which it throws into the air, it is almost matchless. The human voice is not heard in its close vicinity, and the sound reaches to the distance of six miles.

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FALL OF THE RHINE.

2790. *Basle* forms another frontier canton, and has also characters which make it only imperfectly Swiss. A steep mountain chain shuts it completely in from the rest of Switzerland, no part of which can be reached without crossing it. The slopes of this chain, in looking towards Basle, and descending to the fertile plain on the Rhine, are covered with rich pastures. Basle was founded by the Romans, and remained always a city of consequence during the middle ages; but it was in the fifteenth century that it rose to its greatest splendour. Advantageously situated on the Rhine, which here begins to be navigable, and placed at the point of union between France, Switzerland, and Germany, it attained a high degree of commerce and wealth, and distinguished itself likewise by a zealous cultivation of literature and the arts. That of painting was early carried to perfection; and the names of Erasmus (as a resident), Paracelsus, Œcolampadius, to which it has since added those of Euler and the Bernoullis, gave it a distinguished name in the world of letters. Basle, though it has lost much of its former importance, is still the seat of a great transit trade; and forms an important military position, from its command of the first stone bridge over the Rhine. In the fine arts, this city could boast of Holbein, an eminent painter, many of whose best works still adorn its edifices.

2791. *The three cantons of Argovia, Soleure, and Friburg* stretch from Basle in a south-westerly direction along the course of the Aar. They compose, along with part of Berne, the great plain of Switzerland, enclosed on one side by the ridge of the Jura, and on the other by the great range of the central glaciers. This plain presents not the same dead level as those of France and Italy, but is diversified by detached hills and branches of the Jura, some of which rise even to the height of 5000 or 6000 feet; but these hills are green to the summit, generate no glaciers, and in summer throw off altogether their covering of snow. This district, accordingly, contains the richest pastures in Switzerland, whence are produced the Gruyère and other cheeses, which enjoy so high a reputation throughout Europe.

2792. *The cities of this district* are among the most important in the confederacy. *Friburg*, picturesquely situated, partly on an irregular ridge of rocks, surrounded with walls and towers, partly on the plain beneath, forms a sort of capital of catholic Switzerland. The aristocratic spirit was carried in Friburg to an extraordinary height; the magistrates had even, as at Venice, a secret council, by whose invisible machinery all affairs of state were conducted. An eminently exclusive spirit still prevails, which shuts the door against new men and new ideas, and opposes those modern improvements which have found a place in the neighbouring cantons. Some steps, however, though on a contracted scale, have been taken towards the instruction of the lower orders. Morat, in this canton, a small town on a little lake of the same name, is immortalised by the splendid victory gained by the Swiss in 1498 over the great army of the Duke of Burgundy, commanded by Charles the Rash; a victory which, after their long struggle, sealed the existence and independence of the Helvetic confederacy. On the spot was erected a chapel (*fig.* 368.) to which the votaries of freedom came in pilgrimage, and where the Swiss held a regular anniversary of this great day; but the French, trampling upon every solemn and exalted feeling, burned it to the ground, and erected in its stead their own tree of liberty. Soleure is a small town and canton, governed by the same aristocratic spirit as Friburg. The canton includes some part of the range of the Jura; and the Weissenstein, a summit immediately behind the city, commands, according to Ebel, the finest view of the whole range of Swiss mountains that can any where be obtained. Aarau is a small town in the plain of Argovia, celebrated for its rich meadows, and the skill with which they are irrigated. Aarburg, in the same canton, deserves notice, as the only fortified town in Switzerland.

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CHAPEL OF WILLIAM TELL.

2793. *The canton of Neufchâtel*, including Vallengin, covers a long line of the summits and valleys of the Jura. This extensive ridge, which, in a direction from north-east to south-west, separates Switzerland from France, does not reach that immense height, nor exhibit those rugged and broken forms, which give to the southern chains so grand an aspect. It rises in the form of a steep high terrace, resembling, from a distance, a lofty wall. The summit commands the most extensive and delightful views over the plain of Switzerland, and the vast ranges of Alps beyond. The sides being neither covered with perpetual snow, nor subject to the inroad of glaciers, are clothed with large and dense forests of fir in the upper regions, and below chiefly of walnut trees; groves of which enclose almost every village. The political constitution of Neufchâtel presents several anomalies: it has long been subject to the King of Prussia, a sovereign absolute elsewhere, but here strictly limited, exercising the executive power by his governor, but leaving the legislative functions in the hands of the people. Neufchâtel has another relation, by which it forms one of the confederated cantons of Switzerland. On the whole, the people of this district have long enjoyed civil and political rights more ample than in most other parts even of Switzerland; and they accordingly drew numerous emigrants from the aristocratic cantons. Thus encouraged, and stimulated by the difficulties with which they had to contend, they have displayed an industry and ingenuity worthy of admiration. Not only the ground is carefully cultivated, but manufactures, especially watchmaking, have been carried to great perfection.

2794. *The interior details of the Jura* possess considerable interest. The long lake of Neufchâtel, twenty-seven by six miles, extends along its base, overhung by the rocks and woods of the mountain ranges above. A good deal of timber, floated down from the heights is conveyed along this lake and the smaller one of Bienne, which is prolonged in the same direction to the Aar and the Rhine. Neufchâtel is a small, well-built town, finely situated above the lake near its northern extremity, and commanding delightful views over a great part of Switzerland. A Mr. David Pury, one of its citizens, who made a fortune of 6,000,000 livres, left the whole to be employed in the improvement of his native city. There are still remains of the now ancient castle from which it derives its name. Yverdun, at the opposite end of the lake, is also an ancient and agreeable town. The inhabitants are distinguished by intellectual culture, and their city by the residence of Pestalozzi, and by the schools formed according to his ingenious system. The high valleys of Locle and Chaux de Fond consist almost entirely of rocks scattered with the wildest and rudest irregularity; yet they are covered with a thriving and industrious population, employed in the making of lace and watches. The natives of these valleys have distinguished themselves by many important inventions in the latter art. A remarkable object near Locle consists in a deep hollow sunk into the heart of a mountain, near the dark bottom of which are three mills, placed vertically one above the other. In the valley of Travers is Motiers, celebrated by the temporary residence of Rousseau, who has also given distinction to the little lake of Bienne and its island of St. Pierre; though it does not, in M. Simond's opinion, display any picturesque beauty corresponding to the enthusiasm with which he describes it.

2795. *The Grisons* form an extensive canton in the south-east, bordering on Italy and the Tyrol. They ranked, till lately, rather as allies than members of the Swiss confederation, being formed into a league, or rather two leagues, called the Grey League, and the League of the House of God, to which was even added another, called the League of the Ten Jurisdictions. They are now incorporated with the rest of Switzerland under the character of a canton, and form a very extensive one. The district is altogether mountainous and pastoral, though nowhere rising to that extraordinary elevation which is attained by the more westerly chains. Mount Splugen, however, almost rivals the rugged horrors of the valley of Schellenen: the Rhine in its early course flows along its northern border. A road, passable in summer for carriages, has lately been, with great labour, constructed over the Splugen, and forms one of the principal passages into Italy. The people are rather a peculiar race, composed in a great measure of the descendants of the ancient Rhætians, who speak singular dialects, called Roman and Ladin; being compounded of the Latin with that of the original native tribes. The Grisons have an interior government entirely popular, divided into twenty-six jurisdictions, each of which is a little republic in itself: the towns are small, situated along the course of the Rhine. Coire or Chur, the capital of the canton, and the original seat of the League of God's House, is an ancient episcopal city, still containing some Roman monuments, and a cathedral of the eighth century. Dissentis and Truns, at which latter the Grey League was signed, are only agreeable and picturesque villages.

2796. *The new canton of Tesino*, extending along the Italian border, includes the southern slope of that loftiest range of the Alps by which Italy is separated from Switzerland. It is composed of a succession of about thirty Alpine valleys, among which the chief are Levantin, Riviera, Brenna, and Bellinzone, which, though of great elevation, enjoy, in consequence of their fine southern exposure, a much milder climate, and produce grain on sites more elevated, than can be done on the northern side of the mountains. Their pastures, indeed, are less rich, not being fed by those numerous streams, which descend from the snows and glaciers of the higher Alps. The whole country, however, and particularly the shores of the great lakes of Maggiore and Lugano, with their ornamented islands, present almost an Elysian aspect. Yet this, the most favoured by nature of all the cantons, is debased by a poverty, an indolence, and a neglect of culture unknown in any other part of Switzerland. The meanest races in German Switzerland are superior to those of this district; it has even been said that not a hog exists there which would content itself with the habitations in which the peasantry reside. The people are in fact of Italian origin, and never enjoyed that independence which is the genuine birthright of the Swiss peasant. Their different valleys were respectively subject to Unterwald and the other cantons, who, as too often happens with democratic states, proved the most oppressive of all masters. Under the last arrangement, however, this yoke was broken; and Tesino, being now formed into an independent canton, may gradually emerge from its present depression.

2797. *The local features of this canton* are varied and singularly beautiful. The three lakes of Maggiore, Como, and Lugano, though partly belonging to Italy, are in a great measure included within it, and they combine Alpine sublimity with all that is soft and rich in Italian landscape. The Lago Maggiore, which extends forty-four miles in a winding line from north to south, with a breadth nowhere exceeding seven miles, presents many enchanting spots, among which the Borromean Islands are particularly admired. Originally masses of naked rock, they were, by the care of Prince Borromeo of Milan, formed into terraces, and covered with the most brilliant vegetation: they command magnificent views, on one side upon the chain of the Alps, and on the other upon the plains of Italy. Locarno, a small town, finely situated at the northern head of the lake, serves as a market to the inhabitants of the numerous Alpine valleys which open into it. Lugano, on the lake of the same name, is the largest town in the canton, and has a considerable number of churches and convents. The Lake of Lugano is broken into several gulfs, all of which display the most picturesque and enchanting scenes. It abounds remarkably in fish, of which 20,000 to 30,000 quintals are sent weekly to Milan. This territory has given birth to many eminent architects. The northern head of the Lake of Como is enclosed by some of the rudest mountains of the Grisons, where the scene passes gradually into the rich and ornamented plain of Lombardy. Meantime the dignity of capital of the canton is given to Bellinzone; a pleasant small town, commanding the Val d'Airolo, and consequently the passage over the St. Gothard. By this road there is a constant conveyance of cattle and horses, of which an extensive autumnal market is held near Bellinzone. A remarkable battle was fought here in 1422, between the Swiss and the Duke of Milan.

Chap. X.

GERMANY.

2798. *Germany* is an extensive country, situated in the centre of Europe, and exercising a most powerful influence in the political affairs of that continent. There is a peculiar complication in its geography; for not only is it divided into numerous states, of every varied dimension and description, but several of these have large portions of the neighbouring countries, particularly of Poland and Italy, incorporated into their territory. We propose, however, in our description, to preserve that of Germany as much as possible distinct and entire, only exhibiting, under the political section, the general jurisdiction and resources of the great states, from whatever source these may be derived.

Sect. I. *General Outline and Aspect.*

2799. *Germany proper is bounded* on the north by the German Ocean or North Sea, by Denmark and the Baltic; on the east by Poland and Hungary; on the south by Italy and Switzerland, from which it is separated by the vast chain of the Alps; on the west by France, Belgium, and Holland. It lies nearly between 45° and 55° north latitude, 6° and 19° east longitude; extending about 700 miles from north to south, and 550 from east to west. Its entire dimension is estimated by Hassel at 11,664 German square miles, equal to about 256,000 British.

2800. *In its surface,* Germany, in different parts, presents remarkable contrasts. The southern border is formed by the Alps, the loftiest and steepest chain in Europe. The Oerteles and the Great Glockner, in the Rhætian or Tyrolese Alps, are respectively 14,400 and 12,000 feet high; scarcely inferior to the highest in Switzerland. From this main southern barrier, lower branches descend and cover a great part of the interior country; the Black Forest in Swabia; the Seven Mountains on the Rhine; the metalliferous chain of the Hartz in Bohemia and Saxony; and the forest of Thuringia. Of these, however, few rise higher than from 3000 to 4000 feet. They terminate about the middle of Germany, and the whole north forms a portion of that vast continuous plain which reaches from the Bay of Biscay to the frontier of Asia. On the extreme north it falls so low that dikes and other barriers are necessary to prevent it from being overwhelmed by the ocean. This very level surface, and the great extent of sand impregnated with marine exuviæ, suggest the idea that this region had emerged from the sea more recently than the southern division. Notwithstanding the disadvantages occasioned by rugged mountains in the south, and sandy plains in the west, Germany is on the whole a very productive region. Its finest soils are found in the intermediate tracts, between the steep elevations of the south and the dead flats of the north. The latter are best fitted for corn; while vines and fruits cover the declivities and valleys of the southern territory.

2801. *The greatest rivers of Europe* roll through Germany in various directions. The sovereign Danube rises in its furthest eastern border, from the heart of the Black Forest, in the duchy of Baden. Formed by the union of three small streams, it flows nearly due east through the whole breadth of southern Germany, watering the dominions of Wirtemberg, Bavaria, and Austria; and then continuing through Hungary and Turkey, till it terminates in the Black Sea. Its course through Germany is estimated at 432 miles. It becomes navigable at Ulm; but the current being afterwards obstructed by cataracts, it contributes less to internal commerce than any of the great German rivers. From the grand Alpine boundary on the south it receives important streams, the Lech, the Iser, the Inn, the Ens; but on the opposite side the Bohemian mountains press it too closely, and direct all their waters northwards. The great Illyrian tributaries, the Save and the Drave, though partly German, do not enter the Danube till after passing the Hungarian frontier. The Rhine rises in the heart of Switzerland, from the rocky pinnacles of St. Gothard; and in approaching Germany passes through the Lake of Constance, where for some further space it divides Germany from Switzerland, and afterwards from France. Near Landau it enters Germany, within whose borders it pursues its course, till, passing into the Netherlands, it spreads into several broad estuaries, and reaches the ocean. Its largest eastern or German tributary is the Mayn, which flows through Franconia, and by its junction marks the commencement of the Lower Rhine. From the same side come the smaller streams of the Neckar, the Lahn, the Ruhr, and the Lippe. The Moselle and the Meuse, which pour in large accessions from the west, belong more to France than to Germany. The Rhine is navigable from the point where it leaves Switzerland, and is of signal benefit to internal commerce. The other great rivers are altogether German. The Elbe rises on the frontiers of Silesia, and follows a winding course through Bohemia, where, by its tributaries the Moldau and the Eger, it drains all the waters of that mountainous region. Thence it enters Saxony; and after pouring a broad stream through the various territories of northern Germany, flows, by a wide estuary, into the German Ocean. Its entire course is reckoned by Hassel at 523 miles. It receives fifty-three tributaries; of which the principal, besides those already mentioned, are the Saale, bringing the waters of the Unstrut, and the Havel bringing those of the Spree. The Elbe is a navigable river of vast benefit to German commerce. The Oder, a Prussian river, rises in Moravia, flows through Silesia, Brandenburg, and Pomerania, and enters the Baltic by three mouths, after a course of 392 miles. It receives the Neisse and the Bober. The Weser, the river of Westphalia, is formed by the union of the Werra and the Fulda. From that point, under the name of Weser, it has a course of 200 miles; the previous course of the Werra had been 126 miles. The navigation is good both on the Weser and its tributaries.

2802. *Few lakes* of any consequence are formed by the German waters. The Lake of Constance, indeed, called by the Germans the Boden See, has the greater part of its circuit in Germany; but it may be more properly classed with the lakes of Switzerland. The Lake of Garda, though it touches the Tyrol, is more than half Italian. All the others are small and local features. On the coast of the Baltic there are some *haffs*, which are, strictly speaking, bays, being connected with the sea by narrow channels.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2803. I. *Primitive and transition districts.* The primitive and transition districts in Germany are the following: — 1. The more central parts of the Alps, from the east of Switzerland to the plains of Hungary. 2. The western, or the ranges on the west side of the Rhine, which includes much of the Black Forest (Schwarzwald), the Odenwald, and the Spessart. 3. Rhenish slate mountains, in north-western Germany, which extend from W. N. W. to E. N. E. 4. Hartz mountains, in the kingdom of Hanover. 5. The great eastern primitive and transition country, including the mountainous parts of Bohemia, Moravia, Silesia, Saxony, and part of Bavaria; bounded on the *south* by the Danube; on the *west* by the flat country of Regensburg, Amberg, Bayreuth, Coburg, Meiningen, Berka; on the *north* by the plains of Thuringia, Saxony, Lower Lusatia, and Silesia, in the neighbourhood of Eisenach, Rudolstadt, Altenburg, Leipzig, Wurzen, Grossenheim, Görlitz, Lauban, Lignitz, and Breslau; on the *east* by the flat country on the Oder and on the Lausitz; and forming a great connected system.

2804. *Primitive rocks. The chief Neptunian rocks of this division* are gneiss and mica slate, with subordinate clay slate, whitestone, limestone, and hornblende rock: the Plutonian are granite, syenite, &c.

1. *Gneiss.* Sometimes the felspar in the gneiss is in the slate of *kao-lin* or porcelain earth, as at Hafnerzell, on the Danube. Occasionally it contains talc, or crystals of hornblende; more rarely the mica is supplanted by *graphite* or black lead, or the graphite is disposed in veins, as at Hafnerzell, Ruderding, Langensdorf, Leitzerberg, and Zwiezel, in Bavaria; and in different parts in Lower Austria. In the western Böhmerwald, the mica in the gneiss is replaced by *iron mica*, small contemporaneous veins of the Neptunian granite of the Schwarzwald, and other ranges. 2. *Mica slate.* This rock exhibits its usual characters; is observed passing into gneiss, and also alternating in beds with that rock.

2805. *Subordinate primitive rocks. Clay slate, limestone, and hornblende rock*, are the principal subordinate primitive rocks.

1. *Clay slate.* This rock, which is almost entirely composed of minute scales of mica, rests upon the mica slate, and also alternates with it. These three rocks occur more or less distinctly stratified; and in many parts in Germany the direction of the strata is from N. E. to S. W.

2. *Limestone.* This rock, which is in the state of marble, occurs not in regular, continuous, and extensive beds, but also in comparatively short beds, many of which are sometimes observed in the same mountain following each other in interrupted succession for miles.

3. *Hornblende rocks.* Fine displays of these rocks occur in the gneiss of the Böhmerwald; and enclose, as is the case in Scandinavia, repositories of *magnetic iron ore.* There is a remarkable resemblance in the primitive Neptunian rocks of both countries. In the Böhmerwald we find not only the same varieties of gneiss, but also the same subordinate beds, as occur in Scandinavia; also similar veins and masses of granite, containing many different minerals of the same species as those which were formerly considered as characteristic of the northern primitive region. Thus we find in the western part of the Böhmerwald, in the true primitive centre of Germany, the *albite, triphane, petalite, tantalite;* and in the eastern half of that chain, on the Moravian frontier, the red and green *Norwegian garnet*, the *epidote* of Arendal, and the same black *augite* and *coccolite* as in Scandinavia.

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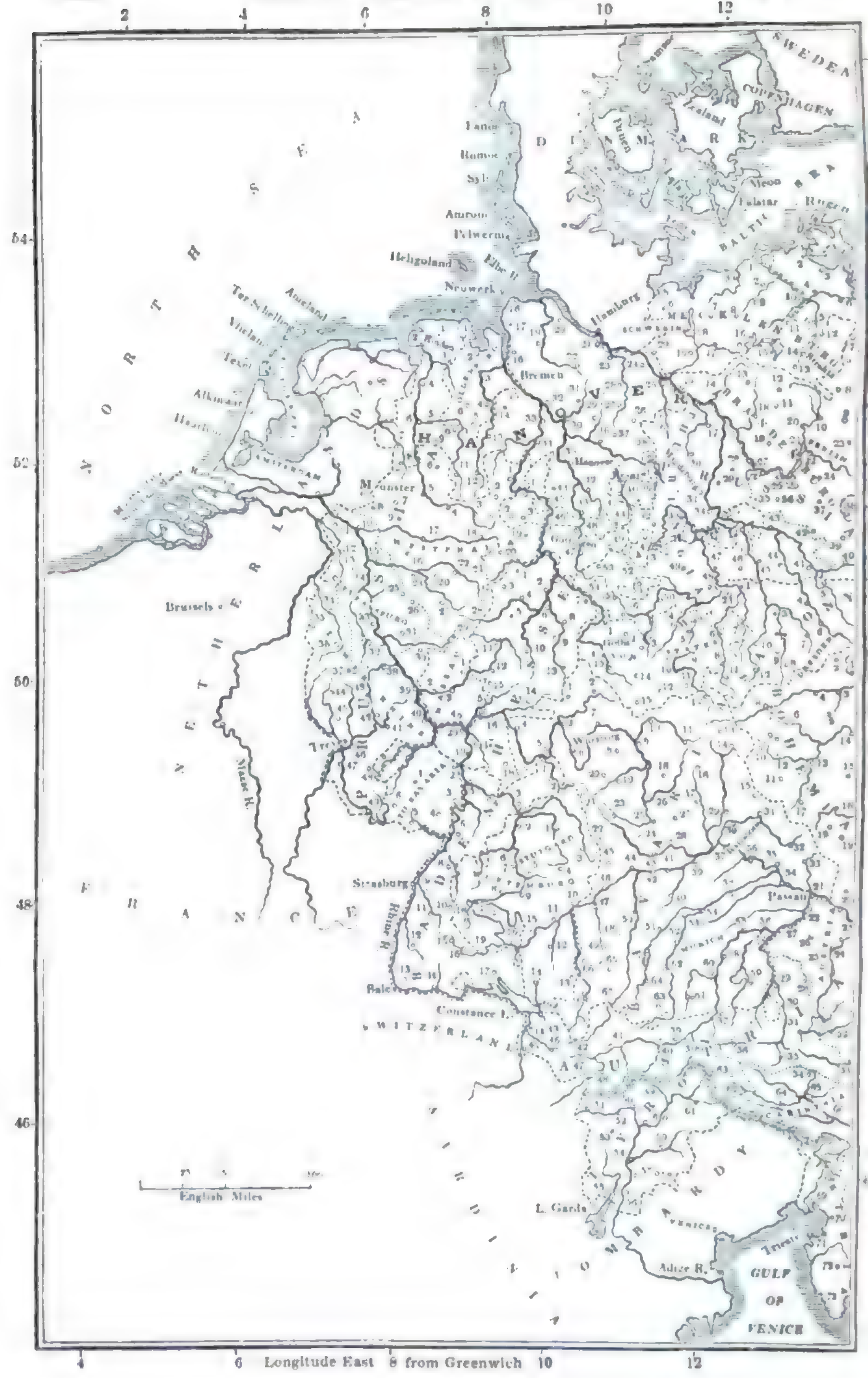
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NORTH SEA
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Heligoland
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Neuwerk
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SCHWERIN
Bremen
HANOVER
Ameland
Ter Schelling
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WESTPHALIA
Hanover
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BADEN
Wurtzburg
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AUSTRIA
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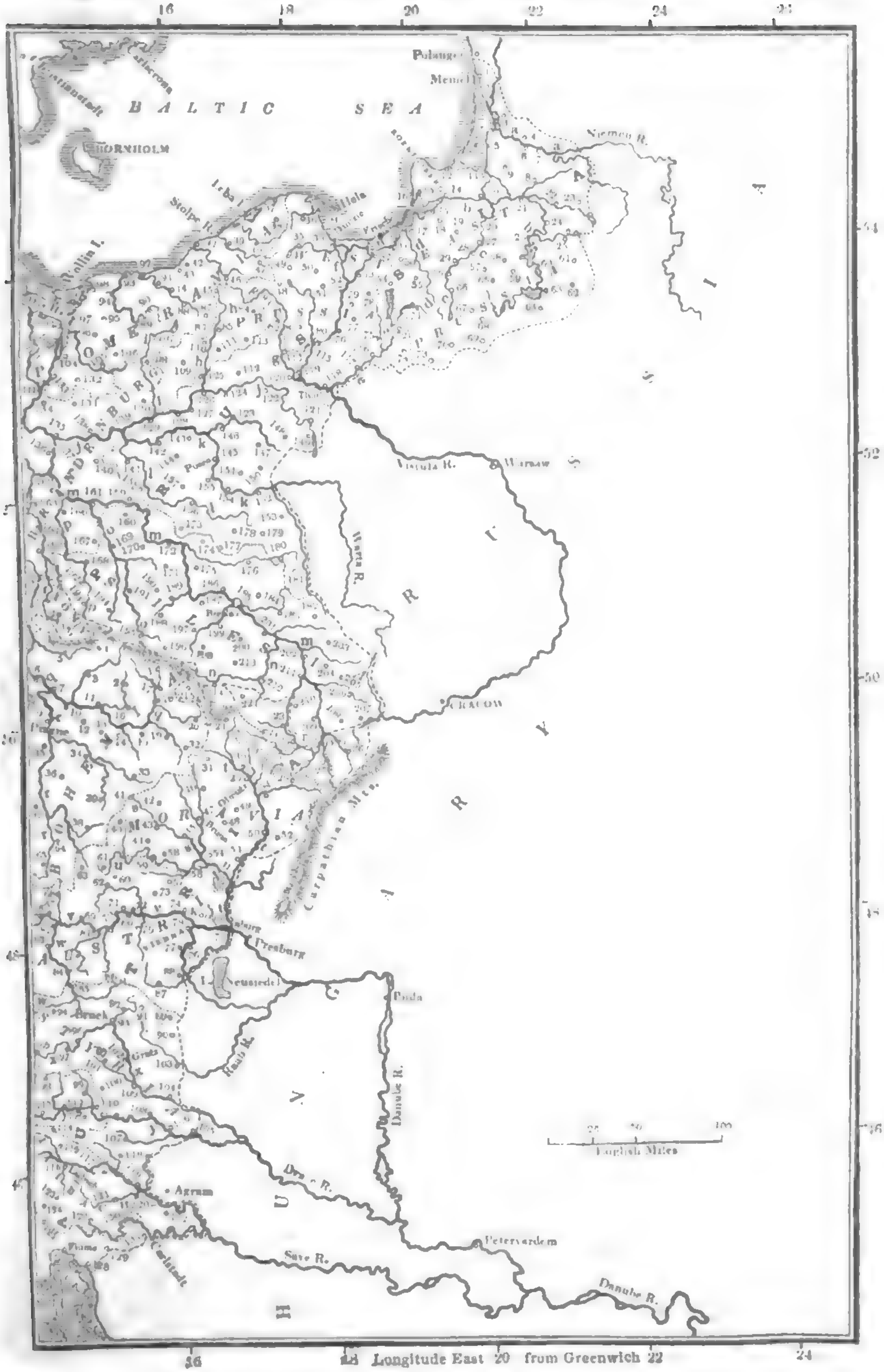
SWITZERLAND
L. Garda
LOMBARDY
VENICE
Adige R.
Trieste
GULF OF VENICE
ITALIA
English Miles
Longitude East from Greenwich

Fig. 370. MAP OF GERMANY—EAST PART.



Further, the *malacolite* of Pargas occurs in the limestone of Zitesch, and there also the well-known combination of *garnet* and *idocrase*. Lastly, the hornblende rocks of Weissemburg contain *epidote* and *prehnite*, those of Jamoliz *harmotome*, and of Marchendorf *stilbite*. The *lepidolite* of Rozena in Moravia occurs in a mass of granite enclosed in gneiss; and it is said the same locality affords also *tin ore* and white *topaz*.

4. *Whitestone*. This rock sometimes encloses masses of gneiss, and is frequently surrounded with gneiss, mica slate, and clay slate. It often contains embedded crystals of *garnet* and *cyanite*; less frequently of hornblende, mica, quartz, and copper pyrites. It generally rests upon gneiss, and is observed passing into that rock, and also into a kind of Neptunian granite. It is a more abundant rock in Germany than in any other country. Saxony; the southern Böhmerwald-Gebirge, on the Austrian and Moravian frontier; the Alps of Salzburg, of Styria, and Lower Austria, contain deposits of this rock.

5. *Serpentine*. Some varieties of this rock occur embedded in limestone in Neptunian strata, and therefore these are probably of aquatic origin.

2806. II. *Transition rocks. Neptunian.* These are clay slate, with quartzo-talcy or micaceous rocks, and older greywacke; newer greywacke, with newer clay slate; transition

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References to the Map of Germany. — West Part.

PRUSSIA.
1. Damgarten
2. Stralsund
3. Griſswalde
4. Loitz
5. Treptow
6. Anklam
7. Pasewalk
8. Lychen
9. Neust Eberswalde
10. Liebenwalde
11. N. Ruppin
12. Reinsberg
13. Wittstock
14. Perleberg
15. Lenzen
16. Salzwedel
17. Osterburg
18. Wasterhausen
19. Nauen
20. Oranienburg
21. Spandau
22. Berlin
23. Münchenberg
24. Mittenwalde
25. Potsdam
26. Werden
27. Brandenburg
28. Genthun
29. Burg
30. Gardelegen
31. Magdeburg
32. Halberstadt
33. Egeln
34. Schönbeck
35. Belzig
36. Treuenbrietzen
37. Luckenwalde
38. Luben
39. Lukau
40. Seftenberg
41. Liebenburg
42. Dahme
43. Wittemburg
44. Torgau
45. Duben
46. Delitzsch
47. Halle
48. Merseburg
49. Eisleben
50. Coleda
51. Sonderhausen
52. Nordhausen
53. Dunderstadt
54. Heiligenstadt
55. Muhlhausen
56. Eisenach.

MECKLENBURG.
1. Riboitz
2. Tessin
3. Rostock
4. Wismar
5. Schönburg
6. Rehna
7. Bruet
8. Gustrow
9. Laage
10. Demmin
11. Stavenhagen
12. N. Brandenburg
13. Mirow
14. N. Strelitz
15. Robel
16. Plau
17. Parchim
18. Schwerin
19. Ludwigslust
20. Roitzenburg.

OLDENBURG.
1. Jever
2. Varel
3. Oldenburg
4. Wildeshausen
5. Vechta
6. Cloppenburg.

HANOVER AND BRUNSWICK.
1. Aurich
2. Embden
3. Detern
4. Papenburg
5. Haseline
6. Meppen
7. Nordhorn
8. Bentheim
9. Fürstenau
10. Quakenbrück
11. Osnabrück
12. Bohmte
13. Diepholz
14. Basum
15. Bremen
16. Stotel
17. Bremer Leche
18. Cuxhaven
19. Bremervorde
20. Stade
21. Haarburg
22. Tostedt
23. Winsen
24. Blekede
25. Dannenburg
26. Bodenteich
27. Ulzen
28. Elstorf
29. Bergen
30. Hudemühlen
31. Soltau
32. Verden
33. Hoya
34. Nienburg
35. Hanover
36. Celle
37. Eschede
38. Worsfelde
39. Helmstadt
40. Brunswick
41. Wolfenbuttel
42. Hildesheim
43. Ahlfeldt
44. Springe
45. Hameln
46. Holzmünden
47. Göttingen
48. Einbeck
49. Goslar.

ANHALT.
1. Dessau
2. Cöthen
3. Thiefelde
4. Brackenburg.

DETMOND.
1. Rintela
2. Detmold
3. Blomberg.

WEST PRUSSIA.
1. Minden
2. Herford
3. Wiedenbruck
4. Warendorf
5. Münster
6. Ibbenbuhren
7. Coesfeldt
8. Borken
9. Dulmen
10. Wesel
11. Clèves
12. Gueldres
13. Creveldt
14. Düsseldorf
15. Mühlheim
16. Dortmund
17. Lünen
18. Lippstadt
19. Paderborn
20. Lichtenau
21. Britzen
22. Arensberg
23. Iserlohn
24. Hagen
25. Elberfeldt
26. Lennep
27. Attendorn
28. Winterburg
29. Siegen
30. Altenkirchen
31. Homburg
32. Bonn
33. Cologne
34. Juliers
35. Aix la Chapelle
36. Eupen
37. Blankenheim
38. Ahreweiler
39. Coblentz
40. Bacarach
41. Traerbach
42. Moselle
43. Dhaun
44. Pruym
45. Bitburg
46. Trèves
47. Sarreburg
48. Tholey
49. Sarrebruck.

NASSAU.
1. Weilburg
2. Nassau
3. Limburg
4. Wisbaden
5. Frankfort.

HESSE.
1. Volkmarsen
2. Cassel
3. Arolsen
4. Waldeck
5. Gemander
6. Melsungen
7. Eschwege
8. Rothenburg
9. Hersfeldt
10. Alsfeldt
11. Marburg
12. Giessen
13. Fulda
14. Gelnhausen
15. Homburg
16. Offenbach
17. Darmstadt
18. Erlach
19. Worms
20. Mayence.

BAVARIA.
1. Kaiserslautern
2. Frankenthal
3. Spire
4. Landau
5. Pirmasens
6. Deux Ponts
7. Meisenheim to Hesse
8. Birkenfeld to Oldenburg.

BADEN.
1. Wertheim
2. Bischofsheim
3. Mosbach
4. Heidelberg
5. Mannheim
6. Carlsruhe
7. Pforzheim
8. Baden
9. Offenburg
10. Frondenstadt
11. Haslach
12. Freyburg
13. Lorrach
14. Wadshutt
15. Villingen
16. Donaueschingen
17. Stockach

BAVARIA.
1. Brückenau
2. Neustadt
3. Gmunden
4. Aschaffenburg
5. Esselbach
6. Würtzburg
7. Schweinfurth
8. Burglein
9. Bamberg
10. Lichtenfeldt
11. Bayreuth
12. Hof
13. Rudwitz
14. Marschenelt
15. Waldmünchen
16. Tumbach
17. Amberg
18. Grafenburg
19. Neustadt
20. M. Bibert
21. Rotenburg
22. Dunkelsbuhl
23. Anspach
24. Ettingen
25. Roth
26. Nuremburg
27. Neumarkt
28. Beilingries
29. Schwandorf
30. Burglengefeldt
31. Cham
32. Regen
33. Grafenau
34. Vilshofen
35. Deggendorf
36. Straubing
37. Ratisbon
38. Landshut
39. Neustadt
40. Pfaffenhofen
41. Ingolstadt
42. Neuburg
43. Eichstadt
44. Donauwerth
45. Nordlingen
46. Dillingen
47. Burgau
48. Schwabmünchen
49. Mindelheim
50. Augsburg
51. Dachau
52. Munich
53. Freising
54. Mosburg
55. Muhldorf
56. Markt
57. Burghausen
58. Wasserburg
59. Frauenstein
60. Aibling
61. Tegernsee
62. Volkrathausen
63. Kochel
64. Weilheim
65. Kaufbeuren
66. Memmingen
67. Fussen
68. Kempten
69. Lindau.

WIRTEMBERG.
1. Halle
2. Heilbronn
3. Dunkelsbuhl
4. Gmund
5. Eslingen
6. Ludwigsburg
7. Stutgard
8. Tübingen
9. Reutlingen
10. Ulm
11. Ehingen
12. Biberach
13. Leutkirch
14. Ravensburg
15. Riedlingen
16. Sigmaringen in Hohenzollern
17. Hechingen in Hohenzollern
18. Rotweil
19. Tutlingen

SAXON STATES.
1. Eisenach
2. Gotha
3. Arnstadt
4. Weimar
5. Jena
6. Gera
7. Altenburg
8. Greitz
9. Neustadt
10. Rudolstadt
11. Lobenstein
12. Sonnenburg
13. Coburg
14. Schleusingen
15. Meiningen.

SAXONY.
1. Leipzig
2. Borna
3. Waldheim
4. Oschatz
5. Grossenhayn
6. Dresden
7. Freyburg
8. Marienburg
9. Tschopau
10. Glauchau
11. Plauen
12. Schneeberg.

AUSTRIA.
1. Leimeritz
2. Toplitz
3. Laun
4. Saaz
5. Rakonitz
6. Ludlitz
7. Carlsbad
8. Ellenbogen
9. Tepl
10. Plau
11. Bischofsteinitz
12. Mies
13. Pilsden
14. Beraun
15. Przibram
16. Horazdiowitz
17. Klauttau
18. Winterburg
19. Prachaltz
20. Rohrbach
21. Passau
22. Scharding
23. Wels
24. Schwanstadt
25. Volklbruck
26. Ried
27. Braunau
28. Thalgau
29. Salzburg
30. Hallein
31. Rudstadt
32. Haus
33. Muran
34. Gmund
35. Hof
36. Mittersill
37. Kufstein
38. Rattenburg
39. Schwaz
40. Innspruck
41. Imst
42. Gries
43. Bregen
44. Feldkirch
45. Vaduz
46. Bluden
47. Finstermunz
48. Pruz
49. Sterzing
50. Meran
51. Glurns
52. Latsch
53. Male
54. Lavis
55. Riva
56. Roveredo
57. Trent
58. Borgo de Valsugana
59. Cavalese
60. Botzen
61. Brünneke
62. Lienz
63. Motray
64. Greifenburg
65. Spital
66. Villach
67. Tolemina
68. Goritz
69. Monfalcone
70. Trieste
71. Isola
72. Pirano
73. Pola.

Rivers in Prussia.
a Havel
b Elbe
c Mulda
d Unstrut.

Rivers in West Prussia.
a Ems
b Lippe
c Roer
d Sieg
e Rhine
f Moselle.

Rivers in Germany.
a Ems
b Fulda
c Leine
d Lahn
e Mayn
f Rhine
g Neckar
h Lax
i Danube
j Fraun
k Salza
l Inn
m Iser
n Ammer
o Lech
p Iller.

limestone, flinty slate or Lydian stone, whet slate, anthracite. 1. The older greywacke and the talcy rocks connect the transition and primitive deposits with the newer greywacke and clay slate, the transition and secondary rocks. 2. The newer or *true* greywacke and its clay slate sometimes contain organic remains, as in the Hartz, Bohemia, Rhine district, &c. The fossils from the animal kingdom are generally *casts*, or they are changed into limestone or brown ironstone. The most frequent are *trilobites*, or fragments of *encrinites* and *madreporites*: fossil bivalve shells also occur, such as *terebratulites*, *ammonites*, *orthoceratites*, &c. Some plants are likewise met with, and are generally calamites.

2807. *The limestone occurs* in interrupted beds, thus exhibiting the same mode of distribution as in the primitive deposits.

2808. (3.) *Limestone of the talcy quartz rocks.* This in general aspect approaches more nearly to the primitive limestone than any of the others of the transition class. Many of the beautiful *brecciated marbles* of commerce belong to this part of the geological arrangement. *Limestone* of the true greywacke is more compact than the former, and also differs from it in frequently containing fossil organic remains, viz., *trilobites*, *calymenites*, *asaphites*, *orthoceratites*, *madreporites*, &c. Many of these limestones, when cut, have a beautiful appearance, and are highly valued as *marbles*. *Caves*, containing remains of extinct animals, occur in the limestone.

4. *Flinty slate* and *Lydian stone*. These minerals occur in beds in the greywacke and clay slate. It is remarked that the greywacke and clay slates, in districts where the beds of flinty slate occur, are sometimes highly impregnated with silica, a fact intimately connected with the mode of formation of all these rocks.

5. *Whet slate* or *whetstone*. This slate, so well known in the arts, occurs in small beds in some districts in the clay slate.

6. *Anthracite*, or *glance coal*. Beds of this coal occur in the Hartz, Westphalia, and Bohemia.

References to the Map of Germany. — East Part.

PRUSSIA.
1. Memel
2. Prokuls
3. Heidekrug
4. Winge
5. Gilge
6. Tilsit
7. Ragnit
8. Sesslacken
9. Mehlaucken
10. Tapiau
11. Labiau
12. Cranzkuhren
13. Fischhausen
14. Königsberg
15. Brandenburg
16. Pillau
17. Heiligenbeil
18. Krentzburg
19. Eylau
20. Allenburg
21. Insterburg
22. Gumbinen
23. Staltupohnen
24. Darkehmen
25. Goldapp
26. Argenburg
27. Schipenbeil
28. Bartenstein
29. Heilsberg
30. Muhlhausen
31. Tolkomit
32. Elbing
33. Dantzic
34. Hela
35. Carthaus
36. Neustadt
37. Belgrow
38. Lauenburg
39. Stolpe
40. Lupow
41. Rugenwalde
42. Zanow
43. Coslin
44. Belgrade
45. Baldenburg
46. Rummelsburg
47. Butow
48. Kossabude
49. Behrend
50. Schoneck
51. Stargardt
52. Mewe
53. Marienburg
54. Saalfeldt
55. Leibstadt
56. Guttstadt
57. Rossel
58. Rastenburg
59. Rhein
60. Lotzen
61. Oletzko
62. Lyck
63. Arys
64. Johannisburg
65. Senaburg
66. Allenstein
67. Passenheim
68. Ortelsburg
69. Willenburg
70. Niedenburg
71. Osterode
72. Lobau
73. Soldau
74. Gurzno
75. Neumark
76. Graudenz
77. Garnsee
78. Reisenberg
79. Marienwerder
80. Schwetz
81. Lindenburg
82. Tuchel
83. Konitz
84. Schlauchau
85. Landeck
86. Ratzebuhr
87. Neu Stettin
88. Barvalde
89. Labes
90. Schievelbien
91. Corlin
92. Colberg
93. Treptow
94. Greiffenberg
95. Naugardten
96. Massow
97. Stepenitz
98. Cammin
99. Wollin
100. Usedom
101. Uckermunde
102. Stettin
103. Brussow
104. Damm
105. Zachan
106. Jacobshayen
107. Dramburg
108. Callies
109. Det Crone
110. Tastrow
111. Flatow
112. Wirsitz
113. Vandsburg
114. Poln Crone
115. Culm
116. Strasburg
117. Gollup
118. Thorn
119. Forden
120. Bromberg
121. Inowraclaw
122. Szubin
123. Wongrowitz
124. Margonin
125. Schneidemühl
126. Uses
127. Czarnikow
128. Pitchne
129. Driesen
130. Woldenburg
131. Soldin
132. Pyritz
133. Fiddichow
134. Königsberg
135. Custrin
136. Frankfort
137. Reppen
138. Wietze
139. Landsberg
140. Zeilenzig
141. Meseritz
142. Birnbaum
143. Samter
144. Pinne
145. Posen
146. Rogasen
147. Gnesen
148. Mogilno
149. Kruswice
150. Wreschen
151. Szroda
152. Neustadt
153. Piesrew
154. Schrim
155. Moszyn
156. Kosten
157. Gratz
158. Bomst
159. Zullichau
160. Grünberg
161. Grossen
162. Fürstenburg
163. Luberose
164. Cotthase
165. Spremberg
166. Guben
167. Sorau
168. Priebus
169. Sagan
170. Neustaedtel
171. Polekwitz
172. Glogau
173. Fraustadt
174. Gahrau
175. Wintzig
176. Militsch
177. Rawicz
178. Kroben
179. Kozmin
180. Adelnau
181. Schildberg
182. Kreutzberg
183. Namslau
184. Oels
185. Breslau
186. Auras
187. Neumark
188. Goldberg
189. Lignitz
190. Haynau
191. Buntzlau
192. Rothenburg
193. Görlitz
194. Lauban
195. Hirschberg
196. Landshut
197. Schweidnitz
198. Reichenbach
199. Zoblen
200. Strehlen
201. Brieg
202. Oppeln
203. Guttentag
204. Great Strelitz
205. Tost
206. Gleiwitz
207. Pless
208. Sohrau
209. Ratibor
210. Lobschütz
211. Krappitz
212. Neisse
213. Munsterb
214. Glatz
215. Reinerz.

SAXONY.
1. Bautzen
2. Lobau
3. Zittau.

AUSTRIA.
1. Trautenau
2. Gitschin
3. Jung Bunzlau
4. Rischenburg
5. Bohm Leipa
6. Budin
7. Melnik
8. Schlan
9. Prague
10. Brandies
11. Nimburg
12. Böhmisch Brod
13. Kourim
14. Czaslau
15. Crudim
16. Chlumetz
17. Josephstadt
18. Königingratz
19. Hohenmauth
20. Senftenberg
21. Alstadt
22. Friedberg
23. Jagerndorf
24. Freudenthal
25. Troppau
26. Teschen
27. Mistek
28. Leipnik
29. Olmutz
30. Littau
31. Zwittau
32. Leutomischel
33. Deutsch Brod
34. Kaczow
35. Kmin
36. Sedletz
37. Pisek
38. Nauhaus
39. Pilgram
40. Telsch
41. Iglau
42. Great Meseritsch
43. Trebitch
44. Budwitz
45. Eibenschiz
46. Lettowitz
47. Brunn
48. Austerlitz
49. Wischau
50. Hradisch
51. Prerau
52. Ung Brod
53. Goding
54. Auspitz
55. Feldsberg
56. Nicolsburg
57. Jazeldorf
58. Znaim
59. Hardeck
60. Allendsteig
61. Vittes
62. Zwettel
63. Gmund
64. Budweis
65. Kruman
66. Linz
67. Steyereck
68. Friestadt
69. Grein
70. Great Pochlarn
71. Durrenstein
72. Krems
73. Meissau
74. Kornenburg
75. Haimburg
76. Traiskirchen
77. Baaden
78. Vienna
79. St. Polten
80. Stein
81. Ips
82. Ens
83. Steyer
84. Weyer
85. Altenmark
86. M. Zell
87. Glaknitz
88. Neustadt
89. Friedberg
90. Hartberg
91. Murzuschlag
92. Kindberg
93. Bruck
94. Rottenmann
95. Murau
96. Knittelfeldt
97. Judenburg
98. Frisach
99. S. André
100. Schwanberg
101. Voitsberg
102. Gratz
103. Fürstenfeldt
104. Radkersburg
105. Friedau
106. Pettau
107. Ganowitz
108. Marburg
109. Wildon
110. Lavamünde
111. Bleyburg
112. Völkermarkt
113. Klagenfurt
114. Neumarkt
115. Grainburg
116. Laybach
117. Littau
118. Cilli
119. Ran
120. Landstrass
121. Neustadt
122. Gotschee
123. Zirknitz
124. Adelsburg
125. Vrem
126. Albona
127. Fiume
128. Novi
129. Verbovko
130. Mötling
131. Carlstadt
132. Jaszka.

Rivers in Prussia.
a Niemen
b Pregel
c Alle
d Passarge
e Drewenz
f Vistula
g Brake
h Kuddow
i Drage
j Netze
k Warta
l Obra
m Oder
n Neisse
o Bober
p Neisse.

Rivers in Germany.
q Elbe
r Moldau
s Igla
t March
u Taja
v Danube
w Ens
x Mur
y Drave
z Save

2809. *Plutonian primitive and transition rocks.* — *Granite.* Those great bodies of granites, which are intermixed with the Neptunian primitive strata at their junction, and which also send out branches or arms among those strata, may be considered as of primitive formation; while the granites, which are confined to transition rocks, and affect them in the same manner as the primitive does the primitive strata, may be viewed as belonging to the transition class. The Alps, Reisengebirge, the Erzgebirge, the Böhmerwald-gebirge, the Harzgebirge, afford examples of these granites.

2810. *Syenite.* This rock in general is said, in Germany, to be newer than many even of the transition rocks. It may be well studied in Moravia, where it abounds. The trap rocks connected with the syenite belong to the same epoch of formation.

2811. III. *Secondary rocks. Neptunian.* The *old red sandstone* and *mountain limestone*, the oldest members of the secondary class, are comparatively less frequent and abundant in Germany than in Britain and Ireland. The *coal formation* occurs in Silesia, Westphalia, Saxony, Bohemia, Moravia, and in other quarters; but in insignificant deposits, when contrasted with its extraordinary abundance in Britain. The most extensive coalfields are those in Silesia. In many places, as Halle, Zwickau, Tharandt, Forest of Thuringia, and also in Silesia, the coal formation is more or less completely covered with that red sandstone known under the name *roth liegende*.

2812. *The secondary formations* that succeed the coal deposit may next be noticed.

2813. *Magnesian limestone*, or *zechstein.* This formation was at one time believed to form a principal part of the great limestone range of the Alps; hence was named Alpine limestone: the truth, however, is, that it occurs in but small quantity in the Alps, the limestone of that range belonging to a newer formation. It is of comparatively small extent, and its colours are grey, brown, yellow, and black. The fossil organic remains which most particularly characterise it are *fishes* of various kinds, and particular kinds of *amphibia*. Fossil crabs of the *trilobite* tribe, and the *productus longispinus* of Sowerby, occur in it. *Terebratulites* and *encrinites*, particularly the *E. ramosus* and *T. alatus*, *cristatus*, *lacunosus*, and *sufflatus*. Impressions of flustra also occur, and fossil mytili and tellinæ. Fossil fruits, and impressions of sea and land plants, add to the variety of organic remains in the formation. It occurs in the Hartz, Hessia, Hanau, Thuringerwald, Schmalkalden, Frankenberg, &c.

2814. *New red sandstone.* This vast deposit is divided in Germany into three great systems: an inferior and superior red sandstone, each abounding in variegated marls, the one separated from the other by a great limestone formation called the *shell limestone*, or muschel kalk. The lowest system of *variegated limestone* contains a good many interesting fossil plants, chiefly *coniferæ* and *ferns*; also bivalve and univalve shells, approaching very nearly in character to those of the *shell limestone* and upper formations, but, as well as the plants, differing essentially from any fossils of the magnesian limestone and lower formations. It frequently contains *salt* and *gypsum*.

2815. *Shell limestone.* This formation is seen in Wirtemberg, Bavaria, Gotha, and Hanover, resting upon the variegated sandstone, and capped by *keuper*. All the *salt-mines* in the kingdom of Wirtemberg occur in it. Jäger found in it fossil remains of several remarkable extinct amphibious animals: these are *plesiosaurus*, *ichthyosaurus*, and an unknown *reptile*; and the jaws and teeth of a *crocodile*, plates of a *turtle*, many parts of fishes of new genera, &c.

2816. *Keuper.* This formation of green, red, and purple sandstones and marls, is seen on a splendid scale at Stutgard, where it rests upon shell limestone, and is covered with lias. Calamites, and equisetaceous plants, resembling those of the lias and oolite of England, and also two new species of saurians (*cylindricodon* and *cubicodon* of Jäger) are found in it.

2817. *Lias.* The lias, marls and gryphite limestone, with many identical English fossils, are seen in Wirtemberg, the north of Bavaria, Hanover, Westphalia, &c. Six new species of ichthyosaurus, five of which are known in England; six or seven genera of fishes; two species of crustacea; eleven species of ammonites; twelve species of belemnites, scaphites, nautili, and numerous other shells common to the English lias, are found at Banz near Coburg, on the right bank of the Mayn. The *pentacrinites briareus* of the English lias is common; besides several species of corals hitherto unobserved in the lias of England.

2818. *Inferior oolite.* This is a great arenaceous deposit, generally highly ferruginous. In the gorge called the Porta Westphalica, by which the Weser escapes into the plains of Minden, there is a fine display of all the shales, sandstones, beds of oolite, &c., of which the inferior oolite is composed. It contains many characteristic British fossils, and in many places throughout Wirtemberg, Bavaria, Hanover, Westphalia, Franconia, &c., it caps the lias. The ferruginous sandstones of this formation are readily distinguished from those of the lias both by superposition and fossils.

2819. *Middle oolite, Jura limestone.* The mineralogical characters of the middle oolite of central and southern Germany are essentially different from those rocks of the same age in

Westphalia and Hanover; so that, instead of the shales, sandstones, &c., just described, they consist in one part of compact cream-coloured limestone, and in another of dolomite. In Franconia, so remarkable on account of the number of bears' caves in the hills opposite Banz, and in many other places, the dolomite usually caps the limestone, the latter containing the greater number of fossils. In these groups, and in the inferior oolite, there are many species of ammonite, and about sixty species of scyphia from the middle Jura limestone, and also many corals. At Solenhofen there are several quarries of a slaty or rather tabular compact limestone, which is valued as a lithographic stone. This Solenhof stone appears to be the equivalent to the Stonesfield slate of England, forming the uppermost part of the oolite formation in Germany, lying consequently immediately below the green sand. The higher members of the oolite group of England, viz., coral rag, Portland stone, &c., have not hitherto been met with in central Germany, though they may exist in Hanover.

2820. *Green sand.* This formation, wherever it occurs in Germany, is generally divisible, as in England, into lower or quartzy limestone, and upper or chalky sandstone; the former known in many districts as the *quader sandstein*, the latter as the *planer kalk*. Fine displays of these two rocks occur in southern Hanover and the northern flank of the Hartz, where the lower sandstone is sometimes a highly ferruginous rock; at other times, a white sandstone, in which character it ranges from the northern flank of the Hartz into Saxony and Bohemia. In Westphalia the green sand deposit is said to approach still nearer in characters to the English group.

2821. *Chalk.* This deposit, the newest of the secondary series, occurs in various localities in the great plain of northern Germany, in some points in the interior of the country; and deposits high in the Alps, with chalk fossils, as they have been called, are by many geologists maintained to be portions of the chalk formation, borne aloft during the upraising of these mountains.

2822. IV. *Tertiary rocks. Neptunian.* These rocks are considered as distributed in five great *basins*, the limits of which are thus designated: —

1. *Basin of Northern Germany*, bounded in some measure by the following towns: — Hanover, Wolfenbuttel, Magdeburg, Kothen, Halle, Merseburg, Zeiz, Gremma, Grossenhayn, Bunzlau, Strehlen, Niesse, Loislau, and Proskau; and extends further into Poland and Russia. Towards the north it terminates on the North Sea and the Baltic.
2. *Bohemian Basin*, bounded by the mountains that lie around Bohemia, as a great circular valley.
3. *Basin of the Rhine.*
4. *Bavarian and Upper Austrian basin*, including the tertiary plain of Swabia, Bavaria, and Upper Austria.
5. *Basin of Lower Austria and Hungary*, including the flat county of Lower Austria, and the great plains of Hungary. — These five basins or hollows, now filled with marine and lacustrine deposits, were formerly great inland seas, situated at different heights.

2823. *Plutonian secondary and tertiary rocks.* These are porphyries and traps of various kinds, which have been sent from below at different periods during the formation of the secondary deposits, and also in part so late as the formation of the tertiary rocks. Fulda, Saxon Erzgebirge, Hessia, and Bohemia, are rich in trap rocks. *Old volcanic rocks* also occur in different parts of Germany, especially in the neighbourhood of the Rhine.

2824. V. *Alluvial deposits.* These occupy great tracts of country, especially in the northern part of Germany.

Subsect. 2. *Botany of Germany, the Netherlands, and Poland.*

2825. *These are countries*, which, however interesting in themselves, do not afford any character so peculiarly striking in their vegetation as to render it necessary to dwell upon it here. As may be expected from their situation, the southern plants of the country, bordering upon the Gulf of Venice, partake of the nature of the Italian productions and the adjacent shores of the Adriatic. The midland parts yield a flora very similar to that of the middle and north of France; the mountains to that of Switzerland; while the northern parts bear a considerable affinity to England. Hungary includes mountains exhibiting a highly beautiful vegetation, and which has given rise to the splendid *Flora Hungarica* of Waldstein and Kitaibel; but the plants are more interesting to the botanist than to the general reader, and partake of an alpine character.

Subsect. 3. *Zoology.*

2826. *The zoology of Germany* is commensurate in importance with the wide extent of territory generally included under that name, and to the diversified nature of its surface. The lofty mountains and vast forests of Hungary, Bohemia, Poland, &c., give shelter to a much larger proportion of the native European quadrupeds, than is to be found, perhaps, in any other part of the Continent. The celebrated wild oxen of antiquity, the Bos Urus, if we may trust the zoological knowledge of travellers, appear to have existed in the Carpathian forests within the last century, but it has long been extinct both there and in Lithuania. Bears, in former times, were very numerous, and are still asserted to be occasionally met with. The Wild Boar is not uncommon, and Wolves still less so; but the Chamois (*fig.* 371.), once common in Carniola and the Carpathian chain, is now rarely seen. This remarkable animal inhabits the wildest and most abrupt precipices, but does not ascend to those elevated heights which the Ibex alone delights to visit: it runs with rapidity along the most perpendicular ledges, springing across precipices, and bounding from rock to rock, with a steadiness and security truly wonderful. If pursued by the hunter beyond the means of retreat, it is said to pitch itself headlong downward upon its enemy, and dash him into the abyss below. Notwithstanding the wild nature of the Chamois, it has been sometimes known to mix with the domestic cattle and goats, and to be partially tameable.

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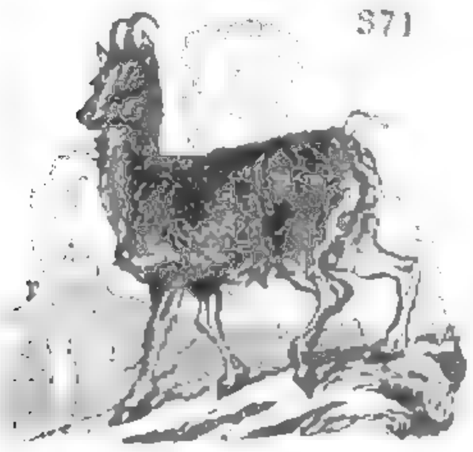

CHAMOIS.

2827. *Some of the most formidable birds of prey* belong to this part of Europe. The great cinereous Vulture (*fig.* 372.) (*Vultur cinereus* Lin.) is principally found on the lofty mountains of Hungary: it measures three feet six inches in length, and preys only upon dead animals; while the Imperial or Golden Eagle, plentiful in the forests, will devour its prey only when captured by itself. The Ringtail Eagle, scarcely inferior in size, is likewise met with. To these might be added numerous smaller species, uninteresting to the general reader. The great Black Woodpecker should not, however, be omitted, as being the largest of its genus known in Europe; nor is the rare *Picus canus*, or Grey Woodpecker, an uncommon inhabitant of the German forests.

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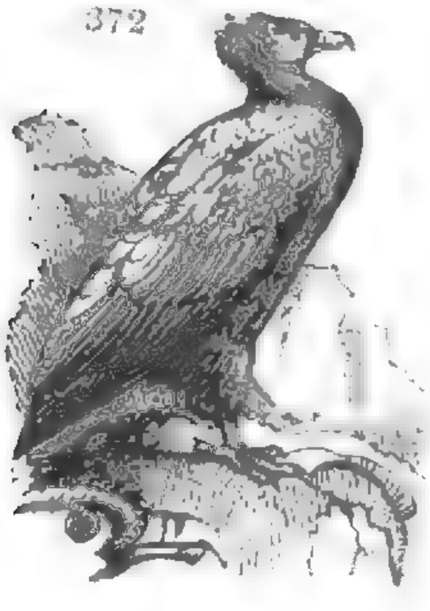

VULTURE.

2828. *The most extraordinary reptile* of Europe is the *Proteus anguinus*, an animal resembling a water-lizard, found in the celebrated lake Zirknitz, in Carniola. Naturalists were long divided in opinion, whether to consider it as a perfect animal, or the larva (or tadpole) of some other; but this latter supposition has since proved to be erroneous. It is, says Dr. Shaw, about twelve inches long, of a pale flesh-colour, and somewhat eel-shaped; on each side of the breast are three branchial fins, or breathing organs, of a bright red colour: its eyes are stated to be remarkably small, and seated beneath the skin.

2829. *The domesticated animals of Germany* do not appear to have received that attention in their improvement which they require. The horses have never been in any great request, yet the breeds appear, to a certain extent, to have been ameliorated within the last hundred years. Most of the German princes have excellent horses in their studs; and their stallions are generally chosen from those of Arabia, Barbary, and Spain: from such sources greater results might have been expected. Yet the chief objection made to the German horses is that of being rather short-winded. (*Ham. Smith.*) The common breed of oxen have small or middle-sized horns; but the different polled races, or hornless cattle, now spread over Europe and part of America, would appear to have originated in Germany. The breeds of sheep are stated to be improving; those of Saxony and Bohemia, in particular, now furnish wool of a very superior quality.

Sect. III. *Historical Geography.*

2830. *Ancient, or, as it was called, Great, Germany* was known to the Romans, but not conquered by them. While the equally distant countries of France and Spain, and the remote island of Britain, were regularly incorporated into that vast empire, the ancient Germans never sacrificed any portion of their proud independence. They are described as having been the rudest, the fiercest, and the bravest of all the tribes of the barbarians. The country was almost entirely covered with vast forests, of which that called the Hercynian extended from the Rhine to the Vistula. Its surface is described by Tacitus and Cæsar as divided among a number of small nations, poor, hardy, and brave, scantily cultivating the ground, and despising all the arts of civilised life, led by their chiefs in war, but scarcely owning their authority in peace, and determining all things by a general assembly of the nation. Cæsar, Germanicus, Drusus, and other great captains, derived glory from their victories over the Germans, and penetrated even a considerable depth into their wilds; but the Romans never were able to form any permanent establishment, and considered themselves fortunate if they could preserve inviolate the boundary of the Rhine and the Danube.

2831. *In the fourth century, the nations of Germany burst these barriers*, and overwhelmed the sinking empire of the West. The Saxons over-ran Britain; the Franks, Heruli, and Burgundians seized different parts of France; the Lombards established themselves in

Italy; the Vandals and Goths penetrated into Spain and Africa. But while German nations thus swayed all the western kingdoms, they owned no dependence upon their original country, which remained in exactly the same state as before she sent forth these numerous bands of conquerors.

2832. *Under the reign of Charlemagne,* Germany first felt the weight of conquest, though only by the arms of her own children. That great monarch spent nearly his whole life in quelling the continual rebellions of the Saxons; but he succeeded in placing on his head the imperial crown, which conferred dominion over France, Germany, and Italy. Under the weak and divided sway of his posterity, this great dominion fell gradually to pieces; but the name and character of an empire remained attached to Germany; and the German emperors always considered themselves as successors of Charlemagne.

2833. *The division of the empire into feudal states* took place gradually, as the central power became weaker, and the dukes, landgraves, and other nobles were emboldened to shake off the yoke. At length they carried the spirit of independence to a higher pitch than in any other of the western kingdoms, rendering the empire itself elective. Nine of the great princes temporal and spiritual,—the king of Bohemia; the dukes of Bavaria, Saxony, Brandenburg, and Hanover; the Palatine of the Rhine; the Bishops of Mentz, Trèves, and Cologne, — exercised this power, and assumed the title of electors. The empire thus passed successively into the houses of Saxony, Franconia, Bavaria, and Austria.

2834. *The rise of the house of Austria,* in the thirteenth century, under Rodolph of Hapsburg, forms a memorable era; that house having ever since (except during a very short interval) retained the succession to the empire, though always with a form of election. Its power, however, has rested much more upon its actual possessions, and the warlike character of its subjects, than upon any jurisdiction which its sovereigns have possessed as emperors.

2835. *The Reformation* formed a remarkable era in the history of Germany. Originating in that empire, it was soon embraced by a great proportion of the leading states, and was accompanied, as usual, with bold and sometimes republican opinions on the subject of government. The emperors put forth their whole strength in endeavouring to crush it by force of arms, and at the same time sought to establish their paramount dominion over all Germany. The perseverance of the protestant confederacy, and the glorious victories of Gustavus Adolphus in the thirty years' war, not only established freedom of worship, but emancipated the smaller states from the authority of the emperor, and rendered his supremacy over the Germanic body little more than an empty name.

2836. *The rise of Prussia,* in the middle of the eighteenth century, caused a considerable change in the political aspect of Germany. Amid all the independent states, Austria had alone ranked as one of the first magnitude, and had thus maintained a paramount influence. Prussia, however, having wrested from her Silesia, and obtained accessions in other quarters, was enabled to treat with her on equal terms; and though Austria continued still a great state, her power over the Germanic body was almost annihilated.

2837. *The French revolutionary war* caused a mighty movement. The whole western part of the empire was new-modelled, under the title of the Confederation of the Rhine; and Prussia and Austria became little more than vassal states. A mighty reaction, however, ensued; France was driven completely within her former boundaries, and Germany, with some modifications, was replaced in the same situation as at the commencement of this terrible contest. An attempt has even been made to revive the powers of the Germanic diet: these have been chiefly employed by the great states in dictating, to those of inferior note, measures regarding the defence of the empire, and the regulation of the press and the universities.

Sect. IV. *Political Geography.*

2838. *The political system of Germany* is particularly complicated, chiefly through the great number and variety of the states of which it consists, partly also through the common bond of union which is attempted to be maintained among them. It will therefore be requisite to consider, first, the Germanic body, as represented in the Diet, which is entitled to exercise certain general functions; and, next, the political form, power, and relations of the particular states.

Subsect. 1. *Germanic Body.*

2839. *The Diet* has for its office to preserve the external and internal security of Germany, as well as the independence and safety of its particular states. It professes to regulate all the foreign relations of the empire, and the disputes which may arise between one state and another, without interfering with the interior administration of any.

2840. *The Diet consists* of deputies from each particular state. The number of votes possessed by each varies, according to its extent and power, though not in any exact or uniform proportion. In the full meeting the aggregate number of votes is seventy, which are thus distributed:—Austria, Prussia, Saxony, Bavaria, Hanover, and Wirtemberg, have each *four*, Baden, Hesse-Cassel, Hesse-Darmstadt, Holstein, Luxemburg, each *three*; Brunswick, Mecklenburg-Schwerin, Nassau, each *two;* all the rest, Saxe-Weimar, Saxe-Gotha, Saxe-Coburg, Saxe-Meiningen, Saxe-Hildeburghausen, Mecklenburg-Strelitz, Holstein-Oldenburg, Anhalt-Dessau, Anhalt-Bamburg, Anhalt-Köthen, Schwartzburg-Sondershausen, Schwartzburg-Rudolstadt, Hohenzollern-Hechingen, Lichtenstein, Hohenzollern-Sigmaringen, Waldeck, Reuss old and new, Schaumburg-Lippe, Lippe-Detmold, Hesse-Homburg, Lubeck, Frankfort, Bremen, Hamburg, have each only *one*. Several of these belong to foreign sovereigns, who have a vote in virtue of territories which they hold in Germany, and are subject to the Diet in matters relating to those territories; as the king of Great Britain for Hanover, the king of Holland for Luxemburg, the king of Denmark for Holstein. The full assembly of the Diet resolves itself into a smaller assembly or committee of seventeen, in which only the great powers have each a vote, and the other votes are respectively assigned to two, three, or four of the smaller powers united. This committee prepares all the business of the full Diet, and puts it in a form to be voted upon. The sittings of the Diet are perpetual, though, when all their business is disposed of, they may allow themselves a vacation of not more than four months.

2841. *The emperor of Austria* no longer claims his ancient prerogatives as emperor of Germany, of which title he was divested by Napoleon; he professes himself only *primus inter pares;* but he is president of the Diet, and submits to it the subjects on which it is to deliberate. He cannot, however, withhold propositions made by any other members, but must bring them forward in proper time and place. He has also a casting vote in the committee. There being no longer an emperor, the functions of the nine electors have ceased.

Subsect. 2. *The Austrian Empire.*

2842. *The empire of Austria* is not only the first power in Germany, but by its possessions, both within and without, it has long ranked among the foremost states in the general system of Europe. By the last war, indeed, it lost the Netherlands, a rich and important territory, though too much detached from the rest. But by means, lawful or unlawful, it obtained accessions which were nearly an equivalent; and its possessions are now formed into a vast, connected dominion in the centre of Europe. In Germany, they comprise Upper and Lower Austria, Bohemia, Moravia, with the Alpine regions of Styria, Carinthia, and the Tyrol; in Poland several provinces, which have been wrested by successive partitions, and to which it gives the name of Gallicia; the entire kingdom of Hungary; and, in Italy, Venice, Milan, Mantua, and other territories, which have been united under the name of the Lombardo-Venetian kingdom. The German territories, with Hungary, are known under the appellation of "the Hereditary States." The Austrian monarchy is bounded on the east by those of Turkey and Russia; on the north by those of Prussia and Saxony; on the west chiefly by Bavaria, Switzerland, and Piedmont; on the south by Tuscany and the Ecclesiastical States. The whole territory amounts, according to Lichtenstein, to 268,500 square miles. The number of inhabitants, in 1815, was reckoned by Blumenbach at 28,182,336; by Lichtenstein at 27,617,500.

2843. *The following* is Professor Bohrer's estimate of the *extent and population* in 1826, to which we add the population in 1829, according to Col. Traux:—

	Square German Miles.	Cities.	Towns.	Villages.	Houses.	Population.	
						1826.	1829.
Lombardy	851·94	42	281	5,401	542,543	4,237,301	4,279,764
Dalmatia	273·75	9	14	968	49,175	323,112	329,727
Tyrol	516·41	21	32	1,558	98,689	789,835	776,390
Illyria	519·74	54	57	6,848	167,012	1,121,240	1,138,506
Styria	399·40	20	96	3,539	163,050	824,505	839,128
Austria	708·65	52	352	11,126	274,997	2,008,970	2,031,136
Bohemia	952·95	286	275	11,924	541,074	3,698,506	3,748,361
Moravia	481·56	119	178	3,673	288,905	1,968,713	1,994,850
Gallicia	1548·03	95	194	6,042	633,709	4,293,488	4,385,608
Hungary	4181·60	62	644	11,695	1,026,007	9,471,263	9,659,686
Transylvania	1100·80	13	64	9,566	256,629	2,000,015	2,027,566
Military Frontier	609·70	12	13	715	89,669	907,453	923,315
	12,144·53	785	2200	73,075	4,131,959	31,664,401	32,134,037

2844. *Of these,* according to Lichtenstein, 4,800,000 are Germans; 11,750,000 Sclavonians; 4,000,000 Magyars, the ruling people in Hungary; 4,500,000 Italians; the rest Wallachians, Jews, gipsies, Greeks, and Armenians. In regard to religion, about 22,000,000 are Roman catholics; 3,000,000 Greek; 2,000,000 Protestants; 500,000 Jews. If we except the mountain borders, the whole empire enjoys the happiest climate, and is fitted to produce corn, wine, silk, and other valuable articles in the highest perfection. Except however, Lombardy, part of Bohemia and Silesia, and the Alpine tracts, cultivation is nowhere carried to the height of which it is susceptible. This seems owing partly to the proud indolence of the Austrian and Hungarian population; partly to the obstructions which stand in the way of foreign commerce; for there is no sea-coast unless at the head of the Adriatic; and the great rivers which roll through the territory, have afterwards a long course through that of foreign and partly semi-barbarous states, before they reach the sea.

2845. *For the same reasons*, none of the Austrian dominions are *manufacturing countries*, though in all those north of the Alps linen is fabricated to a great extent. But the mineral riches of the Austrian dominions are equal or superior to those of any other country in Europe. The salt mines of Poland are the most extensive in the world; the others rank as to importance in the following order: iron, copper, silver, gold, cinnabar, quicksilver, lead, tin.

2846. *The government* of Austria is an hereditary monarchy, almost entirely absolute. Originally the monarch enjoyed the title of emperor only when elected as head of the Germanic body; and his hereditary titles were archduke of Austria, king of Hungary and Bohemia. But when Bonaparte compelled Francis II. to resign the title of emperor of Germany, he assumed in its stead that of emperor of Austria.

2847. *There are assemblies called States* in all the countries subject to Austria, except Friuli and the military limits. But in general they impose no check on the prerogative of the monarch; and their assemblage is only for form's sake, or for giving assistance in some secondary branches of administration. In Hungary and Transylvania, however, the states have a share in the making of laws, and possess other important prerogatives; and in the Tyrol no new tax can be imposed without their consent. Hungary and the Tyrol, accordingly, though the most troublesome in peace, have in war proved always the bulwarks of the Austrian monarchy. The Hungarian government, however, is entirely aristocratical, the body of the peasants being in a state approaching to personal bondage. This was the case also in Austria and Gallicia till 1781, when slavery was abolished by Joseph II. The states consist of four orders, clergy, nobles, knights, and representatives of the free cities. In the Tyrol alone there is a house of peasants.

2848. *Justice* is administered in Austria according to recent codes, which were formed by Joseph II. in 1786–7, and by Francis II. in 1811–12. The tribunals of the first resort are conducted, not by salaried judges, but by the magistrates of towns; and in the country by courts composed of the privileged nobility of the district. From them an appeal lies to colleges of justice established in the capital of each province.

2849. *The finances of Austria* are involved in considerable obscurity, as no official statements on the subject are ever made public. In 1819, Hassel calculated the entire income at 125,000,000 florins, about 13,100,000*l.* sterling. Of this the proportion was from Upper Austria, 19,800,000 florins; Lower Austria, 5,200,000; Saltzburg, 800,000; Styria, 6,000,000; Carinthia, 2,500,000; Carniola, 2,200,000; Littorale, 2,000,000; Tyrol, 4,500,000; Bohemia, 19,500,000; Moravia and Silesia, 8,000,000; Gallicia, 10,000,000; Hungary, 20,000,000; Transylvania, 5,500,000; the military limits, 500,000; Dalmatia, 500,000; Lombardy, 9,000,000; Venice, 9,000,000. This revenue arises, 1. from land-tax, which, for the whole empire, may amount to about 41,000,000 florins. 2. The customs, duties on commodities, stamps, and lottery, not reckoned at more than 30,000,000. 3. The royal monopolies; a copious source, which yields at present not less than 36,000,000. 4. The imperial domains, the value of which is estimated at 300,000,000, but the net revenue arising from them at not more than 7,000,000 or 8,000,000. There are also particular domains in Hungary and Transylvania, which yield about 2,000,000 more. The expenditure is involved in still greater uncertainty. The military disbursements are undoubtedly on a more extensive scale than the revenue can well support, though Hassel rejects as extravagant Lichtenstein's estimate of 140,000,000. The expenses of the court and civil establishment are estimated at 54,000,000, besides which there are the private expenses of the monarch, regulated entirely according to his pleasure.

2850. *The Austrian military establishment* consisted, in 1819, of 270,000 men; 185,400 infantry, 38,400 cavalry, 17,800 artillery, 2350 engineers; of pioneers, invalids, the transport service, &c., 20,600. These are augmented in war by the militia called the *landwehr*; which in 1811 were, for Bohemia, 21,590; Moravia and Silesia, 11,770; Austrian circles, 10,000; Styria and Clagenfurt, 6650; and for Gallicia, 21,500: making in all, 71,510; but the amount is now supposed to have reached 100,000. Besides these, there is the Hungarian levy, called often the *insurrection* levy, led by the nobles, who in the seven years' war replaced Maria Theresa on the throne, and who in the last war repeatedly came forward in great force. In 1797 they mustered 35,000 foot and 18,000 horse. Austria has an excellent body of cavalry, both of heavy dragoons for charging in the field, and of light irregular bands of Croats, Pandours, and other tribes from the military frontier. Her infantry is also respectable: there is something inert, however, both in her councils and movements, which has usually made her unfortunate in her wars, both with France and Prussia; yet she has always recruited her strength with surprising rapidity from the resources of her warlike population.

2851. *Though a maritime force* is ill suited to the situation of Austria, yet she has formed a small navy at Venice, consisting of three ships of the line, two frigates, and twenty-four sloops; and she maintains an armed flotilla on the Danube.

Subsect. 3. *Kingdom of Prussia.*

2852. *The kingdom of Prussia*, which at the beginning of the last century had neither name nor place among the states of Europe, has by rapid advances become one of its most powerful monarchies. The basis was formed by the territory of Brandenburg, the ruler of which ranked as elector, and was one of the chief of the second-rate princes of the empire. About the beginning of the seventeenth century the elector acquired the Grand Duchy of Prussia, a territory held for some time by the knights of the Teutonic order, who being unsuccessful against the Turks in Palestine, turned their efforts to the conversion and conquest of the northern borders of Europe. The united state, however, did not make any great figure till the middle of the seventeenth century, when Frederick I. not only assumed the title of king, but spent his life in forming an army, and raising its discipline to the highest pitch. This army devolved on his son, the great Frederick, whose daring and enterprising spirit was not long of employing it in the extension of the monarchy. From the house of Austria he wrested Silesia, one of the finest of its provinces. By the partition of Poland, an iniquitous proceeding, in which he took the lead, he not only extended, but connected together, many of his scattered possessions. In 1806, the battle of Jena seemed to have for ever laid prostrate the monarchy of Prussia; but the disastrous campaign of the French in Russia, and subsequently the patriotic and universal rising of the people, completely expelled the usurping power, and re-established the kingdom in its ancient rights and possessions.

2853. *The parts of the Prussian monarchy* are so various and detached, that it is difficult to connect them under any general view. In Germany, she has the entire territory of Brandenburg, of Silesia, except a corner left to Austria, and of Pomerania, of which Sweden is now entirely stripped. Her Saxon possessions consist of Magdeburg, Merseburg, and Erfurt. In Westphalia, she has Minden, Munster, and Arensberg; on the Rhine, Dusseldorf, Cologne, Clèves, Coblentz, and Triers. Beyond Germany, she has the original duchies of East and West Prussia, from which she takes her name. In Switzerland, she has the principality of Neufchâtel. In Poland, she has only the province of Posen; for Russia, in reward of her own services, has chosen to appropriate that of Warsaw: Hassel adds, we know not why, the republic of Cracow. These foreign possessions, with the eastern German territories, form nearly a connected kingdom, which comprises the main body of the Prussian monarchy. The Westphalian and Rhenish provinces form a detached western portion, separated from the rest by the dominions of Hanover, Hesse, and Saxony.

2854. *The following is a statement* of the extent of the different parts of the Prussian monarchy, with its population, in 1827: —

		German Square Miles.	Population.
East Prussia -	Königsberg - -	404·93	702,100
	Gumbinnen - -	207·87	408,440
West Prussia -	Dantzig - -	150·80	325,868
	Marienwerder - -	315·06	446,709
Posen - -	Posen - -	327·43	720,112
	Bromberg - -	211·07	331,025
Pomerania -	Stettin - -	233·13	409,992
	Kolin - -	258·49	312,710
	Stralsund - -	74·89	147,356
Brandenburg -	Berlin and Potsdam -	377·27	855,670
	Frankfort - -	371·53	661,333
Silesia - -	Breslau - -	172·73	935,194
	Oppeln - - -	238·43	679,601
	Reichenbach* - -	120·46	
	Lignitz - -	188·40	751,154
Saxony - -	Magdeburg - -	204·70	539,807
	Merseburg - -	187·01	581,059
	Erfurt - - -	66·23	275,374
Westphalia -	Munster - -	128·63	388,898
	Minden - -	94·73	382,108
	Arensberg - -	143·70	439,706
Rhenish provinces - -	Cologne - -	61·77	377,451
	Dusseldorf - -	95·66	675,352
	Coblentz - -	92·58	409,204
	Trèves - - -	196·87	361,729
	Aix la Chapelle -	66·55	344,317
	Neufchâtel - -	13·95	52,800
		4,934·87	12,605,078

The population is supposed to have risen, in 1828, to 12,796,825.

* Lately merged into the other Silesian districts.

2855. *The productions* of this large territory are as various as its constituent parts. According to Hoffmann, the total area is 107,765,000 Magdeburg acres. Of these, 42,767,000 are arable; 432,000 garden ground; 54,000 vineyard; 20,436,000 pasturage; 25,754,000 woods; 18,322,000 rock, water, and waste. The annual revenue derived from it is calculated as follows: arable, 50,656,000 rix-dollars; pasturage, 19,652,000; woods, 6,500,000; gardens, 2,782,000; wines, 300,000; fishery, 749,000; hunting, 745,000: in all, 81,304,000 rix-dollars. The capital value is estimated at 2,032,600,000 rix-dollars. Prussia is not, on the whole, a manufacturing country, though the linens of Silesia are highly distinguished, its woollen manufacture is also extensive, and Berlin has some fine fabrics of glass and porcelain. In 1805, the whole manufactures of Prussia were valued at 84,790,000 rix-dollars, which were supposed to give employment to 350,000 persons.

2856. *The constitution of Prussia* has been long that of a pure military monarchy. The old states of ducal Prussia, Silesia, Pomerania, and other districts, had been entirely discontinued; and even the privileges of the order of nobles, which had been great, were merged in those of the crown. When, however, the king of Prussia called upon his subjects to take arms against France, he came under a solemn obligation to reward them with a free constitution. Replaced on the throne by the valour of his people, he suffered a series of years to elapse, without taking any steps towards the fulfilment of this engagement. Within the last few years, however, the promise has in a certain shape been executed. Separate provincial states have been convoked for the different members of the kingdom, Prussia, Brandenburg, Pomerania, Silesia, Saxony, Westphalia, and the Rhenish provinces. Their jurisdiction, however, is confined within very narrow limits. They cannot originate any project of law, but must merely deliberate on those submitted to them by the king. Their debates are secret. No change, however, can henceforward be made in the law, and no new tax imposed, without their sanction. In other respects the king has zealously supported the measures brought forward by Austria for the suppression of popular influence, and limiting the liberty of the press.

2857. *The taxation of Prussia* is large in proportion to its population, owing in a great measure to the supposed necessity of maintaining an army sufficient to cope with neighbours of more extended dominion. The entire revenue in 1816 amounted to 76,000,000 florins (7,980,000*l.*). Of these, East Prussia produced 8,100,000; West Prussia, 3,750,000; Posen, 3,100,000; Brandenburg, 9,000,000; Pomerania, 3,000,000; Silesia, 13,500,000; Saxony, 10,417,000; Westphalia, 8,431,000; the Rhine, 15,670,000. In 1829, the receipts were stated at 50,796,000 rix-dollars (about 8,889,000*l.*). The following were the chief sources:— Domains and forests, 5,524,000; mines, 1,000,000; posts, 1,100,000; lottery, 684,000; monopoly of salt, 4,783,000; land-tax, 9,657,000; income tax, 6,368,000; licences, 1,736,000; customs and excise, 18,733,000.

2858. *The expenses* come chiefly under the head of public debt, 10,937,000; pensions, 3,158,000; war, 22,165,000; foreign affairs, 586,000; the interior, 4,883,000; ecclesiastical and medical affairs, 2,347,000; justice, 1,823,000; provincial administrations, 1,830,000.

2859. *Prussia* has contracted less *debt* than most modern states. Frederick the Great even left behind him a considerable treasure; but his successors incurred an amount of 60,000,000 or 70,000,000 of rix-dollars. This burden, Frederick-William III., by a strict economy, had in a great measure paid off, before the battle of Jena; but since that time the exigencies of the monarchy have caused the accumulation of a large funded debt, which, including the foreign loans, amounts to 160,000,000 rix-dollars (25,200,000*l.*), besides a floating sum of 18,000,000 or 20,000,000.

2860. *The Prussian army*, its high discipline, and fine condition, have been always the pride of the monarchy; and notwithstanding the blow it received on the fatal field of Jena, its glories in no long time, under Blücher, were completely revived. The army, as formed by Frederick I., was distinguished chiefly for that rigid discipline which reduced the soldier almost to the level of a machine moved at the will of his officer. This system became the object of imitation to the other states; but the victories of the French showed that greater things might be done by a more active and intelligent soldiery. The Prussian force consists of three parts; the standing army, the *landwehr*, and the *landsturm*. The former is composed of 165,000 men, of which 18,220 are guards; 112,140 infantry; 19,232 cavalry; 15,408 artillery and engineers. They are recruited by conscription from the class of young men between twenty and twenty-five, who are all liable to be called upon for three years' service. We cannot but agree with Mr. Sherer, that "this universal soldiership is assuredly a curse," and that it would be much more eligible to have a certain number devoted for life to the army. The *landwehr* consists of those who have escaped the conscription, of those who have retired from the army, and of all others under forty years of age. They consist of two *bans;* the first comprises all who have not served, or are under thirty; the second, those who have retired from the line, or who are under forty. They are employed constantly in war; but in peace only during a part of the year, when they are called out to be trained. In the former case, only the first ban takes the field with the regular army; the second remains at home to perform garrison duty. The *landwehr* consists of 160,000 men; making the whole war establishment, 325,000. The first ban amounts to 95,000; so that 260,000 is the amount which the king can call at once into the field. The *landsturm*, consisting of all not included in the preceding classes, serves only during war; yet not against the enemy, being occupied solely in maintaining internal peace and security.

2861. *A maritime force* has never been an object of attention in Prussia, though she possesses a considerable extent of sea-coast.

Subsect. 4. *Smaller States.*

2862. *The numerous states* into which the German confederation is divided have all internal arrangements peculiar to themselves. Only the constitution of the most leading states will here be delineated, leaving any peculiarities in the minor ones to be noticed in the next section.

2863. *Bavaria* very long ranked as the second state in Germany; she was once the successful rival of Austria, and as such beheld her princes seated on the imperial throne. Napoleon, in the view of employing the elector against the house of Hapsburg, greatly augmented his dominions, and invested him with the title of king. As he ruled him, however, with a rod of iron, the new king seized the first opportunity of joining the confederacy against the French emperor; in virtue of which, though obliged to restore the Tyrol and Saltzburg to Austria, he received elsewhere an ample compensation. Bavaria now possesses a territory of 1437 German, or about 33,000 English square miles, which in 1830 was divided and peopled as follows: —

Circles.	German Square Miles.	Population.
The Iser - - -	286	581,923
The Regen - - -	198	419,949
Upper Danube - -	182	505,220
Lower Danube - - -	155	407,541
The Rezat - - -	148	539,039
Upper Mayn - -	198	523,789
Lower Mayn - - -	170	542,475
Rhine - - -	100	517,081
	1437	4,037,017

2864. *The king, in* 1818, *fulfilled his promise* of giving his people a government moderately constitutional. The states consist of two chambers: the first is composed of the princes, the high nobility, and the heads of the church; the second of deputies from the smaller landholders, the cities, the minor clergy, and even the universities. They meet only once in three years; but they enjoy the full privileges of such a body; since no new law can be passed, no new tax imposed, without having first been voted by them. The revenue of Bavaria amounted, in 1830, to 29,200,000 florins (3,050,000*l.*), of which 5,500,000 arose from land-tax; 3,500,000 from house and other direct taxes; customs, 2,000,000; excise, 4,500,000; 2,000,000 from forests; 7,000,000 from royal domains and rents; 2,000,000 from mines and salt monopoly; 352,000 from the post-office; 1,200,000 from the lottery. The expenditure amounted to 28,400,000 florins; of which 3,005,000 were for the royal house and court; 8,000,000 for the army; 1,250,000 for religion; 1,270,000 for roads and bridges; 750,000 for public instruction; 1,240,000 for ministry of the interior; 1,708,000 for justice; 152,000 for public health; pensions, 4,500,000; public debt, interest, and sinking fund, 8,355,000. The regular army consists of 46,341 men: of which 29,232 are infantry of the line, and 7334 light infantry; 6408 cavalry; 3357 artillery. There is also a reserve to fill up the ranks of the regular army, and a *landwehr* for internal defence.

2865. *Saxony* always ranked as one of the most powerful of the German electorates, until the ascendency gained by Prussia. The elector of Saxony received from Napoleon not only the title of king, but an addition of territory doubling that which he formerly possessed. He adhered to the last to that once powerful benefactor, on whose fall he was not only stripped of all the newly acquired territories, but obliged to surrender some of his former possessions. The extent of his present dominions is only 7276 square miles; but the population, being very dense, amounts to 1,400,000 inhabitants. The government is not quite absolute, but has old feudal states, which must concur in the making of laws and the imposition of taxes. As they represent, however, only the privileged orders and the corporations, the peasantry and small proprietors are entirely thrown out, and have to bear an unequal share of the public burdens. The revenue is now computed at 11,000,000 florins; the debt 36,000,000. The army, which, in 1813, contained 37,000 troops, is now reduced to 10,000, with a reserve, however, of the young men, between the ages of eighteen and thirty-one, who may be called upon to recruit its ranks.

2866. *Wirtemberg*, originally a secondary German state, owed its aggrandisement and its kingly rank to Napoleon, and has been allowed to retain both. It contains 7920 square miles, with a population, in 1830, of 1,520,000. Wirtemberg has taken the lead among the constitutional states of Germany. On the 3d of May, 1817, the king granted a charter, by which the states, composed of two chambers, the nobles and the commons, are to be assembled every two years, and to possess all the privileges enjoyed under the best regulated limited monarchies. The king has a revenue of 9,224,000 florins, which somewhat exceeds the expenditure, but is burdened with a debt of 27,000,000. He maintains an army of 12,000 infantry, 3600 cavalry, and 2500 artillery.

2867. *The other principal states* belong to monarchies out of Germany, of which they are only appendages.

2868. *Hanover*, on the accession of its elector to the throne of Great Britain in 1714, saw this title and that of Brunswick-Luneburg merged in the greater name conveyed by this inheritance. It has always, however, been held as politically a foreign country. The Hanoverian has not the rights of a Briton, nor the Briton those of a Hanoverian. Britain may make war with all the world, and Hanover remain in profound peace. The converse of this proposition has not been found practically true, and Hanover has frequently drawn this country into the vortex of continental war and policy. The kingdom of Hanover has an extent of 15,180 square miles, and a population of 1,550,000. There are provincial states in its several districts, and also a general assembly of the states, which shares with the sovereign the power of making laws and imposing taxes. The elections to the lower chamber, however, are made by the magistrates, who are themselves often elected in a manner independent of the citizens. The revenue is 10,800,000 florins, with a debt of 26,000,000, which causes an annual expense of 1,200,000. The army consists of 12,940 men, of whom about a third are cavalry; besides a *landwehr* of 18,000.

2869. *Of the other smaller states*, Holstein and Luxemburg are so incorporated, the one with Denmark and the other with the Netherlands, as to be politically identified with them. Those smaller states which remain entirely German will be considered under the section of local geography.

Sect. V. *Productive Industry.*

2870. *The products of the industry of Germany*, an extensive region cultivated by a laborious people, are of large amount. They consist of plain, solid, somewhat rough articles; in exchange for which, she procures the finer manufactures of England and France, and the delicate productions of southern Europe and the Indies.

2871. *Agriculture*, throughout all this fertile region, is carried on with great diligence, though not altogether on the extensive scale, or with the intelligence, which have rendered British farming so successful. The cultivators are mostly little farmers or little proprietors, who till the ground with their own hands, and who, in all the Teutonic states, constitute a class called *bauer*, or peasants, to which we have nothing exactly corresponding. The improved processes of this important art, however, are making their way, though slowly. The plough is the universal instrument of cultivation, except in some of the mountain tracts of Saltzburg and the Tyrol, where the spade is used. The horse in the north, and the ox in the south, are chiefly employed in tillage. Field after field spreads usually in an apparently boundless expanse, except in some parts of Westphalia and Holstein, where hedges are interposed to divide them.

2872. *Of the various kinds of grain*, rye is the most extensively cultivated, and forms the food of the great body of the people. Wheat is also raised largely, and is of excellent quality, especially in Bavaria and Austria; buckwheat is sown chiefly on the sandy tracts of northern Germany. Barley and oats, of various kinds, are also general; and maize abounds in Moravia and the extreme southern districts. Peas, beans, lentils, and other pulse are produced in great abundance, and great quantities are sent out from the northern parts. Generally speaking, Germany is a corn-exporting country; for though Lower Austria receives grain from Hungary, and Silesia from Poland, yet this is not nearly equal to the quantity conveyed from Swabia and Franconia into Switzerland, and from the northern parts to Sweden, and also to Great Britain, when she will admit it. Garden vegetables are reared most sedulously, and in great perfection; the cabbage in particular, in the form of *sauer kraut*, is an object of exportation. Other useful articles are not wanting. Flax is raised in such immense quantity, that though it be the material of the staple and universal manufacture, there remains a surplus to be exported. Hops, a native German plant, are produced, especially in Bohemia and along the Mayn, in quantities more than sufficient for internal consumption. Rape is also a production peculiarly German, and vast quantities of rape oil are used both in manufacture and for lamps. Much oil is also expressed from other vegetable substances; yet, as Germany does not produce the olive, she is obliged to import both from southern Europe, and from the countries which participate in the northern whale-fishery.

2873. *Germany enumerates wine among her products*, though not in the first class. All her southern districts, as far as the 51st degree, produce it; but only the hard, cold, agreeable wine, peculiar to the banks of the Rhine, and called Old Hock, is in much request abroad. Hassel reckons, however, that the country produces 12,000,000 eimers; of which quantity 4,500,000 are raised in Austria, the rest on the Rhine and its tributaries. This amounts to only one half of what Hungary, and one sixth of what France produces. It does not obviate the necessity of an extensive importation from France, Spain, and Hungary. The wine made on the Elbe and the Oder is of little use, except for vinegar.

2874. *In respect to live stock*, the peculiar eminence of Germany consists in the hog, of which Hassel computes that 8,000,000 are annually slaughtered. Pork is, indeed, the most favourite food of the Germans, who, notwithstanding its abundance, even import quantities from Hungary and Turkey. On the other hand, Germany has a large export trade to France and the Netherlands, both of live hogs and of hams and sausages; nor does any ship touch at the northern ports without taking in a stock of these German supplies. Horned cattle also form the chief branch of rural industry in the mountainous districts of the south, Bavaria, Swabia, and the Tyrol. In the great northern plain they are used chiefly for labour, except in East Friesland, Holstein, and other marshy tracts, where they yield milk more abundantly than the hill-cows of the south, but it is of inferior quality. Cattle are imported from Poland and Hungary, but not nearly to such extent as the salted and dried meat exported to other countries. Hassel estimates the collective number of the oxen, cows, and calves of Germany at from 12,000,000 to 14,000,000. According to positive enumerations, excluding calves, the proportions are, for Austria, 2,600,000; Prussia on this side the Elbe, 1,328,000; Saxony, 710,000; Westphalia, 508,000; Wirtemberg, 600,000; Baden, 333,000; besides a great part of the empire in which no account has been taken. Germany is supposed to contain nearly 2,000,000 horses, which are not handsome, but well-built, strong, and useful. They are particularly adapted for heavy dragoons, and for that purpose are sent into France and the Netherlands; but the German states cannot keep up their light cavalry without importation from the eastern countries. Sheep are numerous, not in the southern, but chiefly in the middle states, as Silesia and Saxony. The wool has been so much improved by crosses with merino and other breeds, as to have superseded the importation of Spanish wool, and even to have, in a great measure, supplanted it in the British market. There are supposed to be 20,000,000 sheep in Germany. Prussia numbered 3,768,000 after a war which had diminished her flocks by a full third. Bees'-wax and honey were a great ancient staple commodity of Germany; but since sugar has been introduced, and the Reformation, by diminishing the consumption of candles in churches, has reduced the demand for wax, this staple has greatly fallen; yet Lusatia, Luneburg, and some other districts, produce more than is wanted for Germany itself.

2875. *The forests of Germany* are very noble, and are supposed to cover not less than a third of its surface. They are of every description, and for every use. It is complained, however, that, of late years, great neglect, combined with profuse consumption of wood, either for luxury or manufacture, has considerably diminished the abundance of this article, which has risen in many places to six, eight, or even ten times its former price. Still a great quantity is carried down the rivers to the Netherlands and Britain, and pot and pearl ashes are made in the forests. Recently, the German princes, considering that the mines and many of the manufactures absolutely depend on a supply of wood, have made regulations to prevent its wanton consumption, and to ensure fresh plantations. They have even formed institutions, and founded lectures in the universities, for teaching the management and promoting the growth of wood; so that there is, perhaps, no country in which so much is done for securing to posterity a supply of this valuable article.

2876. *In manufactures*, Germany does not retain that prominent place which she once held. Formerly the Hanse towns clothed all the north; but since the spirit of industry has been awakened, first in Holland, then in Britain, and lastly in France, Germany, instead of supplying those countries, has been inundated with their fabrics, and can scarcely maintain the superiority of her linens. Even this is a recent branch, introduced by the exertions of Frederick the Great and Joseph II. A great temporary impulse was given by Napoleon's continental system, under which all importation from Britain was prohibited. Cotton, in particular, then rose into extraordinary activity, and the whole Erzgebirge became one cotton factory. After the general peace, however, and the opening of the European markets, this artificial industry was found incompetent to sustain the rivalry of the British, whose superior skill and machinery enabled them to undersell the Germans in every market. On the other hand, Ireland had availed herself of the cessation of German rivalry to undertake the supply of linen to the colonies, the best market for that article. She made great progress also in the culture of flax, and the spinning of linen yarn, both which commodities the British manufacturers had been accustomed to import from Germany. That country thus not only lost the extraordinary impulse which its manufactures had received, but saw them reduced to a more depressed state than had been known at any former period.

2877. *Linen, one of the staples of Germany*, has its chief seat in Silesia, where many very fine fabrics are produced, and where the entire produce is estimated at upwards of 1,500,000*l.*;

in Bohemia, where it is supposed to be of little less amount; and in Lusatia. Coarse linen is fabricated in Prussian Westphalia, Hanover, Brunswick, and Hesse-Cassel. The woollen manufacture is very flourishing; and Germany is now, in a great measure, independent of foreign supply. Its principal seats are in the Prussian territory of Aachen, in Moravia, Bohemia, Silesia, Lusatia, and Saxony. Leather is produced in sufficient quantity to leave a surplus for exportation. The branches in which Germany excels are leather breeches, gloves, and every thing that relates to military equipment. Earthenware has been carried to great perfection. The porcelain of Meissen, Berlin, and Vienna, surpasses every thing of the kind in Europe, and in some respects even excels that of China. German tobacco-pipes are also distinguished. Bohemian glass is noted all over the world; nor is the manufacture confined to Bohemia, for it extends to all the surrounding territories. Crown-glass and mirrors are the branches for which Germany is most noted. The beer of Germany was formerly celebrated throughout Europe, but has long been surpassed by that of Great Britain. Her cotton fabrics, as already observed, have nearly fallen to the ground, and her manufacture of silk was never considerable. The following may be enumerated as minor articles: — sugar-refinery, wax, oil, musical and mathematical instruments, clocks, watches, and woodwork toys. The German mechanics are usually formed into corporations, and are very skilful, holding the next rank to those of England. In cutlery they claim the pre-eminence.

2878. *Mining* is one of the sources of wealth in which Germany may be said to surpass every country in Europe. Nowhere has the science of mining been more studied, or brought to greater perfection. Metals and minerals are produced in remarkable variety: gold; silver, not very abundant, but superior to that of the other European countries, at least if Hungary be included; mercury and cobalt, also superior; iron, more abundant, and of better quality, than that of any other country, except Sweden; lead and tin, unrivalled, except in Great Britain; a profusion of salt and coal. The principal mining districts are Styria and Carinthia, Silesia, the Erzgebirge in Saxony, the Hartz in Hanover. The entire products of German mining have been thus estimated: — gold, 182 marks; silver, 123,000 marks; copper, 39,000 cwt.; lead, 191,200 cwt.; tin, 7980 cwt.; iron, 2,400,000 cwt.; mercury and cinnabar, 13,980 cwt.; cobalt, 16,500 cwt.; calamine, 82,800 cwt.; arsenic, 10,600 cwt.; bismuth, 1500 cwt.; antimony, 2,400 cwt.; manganese, 1800 cwt.; salt, 3,150,000 cwt.; coal, 20,000,000 cwt.

2879. *The commerce of Germany*, though extensive, is not equal to that which formerly existed, or to the advantages arising from her situation in the heart of Europe and of the civilised world. She was, after Italy, the first European country in which commerce revived; and the Hanseatic league once engrossed the whole trade of the north. In recent times, Germany has been outstripped by Holland, by Britain, and even by France. The German writers ascribe this decay to the want of unity consequent on the number of little states into which their country is split, which deprives its ships of a national flag, and of a powerful protection while navigating remote seas. Their shipping is chiefly confined to Hamburgh, Lubeck, and Bremen, the remnant of the Hanse towns, which still enjoy many of their old privileges in the ports of Europe, and whose flag is seen in every part of that continent. Germany labours under the difficulty of finding an outlet for the great quantity of commodities which she possesses fit for foreign markets; being hemmed in by nations more industrious than herself, destitute of colonies, and precluded by the maritime powers from any direct trade with the East and West Indies. These states rather look upon the great population of Germany as affording a market for their manufactures and the produce of their colonies. Her political disunion has been especially injurious to her internal trade, which would otherwise be immense. Each petty prince thinks only of promoting his own separate interest, by laying under contribution the commerce which passes through his territory. A boat which performs the whole navigation of the Rhine pays toll at twenty-seven stations: the number on the Weser is twenty-three; on the Elbe, thirty-two. The Danube and the Oder, the one passing chiefly through the territories of Austria, and the other through those of Prussia, are more free; but unfortunately the countries through which they flow do not afford the same scope for traffic. Treaties, however, have been for some time negotiating, by which it is expected that a great measure of freedom will be secured to the navigation of the German rivers.

2880. *The exports of Germany* include most of those productions in which she has been described as excelling: grain, salted provisions, especially hams; live cattle and hogs; timber; iron and steel; lead; salt; linen, linen yarn, and linen rags; some woollens to the north of Europe; porcelain, glass, ashes. In return for these essential articles, she receives nearly all the luxuries of life; the manufactures of Britain, the wines of France, the sweets and aromatics of the East and West; also dye-stuffs, and all the cotton and silk which are necessary for her own manufactures. From the disunited state of the country, no general account appears to be kept; but the German economists labour under a dread of the imports exceeding the exports, and the consequent supposed loss from an unfavourable balance.

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2881. *The internal commerce of Germany,* notwithstanding all the obstructions under which it labours, is extensive. It owes this advantage chiefly to its noble rivers, on which vessels of large burden can pass nearly from one extremity to the other. The Danube, though the largest, and of longest course, is not the most beneficial. Its navigation is so difficult that vessels cannot make use of the sail, and must be dragged along by horses; rapids and cataracts obstruct it in several places; and its tributaries, the Inn and the Ens, descend only from the rugged heights of Styria and the Tyrol. It has a triple navigation, the ships of Ulm unlading their goods at Ratisbon, those of Ratisbon at Vienna, whence they are carried downwards through Hungary. The Rhine has a much more valuable navigation, continued from Switzerland to Holland and the Netherlands, and communicating by its great tributaries with the most fertile territories and the most industrious cities in the interior of Germany. It has of late been greatly facilitated by the employment of steam-vessels, which go up as far as Strasburg. The navigation of the Elbe is also very valuable. It begins at the junction of the river with the Moldau in the interior of Bohemia, and constantly improves, till at Hamburg the Elbe is capable of receiving the largest vessels. By means of the Spree and its canal, it communicates with the Oder, and brings down to Hamburg the productions of Silesia and Brandenburg. The commerce of the Oder itself flows chiefly in this channel. The Westphalian streams of the Weser and the Ems, though not of first-rate magnitude, are very commercial, giving support at their mouths to the ports of Bremen and Embden. The system of annual fairs for internal trade is still kept up in Germany to a much greater extent than in any other country. The grand fairs are those of Frankfort on the Mayn, for France and the Netherlands; Leipzig, for Russia, Poland, and the North; and also for the book trade; Bautzen, or Bolzano, for Italy. There are smaller fairs at Naumburg, Cassel, and Madgeburg; and a most extensive trade exists without fairs at Vienna, Augsburg, Nuremberg, Berlin, Cologne, and Breslau. Through these different channels is carried on an extensive interior trade, and a great foreign land-trade to Russia, Poland, Hungary, Italy, Switzerland, France, and the Netherlands.

2882. *Canals* have not been extensively introduced to improve the interior trade of Germany, though no country affords greater scope for them; as, by joining the Danube, the Rhine, and the Elbe, the most distant seas of Europe might be made to communicate. To such undertakings, indeed, the disunited state of the empire must be a great discouragement. A few only have been executed on a small scale, and chiefly in the north. Such are the Holstein canal, which joins the Eyder to the Baltic, and opens a communication between it and the North Sea; the Plaunsche canal, from the Havel to the Elbe, serving, with Frederick-William's canal from the Spree to the Oder, to connect the two great rivers of northern Germany, the Oder and the Elbe. The Vienna canal, completed to Neustadt, is intended to connect the Danube with the Adriatic.

Sect. VI. *Civil and Social State.*

2883. *The population of Germany,* according to official data collected in 1818 by the Diet, amounted to 30,375,679. The enumerations since made have generally exhibited a certain increase; and in 1830, a careful estimate, in the *Bulletin Universel,* from the works of Crome, Mohl, &c. rates it at 34,393,000. They inhabit 2433 cities, 2071 market towns, and 88,619 villages and farms, independently of single houses. Germany has no great capital, like France and England, in which the wealth, power, and civilisation of the state is as it were concentrated. On the other hand, no country in Europe has so many cities and towns of from 3000 to 5000 inhabitants.

2884. *The people who inhabit Germany* are distinguished into two races, the German and Sclavonian. The Germans are estimated at 24,700,000, and are divided into two families, High and Low German, distinguished less by physical differences, than by character, and particularly by the mode of pronouncing the language. The High Germans inhabit most of the territory south of the Hartz and its branches, Upper Saxony, Franconia, the Rhine, Swabia, Bavaria, all the Austrian dominions, and Silesia. The Low Germans are in Lower Saxony, Westphalia, Holstein, Mecklenburg, Brandenburg, and Pomerania. The Sclavonic races are reckoned at 5,040,000, and constitute the greater part of the population in Bohemia, Moravia, and Silesia. They are much inferior in civilisation to the Germans, but are a laborious race, formerly almost all in a state of bondage, but now mostly emancipated, and many of them possessing considerable wealth. Besides these leading races, there are about 175,000 Italians; from 20,000 to 25,000 French, and 250,000 Jews.

2885. *The social state in Germany* exhibits two very distinct portions, not running into, or blending with each other, as in most of the civilised modern states. The class of noble birth hold themselves as separated by the most marked and decided line from the body of the nation. They have divided themselves into high and low nobility. The high nobles are those who either possess sovereign sway, or are descended from those who did, and are called mediatised princes. The low, or feudatory nobles, are those who cannot boast that any sovereign power ever resided in their family. There is another distinction, that of the old nobility, who must be able to count a line of sixteen noble ancestors, and of the young or short nobility. The cities, too, especially those that once ranked either as Hanse towns or as imperial cities, contain a class enjoying hereditary distinction as patricians or city nobles. The petty princes and great nobles of Germany thus retain much of the feudal habits, and their courts display rather rude baronial pride, and forms of empty pomp, than the polish and elegance of the great European courts. It must be owned, however, that they have produced many individuals of the greatest ability and most enlightened minds; and that their sway, though lofty, is generally mild, and even popular. The character of the body of the German people, has many estimable features. They are, perhaps, the hardest-working nation in Europe; slow, heavy, and laborious; and, through these qualities, have always been esteemed the most valuable colonists in newly settled districts. Their habits are simple and domestic; and plain honesty and fidelity usually mark their transactions. Rigidly excluded from court intercourse, their manners are somewhat plain and homely; and German wit, according to Madame de Staël, is the dullest of all possible things. Yet their poetry makes it evident that under this outward crust there is a vein of deep feeling and high fancy; partaking, indeed, too largely of mysticism; but we may add the universal taste for the highest class of music. The character of the Germans is very military; a quality derived from their feudal ancestors, and partly from their country having been the theatre of all the great wars which have been waged in Europe. "The common sounds," says Mr. Sherer, "in the cities of Germany are the clangor of military bands, the ringing of iron boot-heels, and the measured tread of stately soldiers:" hence the military character is said to rank higher there than in the neighbouring countries.

2886. *In regard to religion,* Germany has been the scene of the greatest revolution in modern times. In its bosom the Reformation sprung up; and within it were carried on the most formidable of the conflicts between the old and the new system. Elsewhere, one or the other finally prevailed; but in Germany they have settled into a pretty equal division of the country. Speaking generally, the whole south may be called catholic; the whole north, protestant. Of the greater states, the catholic religion rules in Austria and Bavaria; the protestant, in Prussia, Saxony, Hesse, and Hanover. A complete toleration is now every where granted to every profession. The Catholics still hold the majority, being reckoned at 18,000,000, the Protestants only at 12,000,000. Jews, Moravians, Mennonites, Hussites, and some smaller sects, make up the rest of the population.

2887. *In literature and science,* Germany has been particularly distinguished, and is perhaps the most learned and reading country in the world. Her writers exhibit that character of hard and somewhat mechanical labour, which distinguishes her workmen in other departments. They are voluminous, and eminent for profound research; while they want some of the lighter graces of composition. In editing and illustrating the classics, in biblical criticism, and in statistical researches, no nation can come into competition with them; and since, in abstract science, they can name Leibnitz, Kepler, and Euler; in medicine, Haller and Van Swieten; in mineralogy, Werner and Möhs, no nation can triumph over them in these pursuits. In the metaphysical world also they have recently made a great movement; and the names of Kant, Fichte, and Schelling, are ranked by their followers almost as demigods. We confess ourselves among those who are able to discover only faint glimpses of meaning in the works of these learned persons, and are inclined to think, with Madame de Staël, that "the empire of the air" has been the portion of German metaphysicians. That accurate thinking is not the function which works best in the national brain, seems proved by the recent general prevalence of animal magnetism; to which we dare not add the profound sciences of cranioscopy and craniology. Till within the last half century, Germany had no existence in regard to the belles-lettres, and the Teutonic language and genius were considered alien to every thing like fancy and poetry. Suddenly, however, Klopstock, Wieland, Schiller, Lessing, Göthe, claimed a place among the first poetical names, and distinguished themselves by bold and lofty flights of genius, which made a strong sensation throughout Europe. More recently the exploits of the war of liberation have been sung in very lofty strains by Körner. We must not even in this hasty sketch forget Humboldt, who has established his name as the most learned and eloquent of modern travellers.

2888. *The institutions for the promotion of learning* are very numerous in Germany. The chief learned societies are those of Munich, Berlin, Prague, and Göttingen; but, wanting the impulse of a national metropolis, none of them vie in celebrity with those of Paris and London. The universities are very numerous and very distinguished. Only five of them are catholic; that of Vienna is attended by 1103 students, Prague, 879; Weisburg, 331; Landshut, 640; Freyburg, 837. There are thirteen protestant universities, Heidelberg, with 603 students; Leipzig, 883, Rostock, 76; Griefswalde, 55; Marburg, 197; Jena, 522; Giessen, 241; Kiel, 107; Halle, 471; Göttingen, 1165; Erlangen, 143; Berlin, 1752. There are two of divided religion; Tübingen, which has 500 students, and Bonn, which has 400: in all, twenty universities, which in 1817 were attended by 10,481 students. Instruction is given, as in the Scottish universities, entirely by lectures; the students live in the towns, and are not subjected to any academical discipline. They are in general diligent in their attendance at lectures, but somewhat disorderly in their private conduct. Duelling is practised in a systematic manner, and formed almost into a regular science; hard drinking is alleged to be prevalent; and an ardent, but somewhat irregular patriotism has led to the formation of secret political associations, which have become an object of jealousy to the German sovereigns. The lectures are public and private, of which the latter only are remunerated with fees, and are hence usually the most valuable.

2889. *There are also institutions called Lyceums,* which are numerous, especially in Austria, where lectures are delivered, but no degrees conferred. Common schools are also sufficiently numerous; and those for the instruction of the lower orders are so multiplied, that out of a thousand scarcely one will be found, it is said, who cannot read, or fifty who cannot write. In no country has education been more the object of study; and the systems of Basedow, Salzmann, Pestalozzi, and Jahn have attracted general attention.

2890. *The literary and scientific collections* of Germany are the most numerous and valuable that exist in any country. The imperial library at Vienna contains 300,000 printed volumes, 25,000 manuscripts, and about 70,000 pamphlets; that of Munich, 400,000 volumes; that of Göttingen, the most useful perhaps in the world, 280,000 volumes, 5000 manuscripts, and about 110,000 pamphlets; Dresden has 250,000 volumes; Wolfenbüttel has 190,000, including a rich store of ancient works, and 6000 bibles. Stutgard, 170,000 volumes, and 12,000 bibles. Berlin, 300,000 volumes in her public libraries; of which the king's contains 160,000. Weimar, Prague, Frankfort on the Mayn, Hamburg, Breslau, Mentz, Darmstadt, have each about 100,000. Marburg, Gotha, Jena, and many of the smaller cities, have very considerable libraries; and upon the whole it is calculated that in Germany four millions of volumes are accessible to the public. The cabinets of natural history, and especially of mineralogy, are numerous and valuable. The botanical garden of Schönbrunn, near Vienna, and that of Göttingen, are celebrated; as are the observatories of Vienna, Berlin, and Göttingen. The cabinet of medals at Vienna is the richest in Europe.

2891. *The book trade of Germany,* in unison with the general taste for reading, has reached an extent which equals, perhaps, that of all the rest of the world. The nation numbers about ten thousand authors, who not only produce original writings, but translate immediately every foreign work of any celebrity. The works thus produced are brought annually to the Easter fair at Leipzig, to be distributed among the booksellers of Germany. The new works annually produced amount to about 4000. The want of any literary metropolis where there could exist a permanent depôt seems to have occasioned this arrangement, which appears in many respects cumbrous and inconvenient.

2892. *Of the fine arts,* painting was very early and successfully cultivated in Germany; though the works of Durer and Cranack have a rude and Gothic character, compared with those of the great Italian masters. In recent times, none of her painters have ranked in the first class, certainly that honour cannot be assigned to Mengs and Dietricy. Yet her princes have formed collections of paintings to which there is nothing equal out of Italy. The Dresden gallery holds the foremost rank; after which may be named the Belvidere at Vienna: the galleries of Munich, Berlin, Cassel, Augsburg, not to mention many private collections, especially at Vienna, which rival those of princes. To these are also attached very extensive collections of drawings and engravings. Music is the rage all over the nation; and the German composers, Handel, Haydn, Mozart, Beethoven, Weber, and Spohr, seem almost to have eclipsed the masters of Italy. In almost every village a concert of amateurs is to be found. Architectural genius has not shone with very great lustre. Very splendid edifices have been reared in the great capitals, and in the free cities during the days of their glory; but these have been chiefly formed upon Italian models. Sculpture has never risen above mediocrity. Engraving was early carried to great perfection by Albert Durer and others, called "the little masters," in a small and highly finished style; and in recent times, Frey, Wille, Schmidt, and Müller have maintained the reputation of Germany on a level with that of any other country.

2893. *Amusements, dress, food.* The amusements of the Germans are rather of a more gay and elegant description than their character would lead us to expect. We have already noticed the extreme ardour with which music is cultivated. Equally frequent is the kindred amusement of dancing. The *waltz,* the national German dance, has not obtained the approbation of the moralists of other countries, and indeed appears liable to serious objections; yet Mr. Sherer assures us that in its native land, and performed in its genuine style, it appeared to him sufficiently innocent. The dress of the Germans has now few distinctions from that which has become general over civilised Europe. The pomp of array among the Austrian and Hungarian nobles, and the blaze of jewels which they display, dazzle the other nations of Europe. In food, the Germans have some hard and harsh articles, which are national favourites; ham, sausage, raw herring, sauer kraut, acid wine; and these they contrive to prepare in a manner which renders them agreeable to the palates of the neighbouring nations.

Sect. VII. *Local Geography.*

2894. *The details of German geography* are of immense extent, and extremely intricate; from the vast number of sovereignties, great and small, into which the empire has been split; the manner in which those are intermingled with each other, and the numerous transferences of territory which have taken place. It must be confessed that some degree of simplification was effected by numerous *arrondissemens* made during the war of the French revolution, and the absorption of many of the minor powers into the domain of their greater neighbours.

2895. *The division into circles,* made by Wenceslaus in 1307, and by Maximilian in 1500, with reference to the different regions as parts of an elective empire, formed long the basis upon which every geographical description of Germany was founded. Its importance gradually declined, as Germany was broken up into entirely independent parts; and since the empire itself has been abolished, and the dignity of elector has ceased, the circles have no longer any political existence. Hence Hassel, in his recent description of Germany, has not even employed them as a principle of division, but has distributed the different parts solely according to the princes who actually hold sway over them. Yet the circles hold so great a place in history, and are still so frequently mentioned as recognised portions of Germany, that it may be advantageous to take a rapid sketch of their contents.

2896. (1.) *Austria.* (2.) *Bohemia.* (3.) *Bavaria.* The two first of these form the principal part of the hereditary dominions of the house of Austria; the last includes those of Bavaria, with little or no intermixture.

2897. (4.) *Swabia.* This circle is distinguished by its grand and bold aspect, produced by the Black Forest, the bordering mountains of Switzerland, and the upper course of the Rhine and the Danube. The dukes of Swabia, who for some time held the empire, have long been extinct. This circle comprises the kingdom of Wirtemberg, the Grand Duchy of Baden, and the great imperial cities of Augsburg and Ulm.

2898. (5.) *Franconia.* The dukes of Franconia, who once also ruled Germany, are nearly forgotten in that duchy. It has not been the seat of any considerable sovereign state, since the principalities of Anspach and Bayreuth were occupied by Prussia, who was obliged to cede them to Bavaria. This circle is chiefly distinguished by its great imperial cities, of which the principal are those of Nuremberg and Frankfort on the Mayn; the latter still retaining its nominal freedom, and its extensive home trade.

2899. (6.) *The circles of the Upper and Lower Rhine* comprise the most fertile and beautiful portion of Germany, the choicest vineyards of which are on its hills. Since the fall of the elector palatine, from whom a great part of it was called the Palatinate, it has been split into various parts, and occupied to a great extent by powers without the circle. Hesse-Cassel and Hesse-Darmstadt are considerable states, whose dominions lie chiefly within the Upper Rhine; while Prussia possesses the most valuable part of the Lower Rhine. This circle has been much distinguished by its sovereign bishops, those of Mentz, Trèves, Cologne, who ranked once as electors, and vied in pomp and power with the greatest princes. They gave way, however, before the late shocks, have been deprived of their sovereignties, and their domain reduced within very narrow limits. This circle is also remarkable for the chain of mighty fortresses, the barriers of Germany, which have been erected along the frontier stream of the Rhine.

2900. (7.) *Westphalia* is also a very miscellaneous circle, the chief portions of which belong to Prussia and Hanover. It does not appear to have formed an independent sovereignty, except during the ephemeral sway of Jerome Bonaparte. Westphalia is in general a level and fertile district, of which the inhabitants are industrious. It is traversed by the Weser and the Ems; and its foreign trade is carried on by the Hanse towns of Bremen, Verden, and Emden.

2901. (8.) *Lower Saxony.* The name of Saxony applies to that great extent of northern Germany originally occupied by the Saxons, the once powerful and warlike conquerors of Britain. It is generally level, forming a continuation of the immense plain of continental Europe. Lower Saxony consists chiefly of Hanover with Brunswick; but portions of it are held by the kings of Saxony and Prussia. The lower course of the Elbe flowing through this circle, makes it the theatre of an extensive trade, which centres chiefly in the great Hanse town of Hamburgh.

2902. (9.) *Upper Saxony* is the most extensive, and perhaps most important, of all the circles. It includes Brandenburg, the central seat of the king of Prussia's territories, and Saxony Proper, which forms nearly the whole of the territories constituting the electorate, now kingdom, bearing that title. It contains the large and fine capitals of Dresden and Berlin. It has also a considerable extent of sea-coast; but this being on the Baltic, is not so favourably situated for commerce as that of Lower Saxony.

2903. *The local divisions of Germany* must now be considered according to the sovereigns by whom they are ruled; that being the only political distinction now recognised.

Subsect. 1. *Austrian Dominions.*

2904. *More than half the dominions of the house of Austria* are out of Germany. The Lombardo-Venetian kingdom, as a local division, came under Italy, and Gallicia will come under Poland. Hungary, however, with its appendages, forms so extensive and important a territory as to be entitled to a separate chapter.

2905. *The German territories* belonging to the Austrian emperor consist of the archduchy of Austria, Bohemia, Moravia, Styria, Illyria, and Tyrol; the extent and population of which have been already given from the latest authorities.

2906. *Lower Austria*, or Austria below the Ems, forms as it were the metropolitan province, being situated in the very heart of this vast empire. It is composed of the deep and warm valley of the Danube, bordered on each side by considerably elevated mountain chains. Those on the south form a part of the great Alpine barrier; inferior, however, to the gigantic ranges of Switzerland and the Tyrol. They are called the Noric Alps: their higher eminences extend along the Styrian frontier, though they shoot long branches into the heart of Austria. The most elevated summits are the Schneeberg, 6521 feet; the Oelscher, 6060; the Wechselberg, 5574; the Simmering, 4416. On the northern side a chain of mountains, connected with those of Bohemia, separates the valley of the Danube from those of the Moldau and the Elbe; but it has no alpine character, and does not rival the elevation of the southern chain. Between the two lies another branch, of which the highest point is the Kalenberg, and eastward from which the land slopes down to the vast watery plains of Hungary. A great extent of these hills is covered with wood, while many parts on the contrary are rocky and barren; so that this is rather a picturesque than a naturally fruitful country. A large portion, however, is laboriously cultivated. The entire surface is reckoned at 2,870,000 jochs (1½ acres each), of which about 600,000 are water and waste, 1,280,000 arable, 78,000 vineyard, 650,000 pasturage, and 860,000 woodland.

2907. *The produce of wine* is reckoned by Blumenbach at 2,000,000 eimers (nearly ten gallons each); of which about 500,000 is exported, and 50,000 made into vinegar. The pastures, which are diminishing, sustained in 1815, 57,590 horses, 89,909 oxen, 196,565 cows, and 345,697 sheep. The breed of horses is greatly improved by the demand for the imperial studs, and that of sheep by the introduction of merinos. Lower Austria is the most manufacturing district of the whole monarchy. In 1819 it was reckoned to contain 18,044 looms, 520 printfields, and 2368 water-mills; giving employment to 57,121 manufacturers, independent of weavers, of spinners, and other workmen. These manufactures, in the order of their importance, are cotton, silk, linen, iron, copper, jewellery, glass. Vienna is also the centre of the internal commerce of the whole monarchy.

2908. *Vienna* (*fig.* 373.) the great and ancient capital of Germany, is seated on the southern bank of the Danube, not more than twenty miles from the frontier of Hungary. The original city, surrounded by its once formidable walls, does not exceed a sixth of the space covered by the thirty-four suburbs, which stretch in an almost interminable extent, but are all surrounded by a brick wall serving for purposes of taxation and police. The body of the place displays a sober and solid stateliness, without gloom. The houses are massive and lofty; and, like those of Edinburgh, divided among a number of families, with a common staircase. Every house has a master, who looks to its general cleanliness and security, and shuts the common door at ten at night. There are on an average thirty-eight men in every house in Vienna, and there is one which contains 400. The city is rendered very handsome by the great number of mansions, justly entitled to the name of palaces, which are held by the high Austrian and Hungarian nobles. There are few very prominent single edifices. Even the original palace of the house of Hapsburg (*fig.* 374.)

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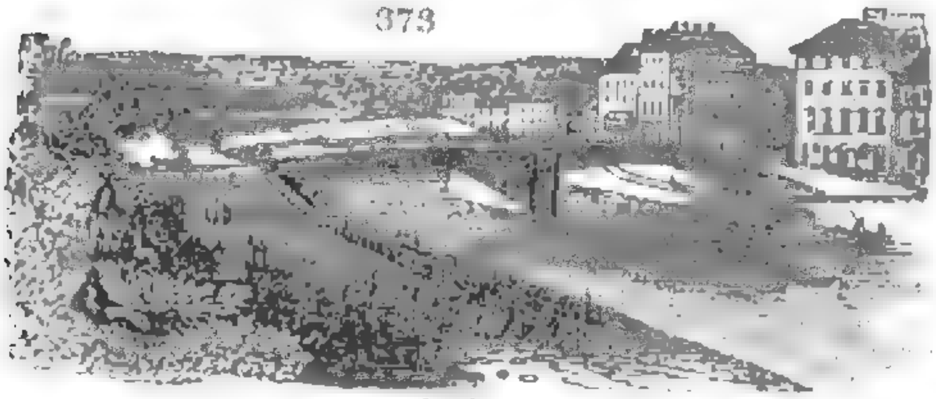

VIENNA.

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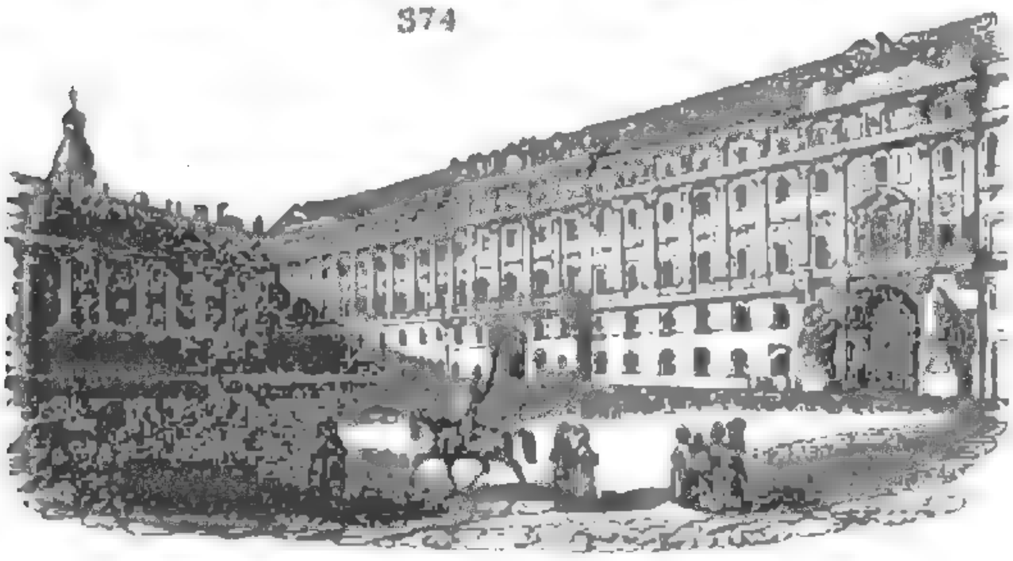

SQUARE OF IMPERIAL PALACE, VIENNA.

is represented as a collection of dissimilar and ill-assorted masses, added to each other as convenience dictated. That of Belvidere is more attractive, from its rich collections; and the rural palace of Schönbrunn, from its fine gardens. The cathedral of St. Stephen (*fig.* 375.) is the largest church in Germany, and unites all that is lofty, imposing, and sublime in Gothic architecture. A colossal and equestrian monument of Joseph II., by the German sculptor Zauner, adorns the square which bears that emperor's name. In other instances Austria has withheld this mark of gratitude from her great men: hence the relict of the great Marshal Laudohn, having placed a monument of him at his country seat, inscribed on it:—"Erected not by his country, not by his sovereign; but by his widow." Vienna has a number of other churches that are highly ornamental, particularly that of St. Lorenzo (*fig.* 376.), a Gothic structure of great elegance. By the census of 1815, Vienna was found to contain 7150 houses, in which were 56,749 families, and 238,177 persons; of whom 111,340 were male and 126,831 female. According to an official statement in 1829, the population had risen to 289,785; of whom 142,654 were male, and 147,137 female. In 1810, 9,000,000 florins were paid for house-rent; and the value of private houses was estimated at 150,000,000. In 1815, the year's consumption for the city was thus stated:— 84,000 oxen, 93,000 calves; 70,000 sheep; 356,000 eimers of Austrian wine, 40,000 Hungarian, only 600 foreign; 571,000 eimers of beer; 3,210,000 bushels of grain. Vienna is the most manufacturing city in the monarchy. In 1811 there were 10,800 looms, and about 60,000 people employed on them. The tradesmen of Vienna are also reckoned the best in Germany. There are 6000 masters, 23,000 journeymen, 6000 apprentices, and 24,000 females employed. Shoes of Vienna manufacture are in request all over Germany. The city is also very commercial; and the bustle in its streets is not equalled even in an English trading town. The art of effecting a safe passage through them on foot, amid the crowd of carriages, hackney coaches, loaded waggons, and wheelbarrows, there being only a slight indication of foot-pavement, is said to remain a mystery even for those who have had the most extensive London experience. The driving a coach through with speed and safety is an attainment which the most skilful coachmen from other cities cannot attain without very long practice.

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CATHEDRAL OF ST. STEPHEN.

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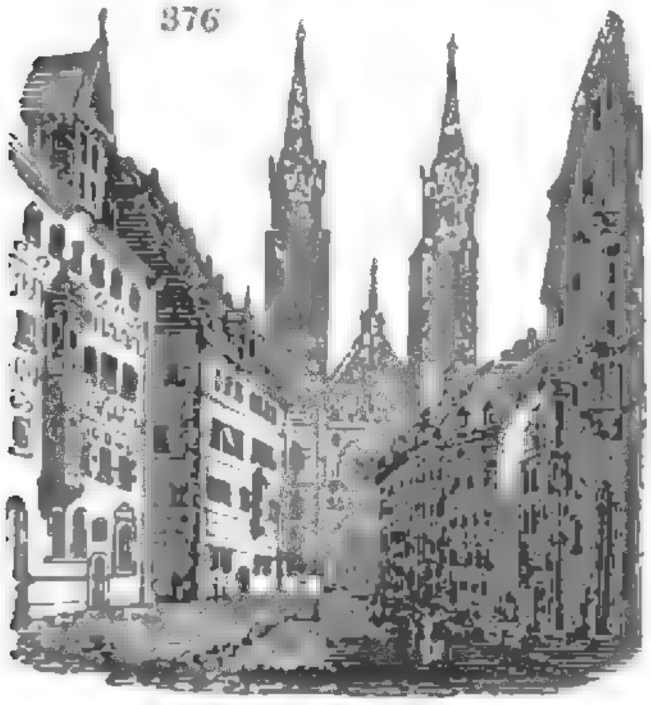

CATHEDRAL OF ST. LORENZO.

2909. *Vienna* is not a literary city, and is perhaps the largest that exists without an academy either of science or belles lettres. Yet there are few that contain more extensive collections of books, paintings, and objects of natural history, both in the royal palaces and the houses of the nobles. The censorship of the press is maintained with the utmost rigour; and the great object of the court seems to be, that nothing shall appear which can in the smallest degree reflect upon the imperial house or government. Mr. Russell even reports of the present emperor, that, when treating of some seminary of education, he observed, "I do not want learned men; I want men that will do what I bid them." The drama in Vienna, as over all Germany, is a favourite amusement; but none of the leading dramatic writers belong to that city, which ranks, however, as the musical capital of Germany, and even of the world. If some of those whose names distinguish its harmonic annals were not native, at least they found there the patronage by which their exertions were excited, and their talents developed.

2910. *The manners* of the people of Vienna are the subject only of qualified encomium. They are described as a more eating, drinking, good-natured, ill-educated, laughing, and hospitable people, than any other of Germany, or perhaps of Europe. In regard to themselves, they are distinguished by a love of pleasure; in regard to strangers, by great kindness and hospitality. The pleasures of the table seem to be prized in a very especial manner. The most profound skill is attributed to the cooks of Vienna; and Dr. Townson even expresses apprehension that a scarcity of the livers of geese, their favourite dish, might endanger the tranquillity of the empire. The citizens are seen in crowded parties of pleasure on the ramparts, and in the fine wooded public walk called the Prater, between the city and the Danube. This eager pursuit of pleasure is unfortunately not always confined within the bounds of innocence. The dancing balls, to which persons of every class are admitted, attract a large proportion, at least, of the most profligate. Mr. Russell has not hesitated to make a charge of general dissoluteness; and adds, that there is not a female in Vienna who will not increase her means of amusement and show by the sacrifice of her virtue. M. Sherer, however, "who scans his nature with a brother's eye," argues that the scum which floats on the surface must not be too partially taken as the criterion of the whole composition. The family parties in the Prater appeared to him to show rather an air of quiet and natural cheerfulness, than of dissolute gaiety; while the neatness and care with which the children were dressed, their smiling and happy countenances, seemed by no means to bespeak parental profligacy. They appeared to him altogether an honest, affectionate, cheerful, frank, and obliging race.

2911. *Lower Austria* has few other places of any consequence. Baden, fourteen miles to the south, on the frontier of Styria, and at the entrance of the beautiful vale of St. Helena, has become highly distinguished for the baths, from which it derives its name, and which attract from 2000 to 3000 annual visitants from Vienna. The springs, strongly impregnated with sulphur and carbonic acid gas, are considered specific in cutaneous diseases, and useful in many others. The bathers sit or walk for an hour or two up to the neck in water. Kloster Neuburg and Korn Neuburg, on the opposite banks of the Danube, are old castellated towns. Krems is also a well-built place, surrounded by old walls, and containing a lyceum and gymnasium. Aspern and Wagram are villages opposite to Vienna, only distinguished for the great battles fought there in 1809.

2912. *Upper Austria* is entirely a mountain region, an assemblage of lofty alps and glaciers, separated by valleys, and even by small plains, and presenting landscape, sometimes soft and pleasing, sometimes in the highest degree wild and romantic. These mountains consist of the main body of the Noric, and the borders of the Rhætian Alps. Among the loftiest summits are the Gross Glockner, 11,982 feet high; the Viehbachhorn, 11,058; the Hockhorn, 10,854; the Dachstein, 9222; the Hohekreutzberg, 8688. On the opposite side of the Danube, Upper Austria is bounded, and in a great degree covered, by the Bohemian forest. It is most copiously watered, not only by the Danube, but by the Inn, the Traun, and the Ens; and has the Kammersee, the Mondsee, the Zellersee, the Traunsee, and other lakes, which are romantic and well supplied with fish, but of little extent. It is needless to say that the country is little fitted for agricultural purposes; yet there is no district of Germany which has been improved with greater diligence. Of 3,287,264 jochs, of which this rugged surface consists, not more than an eleventh part is abandoned to absolute waste. There are 837,000 arable acres, 1,167,000 pasture, and 969,000 wood. The quantity of grain produced is about 9,000,000 bushels. The chief branch of husbandry, however, is pasturage, and the meadows of Upper Austria are reckoned superior to any other in Germany. Horticulture flourishes, especially in apples, from which 40,000 or 50,000 eimers of cider are made. There are very extensive salt mines, yielding 900,000 cwt., and supplying a great part of Germany.

2913. *The cities in this rural district* are not of the first magnitude. Lintz, the capital, and the seat of administration, situated on the Danube, is a well-built city; and its fine square, considerable castle, three monasteries, and bridge of 800 feet long over the Danube, give it a very handsome appearance. It has a considerable imperial manufactory of woollen. Wels, the capital of one of the circles, is smaller, but carries on some trade. Steyer, at the confluence of the Traun and the Steyer, is a very thriving place, the inhabitants of which have increased, since 1803, from 7000 to 10,000. It flourishes by its ironworks and by the manufacture of various articles; also by that of mixed woollen and linen cloths. Braunau, a small but very strong place, on the frontier stream of the Inn, has been considered the bulwark of the monarchy, though it did not, in any of the late wars, arrest the tide of invasion.

2914. *The bishopric* of Saltzburg forms a detached district of Upper Austria, ceded for a time to Bavaria, but restored at the peace of 1814. It is a completely alpine region, presenting all the Swiss features of rocks, glaciers, torrents, and mountains covered with eternal snow. The Noric and Rhætian Alps approximate, leaving between them the broad valley of the Salza, connected with many others, which present the most beautiful features of nature, and afford ample scope to human industry. Saltzburg (*fig.* 377.) ranks with the most picturesque cities in Europe, being built on several irregular hills, with the loftiest alpine summits towering behind. Its edifices correspond altogether to the grandeur of the surrounding scenery. The strong castle, with the arsenal, the bishop's palace, and the cathedral, are built in the grandest style of architecture, and placed in the most lofty and commanding situations. Several other fine buildings were consumed by fire in 1818. Saltzburg has a lyceum, with eleven professors; two libraries: containing together 56,000 volumes, and a school of medicine.

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SALTZBURG.

2915. *Steyermark*, which we call Styria, is a considerable inland territory, immediately to the south of Lower Austria, once governed by its own dukes, but long since absorbed in the empire. It is divided into Upper and Lower Styria; the former of which, being the western part, is altogether alpine; while the eastern districts decline into lower mountains, then into gentle hills, and finally into almost a level plain, on the borders of Hungary. The mountains are not so elevated as those of Switzerland; and though some glaciers remain in the valleys throughout the summer, they do not regularly attain the limit of perpetual snow. The highest are, the Grossenberg, 8381 feet; the Eisenhut, 7676; the Grimming, once accounted the loftiest, only 7540;

the Stauge Alpe, 7140. The Mur, which crosses Styria from west to east, and passes through Hungary into the Danube, is a broad and rapid stream; but its navigation is so obstructed, that it is only useful for floating down the timber made into rafts, which are often dashed to pieces. The Drave, the Save, the Raab, and the Ens water particular parts of Styria. Of the 3,800,000 jochs of which it consists, about 1,500,000 are woodland; 1,080,000 pasture; only 558,000 arable; 50,000 vineyard. The grain is chiefly maize (used both for the cattle and for the bread of the lower orders), rye and buck-wheat: and the annual produce is estimated, by Kindermann, at 7,800,000 bushels. Flax, hemp, and potatoes are general. The wine is reckoned at 1,000,000 eimers, and is stronger and more fiery than the Austrian. But the most valuable produce is that of the mines in the upper province, which are various; but the most considerable is very fine iron, peculiarly fit for being formed into steel. Besides the numerous furnaces employed in extracting the ore, there are large manufactures of scythes, sickles, and chopping-knives; a great part of the iron also is worked up in Austria, and is even exported to England and France. Of the eastern province, a considerable extent is occupied, not by German inhabitants, but by the Winden, a rude Sclavonian race, who do not understand the language of the Germans, and live in a much poorer and ruder manner.

2916. *Of the towns of Styria*, Grats, the ancient residence of the dukes, is the capital: it is situated on the Mur, in a fine valley, on the borders of the lower district. It is a handsome, bustling, and prosperous town, and contains many houses which may be called palaces. Indeed, it ranks the third in the hereditary dominions, and contained, in 1810, 2621 houses, with a population of 29,576. Its old walls and castle, situated on a high rock, no longer suffice to render it a fortified city. The church of St. Catherine, and the monument of Ferdinand II., are its chief ornaments. Its lyceum, the only one that exists in the province, has twenty-six professors, and a library of 70,000 volumes. It carries on a considerable trade, particularly in iron, and has two yearly fairs. The female population of Grats are celebrated for their beauty. Bruck, the capital of a district in Upper Styria, is a small and dull town. Mosburg is a larger place, carrying on some trade. Cilly, Judenburg, capitals of particular districts, and Leoben, where the preliminaries of 1798 were signed, are only large villages. Mariazell, a village on the Austrian frontier, attracts crowds to view an uncouth image of the Virgin there deposited. It was once enriched by many precious donations, among which were the images, in silver, of the Empress Maria Theresa, and all her family; but her son, Joseph II., being pressed by financial difficulties, not only melted down his mother, and all his brothers and sisters, into coin, but seized a great part of the other treasures.

2917. *The kingdom of Illyria* was formed by Napoleon, after the peace of Presburg, when he had compelled Austria to cede to him the whole south-eastern angle of Germany, Carinthia, Carniola, and Friuli; to which he annexed part of Croatia, and the Tyrol. When all these territories returned under the dominion of Austria, she still retained the newly created kingdom, only severing from it the last two appendages. The kingdom, thus modified, contains a superficial extent of 13,590 square miles, according to Blumenbach, but only 13,480, according to Lichtenstein, who states the population at 1,065,000. Hassel, however, calculates it at 1,165,197; but Col. Traux gives 1,138,000 as the result of the latest enumeration in 1829. This region is extremely mountainous and rugged, though the highest chains are on the frontier of Upper Austria and Styria, where Illyria claims a part of the stupendous mass of the Gross Glockner. Its own proper chains are those of the Carniolan and Julian Alps, which cover the greater part of the territory, of which the loftiest pinnacles do not in general rise above 6500 feet. The large stream of the Drave passes through Carinthia, and that of the Save through Carniola, into Hungary. The rugged surface of Illyria is, in many places, very ill-fitted for corn, of which it, however, produces 9,000,000 bushels, chiefly of the coarser kinds, rye and oats. There is a good deal of flax, and a little hemp and silk. Cattle are fed in great numbers, and sheep in the more bare and rocky tracts round the Adriatic. Lead is produced more copiously than in any other part of the empire (about 2000 tons), and mercury more abundantly than in any part of Europe (640 tons); iron 17,500 tons, and considerable quantities of antimony, alum, vitriol, coal, and salt. The chief branch of manufacture is that of working in metals, iron poles, wire, scissors, sickles, hooks, &c. There is also a good deal of linen, and some woollen. The foreign commerce is considerable: the only sea-ports in the Austro-German territories, Trieste and Fiume, are situated in Illyria.

2918. *The physical structure of this country* is very singular, its mountains being composed of that soft and porous limestone which is subject to extensive perforation. Illyria is said to contain upwards of 1000 caverns, many of which receive and send forth subterraneous rivers. The most considerable is the Laybach, which issues at once a broad stream from the bosom of a mountain. Its caverned course is accessible by a majestic natural gateway, forty feet high, and regularly arched. This leads into a spacious cavern, beneath the gigantic walls and vaulted roof of which the river is seen flowing. The cavern cannot be traced far up; but the river is still heard rolling over its rocky bed in the interior of the earth. Of all the caverns, the most extensive is that of Adelsberg. The entrance is by two large apertures, into one of which a river flows, and accompanies the visiter in his progress through this dark passage. At length it reaches an extensive natural cavern, and having penetrated a ledge of rock, plunges under ground, and is seen no more. Here a precipitous rocky wall formerly arrested all further advance; but, about ten years ago, it was scaled, and found to lead to a double range of most magnificent caverns, or natural palaces, supported by pillars, and fretted with cornices of the purest stalactite. The columns are, in some places, so nicely clustered together, and so regularly arranged, as to resemble the nave of a Gothic cathedral. The roof is in part so lofty as not to be discoverable from beneath. Not a sound is heard beyond the occasional dropping of the water, except once a year, when a ball is given by the peasantry in one of the most spacious caverns. Here, many hundred feet beneath the surface of the earth, and a mile distant from the light of day, the simple music of the Carniolan rustics resounds through more magnificent halls than ever were built for monarchs. At the end of six miles, the range terminates in a deep, clear, and cold subterraneous lake, which has not yet been passed. The Lake of Zirknitz is another of the wonders of Illyria. Its celebrity is founded on the periodical flux and reflux of its waters into and out of the bowels of the mountain. In winter and spring its basin, measuring six miles by three, is entirely filled. On the approach of midsummer it begins to diminish, and in the course of a few weeks is entirely drained. A luxuriant crop of grass, or even rye, is then raised in its abandoned bed; and the sportsman shoots game, where shortly before he was fishing for pike. The caverns are then seen gaping, through which the waters descended; and at the end of autumn, when the rains set in, water rushes out from them and from others, and the lake is rapidly filled.

2919. *The cities of Illyria are:* — Laybach, an ancient place, the principal seat of government, containing about 10,000 inhabitants, a lyceum, and some manufactures of silk and porcelain. It is distinguished as having been the seat of that congress in which the Holy Alliance decided the fate of Italy. On a hill above it stands the strong castle of Subiana, the place of confinement for the Italian liberals. Clagenfurt, a town of equal size, has also a lyceum, some manufactures of cloth, and a considerable transit trade. Villach is only about half its extent, but has considerable traffic in the produce of the mines, and in the conveyance of goods between Germany and Italy. The only Austro-German sea-ports are in the kingdom of Illyria. Trieste, made a free port about the close of the last century, has increased so rapidly, as to be now one of the principal havens of Europe. Its population, in 1815, was 36,000, but has since risen to upwards of 42,000. In 1815 it was entered by 7676 large vessels, and 275,000 tons of goods were exported. Its exports to North America alone, in that year, amounted to 250,000*l.*, and the imports to 200,000*l.* Flume, at the head of a more easterly bay, is to Hungary what Trieste is to Germany; but this trade not being so important, supports only a population of about 8000, and enables Flume to send out from 1200 to 1500 sloops.

2920. *The Tyrol,* including Vorarlberg, is the most westerly of the German territories of the empire, and borders upon Bavaria and Switzerland. It is also the most lofty and rugged of all the alpine regions of Austria. It is, indeed, a sort of projection from Switzerland, which it entirely resembles, except in the absence of extensive lakes. It presents mountains reaching to the skies, and crowned with eternal snows, or with rocky pinnacles; awful abysses, with thundering waterfalls; fields of ice stretching miles in extent; avalanches rushing down the steep sides, — the whole aspect of nature presenting a scene of awful majesty and fearful beauty. The Oerteles, the highest peak yet measured, has been found to reach an altitude of 14,416 feet; and there are others, particularly in the Oestal, which might also stand by the side of Mont Blanc and Monte Rosa; but their height has not yet been ascertained. The Schernomand is 11,645 feet, the Phalleyhugel 9756, the Sollstein 9106. Some of the chief tributaries of the Danube (the Inn, the Lech, the Iser,) pour down from the heights of the Tyrol. Agricultural industry cannot flourish on such a surface; as, of 1,500,000 jochs, only a tenth can be subjected to the plough, and then only rye, wheat, and barley can be grown. The Tyrolese, however, have made all that was possible out of their rugged soil. They have a great store of horned cattle and sheep; valuable gardens, from which apples are sent even to Russia; good wine, though it will not keep; some tobacco; wood, and salt in abundance. The other mineral productions are in considerable variety, but of no great amount. The national character of the Tyrolese is excellent. They are honest, sincere, and open-hearted. Their attachment to their country, to its independence, and to the house of Austria, has been displayed in the most heroic manner. The exploits which their undisciplined and almost unarmed bands performed in the last war, form one of the brightest pages of modern history. They are almost all Catholics; but their religion, according to this creed, is genuine and sincere. Their enterprising industry is strikingly displayed by the boldness with which they mount the steepest cliffs, and are thence let down by ropes, in order to cultivate like a garden a little spot that to a stranger would appear inaccessible.

2921. *The towns of the Tyrol* are Innspruck, the capital; an ancient, well built, and considerable place, commanding the valley of the Inn, and the most direct passage from Germany into Italy. Halle, farther down on the same, flourishes by large mines of salt. Kuffstein is important as a military position. Trent, on the Adige, and near the borders of Italy, is a fine old city, celebrated for the ecclesiastical council held there in 1545—1562, which had so signal an influence on the political destinies of Europe. Roveredo, still further down, and almost Italian, carries on some silk manufactures. Botzen, or Bolsano, has a crowded market, where the German and Italian merchants exchange the commodities of their respective countries. Brixen, Bregenz, Feldkirch, (the last two in the Vorarlberg, and on the borders of Switzerland,) are also of some consequence.

2922. *Bohemia* is the most considerable and most valuable of all the Austrian territories in Germany. It consists of an extensive plain, completely enclosed by a ring of mountains, of which the Riesengebirge separate it from Silesia, the Erzgebirge from Saxony, those of the Bohemian forest from Austria and Franconia. These chains run from 3000 to 5000 feet, and none of them shoot up those awful pinnacles, covered with eternal snow, which range along the Swiss and Italian borders. Bohemia is the most completely inland country of Germany, being nearly equidistant from the North Sea and the Adriatic. With the former, however, it communicates by the great stream of the Elbe, which rises in and rolls through all Bohemia, receiving its great tributary, the Moldau, and all its other waters. There is, perhaps, no country on earth more amply stocked with all kinds of solid and useful commodities than Bohemia. Grain, cattle, timber, metals, are all in such plenty, that it is difficult to say which predominates. Of 7,769,000 jochs, 3,608,000 are arable, which, in 1785, produced 52,000,000 quarters; the proportions of which were, 17,000,000 rye, 14,000,000 oats, 17,000,000 barley, 2,500,000 wheat; and the amount is now supposed to be from 50,000,000 to 60,000,000. Flax is raised to the amount of 8000 tons, which yet is not sufficient for the manufactures of the country. Horned cattle, though very numerous, have been somewhat diminished of late years; but the breed both of horses and sheep has been much improved. In 1817, there was a census, which returned 121,000 horses, 241,000 oxen, 601,000 cows, and 907,000 sheep. The hops are the best in the world, and there is a profusion of apples and pears; but the wines are in small quantity, and scarcely drinkable. From the mines are drawn various metals, of which the most peculiar is tin, to the amount of 275 tons. Even fishing is carried on very actively in this inland situation, by means of ponds, which are said to exceed 20,000 in number. The manufactures of Bohemia are also most extensive. That of linen is the staple, including not only the common fabrics, but the finer ones of damask, cambric, lawn, and tape. In 1811, this manufacture was said to employ 400,000 spinners, 55,000 weavers, and 3000 bleachers. That of wool once employed 50,000 spinners, and 20,000 weavers and other workmen. In the cotton branch, the number employed is computed at 36,000. There are 3000 hat-makers; and the glass of Bohemia is famed over all Europe. In 1801, the entire value of Bohemian manufactures was reckoned at nearly 4,000,000*l.* sterling; the pay of the workmen 1,500,000*l.*, and that of the spinners 400,000*l.* Yet it is remarked, that there is little appearance of the wealth which Bohemia actually contains. The nobles, indeed, possess immense estates, the value of which is estimated at nearly 45,000,000*l.* sterling, firmly secured by entails and other legal provisions; but they spend their fortunes chiefly in profuse pomp and luxury at Vienna. The population, in 1775, was only 2,531,000. In 1817 it had increased to 3,236,000; but by the census in 1827, to 3,783,630: of these 1,810,742 were males, and 1,972,898 females. Two thirds are of Sclavonic race, and there are about 50,000 Jews. The Bohemians, beyond any other German people, made an early and noble stand in the cause of civil and religious liberty. Not only after Luther, but long before, the standard of the Reformation was reared, after the death of John Huss and Jerome of Prague; but these glorious efforts had a fatal issue. Overwhelmed by the arms of Austria, the Protestants were either driven out of the kingdom, or compelled to renounce their worship; and it was not until the end of last century, when the principles of toleration began to influence even the Austrian cabinet, that about 34,000 Protestants resumed the exercise of their religion. Amid the same convulsions, the civil rights for which Bohemia had so nobly contended were all wrested from her, and she retains only a semblance of national states.

2923. *Prague* (*fig.* 378.), the capital, is situated in the very centre of the great plain of Bohemia. Its bridge, its old Gothic cathedral on a hill, the vast and decaying palaces of the ancient nobles, the old style of architecture in the private mansions, unite to give it an antique and characteristic grandeur. In the cathedral is particularly distinguished the magnificent silver shrine, which has survived the wars of centuries. Among the vast forsaken palaces may be distinguished that of Wallenstein, the frescoes of which are still bright; and that of Czernim, still more vast, but quite dilapidated. Prague appeared, on the whole, to Mr. Sherer, more picturesque and more impressive than Vienna. The population, in 1817, amounted to 79,606, of which 6783 were Jews; but, by documents collected in 1826, Dr. Sulzig estimates it at 105,000 independent of 12,000 troops in garrison. Of these, 527 were clergy, 883 nobility, 2093 public functionaries, and 5608 artisans. There is a considerable spirit of literature, and of making literary collections in Prague. It has an academy of sciences, an university with 44 professors and 879 students, and a library of 100,000 volumes. There is a national museum, an academy of painting, fifteen good picture-galleries, and a conservatory of music. The trade of the kingdom centres very much in Prague; and three great annual fairs are held there. The city is kept very clean, but indifferently lighted, and some of its streets are unpaved.

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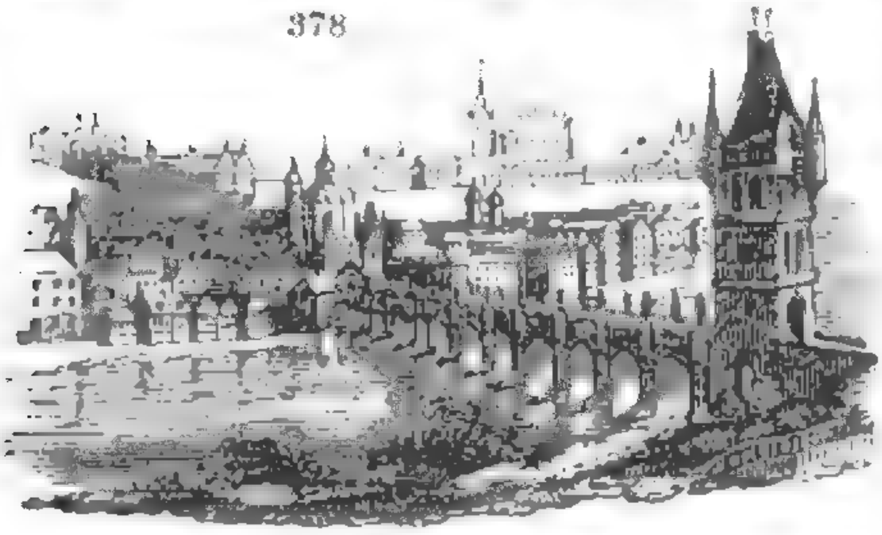

PRAGUE.

2924. *Bohemia* has a number of little towns of from 2000 to 5000 inhabitants, but no great cities, except its capital. We may mention Budweis, Pilsen; Königsgratz, a strong place on the Silesian frontier; Eger, a military position on the side of Franconia; Tabor, founded by the Hussites, who gave it this scriptural name; Töplitz, celebrated for its baths. The manufactures are chiefly carried on in small towns and villages, and do not accumulate in the larger cities.

2925. *Moravia*, in which we shall include the small part of Silesia which remains to Austria, is a country of less extent than Bohemia, but of nearly similar aspect, and equally fertile. It has also a frontier of high mountains; being bounded on the one side by those which separate it from Bohemia, on the other by the

Carpathian mountains, beyond which are Poland and Hungary. Smaller chains penetrate the country, and render the full half of it mountainous; but broad and fruitful valleys intervene, and the southern part consists of fine and extensive plains, the soil of which is peculiarly rich. The March or Morava, rising in the Silesian frontier, traverses the whole country, bearing all its tributary waters down to the Danube. Moravia contains 2,070,000 jochs arable, 750,000 pasture, 50,000 vineyards, 1,120,000 in timber. The produce is, wheat, about 2,600,000 bushels; rye, 8,000,000; barley, 3,500,000; oats, 16,000,000. The live stock, 127,000 horses, 357,000 oxen, and 402,000 cows. The produce of flax is also very great. This is a distinguished manufacturing province. The woollen branch flourishes more than in any other part of the empire; employing 10,000 looms and 100,000 men, not only in common cloths and flannels, but in kerseymeres and other fine fabrics. The general staple of linen is not less flourishing; employing 26,000 looms, 15,000 weavers, and 200,000 spinners. Cotton also gives employment to 10,000 people; and the hosiery amounts to 200,000 woollen, and 140,000 cotton stockings. Moravia and Austrian Silesia, in 1817, contained 1,733,000 inhabitants; of whom 450,000 were of German, and 1,250,000 of Sclavonic race, with 28,000 Jews. By the census of 1825 they had increased to 1,968,000.

2926. *The towns of Moravia are considerable.* Brunn and Olmutz are both strong fortresses, and barriers of the empire. The former, containing 27,000 inhabitants, is the seat of government, and has extensive manufactures of fine woollens. Olmutz is a great market for Russian and Hungarian cattle. Iglau, an open town, has considerable manufactures, and is the greatest thoroughfare in Moravia. Znaym, the ancient seat of the Moravian princes, is now chiefly supported by its great military hospital. Troppau and Jägerndorf, in Austrian Silesia, are strong and pretty considerable towns.

Subsect. 2. *Prussian Dominions.*

2927. *The German dominions of Prussia* are extensive and scattered, variously acquired by successive inheritance and conquest. They consist of Brandenburg, the original basis of the monarchy; of Pomerania and Silesia; and of territories in Saxony, in Westphalia, and on the Rhine.

2928. *Brandenburg* forms a great mass of territory in the eastern part of the north of Germany, bordering on Poland. It is usually called the Mark of Brandenburg, and comprises the cities of Berlin, Frankfort, and Stettin; containing 15,480 square miles, and 1,926,995 inhabitants in 1827: it is neither the most fertile nor the most beautiful part of this great country. It consists of a vast plain of sand, in some places presenting a dead level, in others blown into hills of little elevation. The grain, though carefully cultivated, is not sufficient for internal supply, but is of excellent quality. Tobacco and flax are cultivated with success. The breed of horses and oxen has been improved; but the pastures are not sufficiently rich for them. Sheep are bred in great numbers on the sand-hills; and their wool, improved by the mixture of the merino, ranks next to that of Silesia. The woods cover a fourth part of the surface, but are chiefly firs and pines, affording excellent masts, with some good oak forests. The manufactures, few of which originally belonged to the district, having been patronised with great zeal by the government, have considerably increased. That of woollens is the most extensive; the next in importance are linens and silk: porcelain and other ornamental fabrics are carried on at Berlin. The inland trade is very considerable, being favoured by the great rivers which pass through the province. The Elbe, indeed, only touches its western border; but its great tributaries, the Elster and the Spree, cross all Brandenburg; and the Oder runs through it from the north. The navigation of these rivers is greatly aided by the canals that unite them.

2929. *Berlin* (*fig.* 379.), *the capital of Brandenburg*, and of the Prussian monarchy, is one of the finest cities in Europe; being the recent and studied creation of an absolute monarch, it has been formed upon a regular plan, and on a liberal scale of expenditure. The Brandenburg Gate (*fig.* 380.) is considered the most simple and majestic portal in Europe. On the entablature stands a bronze figure of Victory, one of the trophies carried off by the French, but which Prussian victories have now restored to its place. This matchless gate forms the entrance into the Linden-strasse, which, as a street, is perhaps also without a rival. It is divided, by double rows of linden or lime trees, into fine alleys, which afford delightful walks, and along which are ranged edifices of the most majestic and classical character. Among these are chiefly remarked, the palace situated on the Place de Gendarmes (*fig.* 381.), seen along a line of lofty façade, ornamented with porticoes, statues, and every variety of sculptural decoration; the Italian opera-house, the churches, and the theatre, built with the intention of eclipsing all the other productions of Prussian architectural taste. Mr. Russell, however,

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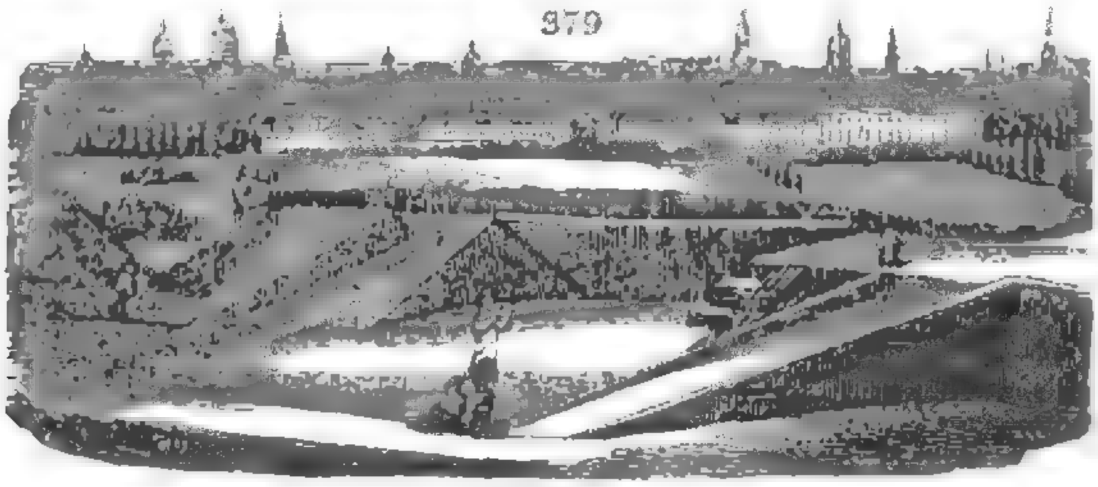

BERLIN.

complains that there is something monotonous in the design, which is uniformly that of an Ionic portico on a very simple front. The same fault he imputes to the other streets and squares, though they are broad, spacious, and regular. The Spree, which divides Berlin, has only the appearance of a broad ditch, navigated by flat-bottomed boats. On the opposite side is the old town, a scene of traffic, with little pretension to beauty. The population, which in 1726 was only 94,419, had risen in 1827 to 223,520. Out of every hundred, fifteen were military. Berlin is a busy city, carrying on various manufactures of woollen, linen, and particularly silk, with a royal manufactory of porcelain, employing 300 hands, and the products of which have been preferred by some to those of Dresden. There are numerous makers of surgical and mathematical instruments. The trade of Berlin is also extensive, as it communicates by the Spree, and its canals, both with the Elbe and the Oder. An university has lately been founded, which, in 1829, contained 1752 students, and ranks as second only to that of Göttingen. This capital has also royal academies of science and the fine arts; a splendid public library; cabinets of natural history; a botanic garden containing 12,000 exotic plants; a picture gallery, not so rich, however, as that of Potsdam, the pictures in which, by the last accounts, were to be added to this collection.

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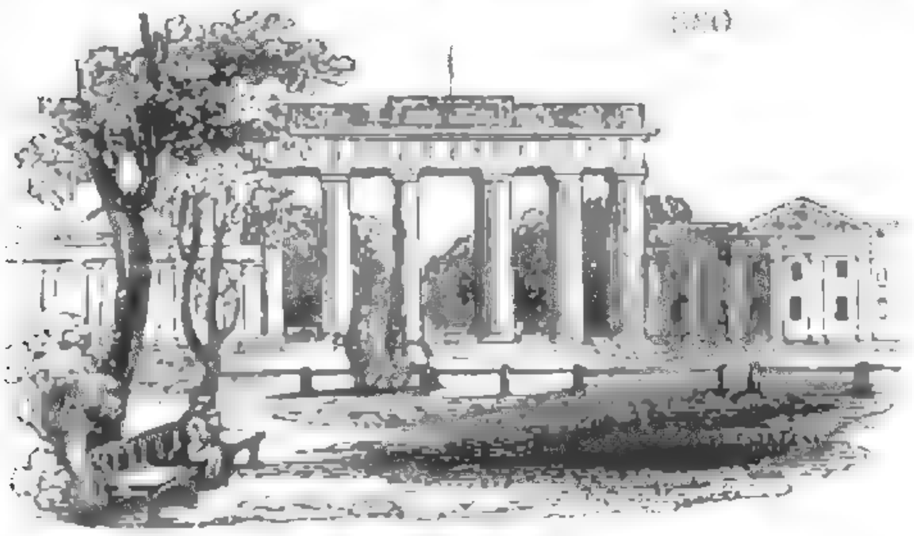

BRANDENBURG GATE.

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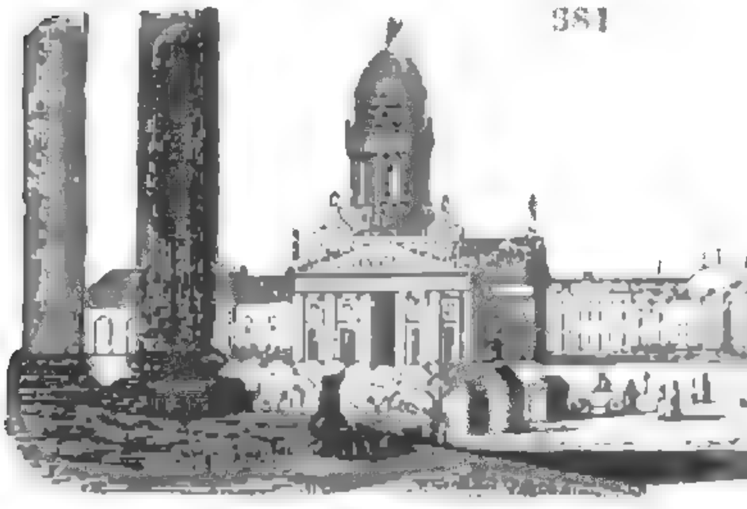

PLACE DE GENDARMES, BERLIN.

2930. *The other towns of Brandenburg* are not of first-rate importance. Potsdam, designed by Frederick the Great as a military residence, is regularly and very handsomely built; yet, according to a late writer, it suggests no other idea than that of a barrack. On every side are seen stiff figures of recruits moving slowly to the marching step, under smart and severe instructors. Frederick's palace of Sans Souci is remarkable for the extreme simplicity of those apartments which were occupied by himself: it contains one of the finest picture-galleries in Germany. Frankfort on the Oder cannot challenge a comparison with its namesake on the Mayn: it is still a considerable town of 15,500 inhabitants, with a strong bridge over the Oder, which is here a broad and spacious stream. It has some manufactures, and a considerable trade, holding five yearly markets, much frequented by the Russians and Poles. Brandenburg, the old capital, is still a city of 12,000 inhabitants. Kustrin and Spandau are little fortified towns, the former of great strength.

2931. *Pomerania* is a long line of narrow, sandy coast, lying along the Baltic. The Oder here enters that sea forming at its mouth a large and winding *haff*, or bay, on the opposite side of which are the large islands of Usedom and Wollin. It is divided into the governments of Stettin, Stralsund, and Koslin, containing a population of 869,958. The soil is in many parts far from productive; yet in others, especially that which formerly belonged to Sweden, it is made by industry to yield harvests of grain more than sufficient for the interior supply. There are few manufactures; but the commodities of Brandenburg and Silesia are brought down the Oder, and exported from Stettin, Stralsund, and other ports. Stettin, the capital, is not only one of the strongest fortresses, but one of the most flourishing commercial cities in the monarchy, containing a population of 25,000, including the military. In 1827, there entered and quitted its port 25,024 vessels, and nineteen were built there. Stralsund, the former capital of Swedish Pomerania, lies in a wide flat territory, separated by a narrow channel from the great island of Rugen, and so enclosed by bays and lakes that it can communicate with the continent only by bridges. It ranked as one of the most celebrated fortresses in Europe, and bade defiance to the utmost efforts of Wallenstein; but the walls are now suffered to go to ruin, and the ramparts are used only as a promenade. The vessels which entered and quitted its port in 1827 were 6324. Anklam, Stolpe, Wollin, Stargard, and Koslin, are also ports and towns deserving of mention.

2932. *Silesia* is an extensive oblong tract between Bohemia and Poland. It was originally a Polish province; but German settlers have now occupied the greater part of it, and introduced industry and prosperity. From its fertility, and the industry of its inhabitants, it is considered the brightest jewel in the Prussian crown. The Oder, rising on its southern border, divides it into two nearly equal parts, of which the western is mountainous or hilly: its population is altogether German, and it is the seat of the principal manufactures; while the eastern consists, in a great measure, of flat and sandy plains, and is partly occupied by Sclavonic races. The principal mountains are the Riesengebirge and the Sudetes, on the borders of Bohemia and Moravia. Of the Riesengebirge, the most elevated summit is the Schneekopfe, 5000 feet high; and though not adorned by lakes, it exhibits very picturesque scenery, which has gained it the appellation of "German Switzerland." Silesia contains 15,600 square miles, and is divided into the governments of Breslau, Oppeln, and Lignitz, which, in 1827, comprised a population of 2,362,562 persons; the number of inhabitants in 1817 was 1,992,598. Of 12,400,000 acres, excluding tracts altogether naked and mountainous, 6,900,000 are under the plough; yet, so great is the population, that it is only in favourable years that the produce of grain suffices for the consumption of the people. Flax is cultivated in a very great quantity; yet still not sufficient for the immense manufacture of which it is the material. Hops, tobacco, and madder are also considerable productions. The live stock that is reared is not adequate to the wants of the country, with the exception of sheep, which, even in 1802, amounted to 2,229,000; and their wool has been brought to such perfection as to be an extensive object of export, in a great measure superseding the Spanish in the market of Britain. Silesia is, perhaps, the most manufacturing country in all Germany; its linens, in particular, are considered the best in the world for pliancy, brilliant whiteness, and durability. In 1805, they employed 35,000 looms, producing in value about 12,000,000 rix-dollars; but Bonaparte's decrees, and the successful rivalry of Ireland and Scotland, have greatly lowered the amount, which is now only estimated at from 7,000,000 to 9,000,000, of which from 5,000,000 to 7,000,000 are exported. About half of the inhabitants are employed in spinning. Yarn is exported; and a great quantity of Bohemian cloth is brought hither to be bleached. The seat of the manufacture is chiefly in the mountainous district, where the numerous streams and the purity of the water are highly favourable to its various processes. The woollen fabric, though less considerable, employs 5500 looms, and is reckoned to produce 5,000,000 rix-dollars. The mineral kingdom is very productive, the returns being 10,000 tons of iron, 2677 marks of silver, besides copper, lead, arsenic, &c. The trade of Silesia consists in the exportation of its manufactures, chiefly by the ports of Hamburgh and Stettin, and in the importation of grain and cattle from Poland and Moldavia; of wine from Austria, and of India goods, silk, and cotton, by way of Hamburgh.

2933. *The towns of Silesia* are close-built, well fortified, not very large, but in a thriving state. Breslau, the capital, however, in 1827, contained 87,119 people, besides the military, and is the centre of the whole trade of the province, maintaining intimate communications with Hamburgh, Stettin, and Dantzic. It has also a flourishing university, an extensive library, and other valuable collections, and has given birth to many learned men, particularly Garve and Wolf. Schweidnitz was considered of immense strength, and was made by Frederick his chief place of arms during the seven years' war; but when Napoleon obtained possession of it in 1807, he demolished the fortifications, which have never been restored. Glatz, in a beautiful mountain valley, has two castles, both reckoned masterpieces of modern fortification. Lignitz is less remarkable for its own strength than for the signal victory there gained by Frederick over the Austrian army in 1760. Hirschberg, situated amid the most romantic scenes of mountain Silesia, is crowded in summer with admiring visitants. The other fortress towns of importance are Gross Glogau, on the Oder, and Neisse, on the river of that name, in a marshy country, surrounded by a spacious wet ditch. Brieg and Görlitz are considerable open towns.

2934. *Prussian Saxony* forms a large extent of straggling territory, consisting of portions severed at various times and in various ways from all the neighbouring states, great and small, sometimes having fragments enclosed within them, and sometimes enclosing within itself fragments of them. Generally speaking, it may be viewed as nearly a square territory, extending on both sides of the Elbe, between Royal Saxony, Brandenburg, and Hanover. It is divided into the governments of Magdeburg, Merseburg, and Erfurt, containing 1,396,240 inhabitants. It belongs generally to the vast, wide, flat plain of northern Germany, though on its western side it borders on the Hartz and the forest of Thuringia. There are considerable sandy and marshy tracts, but upon the whole it is abundantly productive of grain, which is cultivated with particular skill and diligence. Flax and tobacco, with rape and linseed, are also in great plenty. Horses, and horned cattle are kept up merely for the purposes of cultivation, but sheep are in number about 1,000,000, and the Saxon wool ranks with the very best in Europe. The mineral wealth is considerable, especially salt, of which a great vein traverses nearly the whole of this territory. The common manufactures of linen and woollen are generally diffused, without being carried to any remarkable extent. The Elbe, which divides the province into two parts, affords the opportunity of a very active trade. The territory is rated at 10076 square miles, and its population in 1817 amounted to 1,396,219. The inhabitants are almost entirely German and Protestants, this having been at an early period the grand seat of Luther's reformation.

2935. *The towns are not generally very large*, but numerous, ancient, well fortified, and celebrated in the history of German warfare. Magdeburg, which may rank as the capital, has always been considered one of the strongest places in Europe; and, for its noble defence against Charles V. and Tilly, was regarded as the bulwark of the protestant cause. Its works are of immense extent, bounded on most of its circuit by the Elbe, and in the rest by a ditch, not wet, but very broad, and carefully undermined. The horrible sacking of Magdeburg by the imperialists, in 1631, is still vividly remembered there, with execrations on the memory of Count Tilly, by whom it was sanctioned. It is a fine old city; the houses large and massive; it has a spacious market-place, adorned with the statue of Otho the Great, and an irregular but very broad principal street. Once a powerful free city, it now contains 32,000 inhabitants, a number of manufactures, and enjoys a considerable trade up and down the Elbe. Erfurt, formerly one of the principal cities, and a central mart, in the north of Germany, has now completely yielded the palm to Leipzig; and, instead of 60,000, contains only about 18,000 inhabitants. It is still a strong fortress, forming the key between Saxony and Franconia. Wittenberg, formerly a distinguished Saxon capital, where the standard of the Reformation was first reared, is now only a small but strong town. Halle is a large city of 21,500 inhabitants, with one of the most flourishing and crowded universities of Germany, and enriched by extensive saltworks in its neighbourhood. Halbertstadt is also a large open old town, of 15,000 inhabitants. Quedlinburg was once distinguished for the unbounded wealth of its nunnery, the abbess of which had the principal seat and vote on the bench of prelates; but since 1826 its wealth and privileges have been vastly curtailed. Muhlhausen, Merseburg, Weissenfels, Naumburg, Torgau, Stendahl, Salzwedel, are also considerable towns, of from 4000 to 8000 inhabitants. Lutzen is only a village; but its site is distinguished by the victory and fall of Gustavus Adolphus, the great protestant hero.

2936. *Prussian Westphalia* is also an aggregate of a number of small detached parts; but by cessions and arrondissemens it has been formed into a pretty compact territory, situated between Hanover and Holland, and extending from the Weser nearly to the Rhine. It extends to 8272 square miles, and its three governments of Munster, Minden, and Arensberg contained, in 1827, a population of 1,207,712. The Lippe divides it into two parts; the northern belongs to the great plain, which is sandy and marshy, but affords some good corn-land; the southern is covered with ranges of little rocky hills branching from the Hartz which render the soil often unfit for the plough, but it is always covered with fine wood. The staple to which Westphalia owes its celebrity consists in its hogs, which surpass those of all the other provinces, producing the hams so much famed throughout Europe. The valuable minerals of iron, coal, and salt are also very abundant. There are extensive manufactures of coarse linen, and a few which produce that of finer quality. Upwards of 20,000 looms were at work in 1816. The trade of the province consists in sending these productions down the rivers to Bremen and Holland; but Prussian Westphalia at no point reaches the sea, or even extends to the Rhine.

2937. *The chief towns of Prussian Westphalia* are the capitals of its three districts, Munster, Minden, and

Arensberg. Munster, once the seat of a sovereign bishop, and too well known from the excesses committed by the Anabaptists during their temporary possession of it, is still a flourishing place, which between 1802 and 1817 increased its population from 12,797 to 18,218. The peace of Munster, in 1648, forms one of the great eras of European history. Minden, celebrated for the signal victory achieved by the British arms in 1759, lies on the Weser, and carries on a considerable trade. A beautiful landscape is here formed by the river, its numerous little tributaries, and a range of wooded mountains, between which the Weser opens the passage called Porta Westphalica. Arensberg, once the seat of a count of that name, and Paderborn, the see of a bishop, were distinguished places in the middle ages, but have greatly declined. Bielefeld is the centre of Westphalian manufacture, especially that of damask, and of other kinds of fine linen. In 1811 there were exposed in its market upwards of 2,000,000 ells. In the surrounding meadows seventeen bleachfields employ 450 labourers. There is also a surprising number of little towns, of from 2000 to 5000 people: Rucklinghausen, Kosfeld, Steinfurt, Herforden, Brakel, Wasburg, Lippstadt, Sost, Hamm, Dortmund, Hagen, Iserlon, Altona, and Siegen.

2938. *The Rhenish provinces of Prussia* consist of two parts; one bearing the compound appellation of Julich-Cleve-Berg, and the other that of the Lower Rhine. The population of the whole amounts to 2,168,163.

2939. *Julich-Cleve-Berg* consists of the three grand duchies of those names, incorporated with the city and part of the bishopric of Cologne, the Prussian part of Guelderland, the abbacies of Essen and Werden, and a few other small places. It occupies almost ninety miles of the course of the Rhine, extending on both sides of that river. Of all the Prussian territories it is the least favoured by nature. On the eastern bank extends a continuous range of mountains, including the remarkable group called the Siebengebirge, or Seven Hills; not, indeed, exceeding the height of 2000 feet, but naked and rugged. The opposite bank is, indeed, level, but consists almost entirely of sandy plains and wide morasses: the country, therefore, does not produce corn sufficient for its own consumption, nor any thing in abundance except flax. Under these natural disadvantages, however, the inhabitants exert a manufacturing industry beyond what is found in any other part of Prussia, or even of Germany. The grand duchy of Berg has been called England in miniature, such is the variety of fabrics carried on there. Cloth, metals, and tobacco are worked up in almost every shape, and are exported to the value of 3,000,000 rix-dollars. The consequence is, that this district, so little favoured by nature, is the most populous, in relation to its extent, of any that belongs to Prussia. The area is only 3476 square miles; while the inhabitants, according to Hoffman's table, amounted, in 1817, to 935,040. It carries on a considerable trade along the Rhine and its navigable tributaries, the Ruhr and the Lippe; the Meuse also runs along its western border. The hills, particularly the Siebengebirge, present many peculiarly bold and picturesque sites, as they rear their heads above the river, crowned with ancient castles.

2940. *Some fine cities adorn the territory.* Cologne (*fig.* 382.) is one of the most ancient in Germany, and till 1797, was an imperial city, and the seat of a bishop, who was once an elector. It still contains above 50,000 inhabitants, and is the seat of a great trade, being the chief medium of intercourse between Germany and Holland. There is a great exchange of wine and other productions brought down the Rhine for colonial and manufactured goods. In 1814, 3039 vessels entered its port. The silk manufacture employs 494 looms, producing in value about 800,000 rix-dollars. The liquor called Cologne water is celebrated, and is sent out to the annual amount of 80,000 or 90,000 flasks. Dusseldorf (*fig.* 383.), long an electoral residence, is one of the prettiest cities in Germany, though its walls serve only for a promenade, and its splendid collection of pictures has been conveyed to Munich. Its spacious squares, its handsome houses, arranged in regular streets, and the fine gardens which surround the city, constitute its attractions. It has also a good deal of trade; and though the population between the years 1787 and 1804 had fallen from 12,102 to 11,844, it has again risen as high as 15,000. Cleves, a much smaller town, is situated two miles from the Rhine, with which it communicates by a canal. The late palace of the grand duke is still surrounded by extensive gardens, which are open to the public. Bonn, a well-built imperial city, of 10,000 inhabitants, has a strong castle, now in a great measure neglected. Elberfeld and Krefeld are large and flourishing places; its chief seats of manufacture, Rees, Solingen, Muhlheim, Reuss, Lennep, are also deserving of mention.

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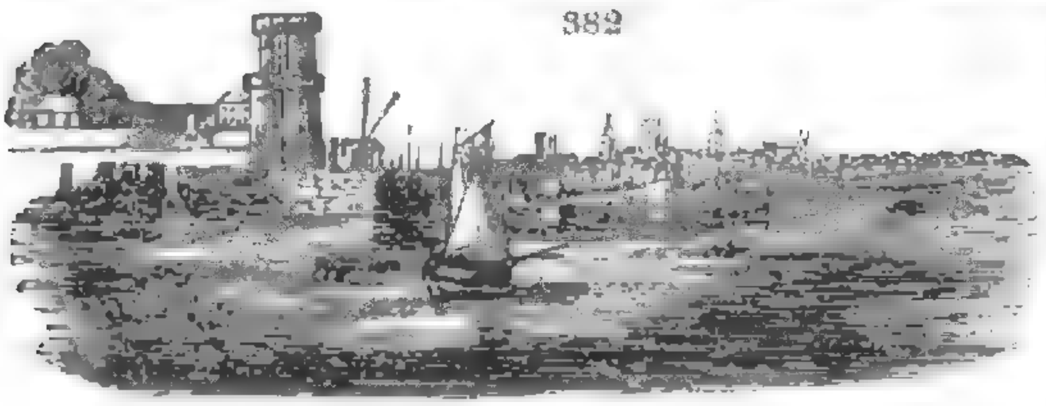

COLOGNE.

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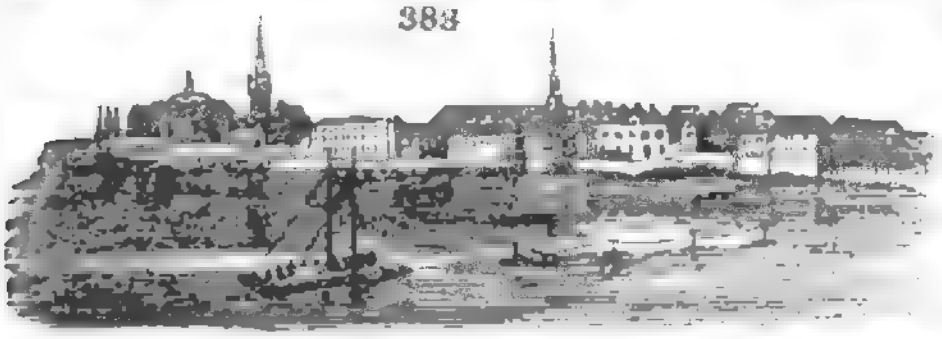

DUSSELDORF.

2941. *The province of the Lower Rhine* occupies a considerably greater extent of the course of the river higher up, than that last described. The principal part of it belonged formerly to the archbishopric of Trèves, which, with various little states and cities, has now merged into the Prussian dominion. The Rhine flows through the middle of this tract, receiving on one side the Moselle, and on the other the Lahn and the Lieg. The province is almost wholly mountainous, the principal chains in the west being the Hundsruck, a rocky calcareous group, widely extended, but not more than 1500 feet high, and from whose sides vast woods overhang the Moselle. The tract of Ardennes also touches the extreme frontier; and on the east, the principal chains belong to the Wasgau. The banks of the rivers are generally planted with vines, and present the most beautiful and pleasing sites that are to be found in any part of Germany. The soil and climate are very various; but though many tracts are doomed to inevitable sterility, a very great part is under careful cultivation. Rye and oats are the chief grains; but the most characteristic objects are the wines of the Rhine, particularly those of Hockheim (denominated Old Hock), and those of the Moselle and Ahr: they are celebrated over

Europe, and from 26,000 to 28,000 acres are occupied in producing them. As a manufacturing district, the present by no means rivals that above described; yet there is in Aachen a very extensive fabric of cloths, some of which are exported. These cloths, with wine and wood, form the basis of a considerable trade, independent of the passage of vessels up and down the Rhine. The area is 6332 miles; the population in 1817 was 972,724.

2942. *Coblentz*, at the junction of the Rhine and the Moselle, is the capital of the Prussian province of Lower Rhine, situated at the confluence of the Rhine and Moselle. It is a very ancient city, once the frequent residence of the emperors of the Carlovingian dynasty, and afterwards of the princes of Trèves. It contains, therefore, many fine old edifices, both public and private. During the French revolution it was for some time the residence of the exiled court, and the asylum of the emigrant nobility. The situation is delightful, and it is a considerable depôt for the Rhenish and Moselle wines brought down for embarkation. On the opposite side of the river is Ehrenbreitstein (*fig.* 384.), a small town, on a rock above which stood one of the strongest fortresses in Europe: it was demolished in 1801.

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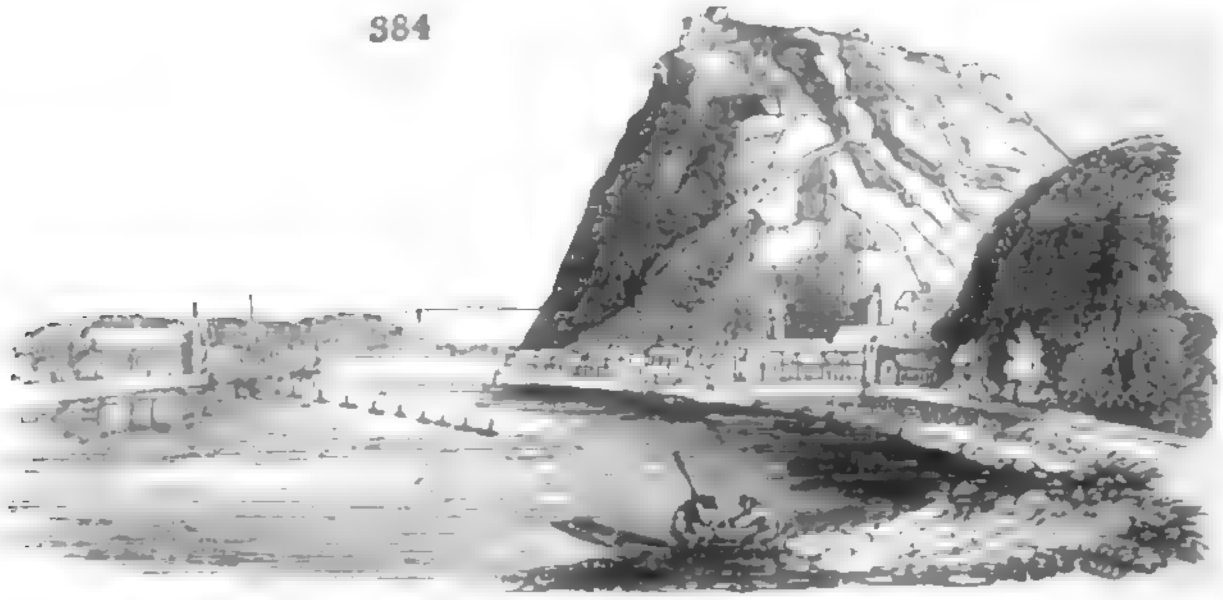

EHRENBREITSTEIN.

2943. *Of the other towns, Trèves* is considered one of the most ancient either in France or Germany, being noticed by the Romans under the appellation Trevirorum Civitas. The inhabitants have even a boastful proverb that "before Rome was, Treveri stood." It was a great city in the middle ages, and contains many superb churches and convents as monuments of its former grandeur; but many of them are now empty, and going to ruin. The place has still 12,750 inhabitants, and a considerable trade with France, and in the wine and wood of the Moselle. Aachen, better known as Aix la Chapelle, is the largest town of the territory, containing a population of 32,000 chiefly employed in manufactures. These consist chiefly in kerseymere and other fine woollens, which occupy 1358 looms, and produce a value of 400,000*l.* The city is also very ancient, having been a residence of the emperors, and the place of their coronation. Being built, however, on an irregular spot of ground, its streets are extremely uneven, narrow, and dirty. Kreuzenach and Saarbruck are also considerable towns, and Saar-Louis is a strong fortress. St. Goar and Bacharach are only villages; but a great quantity of the finest Rhenish wine is brought down to them. *Neufchâtel* has been noticed under the head of Switzerland.

Subsect. 3. *Smaller States.*

2944. *Bavaria*, next to Austria and Prussia, is the most powerful of all the German states. At various periods, the princes of Bavaria have been seated on the imperial throne, and their house even attempted a rivalry with that of Austria; but the disasters of the war of the succession, during which Bavaria followed the adverse fortunes of France, sunk it into a rank decidedly secondary. It obtained, however, a great increase in 1777, on the accession of Charles-Theodore, who brought into it a great part of the upper palatinate of the Rhine. In the beginning of the present century, it obtained a much more remarkable enlargement from Napoleon; who hoped to attach his vassals by aggrandising them, and was finally the dupe of that policy. The elector of Bavaria received from Austria the Tyrol, Saltzburg, and part of Upper Austria; from Prussia, Anspach and Bayreuth. At the downfall of Napoleon, Bavaria was obliged to restore all that had been taken from Austria; but she was indemnified by the territory of the free imperial cities, Augsburg, Nuremberg, Wurtzburg, and others, once great and powerful, whose burghers were princes, and whose almost impregnable walls enabled them to defy the greatest monarchs, but who had sunk under the recent political shocks. These acquisitions, joined to the entire circle of Bavaria, gave to that power a territory of 32,834 square miles, according to Hassel; but Rudhart, in his comprehensive statistical tables, in 1824, allows only 30,404. The new acquisitions in Swabia and Franconia form a tolerably connected state with Bavaria; but the Rhenish territory is a portion entirely severed from the rest of the monarchy. Bavaria has a mountainous character, produced chiefly by branches of the neighbouring mountain ranges. The Noric Alps, in the south, are the most formidable, and several of their pinnacles rise to the height of 9000 feet. On the northern side, it borders on the Rhenish chain of the Wasgau, on the Thuringian and Bohemian forests. The Spessart, the Stugerwalde, and the Fichtelgebirge are found in the interior of Franconia along the Mayn. Between those mountains there are not only broad valleys, but even extended plains, especially along the banks of the rivers, though a considerable part of these are covered by morasses, overgrown with rank grass, and not yielding even turf. The greatest rivers of Germany water Bavaria: the Danube intersects the chief portion of it; Franconia is traversed by the Mayn, and the Rhenish territory by the Rhine. The Danube receives from the Tyrol important tributaries, the Lech, the Iller, and the Iser. After every deduction, Bavaria is a very fruitful region; but culture is in an extremely unprosperous state. The cultivators are superstitious, and wedded to old habits; and they are so bound down by servitudes, *corvées*, and restrictions originating in the feudal system, as to discourage all their efforts. The legislature, however, has been very anxiously seeking to diminish these burthens, by commuting them for a regular rent or price. There are many fine corn-lands, and the wheat of the Danube is very good; but the produce is not, on the whole, sufficient for the supply of the inhabitants. Cattle are extensively reared, and their number is said to exceed 1,000,000: but the breed is little attended to; and, in case of sickness, the husbandmen, instead of applying remedies, lead them in pilgrimage to some favourite shrine. In 1821, there were 30,000 of these cattle pilgrimages. Horses and sheep are fewer in number, and of still worse breed; but the hog, yielding a favourite dish, is reared with very anxious care: in 1794, there were 400,000 hogs in the kingdom. A good wine is produced on the banks of the Mayn, to the extent of 600,000 or 700,000 eimers, of which part is taken off by Saxony. Timber is a national staple, a great part of the kingdom being covered with natural forests; oak and beech on the plains, pine and fir on the mountains. The Bavarian minerals are salt and iron. The salt mines of Ruchenhall, Traunstein, and Rosenheim produce 40,000 tons; those of Berchtoldsgaden 15,200 tons. The iron mines yield 32,000 tons. There is also a considerable supply of coal on the Rhine and on the Mayn. The manufactures, which are slender and coarse, are established almost exclusively in the newly acquired free cities. Even linen, the German staple, is in its infancy; but there are quantities of coarse woollens and of cotton goods, almost sufficient for internal supply. There is a great quantity of leather, of very coarse paper, and of fine works in gold and silver: these last chiefly at Augsburg; also a good deal of glass. Bavarian brandy and beer are reckoned excellent. The limited commerce of Bavaria is carried on chiefly by the Danube on one side, and the Rhine on the other. It exports salt, iron, wood, cattle, leather, paper, glass, and wine; receiving in return colonial produce and fine manufactures of every kind.

2945. *In regard to its political and civil state*, Bavaria, since 1818, has been a constitutional monarchy. It is represented by an assembly divided into two chambers; the lower contains a representative for every 7000 families. The king is obliged to assemble them only once in three years. The regular army consists of 36,500 infantry, 6400 cavalry, and 3350 artillery. It is raised by a conscription, including all between nineteen and thirty. There is also a strong reserve and landwehr. The population of Bavaria has not been ascertained by any recent enumeration; but Hassel, from various data, fixes it at 3,513,000. Rudhart, in 1825, makes it 3,743,000; but Grabuth only 3,560,000. The numbers were, Catholics, 2,399,000; Protestants, 1,007,000; Jews, 52,000. Bavaria, at least the original territory, has not ranked among the enlightened countries of Germany; yet great efforts are now made to extend and improve the means of education, especially for the lower classes. There are three universities and nine lyceums, but mostly in the free cities and other acquired territories. The collections, however, made by enlightened princes are munificent, and on a greater scale, compared with its resources, than those of almost any other state. The library, of 400,000 volumes, contains many valuable manuscripts and early printed works; the picture gallery, chiefly removed from Dusseldorf, is also most splendid; and there are several of both, on a smaller scale, in the other cities.

2946. *In regard to local details*, the princes of Bavaria appear to have studied to obliterate the former political distinctions, and have distributed the state into eight circles, founded upon its grand natural feature, the rivers. There are two belonging to the Danube, Upper and Lower; two to the Mayn; to the Rhine, the Iser, the Rezat, the Regen, one each. A statistical view of these circles has already been given.

2947. *Munich*, the capital, lies in an extensive plain, on the Iser; and though it cannot boast any thing which suggests ideas of grandeur, either ancient or modern, it is handsome, and full of well-built modern houses; the streets are broad and well paved. Hassel ranks it among the handsomest cities in Germany. The cathedral of Notre Dame, however, though of vast extent, and with towers 350 feet high, is declared by Mr. Dibdin to be frightful in the extreme, built of red brick, without ornament, design, or expression, and not of earlier date than the fifteenth century. The church of St. Michael, in which the public library is deposited, is more elegant, and its interior is one of the finest in Europe. The palace has also been considered a good specimen of modern architecture. The six suburbs comprise nearly half the town, containing 1419 out of the whole number of 3613 houses.

2948. *There are other ancient, venerable, and important cities* in Bavaria. Augsburg (*fig.* 385), three centuries ago, outshone all the others, being the chief seat both of merchants and nobles. A thousand flags then floated from the castellated mansions and along the almost impregnable ramparts. Augsburg was once the chief seat of painting in Germany, the birthplace of Hans Holbein and other eminent artists, as is still attested by the exterior walls, covered with landscapes and groups of figures, executed in brilliant colours, though somewhat Gothic in design. The streets, like those of other old cities, are narrow and crowded, and the handsomest are in the suburbs, beyond the now-decaying walls. The town-house, however, is the finest in Europe. There is still an extensive and curious library, and a picture-gallery of some value, though many of its best specimens have been transported to Munich. Augsburg is still distinguished for its calico-printing which, in 1805, employed 6968 persons; for its gold and silver lace; for its mathematical instruments; and for its trade, which employs 2000 houses, and amounts to about 2,000,000*l.* sterling. Nuremberg, once the boast of the free cities of Germany, and the grand seat of its arts, both useful and ornamental, is now annexed to Bavaria; a change indignantly felt by its ancient and opulent burghers. Its churches and public buildings are still esteemed fine specimens of its ancient art: they are adorned with rich early paintings on glass, and select works by Albert Durer, a native of the town, and others by Sachsens, Behaim, and Pirckheymer. Nuremberg is above all famed for its inventions: those of the watch, the making of brass, copperplate engraving, the pedal, the musket, the trumpet, the clarionet, are all claimed for one or other of its citizens. The streets are broad, with many fine old houses, but not regularly built. The town-house, and several of the churches, are distinguished, the latter especially, for their paintings in glass. Bamberg is also a very handsome and ancient free city, with a castle, once distinguished by its strength, and a flourishing university. Würtzburg is a city of similar character, celebrated as a strong fortress, and possessing an university, the medical school of which is distinguished all over Germany. Schweinfurt was likewise distinguished, during the thirty years' war, as a grand military position. Regensburg, which we call Ratisbon, was a Roman city, and, in modern times, venerated as the seat of the Germanic diet; the house used for which purpose still remains, but bears few marks of that dignified destination. Its chief ornament is the cathedral, which forms an ancient and noble Gothic structure (*fig.* 386.). The streets are narrow and winding, but clean, consisting of high well-built houses. It suffered severely during the five days' battle in 1809, between the Austrians and the French. It still flourishes by a very extensive trade on the Danube, being the chief intermediate port between Ulm and Vienna. Landshut is a neat small town, with an extensive and very curious library. Nordlingen, only a moderate town, is celebrated in military history for several remarkable battles. Anspach and Bayreuth, once the seat of little courts, still hold a place as the capitals of circles. Passau is distinguished for its antiquity, its romantic site, and the treaty signed there, in 1552, between the Catholics and Protestants.

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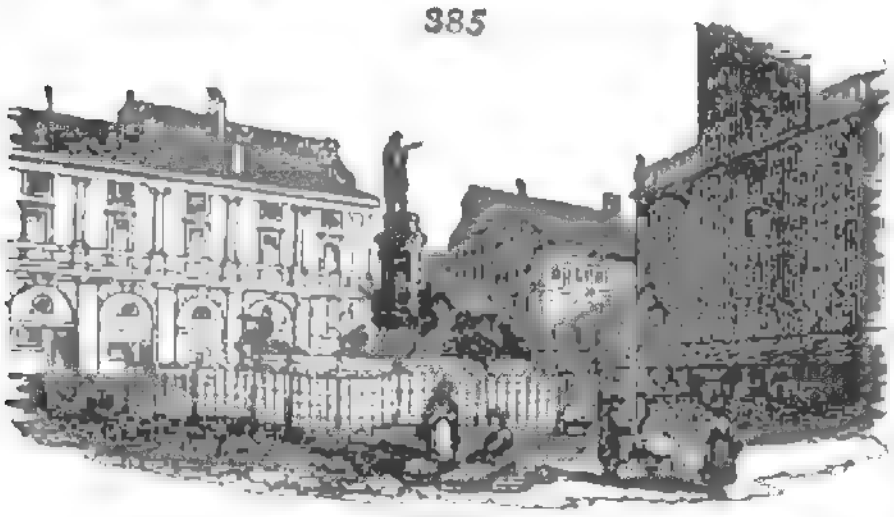

AUGSBURG.

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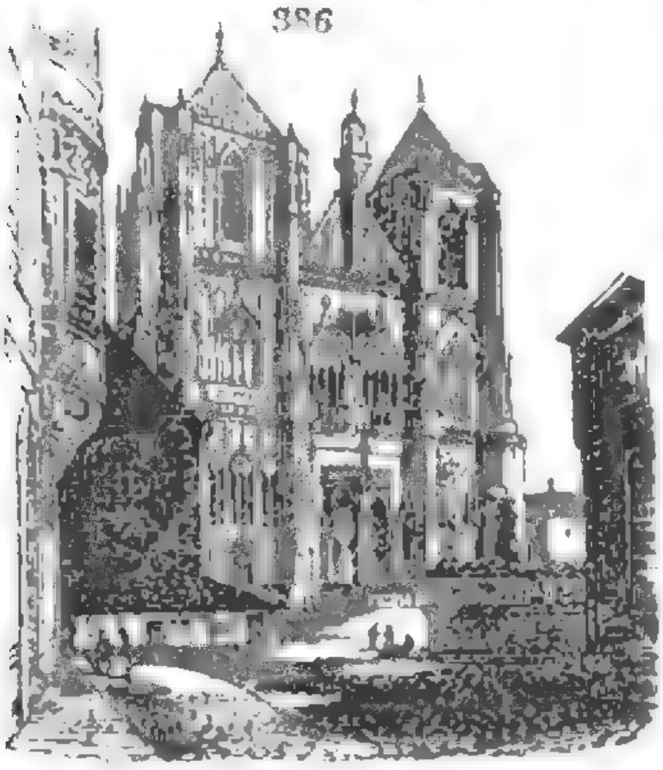

RATISBON CATHEDRAL.

2949. *Wirtemberg* does not follow Bavaria in the order of magnitude; but we shall here notice it as completing the principal southern states. Wirtemberg occupies the greater part of the circle of Swabia; having Bavaria on the east, and Baden on the west. It is entirely traversed, from north to south, by the Neckar, which, rising in the Black Forest, and flowing due north, falls into the Rhine at Mannheim; and by the Upper Danube, which, rising from nearly the same source, directs its course north-east, till it passes Ulm and enters Bavaria. The mountains nowhere rise to an alpine height: on the western border is the Black Forest; but none of its branches within Wirtemberg reach above the height of 3000 feet. There is no part of the kingdom to which the name of plain can apply; but there are very broad and productive valleys; rendering Wirtemberg, on the whole, one of the most fertile countries in Germany. It is reckoned to contain 1,840,392 acres of arable land, 620,477 pasture, 79,296 of vineyard, and 1,735,466 woodland. The produce of grain of every kind, including maize, is computed at 6,000,000 bushels; of wine, 160,000 eimers: apples, pears, potatoes, and garden stuffs are plentiful and excellent. The rearing of cattle, with that of sheep, holds a very prominent place in the agriculture of Wirtemberg, and has lately been much improved both by new breeds and by artificial grasses and stall-feeding. In horses, hogs, and bees, this country is below the general level of Germany. Geese are reared in surprising numbers, and are sent even to Vienna and Italy. The extensive forests are valuable not only by their timber, but for producing cherries and several kinds of berries, which are a considerable resource to the poor as food, and from which spirituous liquors are extracted. The mines consist chiefly of iron, to the extent of 3000 tons and of some salt. The manufactures are limited: they consist chiefly of linen or woollen, carried on by the rural population for home use. There are, however, 104,000 incorporated tradesmen. The commerce is brisk. The export consists in a large quantity of cattle, some grain and timber, some coarse woollen and linen stuffs, and manufactured tobacco. The returns are in colonial goods, cotton, silk, and other manufactures. The government is now the most decidedly constitutional of any in Germany; the nation being represented by states, which assemble every two years, are freely elected, and enjoy all the attributes proper to such institutions. The king of Wirtemberg has always been the most intractable in regard to the arbitrary measures of Austria and the Diet. In no country is there a more general diffusion of knowledge. It has one flourishing university; and its schools and seminaries of other descriptions are said, by Hassel, to be more numerous than in any other country of the same dimensions.

2950. *Wirtemberg* is divided into four circles, marked by natural features. 1. Circle of the Neckar, comprising the course of that river, the finest part of Wirtemberg. 2. Circle of the Black Forest, being the territory covered by that range of mountains. 3. Circle of the Danube. 4. Circle of the Jaxt, deriving its name from a small river of that name, and occupying the south-eastern part of the kingdom. The population in 1828, was reckoned at 1,520,000.

2951. *Stutgard*, the capital, is situated on an extensive plain, 700 feet above the level of the sea, and surrounded on three sides by mountains. It is described as large and dull; but the streets are broad and well paved, especially the principal one, called the Königstrasse. In its nine squares and eighty-seven streets there are a number of handsome houses, and the new royal palace is elegant; but there are no monuments of antiquity, no objects calling up any grand historical recollections. There is, however, a library of 200,000 volumes, including 12,000 bibles, and a celebrated gymnasium, attended by 545 scholars. The manufactures and trade are of little consequence.

2952. *Among the other cities*, Ulm, in the circle of the Danube, may take the lead. This once great imperial city is happily situated in an exceedingly rich and beautiful plain, at the point where the Danube, swelled by the Iller and the Blau, becomes a great navigable stream. It retains, however, but a shadow of its once extensive industry, chiefly in linen manufactures, which now employ only 300 persons. The houses are built in the old German style, with high gables; the streets are irregular, but well paved. The chief ornament of Ulm is the cathedral (*fig.* 387.), one of the grandest structures of the kind in Europe. It is described by Mr. Dibdin as "English-looking;" broad, bold, and lofty, in a massive and imposing style of architecture. It is 416 feet long, 160 broad, and the tower 337 feet high. The interior is very noble, and adorned with many pictures of the old German masters. Ulm derives a dark celebrity from the overthrow and surrender of the Austrian army, under Mack, in 1805. There are still remains of the strong walls by which it was once defended. Halle is another free city of Swabia, different from one of the same name in Saxony. It is strongly fortified, and its town-house and the cathedral of St. Michael are greatly admired. There are very extensive saltworks, yielding 5000 tons of rock salt; also a trade in corn, cattle, and wood. Heilbronn is a strong little town, situated on the Neckar, in a fine wine country, and carrying on some branches of industry. Ludwigsburg, pleasantly situated on the same river, is the occasional residence of the royal family. Tübingen, in the Black Forest, contains the national university, with five faculties, attended by 557 students.

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ULM CATHEDRAL.

2953. *The grand duchy of Baden* consists of the long valley of the Rhine, from Basle to Mannheim, sloping down from the Black Forest, which borders it like a ring. Its surface, of about 6000 square miles, contains no plain, but a number of broad fine valleys subordinate to the great valley, among which the Murgthal and the Kinzigthal are the most important. The mountains of the Black Forest nowhere rise much above 4000 feet, and their heads are not covered with snow more than half the year: they abound, as their name implies, with dark and majestic woods. The soil in the lower valleys is every where fertile in the extreme, and the richest pasture covers the sides of the hills. The Danube rises from three springs near Donaueschingen, but leaves the territory while yet little more than a brook. Of far greater importance is the majestic circuit made by the Rhine along the whole southern and western border. The lower course of the Neckar also flows through Baden; and numerous small but fertilising streams descend from the Black Forest into the Rhine. Grain is produced so abundantly as to afford a surplus for exportation: the wheat yields a very fine flour, to which we may add the finest hemp in Germany, and excellent tobacco. Pulse, flax, and hops are less productive. Fruits are very abundant, though not in the same vast profusion as in Wirtemberg. The vineyards along the Rhine and the Neckar are extensive, and enjoy a high reputation; but the produce of the territory on the Lake of Constance, or Bodensee, called sea-wine, is much less prized. The number of horned cattle is great, amounting to 400,000 head; and the hogs are estimated at 194,000: but horses and sheep are not reared with the same success. Although the range of the wild animals has been much diminished, yet, in the recesses of the Black Forest, the wild hog, the stag, and the fox, afford still too much scope for the amusement and occupation of hunting. The forests of noble trees afford a most valuable commodity, of which a great quantity is sent down the Rhine to Holland. The mines of silver, copper, iron, and salt are pretty considerable; none of them very great. The manufactures are but of very limited extent, though they include many fabrics of wood, particularly clocks, to the great number of 107,000; also 51,000 dozen of metal spoons. Linen employs about 10,000 persons. Baden enjoys a great transit trade, from its situation along the Rhine and on the frontiers of Germany, France, and Switzerland; it has also a regular trade in the export of its own wood, wooden clocks, fruits, grain, and wine. Mannheim is the chief emporium.

2954. *The population of Baden* was found, in 1819, to be about 1,100,000; and it had increased in 1828 to 1,130,000, notwithstanding considerable emigrations to Russia and America. There are supposed to be 663,000 Catholics, 248,000 Lutherans, 82,000 Calvinists, and 15,000 Jews. Since 1817, Baden has had a representative constitution nearly similar to that of Bavaria and Wirtemberg. The revenue may amount to between 5,000,000 and 6,000,000 guilders; but it is burdened with a debt of 20,000,000. The standing army is from 8000 to 10,000, with about an equal number of landwehr; to which may be added the landsturm, or levée en masse, which may amount to about 100,000. The establishments for education have recently been very extensive: there are two universities, four lyceums, and thirteen gymnasiums.

2955. *Carlsruhe*, as a capital, is small, being supported almost entirely by the residence of the court, and of the gay and wealthy classes of society, whom that residence attracts: this gives it a very lively aspect; yet though it contains many good houses, and thirteen which rank as palaces, its aspect, according to a late traveller, is only that of a very large and handsome country village. It has a fine lyceum, and several scientific collections and establishments, though not on a very great scale.

2956. *Baden possesses other equally important cities.* Mannheim, at the junction of the Neckar and Rhine, is reckoned one of the finest in Germany; but it seems agreed that it is too mathematically regular, all the streets crossing each other at right angles, and every house being of the same height. An extensive and strong castellated palace extends along the Rhine, and contains a handsome collection of antiquities, casts, drawings, paintings, with remains of the ancient library, amounting still to 70,000 volumes. Heidelberg is one of the most ancient cities of Germany; and above it the ancient palace of the electors palatine still frowns, a huge majestic pile; though the mass of its walls lies in fragments in the ditch beneath. Its cellars still contain the famous and enormous Heidelberg tun, capable of holding 500 pipes of wine, but now empty. The most ancient German university, founded in 1386, still flourishes under royal patronage, and had, in 1818, 45 professors and 603 students. Philipsburg, once among the strongest fortresses of Europe, has been dismantled since 1802. Rastadt, famous in the annals of diplomacy, is only a small country town. Baden, encircled by seven lofty fir-clad hills, attracts strangers by the beauty of its situation, and still more by its warm baths, which make it at once the resort of the sick, the fashionable, and the gay. Kehl, opposite to Strasburg, is an important military position. Freyburg, a considerable town, in the heart of the Black Forest, has a well-endowed university. Constance, situated on the lake of the same name, where the Rhine issues from it, has a little trade and shipping, raises a great deal of pulse and vegetables in its suburbs, and in its vicinity a good deal of indifferent wine.

2957. *The kingdom of Saxony* now consists of a much diminished part of the former possessions of that great house, which once held the chief sway in northern Germany. The policy of Napoleon, indeed, raised it to a greater magnitude than it had ever before possessed, by annexing part of the Prussian territory, with a considerable portion of Poland, under the title of the duchy of Warsaw. But of all these acquisitions Saxony was stripped, in consequence of her adherence to Napoleon at the time of his downfall. The kingdom now consists of the plain of the Elbe, extending along its course for about a hundred miles after it forces for itself a channel through the mighty rock wall of the Erzgebirge, which separates it from Bohemia. On this line it receives several fine tributaries; the Mulda and the White Elster from the west, the Black Elster from the east. The eastern borders of Saxony are watered by the Neisse and the Spree: on its frontiers are several chains of mountains; the Erzgebirge on the south, a rich metalliferous range; the Riesengebirge in Swabia; the Vogelberg and Thuringian forest in the west. The central plain is fertile, and the most thoroughly well cultivated in all Germany; notwithstanding which it cannot fully supply with bread the dense manufacturing and mining population. A great part of the surface also is covered with flocks of sheep, to the number of 1,300,000, the wool of which has been raised to high perfection by the introduction of the merino breed. The woods are extensive; but, since the loss of the vast forests of Lusatia and Thuringia, they are not adequate to the supply of the mines and manufactures. The mining operations, though in the hands of government, are conducted with a science and a diligence not equalled in any other part of the world. Their products are, silver, 48,000 marks; lead, 10,400 cwt.; cobalt, 8900; tin, 2400; copper, 600; iron, 24,000 tons. Saxony surpasses all the rest of Germany in manufacturing industry, which is supposed to occupy three-fifths of the inhabitants. The staples of linen and woollen are both considerable; but it is in cottons that this country excels all the rest of Germany. Hassel hesitates not to assert that the Saxon ginghams and muslins are equal in every respect to the English, and that, if they cannot support the competition, it is only because the latter are more slight and showy. There is a great deal of paper manufactured, and printing is conducted upon a large scale. The metals of Germany are smelted with the same skill with which they are extracted; and the porcelain of Dresden and Meissen rivals that of China. The commerce of Saxony is particularly active, not only in its own productions, but as it contains in Leipzig the grand centre of all the commercial movements of Germany. The whole book trade of this vast country is carried on there; independent of which, the other goods brought to its three fairs are estimated at 18,000,000 rix-dollars. The trade of Leipzig, and of Saxony in general, is carried on chiefly by waggons, though a good deal also goes along the Elbe.

2958. *The population of Saxony*, in 1828, was rated at 1,400,000. Lutheranism, which was first established here, is almost universal, there being only 40,000 Catholics; though, by a singular anomaly, the king himself is of that persuasion, and has obtained, since 1811, complete equality for those of his own creed. The diffusion of knowledge is general; but there is only one university, that of Leipzig: and the schools are said to be on a contracted scale, and the attempt to improve them has been hitherto ineffectual. Saxony retains still an ancient constitution, but on the feudal model, and the states consist merely of the nobles and corporations: the peasantry are not represented, and are encumbered with a very disproportionate share of the public burdens.

2959. *Dresden* (*fig.* 388.), though not one of the largest, is generally reckoned the most elegant of the German cities: it has even been called the Florence of Germany. It is almost unrivalled in situation, the country around presenting a mixture of romantic natural scenery, with the richest possible cultivation. The banks of the Elbe are on one side abrupt, rocky, woody, picturesque; on the other, they swell into graceful and verdant eminences. The streets of the old town are somewhat narrow, but bordered by many lofty palaces of the Saxon nobles, built in a simple and austere style of architecture. The royal palace is of great extent, and contains many

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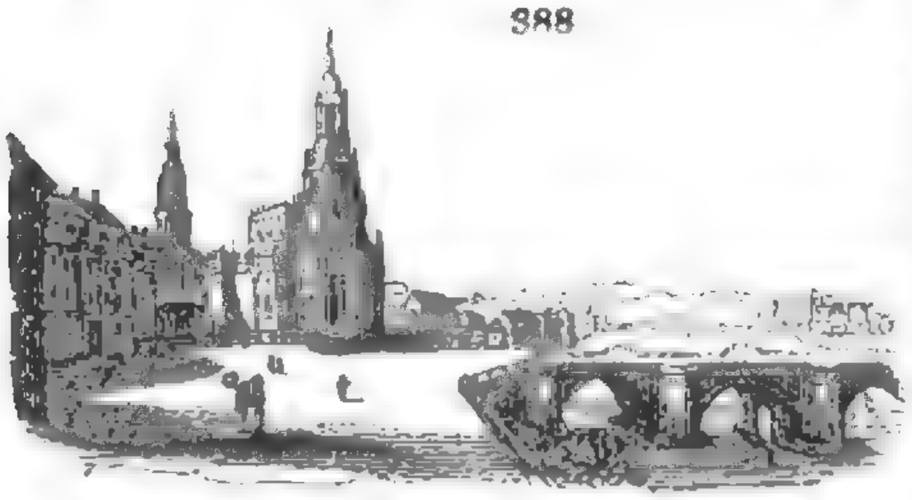

DRESDEN.

elegant features; but these are so various and scattered, as to produce nothing striking as a whole. The new town, on the opposite bank, is built in a lighter and more regular style, and has one very fine street; but it cannot vie with the magnificence of the opposite city, which remains still the seat of the court and the fashionable circles. The stone bridge, of eleven arches, over the Elbe, is the finest structure of the kind in Germany. Dresden is illustrious for its collections in literature and the arts. The royal library is one of the first in Germany, and the picture-gallery has no rival on this side of the Alps. There is also an immense and valuable collection of prints, of casts, and of antiquities.

2960. *Among other towns* is Meissen, a little city, above the Elbe, which gives name to the circle, adorned with a handsome cathedral, and a ducal castle, majestically seated on a rock of granite. It is now converted into the royal manufactory of porcelain, producing the finest specimens of that article in Europe. Freyberg, the capital of the mining district in the Erzgebirge, the scene of the most extensive mineral operations, is rendered illustrious by the residence and instructions of Werner, the founder of the modern school of mineralogy. Chemnitz, which may be held as the manufacturing capital of the same district, employs 1600 looms in linen and cotton, and makes 50,000 dozen stockings. Bautzen, or Budissin, the capital of Saxon Lusatia, is a well-built and flourishing town, carrying on a great variety of manufactures, stockings, gloves, hats, woollen cloth, &c. Zittau is also considerable, as being the centre of the yarn and linen trade. Königstein, on a high rock over the Elbe, deserves notice, as the strongest fortress of the monarchy.

2961. *Leipzig* claims distinguished notice, as the grand centre of commerce, not only for Saxony, but for all Germany. The scene which it presents of bustle and business, though familiar to an English eye, has no parallel on the Continent. " Such mountains of woolpacks, such firmaments of mirrors, such processions of porters and carters, are to the German a new world." In its structure, it presents a mixture of the old and new style of building, which is singular, but not unpleasing. The whole wears an air of comfort and substantiality, which accords with the character of the place. The surrounding country is fertile and well cultivated, but flat and monotonous. It has, however, been the scene of some of the most signal events in European military history. Here Gustavus Adolphus gained that signal victory which turned the tide of fortune in the great protestant war; and at Lutzen, nor far distant, he fell, crowned with victory. A number of unhewn stones, standing horizontally, mark the spot, on one of which is rudely carved, " Gustavus Adolphus, king of Sweden, fell here, for liberty of conscience." This " stone of the Swede," as it is called, though in a field by the road, has remained untouched. Round and in Leipzig, too, was fought that mighty battle which liberated Germany, and drove Napoleon beyond the Rhine. The inhabitants, who call this " the battle of the people," have carefully preserved the traces of the cannon and musket-balls with which many of the buildings were struck or perforated.

2962. *The kingdom of Hanover*, which, for more than a century has been an appendage to the crown of Great Britain, occupies, with some intervals, the whole north-western angle of Germany, from the Elbe to the frontier of Holland. It contains a surface of about 15,180 square miles. The Hartz, a long chain of detached mountain masses, extending for more than 100 miles along its southern border, is covered with extensive woods, and rich in mines. It highest pinnacle, the Brocken, does not fall within Hanover; but there are several heights somewhat exceeding 3000 feet. The rest of the kingdom forms the commencement of that immense plain which extends across Europe to the Urals, or mountain boundary of Asia. This plain consists of a continuous basis of sand, interspersed with blocks of granite, which seem to have been carried thither by some ancient revolution of the globe. The land, where it is not brought under cultivation, is only an expanse of heath and gloomy pine. The only fertile tracts are along the banks of the rivers, and on the flat coast of the sea, where artificial mounds have rescued from its ravages an expanse of very rich meadows. The country has the Elbe for its eastern boundary, and is traversed by the navigable streams of the Ems, the Weser, and their tributaries; so that it enjoys great advantages for trade. The disadvantages of nature are not redeemed by human diligence to the same degree as in some other parts of Germany. It is true, that in Göttingen, Hildersheim, Grabenhagen, and some of the marshy tracts redeemed from the rivers and from the sea, both skill and diligence are displayed. But others, as Luneburg, Hoya, Osnaburg, &c., which might at least be greatly improved, are left a dreary and savage waste, the inhabitants preferring to hire themselves as servants to the Dutch. After all, grain is raised sufficient for internal consumption, and cabbage and other vegetables more than sufficient. Great quantities of flax are reared for its linen manufactures. With respect to live stock, Hanover is only distinguished for its hogs, which possess a peculiar excellence, rendering Westphalia hams famous over the globe. The supply of timber is large, and in some provinces there is great abundance of turf. The mines of the Hartz are very valuable, being in annual amount about 2,000,000 rix-dollars; of which silver averages 410,000; lead, 258,000; copper, 44,000; iron, 306,000; brass, 94,000; zinc, 45,000; salt, 548,000; and some coal. Coarse and household linen is the staple manufacture, to which is added some fine linen, and a good deal of sailcloth. Brewing, which was formerly very extensive, is now much fallen off, and distillery has sprung up in its stead. The commerce for which this part of Germany is favourably situated has been chiefly engrossed by the Hanse towns of Hamburg and Bremen; while most of the interior trade passes by Brunswick. Emden, in East Friesland, is almost the only port from which there is any foreign trade; while the waggon traffic passes chiefly through Luneburg and Munden. The population of Hanover amounted in 1828 to 1,550,000. It was occupied by Bonaparte during the war; and, on its restoration, in 1815, was erected into a kingdom, a name, perhaps, necessary, instead of the lost title of electorate; but as the sovereign, since 1714, has held his seat in London, the immediate rule is by a regent. The government, in 1815, also received a constitutional form; and states were organised: they are composed of 101 deputies, of whom 10 are prelates, 49 nobles, and 42 deputies from the cities. It has been remarked, however, that this representation is not on the most liberal principle, being confined to the nobility and the corporations, and excluding almost entirely the body of the peasantry. Each of the numerous and once separate districts of which Hanover is now composed, has also a constitution of its own, and peculiar modes of administering justice.

2963. *Among the cities, Hanover, the capital*, is a plain, ordinary town, situated in the midst of the wide sandy plain, and neither very large, nor containing any thing very remarkable. It is supported by the residence of the court and military, and the occasional assemblage of the states; and, notwithstanding the close connection with England, English manners have not made much progress. There is a library and collection of paintings, but both on a small scale. Göttingen possesses a greater interest, as the seat of the most flourishing protestant university of Germany, supported by the Hanoverian government with an almost unrivalled liberality. The number of students, which in 1817 amounted to 1065, has now increased to 1500: it is the ambition of every German youth to study at Gottingen, and of every German *savant* to be one of the professors. The government pays to the latter a salary of not quite 200*l*. a year, which, however, is more liberal than any of those allowed in other German seminaries; and it expends more than 1000*l*. a year in supporting a library of nearly 300,000 volumes, said to be the most useful in Europe, being supplied with plain editions of all new works of importance, without any expenditure incurred for show and ostentation. The professors amount to forty, with a number of private teachers and tutors. Luneburg, on the Ilmenau, where that river is navigable for vessels of sixty or seventy tons, has a pretty brisk trade, especially by land, employing 70,000 horses and forty waggons daily. Munden, at the junction of the Weser, Fulda, and Werra, receives annually 600 vessels into its port. Clausthal is an industrious manufacturing place.

2964. *Hesse-Cassel* is a smaller state than those hitherto described, comprising only 4550 square miles, with a population of 592,000. It borders on Saxony, Hanover, Bavaria, and a crowd of little states. The country is almost entirely filled with hills and woods, presenting a very picturesque aspect; though, of the principal ranges, the Thuringian forest does not rise above 3500 feet, nor the Fulda range above 1500 feet, but both are covered with extensive forests. The Fulda and Werra, tributaries of the Weser, are the chief rivers, though it touches also on the Mayn. The land is cultivated with diligence, but not in an enlightened or improved manner, being too much subdivided among a poor peasantry. It yields grain, however, somewhat beyond its own wants, with large quantities of flax, and a profusion of valuable wood. It has 363,000 sheep, and 139,000 hogs. The produce of the mines is considerable, especially iron, with some silver and copper. The only flourishing manufacture is that of coarse linen, which is generally diffused throughout the district. Hesse carries on little trade beyond the export of the articles already mentioned, but it is situated on the passage between the inland trade of southern and of northern Germany, on which it is thus enabled to levy considerable tolls. Hesse-Cassel, which formed the central portion of Jerome Bonaparte's ephemeral kingdom of Westphalia, has now been restored to the elector, who represents the ancient powerful and warlike landgraves of Hesse-Cassel: there are states, but quite in the ancient and feudal form. The revenue is about 4,000,000 guilders. The army consists of 18,000 men, of whom 2000 are in regular pay; the rest are only called out during part of the year. Hesse no longer carries on that extensive traffic of mercenary troops, which formerly brought in large sums of money, and rendered the elector, perhaps, the richest individual in Europe.

2965. *Among the cities, Cassel, the capital*, is divided into two parts; of which the old town, extending along the Fulda, exhibits, in the extreme, all the defects of old German cities; yet it is still the scene of traffic. The new town, built in a higher situation, is one of the most elegant in the empire: the Königsplats, of an oval form, with six streets branching from it, is said to be finer than any other of its squares. The palace, seated on a delightful terrace, and the museum, are also fine edifices. There is a library of 70,000 volumes, a fine gallery of paintings, and some other interesting collections. Two miles from Cassel is Wilhelmshöhe, an Ionic palace, with a long, lofty, simple front, very beautifully situated on the slope of a wooded hill. Its waterworks display great taste and variety. Hanau, at the junction of the Mayn and the Kintzig, is a large, well built, open town, carrying on a considerable trade. Fulda is an agreeable little city, finely situated on the river of that name, over which there is a handsome stone bridge.

2966. *Hesse-Darmstadt, called the Grand Duchy of Hesse*, is composed of two portions reaching along the Rhine from the Prussian to the Bavarian frontier. It is entirely enclosed by the Odenwald, the Vogelsberg, the Westerwald, and other mountains of this part of Germany, not lofty, but steep and wooded. The broad valley of the Rhine, however, with others branching from it, enclose a great extent of fertile territory, very productive, especially in wine, of which 64,000 tuns, according to Hassel, are annually produced; but oats are the only grain for which its high tracts are suited. Besides the Rhine, this duchy includes the lower part of the course of the Mayn, and even touches the Neckar. The entire surface does not exceed 1120 square miles. In addition to the above productions, tobacco and flax are raised in considerable quantities; and the hills are covered with large herds of cattle. There is a little copper, iron, and salt. The population is estimated at 700,000, of which only 140,000 are catholics. Hesse-Darmstadt has a constitution, which, after some difficulty, the grand duke was prevailed on to make sufficiently liberal. The revenue is about 4,000,000 guilders; and the army, independent of landwehr, amounts to 8000 or 9000 men.

2967. *Among the cities, Darmstadt, the capital*, is not the most remarkable, though it is handsome and agreeable, with 15,400 inhabitants, a splendid opera-house, and a library of 90,000 volumes. Darmstadt derives much greater lustre from Mentz, or Mayence (*fig.* 389.), that great imperial city, formerly the residence of an electoral bishop, which is now annexed to its territory. The fortifications of Mentz, which are of immense strength and extent, have been put in repair, and are now held by the diet as one of the great bulwarks of the empire. The troops of Austria and Prussia, therefore, occupy the forts in front of Mentz, and those of Cassel on the opposite bank; while the duke governs the interior of the town. The Rhine is here crossed by a bridge of fifty-two pontoons. Mentz has now few manufactures, but a very considerable trade in wine and colonial produce. Worms, another once great imperial city, exhibits only the ruins of its former state, and is almost choked with rubbish, the fruit of successive desolating wars. It has still the remains of some fine edifices, and a good fruit and corn market. Offenbach, a thriving little town, is the only place in the duchy where manufactures flourish.

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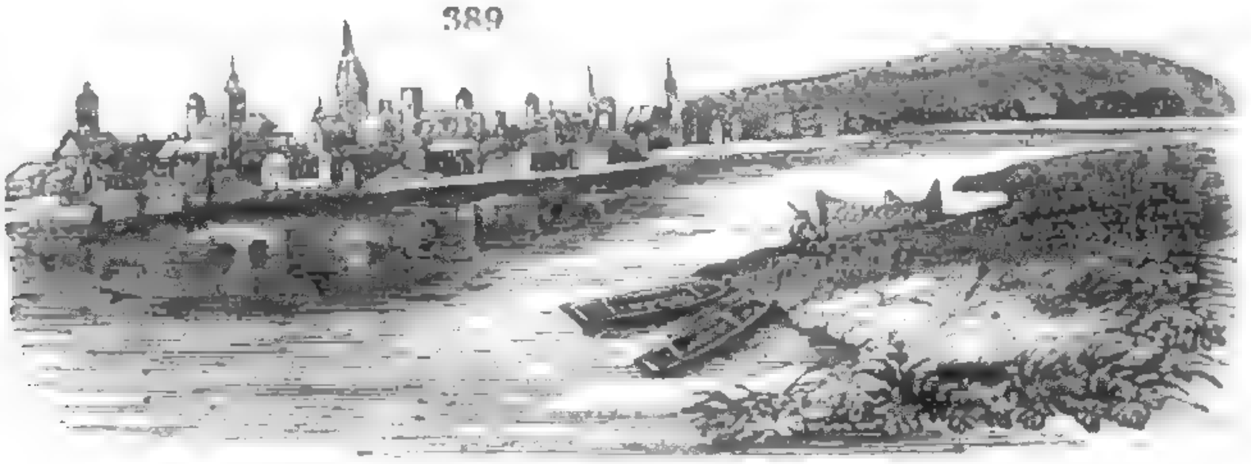


MENTZ.

2968. *A variety of little states and principalities* are clustered in different parts of the north and west of Germany. These, in extent, and even in revenue, are often inferior to the estates of English nobles even of a secondary class; yet the petty princes by whom they are ruled maintain all the form and state of sovereigns. They have states, ministers, an exchequer, a public debt, an army, all in miniature. Yet, small as these princes are, circumstances have occurred to draw them into considerable notice in the eyes of Europe. Several, in the absence of wealth and power, have endeavoured to distinguish themselves by personal merit, and particularly by military talent: Brunswick and other houses have produced some of the greatest European generals. The obligation, also, imposed upon the British royal family, of marrying only into protestant houses, with the inconveniences which might be produced by an alliance with the great monarchies, has caused these smaller houses to be almost invariably resorted to when a matrimonial alliance was projected. Several of them have given queens to Great Britain; one of the smallest, but for a recent fatal event, would have given a matrimonial king. Similar connections have been formed with Russia and other northern courts. The following table, of the extent, population, &c. of these states, in 1830, has been drawn up from good authorities: —

	German Square Miles.	Population.	Revenue in Florins.
Saxe-Weimar	65·82	225,000	2,245,000
Saxe-Oldenburg	23·42	115,000	725,000
Oldenburg	116·	248,198	1,500,000
Saxe-Coburg-Gotha	48·88	145,500	1,180,000
Saxe-Meiningen	41·72	150,000	1,900,000
Mecklenburg-Schwerin	223·88	440,000	2,500,000
Mecklenburg-Strelitz	45·	70,400	700,000
Brunswick	70·37	244,900	3,089,000
Nassau	82·70	348,000	2,967,000
Anhalt (three principalities)	47·23	130,200	1,668,000
Schwartzburg (two principalities)	36·	106,000	650,000
Reuss (two principalities)	28·	81,700	608,000
Hohenzollern (two principalities)	23·37	53,000	270,000
Waldeck	21·68	56,000	480,000
Lippe-Detmold	20·50	76,718	580,000
Lippe-Schauenburg	9·75	25,500	240,000
Hesse-Homburg	7·84	21,350	110,000
Lichtenstein	2·50	5,800	20,500
Hamburg	7·10	150,000	1,800,000
Frankfort	5·	54,000	760,000
Lubeck	6·75	40,500	480,000
Bremen	5·	57,800	480,000

2969. *The grand duchy of Saxe-Weimar*, must rank with the small states, though it takes the lead among them. It stands chiefly upon the Thuringian forest, and is diversified with wooded hills of various height, form, and aspect. The soil is in many parts ungrateful, but is diligently cultivated, though by a poor peasantry, and in too minutely divided portions; notwithstanding which, it yields corn more than is sufficient for its own supply, and breeds sheep with very highly improved wool, which, under the name of electoral, is in request even in England. But the glory of Weimar consists in its intellectual eminence, which has rendered it the literary capital, the Athens, of Germany. While the other princes disdainfully neglected men of learning, or confined their patronage to the French, the grand duke of Saxe-Weimar, by extreme liberality and courtesy, drew round him all the great men by whom the annals of German literature have been illustrated during the last half century. Wieland, Herder, Schiller, Göthe, and a crowd of secondary name, have, successively or together, made Weimar their residence. This German Athens is little more than a spacious village, with scarcely a regular street: only the palace and house of assembly can be called spacious edifices. It has, however, a library of 110,000 volumes, liberally thrown open to the public. Every degree of freedom is given to the press that the great monarchs will allow; but to them the press of Weimar is an object of continual jealousy. The grand duke, the most liberal and popular of all the German princes, was the first to give to his subjects a representative constitution: yet so well were they before satisfied with his government, that attendance on the states was considered by some as an unnecessary burden. Jena, a small town, is distinguished by one of the most flourishing universities of Germany, and as the theatre of the great battle which overthrew for a time the Prussian monarchy.

2970. *Mecklenburg* is a territory of the most northerly part of Germany, north-east of Hanover, and bordering on Pomerania, of whose character it in a great measure partakes. It consists to a great extent of lake and forest; and the cultivation is comparatively rude; yet a variety of gentle hills give it a picturesque aspect. It is divided into the two grand duchies of Schwerin and Strelitz; the former is much the more extensive; and Schwerin, the capital, is a pretty considerable town, with a handsome palace, situated on a lake, and containing a good gallery of pictures. Rostock is a larger town, situated on the Baltic, and exporting grain to the value of from 150,000*l.* to 200,000*l.* Mecklenburg-Strelitz is exceedingly small, not containing quite 80,000 people, and its capital being little more than a large village; yet it is interesting to Britain, as having given to her Caroline, wife of George II., and Charlotte, wife of George III., two of the most respected British queens.

2971. *Brunswick* is the appanage of one of the greatest and most ancient houses of Germany, that of Guelf; whose head, Henry the Lion, contended with the house of Swabia for the empire, but was worsted, and put under the imperial ban. Since that time, the Guelf family has held only a secondary place in Germany. The branch of Brunswick-

Luneburg, however, has risen to the dignity, first of electors of Hanover, and then of kings of Great Britain. That of Wolfenbüttel hold only the small domain called the duchy of Brunswick. It is rather a productive territory, situated partly on the declivities of the Hartz, partly on the plain of Saxony. The city of Brunswick is larger than in proportion to the state, containing a population of about 30,000. It is a considerable seat of the inland trade of Germany, its fairs ranking next to those of Frankfort and Leipzig. The government was nearly absolute till very lately, when the people, by a violent change of dynasty, effected for themselves a representative constitution.

2972. *Branches of the house of Saxony*, once the ruling family in northern Germany, hold a cluster of small principalities to the west of Saxony royal. Saxe-Coburg-Gotha has been lately formed by the union of these two branches, on the extinction of that of Gotha. It comprehends a great part of the territory of Thuringia, and is rather productive. The city, containing about 12,000 inhabitants, is the channel of a considerable trade connected with the fair of Leipzig. It is somewhat a learned city; containing a library of 60,000 volumes, with valuable manuscripts. Saxe-Coburg is a mountainous territory, comprising part of the Thuringian forest. It contains good pasturage, and some valuable mines. This territory has been raised to distinction by the good fortune of one of its younger members, now king of the Belgians. Saxe-Meiningen, on the Werra, is a little tract, enriched by mines of salt at Salzungen, and by some of coal, iron, and cobalt. Saxe-Hildburghausen is the most complete example of one of these petty principalities. With a population of 32,000, and a revenue of 20,000*l.*, it has all the appendages of a great state; a public debt, an army of 100 men, and a vote in the Germanic diet.

2973. *Oldenburg* is distinguished by the high rank of its princes, connected by family alliances with all the great powers of the north, particularly Russia. The duke has possessions in different parts of the north of Germany; but the main part of them is situated on the Weser, to the west of Hanover; a flat, marshy district, but abounding in rich pastures, and somewhat resembling Holland.

2974. *Nassau* is a dukedom, which, by the union of the territories held by several branches of the same family, has attained to some tolerable magnitude. Situated in the southern part of Franconia, forming a hilly country on the banks of the Rhine and the Mayn, it produces those valuable wines, old Hock and Bleschert, which distinguish this part of Germany: it does not contain, however, any towns of importance.

2975. *The other principalities* are all very small. Anhalt, on the Elbe, between Saxony and Brandenburg, has its population, of 130,000, divided between the three branches of Dessau, Bernburg, and Köthen. The family is ancient, and has produced some men of eminence. *Schwartzenburg*, a district of Franconia, has 106,000 people, divided between the two branches of Sondershausen and Rudolstadt, both of great antiquity, and deriving more importance from their great estates in Bohemia and other parts of the Austrian territory. *Reuss*, in Upper Saxony, has 81,700 inhabitants, divided between the elder and younger branches. *Lippe-Detmold* and *Lippe-Schauenburg* are situated to the south of Hanover; the one hilly and wooded, the other flat and fertile. A former prince of Lippe-Schauenburg made a distinguished figure in the service of Portugal. There are two princes of Hohenzollern, Sigmaringen and Hertzingen, having between them 53,000 people. They form the only petty states in the south of Germany, being situated in Swabia, between Baden and Wirtemberg. Waldeck-Pyrmont, composed of two hilly counties between Hesse and Hanover, derives almost its sole importance from the mineral baths of Pyrmont, which are among the most celebrated in Europe. Hesse-Homburg is a small mountainous principality, near Frankfort, possessed by a branch of the family of Hesse-Darmstadt. Though, by the favour of the house of Austria, its possessions have been tripled, they do not exceed those of a rich English squire. Homburg, the capital, is a small town, in a very picturesque situation. Finally, the minimum of principalities is found in *Lichtenstein*, a district in the Saxon Erzegebirge, with only 5800 inhabitants; but the prince, as an Austrian nobleman, is one of the most opulent individuals in Europe, and his family distinguished by information and intelligence.

2976. *The four free cities of Germany*, Hamburg, Lubeck, Bremen, and Frankfort, form still an interesting feature, necessary to close the picture of this great country. They are the sole remnant of the Hanse Towns and imperial cities; illustrious confederacies, which, during the middle ages, acted a most conspicuous part in the improvement of the European system. The members of the congress of Vienna, though little friendly to any thing republican, considered these so fully established, and so venerable by antiquity, that they sanctioned them as a part of the Germanic body.

2977. *Hamburg* is the most important commercial city of Germany. It forms the emporium of Saxony, Bohemia, and other fertile and industrious regions watered by the Elbe and its tributaries. It is, at the same time, a grand medium of communication between the northern and middle states of Europe; and a species of depôt for the commodities of each. The city is of great antiquity, having been founded by Charlemagne, as a bulwark against the rude northern tribes, by whom it was repeatedly sacked, particularly by the Vendes, in 1002.

Its advantageous situation, however, enabled it always to recover and extend its commerce, till, in the middle of the thirteenth century, it concluded with Lubeck a treaty, which became the basis of the celebrated Hanseatic league. It continued in a state of uninterrupted advance, while other members of the confederacy declined. In 1618 it was declared a free imperial city, and in 1768 was emancipated from all remnant of dependence upon Denmark. In 1807, however, a period of deep calamity commenced: it was forcibly occupied by the French troops, and Bonaparte seized on a part of the public treasure. He caused a still more deadly injury by the enforcement of the continental system, by which the mercantile interests of Hamburg were reduced almost to a state of ruin. She suffered also severely in 1813, by a premature attempt to effect her liberation: but, on the downfall of Napoleon, she was restored to all her rights. Since that time she has greatly revived; though her previous losses, and the depression generally affecting the commercial interests of Europe, have prevented her from regaining all her former importance. In 1830, 1922 vessels entered the port of Hamburg; of which 710 were from Great Britain; 375, Holland; 82, Brazil; 61, the Mediterranean; 102, the West Indies; 23, United States; 65, France; 443, the Baltic; 28, Portugal; 13, East Indies; 20, Spain. The leading articles of importation in 1830 were, coffee, 35,000,000 lbs.; cotton, 16,000 bales; tobacco, 2538 hogsheads; rum, 3483 puncheons; pepper, 680,000 lbs.; tea, 8800 boxes. (*M'Culloch's Dict. of Commerce.*) The total exportation from Britain to the Hanse towns, most of which goes to Hamburg, is from 7,500,000*l.* to 9,000,000*l.* The manufactures of Hamburg are various, though none very considerable, except the refinery of sugar, which has also declined from the importance which it possessed at the beginning of this century.

2977. *Hamburg* is not a well-built town; the streets being in general narrow and irregular, the houses constructed of brick or wood. The churches of St. Michael's and St. Peter's have elegant spires, and the new exchange is handsome; but there is no edifice distinguished for its splendour. The hospital, however, completed in 1823, is most spacious and commodious; being 700 feet in front, and each wing 300 feet long. It is extremely well managed, and believed to contain 2500 beds. The executive in Hamburg consists of a self-elected senate of twenty-eight members, who, however, are checked by popular councils chosen by all who have 240*l.* of property within the city. According to Dr. Buch, the average population between 1817 and 1826 was 122,815; while Crome estimates that of the whole territory at 150,000.

2978. *Lubeck*, as a Hanse town, rose to distinction as early as Hamburg, and possessed even a pre-eminence; the maritime law by which the concerns of that great confederacy were regulated having derived its name from this city. Its situation, however, within the Baltic, and not commanding the navigation of any great river, rendered it impossible for it to compete with the high prosperity to which Hamburg has, in modern times, attained. It acquired celebrity by the retreat of Blucher, after the disastrous battle of Jena; when that general, entrenching himself in the city, made a desperate stand against a superior force of French troops, in which Lubeck suffered severely. By the treaty of Vienna it regained its privileges as a free city, and a place in the Germanic diet. Its commerce is impeded by the small depth of water in the Trave, upon which it is situated, and which obliges vessels drawing more than ten feet to stop at Travemunde. What remains of its commerce consists in the export of the grain abundantly produced in the surrounding countries; for whose use it imports wine, colonial produce, and manufactured articles. Lubeck, for an old town, is well built of stone, and the church of St. Mary is elegantly adorned with a series of paintings called the Dance of Death. The fortresses, once of great strength, were demolished by the French.

2979. *Bremen*, at the mouth of the Weser, is enriched by the commerce of that important river, down which are brought the productions of Westphalia and part of Franconia; countries extensive and valuable, though not nearly equal to those watered by the Elbe. The city is situated on both sides of the river. The old town consists of narrow streets, bordered by high gloomy houses, built in the fashion of the middle ages: but there is a new town, in a much more elegant style. The government, which once approached to an oligarchy, is now almost purely democratic. In 1829 there entered Bremen 881 vessels; of which 66 were from the United States; 45, West Indies, chiefly Spanish; 14, South America; 110, Great Britain; 37, France; 5, Spain and the Canaries; 2, Italy; 80, Russia; 11, Sweden; 11, Norway; 66, Denmark; 321, North of Germany; 41, Prussia; 70, Netherlands, &c.; 2, the whale fishery. The chief imports were coffee, 13,500,000 lbs.; sugar, 17,000,000; cotton, 1,500,000; tobacco, 14,000,000; wine, 15,000 oxhoft (58 gallons); grain, 5098 lasts.

2980. *Frankfort on the Mayn* is an ancient and venerable city, the seat of the Germanic diet. Its chief importance, however, is derived from being one of the great centres of the German inland trade: its fairs, which are held twice in the year, being second only to that of Leipzig. Its situation on the Mayn, near its junction with the Rhine, and at the meeting of the great roads which traverse Germany, is extremely favourable for this object. Though the houses are built of wood, there are several spacious squares and streets; also numerous large mansions which recall solemn historical recollections. The fortifications are no longer of any importance. The main body of the city is on the north side of the river; but a portion, called Sachsenhausen, stands on the north side, and is connected by a stone bridge. The inhabitants are, in general, well informed; and many private individuals possess valuable libraries, and collections relating to the fine arts. The Jews, who are very numerous, were formerly confined to a particular quarter, where they were shut in every night; but since 1796 this illiberal system has been discontinued.

Chap. XI.

HOLLAND AND BELGIUM.

2981. *The Netherlands*, comprising now the two kingdoms of *Holland* and *Belgium*, form a maritime territory, which, situated almost in the centre between the north and the south of Europe, and penetrated by the Rhine and its tributaries, possesses great natural advantages for industry and commerce. They have, accordingly, from a very early period of modern history, ranked as one of the most prosperous and flourishing parts of Europe. The union of the Batavian and Belgic Netherlands into one kingdom, though in fact only a renewal of that which subsisted at a former period, was suddenly terminated, in 1830, by a revolution of the Belgians. The separate existence, however, of Holland and Belgium being yet recent, and the statistical information respecting them having for a number of years been collected with reference always to the entire Netherlands, they will be still treated most advantageously in combination. It may be sufficient to observe, that, since the revolution of 1830, Belgium has been erected into a separate monarchy, through the mediation of the five great powers of Europe; and the crown, with their consent, has been conferred on Prince Leopold, formerly of Saxe-Coburg.

References to the Map of Holland and Belgium.

HOLLAND.
I. Friesland.
1. Paesens
2. Buitenpost
3. Dokkum
4. Leuwarden
5. St. Jacob
6. Fanekir
7. Harlingen
8. Kornwurt
9. Bolsward
10. Workum
11. Hindelopen
12. Stavoren
13. Sloten
14. Kuinder
15. Terkappel
16. Grouw
17. Schoot
18. Noordwelde
19. Beester Zwang
20. Donkerboek.

II. Gröningen.
21. Marum
22. Grypskerke
23. Zoltkamp
24. Uskert
25. Loppersum
26. Delfzyl
27. Winschoten
28. Fort Bourtange
29. Ter Apel
30. Ter Maarsch
31. Kolhorn
32. Gröningen.

III. Drenthe.
33. Roon
34. Gasteren
35. Annen
36. Smilde
37. Dieverburg
38. Westerborg
39. Odoorn
40. Schoonebeck
41. Koevorden
42. Ruinen
43. Meppel.

IV. Overyssel.
44. Steenwyk
45. Blockzyl
46 Vollenhoven
47. Zwartesluis
48. Kampen
49. Hattem
50. Zwoll
51. Genemuiden
52. Ommen
53. Hardenberg
54 Den Ham
55. Almelo
56. Oolmarsum
57. Oldenzaal
58. Enschede
59. Delden
60. Haaksbergen
61. Goor
62. Rysen
63. Holten
64. Wesepe
65. Heyno.

V. Guelderland.
66. Elburg
67. Posthuis
68. Harderwyk
69. Leuvenum
70. Nykerk
71. Amersfoort
72. Barneveld
73. Kootvyk
74. Apeldoorn
75. Vaasen
76. Deventer
77. Zutphen
78. Lochem
79. Borkulo
80. Ruerlo
81. Bredevort
82. Heerenberg
83. Deutichem
84. Doesburg
85. De Woest Hoef
86. Arnheim
87. Huissen
88. Herveld
89. Wageningen
90. Thiel
91. Kuilenburg.

VI. Utrecht.
92. Wyk
93. Venendaal
94. Isselstein
95. Montfoort
96. Utrecht
97. Nieuwersluis
98. Naarden.

VII. North Holland.
99. Amsterdam
100. De Koog
101. Monnikendam
102. Purmerend
103. Edam
104. Hoorn
105. Enkhuizen
106. Medenblick
107. Kolhorn
108. The Helder
109. Calandsoog
110. Petten
111. Broek
112. Alkmaar
113. Egmondaan Zee
114. Beverwyk
115. Zandvoort
116. Haarlem.

VIII. South Holland.
117. Lisse
118. Leimuden
119. Leyden
120. The Hague
121. Gravezande
122. Wilsveen
123. Gouda
124. Schoonhoven
125. Leerdam
126. Gorcum
127. Rotterdam
128. Clarlot
129. Stryen
130 Helvoetsluys
131. Goeree
132. Zierikzee
133. Goes
134. Veere
135. Middleburg
136. Sluys
137. Biervliet
138. Axel
139. Hulst
140. Tholen
141. Steenbergen.

IX. North Brabant.
142. Bergen op Zoom
143. Rozendaal
144. Williamstad
145. Breda
146. Chaam
147. Tilburg
148. Geertruidenberg
149. Heusdon
150. Bommel
151. Fort St. Andries
152. Grave
153. Vechel
154. Bois le Duc
155. Houvel
156. Reusel
157. Luiks Gestel
158. Eerzel
159. Leende
160. Asten
161. Helmont
162. Wanroy
163. Vertingbeek

X. Limburg.
164. Velten
165. Peterwerth
166. Venlo
167. Helden
168. Meyel
169. Weert
170. Ruremonde
171. Wessem
172. Oirsbeeck
173. Rolduc
174. Maestricht
175. Gulpen.

XI. Luxemburg.
176. Wies Wampach
177. Clervaux
178. Vienden
179. Eschdorf
180. Martelange
181. Nider Pallen
182. Luxemburg
183. Esch
184. Prisange
185. Canach
186. N. Anwen
187. Mersch
188. Ettelbruck
189. Dickirch
190. Echtenach
191. Grevenmacheren.

BELGIUM.
I. Antwerp.
1. Arendonck
2. Turnhout
3. Minderhout
4. Goring
5. Oost Malle
6. Sant Vliet
7. Fort Lillo
8. Fort St. Philip
9. Antwerp
10. Bergenhout
11. Herchem
12. Boom
13. Mechlin
14. Lier
15. Vosdoncken
16. Herenthals
17. Gestel
18. Lommel.

II. Limburg.
19. Helck Teren
20. Peer
21. Hamont
22. Maseyck
23. Asch
24. Reckem
25. Hasselt
26. Bilsen
27. Santongres
28. Maeshoven.

III. South Brabant.
29. Tirlemont
30. Incourt
31. Moustier
32. Nivelles
33. La Belle Alliance
34. Halle
35. Waterloo
36. Brussels
37. Vlanden
38. Louvaine
39. Haerlen
40. Diest
41. Aerschot
42. Ecluse
43. Dondermeel
44. Asche.

IV. East Flanders.
45. Alost
46. Ninove
47. Grammont
48. Parieke
49. Oudenarde
50. Leeuwerghem
51. Denmock
52. Deinse
53. Ghent
54. Wetteren
55. Caleken
56. Hamme
57. Burcht Town and Fort
58. Tête de Flandres
59. Doel
60. Enveide
61. St. Laurens.

V. West Flanders.
62. Cnooke
63. Blankenburg
64. Bruges
65. Ostend
66. Nieuport
67. Thorout
68. Dixmud
69. Loo
70. Rousbrugge
71. Poperinghe
72. Warneton
73. Ypres
74. Menin
75. Courtray
76. Rousselaere
77. Thielt.

VI. Hainault.
78. Pottes
79. Depret
80. Temp Leuze
81. Tournay
82. Fontenoy
83. Teruevels
84. Quivrain
85 Sars
86. Mons
87. Lens
88. Ath
89. Enghien
90. Roeulx
91. Goselies
92. Charleroi
93. Merbes le Château
94. Beaumont
95. Ranse
96. Chimay.

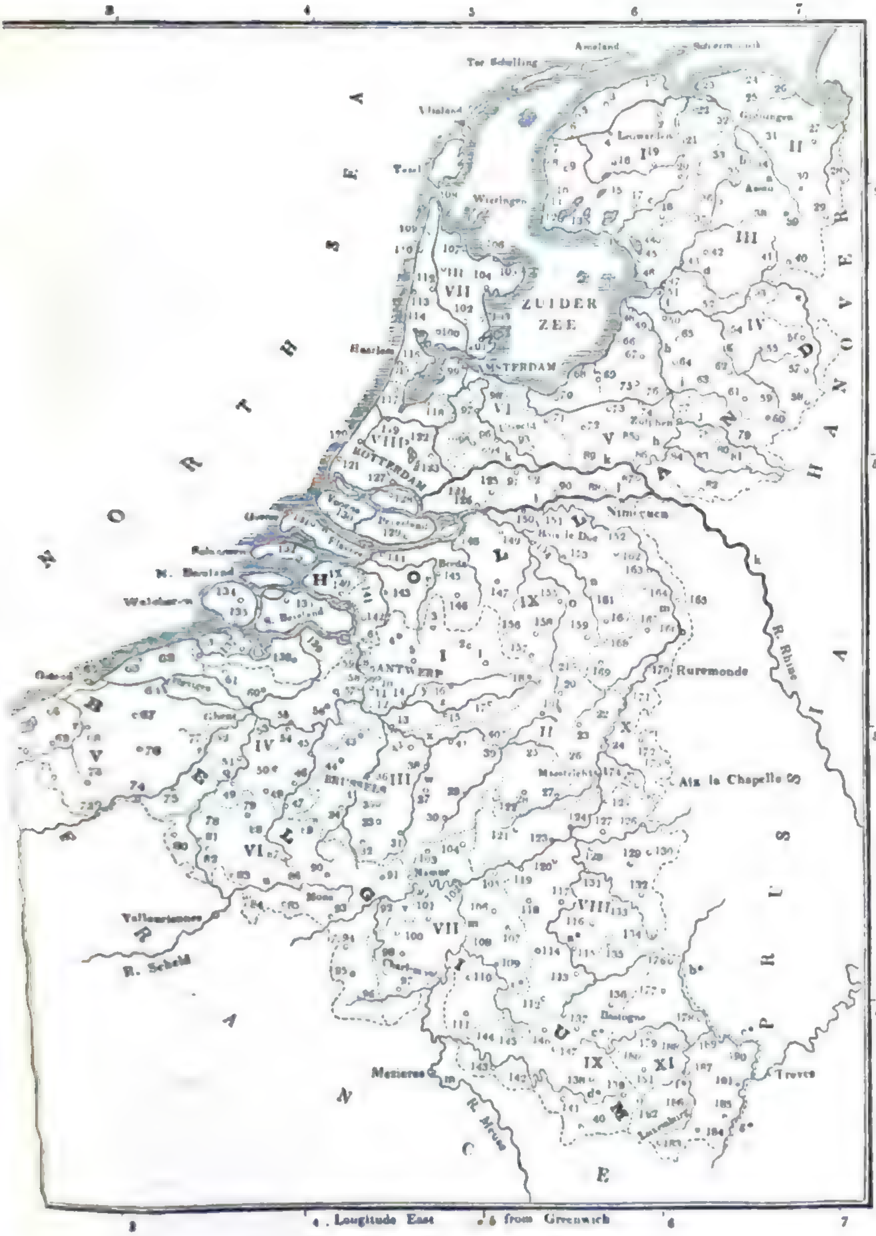
VII. Namur.
97. Marienbourg
98. Philipville
99. Ligny
100. Thil Baudien
101. Graux
102. Namur
103. Gembloux
104. Eghezee
105. Ardennes
106. Nattore
107. Pessoulx
108. Dinant
109. Jambeline
110. Beau Raing
111. Gedinne.

VIII. Liege.
112. St. Hubert
113. Beausainte
114. Marche
115. Marcourt
116. Grand Menil
117. Tobogne
118. Mieraij
119. Huy
120. Nieuf Ville
121. Oinal
122. Landen
123. Flemalle
124. Liege
125. Vise
126. Limburg
127. Heron
128. Baufays
129. Spa
130. Solvastre
131. Doufiame
132. Stavelot
133. Thession
134. Viel Salm.

IX. Luxemburg.
135. Traittes
136. Bastogne
137. Neville
138. Chau de Bologne
139. Arlon
140. Virton
141. Belle Fontaine
142. Perensart
143. Bouillon
144. Orchimont
145. Anloy
146. Recogne
147. Neuf Château.

Rivers.
a Schuyten
b Hoorn
c Kuinder
d Reest
e Dinkel
f Wecht
g Regge
h Yssel
i Chipbeek
j Berkel
k Rhine
l Waal
m Meuse
n Great Aa
o Dommel
p Merk
q Scheldt
r Yperlee
s Lys
t Senne
u Haine
v Sambre
w Dyle
x Demer
y Little Lethen
z Great Lethen
a* Ourt
b* Our
c* Sure
d* Semoy
e* Lesse
f* Alsette
g* Moselle.

Fig. 890. MAP OF HOLLAND AND BELGIUM



Sect. I. *General Outline and Aspect.*

2982. *Holland and Belgium* may be regarded as a large corner or segment cut off from France and Germany, which form round it a species of irregular arc. Arbitrary lines, drawn conformably to treaties, mark all except its maritime boundaries; for, though several of the greatest rivers of Europe cross its territory, none of them have any limitary character. The maritime boundary, which, like the inland, extends from north-east to south-west, is the North Sea, or German Ocean, which is formed here into a species of large gulf by the opposite coast of part of the English Channel. Holland is also penetrated by the deep inlet of the Zuyder Zee. The whole territory extends between 49° 30′ and 53° 34′ N. lat., and 2° 30′ and 5° 58′ E. long.; making about 280 miles in length, and 220 miles in breadth. The entire extent, according to the best calculations, amounts to 24,870 square miles, or 15,900,000 English acres.

2983. *In respect to surface*, this country includes the lowest portion of the great low land of the European continent. The northern parts, composing the new kingdom of Holland, are mostly below the level to which the bordering sea rises during high tides or swells. Hence originated an imminent danger of inundation, till the Dutch constructed those mighty dikes, by which the sea is excluded, and which form so extraordinary a monument of their industry. Holland is humorously described by Butler as " a country that draws fifty feet of water." The Belgic provinces are also flat, but not lower than the surface of the sea, nor much exposed to river inundation. In the south-eastern district of Liège and Namur, branches of the Rhenish mountains render the surface irregular, and sometimes hilly, particularly in the tract forming part of the ancient forest of Ardennes.

2984. *Several rivers*, which rank among the greatest in Europe, and are derived from distant sources, pass through this territory; and, separating into numerous channels, form broad estuaries at their entrance into the ocean. They all unite in the channel of the majestic Rhine; yet, by a singular fortune, this great name is not retained by the main branch of the river, which, in turning to the westward, receives the name of Waal, and afterwards that of its important tributary the Maese, under which designation it flows into the sea below Rotterdam. The Yssel, another considerable branch, runs northward into the Zuyder Zee; while the name of Rhine is retained by another, comparatively a rivulet, which passes through the provinces of Gueldres and Utrecht. The Maese is the only great river which has the larger part of its course through the Netherlands, traversing the interior of Belgium from south to north. Its main tributaries, the Sambre on the west, and the Roer on the east, have only a portion of their course through Belgium. The Scheldt has not nearly so long a course; but this river, and its tributaries, the Lys, the Dyle, the Dender, and the Neethe, water the most improved districts, and visit the greatest cities of Belgium. When united under their main branch, they form a broad navigable channel, opening into an estuary, which affords to Antwerp the means of carrying on an extensive maritime commerce.

2985. *The only considerable lake in Holland* is Haerlem-Meer, a wide shallow expanse; which, however, was of great service to the Dutch during their grand struggle for independence, by giving them the means of laying the surrounding country under water. There are several smaller lakes of the same character in Friesland.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

2986. *The higher parts of this country* are composed of *strata of transition slates* and *quartzes*, more or less inclining to sandstone, generally directed from N. E. to S. W., and traversed by numerous veins of quartz. These slates are *clay slate*, *whet slate* or *hone*, *drawing slate* or *black chalk*. Resting upon the transition rocks occur various secondary deposits. The first formation is the old *red sandstone*, upon which rests the *mountain limestone*. Associated with these rocks are various slate clays, and beds of *anthracite* or *glance coal*. Mines of *brown iron ore*, or hydrate of iron, and of *red iron ore*, or oxide of iron, occur among these rocks. A great field of the *coal formation*, resting upon this mountain limestone, extends from Aix la Chapelle to Douay. The coal formation in this tract of country forms a series of irregular basins, of which the most considerable are those of Liège and Charleroi, which are separated from each other by a small ridge of limestone. The chief rocks of these coal-basins are sandstone, slate, clay ironstone, and coal. The most important coal mines are those in the neighbourhood of Mons and Charleroi; but the mines of Liège are remarkable on account of the difficulties the miners meet with in their workings; the number of beds of coal being reckoned as high as eighty-three by M. Dumont. From Aix la Chapelle by Maestricht and Brussels, the country is composed of chalk, with occasional displays of green sand, gault, and Shanklin sand, rising from under it.

2987. *The tritonian* or lower tertiary rocks form in the Netherlands a very considerable basin, in which is situated the city of Brussels. It is composed principally of sands, ferriferous sandstones, white sandstones, flint, limestone, and clayey marl. These tertiary deposits are observed more or less deeply covered with *diluvium*; and at the mouths of the Scheldt, Meuse, and Rhine, there are vast deposits of river *alluvium*, which alluvium forms also the island of Zeeland, and the greater part of Holland.

Subsect. 2. *Botany.*

2988. The *Botany* of this country has been already noticed under that of Germany.

Subsect. 3. *Zoology.*

2989. *The Native Zoology* offers nothing peculiar from that of the adjacent kingdoms. The Dutch horses (*fig.* 391.) are only valuable for draught: those of Friesland, Berg, and the country of Juliers, are the best; but their feet are generally large, they eat much, and have little endurance. The Flemish sheep are of a breed common to France and the Netherlands, being in general hornless, high on the legs, and derived from an intermixture with the Barbary long-legged sheep. The Dutch oxen are of an immense size, Major Smith having seen one which weighed 2000 lbs. This race appears to have been derived from Denmark, and to have produced the Holstein, which was the parent of the old unimproved English breeds.

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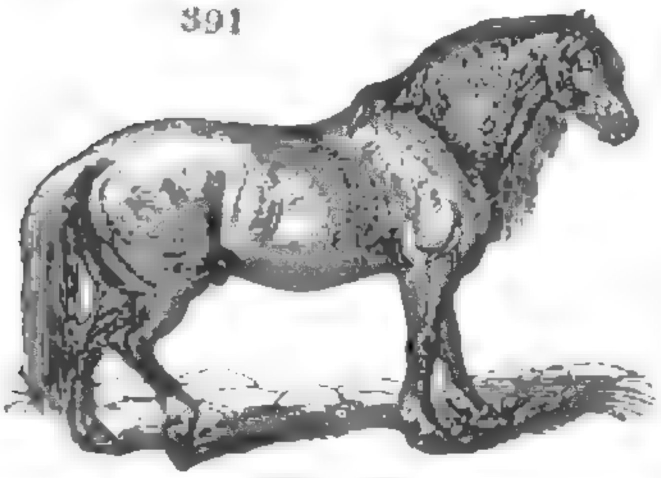

DUTCH HORSE.

Sect. III. *Historical Geography.*

2990. *The Netherlands* formed, in ancient times, the principal part of *Gallia Belgica*. The Belgæ were the rudest, the bravest, and the fiercest of the three nations of Gaul. A desperate struggle was maintained before they yielded to the genius of Cæsar, and the superior discipline of the Roman armies. At length the country within the Rhine was reduced to the condition of a Roman province; but the Batavi, the ancient Hollanders, united themselves to Rome rather as allies than subjects.

2991. *During the middle ages* the Netherlands passed through a series of vicissitudes. So early as the era of Charlemagne, they had acquired distinction in the pursuits of industry; and some of their fabrics were sent by that monarch to the caliph Haroun Alraschid, as specimens of the arts and industry of Europe. When the empire of Charlemagne fell to pieces, these states were divided into a number of separate principalities, all successively united, by marriage contract or inheritances, under the sway of the house of Burgundy. It was at this time that the Flemish provinces rose to the highest pitch of manufacturing and commercial prosperity. They received all the raw materials of France and England, countries then rude and agricultural, and returned them in a manufactured state. Ghent alone is said to have employed 40,000 looms; though this is most probably much exaggerated. Bruges first, and then Antwerp, formed the grand depôt for the commerce of the northern and middle states of Europe.

2992. *The house of Austria*, by the intermarriage of Maximilian I. and Mary, the heiress of Burgundy, succeeded to the rich dowry of the Seventeen Provinces. They formed one of the chief sources of the power of Charles V., who transmitted them, with Spain and his Italian dominions, to his son Philip II.

2993. *The Reformation* was early introduced into the Netherlands, and had a most powerful influence upon their destiny. Being suited to the sober and thinking habits of a manufacturing population, it was soon embraced by a majority of the people, who were thus placed in direct collision with the fierce and gloomy bigotry of Philip II. The Inquisition being introduced, in its most unrelenting severity, with a view to the suppression of the new doctrine, drove the people into open rebellion; and a contest of fifty years' duration arose, the most fierce, bloody, and important in its consequences, of all those to which differences of religion have given rise. The duke of Alva, who boasted that, during his government in the Low Countries, 18,000 persons had perished on the scaffold, was, however, unable to subdue the independent spirit and determined enmity to Spanish dominion which he had been instrumental in kindling. The more moderate conduct of his successors, and, above all, of Alexander Farnese, succeeded in re-establishing the Spanish sway over the Belgic provinces which were not defended by any natural barriers. Even the Dutch were reduced to the disastrous necessity of opening their dikes, and allowing a great part of their territory to be inundated. Their courage and perseverance, however, the great talent of the first two princes of the house of Orange, and the aid afforded by Elizabeth, enabled them finally to achieve their independence. The union of Utrecht, when they constituted themselves into an independent state, by the title of the Seven United Provinces, was concluded in 1597.

2994. *From this period* the destiny of the United Provinces, called more commonly by the name of Holland, the chief province among them, was entirely different from that of Belgium. They speedily attracted many of the manufactures, and all the commerce, which had raised the Flemish cities to prosperity. The Dutch conquered from Portugal, at that time under the dominion of Spain, the finest of her possessions in the East Indies; obtained a temporary footing in Brazil; and rendered Amsterdam the centre of a flourishing trade with India: they carried on the fisheries, especially those of herrings, upon an unprecedented scale; and became the first maritime people in the world. The commercial greatness of Holland presents so remarkable a phenomenon, that we cannot forbear availing ourselves of some part of that luminous illustration of it, which has been afforded by the researches of Mr. M'Culloch. That able writer observes: —

"Between the years 1651 and 1672, when the territories of the republic were invaded by the French, the commerce of Holland seems to have reached its greatest height. De Witt estimates its increase from the treaty with Spain, concluded at Munster in 1643, to 1669, at fully a half. He adds, that, during the war with Holland, Spain lost the greatest part of her naval power; that since the peace, the Dutch had obtained most of the trade to that country, which had been previously carried on by the Hanseatic merchants and the English; that almost all the coasting trade of Spain was carried on by Dutch shipping; that Spain had even been forced to hire Dutch ships to sail to her American possessions; and that so great was the exportation of goods from Holland to Spain, that all the merchandise brought from the Spanish West Indies was not sufficient to make returns for them.

"At this period, indeed, the Dutch engrossed, not by means of any artificial monopoly, but by the greater number of their ships, and their superior skill and economy in all that regarded navigation, almost the whole carrying trade of Europe. The value of the goods exported from France in Dutch bottoms, towards the middle of the fourteenth century, exceeded 40,000,000 livres; and the commerce of England with the Low Countries was, for a very long period, almost entirely carried on in them.

"The business of marine insurance was largely and successfully prosecuted at Amsterdam; and the ordinances published in 1551, 1563, and 1570, contain the most judicious regulations for the settlement of such disputes as might arise in conducting this difficult but highly useful business. It is singular, however, notwithstanding the sagacity of the Dutch, and their desire to strengthen industrious habits, that they should have prohibited insurance upon lives. It was reserved for England to show the advantages that might be derived from this beautiful application of the science of probabilities.

"In 1690, Sir William Petty estimated the shipping of Europe at about 2,000,000 tons, which he supposed to be distributed as follows: — viz. England, 500,000; France, 100,000; Hamburgh, Denmark, Sweden, and Dantzic, 250,000; Spain, Portugal, and Italy, 250,000; that of the Seven United Provinces amounting, according to him, to 900,000 tons, or to nearly one half of the whole tonnage of Europe! No great dependence can, of course, be placed upon these estimates; but the probability is, that, had they been more accurate, the preponderance in favour of Holland would have been greater than it appears to be; for the official returns to the circulars addressed in 1701 by the commissioners of customs to the officers at the different ports, show that the whole mercantile navy of England amounted at that period to only 261,222 tons, carrying 27,196 men. (*Macpherson's Annals of Commerce*, anno 1701.)

"It may, therefore, be fairly concluded, that, during the seventeenth century the foreign commerce and navigation of Holland was greater than that of all Europe besides; and yet the country which was the seat of this vast commerce had no native produce to export, nor even a piece of timber fit for ship-building. All had been the fruit of industry, economy, and a fortunate combination of circumstances.

"Holland owed this vast commerce to a variety of causes: partly to her peculiar situation, the industry and economy of her inhabitants, the comparatively liberal and enlightened system of civil as well as of commercial policy adopted by the republic; and partly also to the wars and disturbances that prevailed in most European countries in the sixteenth and seventeenth centuries, and prevented them from emulating the successful career of the Dutch.

"Many dissertations have been written to account for the decline of the commerce of Holland. But, if we mistake not, its leading causes may be classed under two prominent heads, viz. first, the natural growth of commerce and navigation in other countries; and second, the weight of taxation at home. During the period when the republic rose to great eminence as a commercial state, England, France, and Spain, distracted by civil and religious dissensions, or engrossed wholly by schemes of foreign conquest, were unable to apply their energies to the cultivation of commerce, or to withstand the competition of so industrious a people as the Dutch. They, therefore, were under the necessity of allowing the greater part of their foreign, and even of their coasting trade, to be carried on in Dutch bottoms, and under the superintendence of Dutch factors. But after the accession of Louis XIV. and the ascendency of Cromwell had put an end to internal commotions in France and England, the energies of these two great nations began to be directed to pursuits of which the Dutch had hitherto enjoyed almost a monopoly. It was not to be supposed that, when tranquillity and a regular system of government had been established in France and England, their active and enterprising inhabitants would submit to see one of their most valuable branches of industry in the hands of foreigners. The Dutch ceased to be the carriers of Europe, without any fault of their own. Their performance of that function necessarily terminated as soon as other nations became possessed of a mercantile marine, and were able to do for themselves what had previously been done for them by their neighbours.

" Whatever, therefore, might have been the condition of Holland in other respects, the natural advance of rival nations must inevitably have stripped her of a large portion of the commerce she once possessed. But the progress of decline seems to have been considerably accelerated, or rather, perhaps, the efforts to arrest it were rendered ineffectual, by the extremely heavy taxation to which she was subjected, occasioned by the unavoidable expenses incurred in the revolutionary struggle with Spain, and the subsequent wars with France and England. The necessities of the state led to the imposition of taxes on corn, on flour when it was ground at the mill, and on bread when it came from the oven; on butter, and fish, and fruit; on income and legacies; the sale of houses; and, in short, almost every article either of necessity or convenience. Sir William Temple mentions that in his time — and taxes were greatly increased afterwards — one fish sauce was in common use, which directly paid no fewer than *thirty* different duties of excise; and it was a common saying at Amsterdam, that every dish of fish brought to table was paid for *once* to the fisherman, and *six* times to the state.

" In consequence principally of the oppressiveness of taxation, but partly, too, of the excessive accumulation of capital that had taken place while the Dutch engrossed the carrying trade of Europe, profits in Holland were reduced towards the middle of the seventeenth century, and have ever since continued extremely low. This circumstance would of itself have sapped the foundations of her commercial greatness. Her capitalists, who could hardly expect to clear more than two or three per cent. of nett profit by any sort of undertaking carried on at home, were tempted to vest their capital in other countries, and to speculate in loans to foreign governments. There are the best reasons for thinking that the Dutch were, until very lately, the largest creditors of any nation in Europe. It is impossible, indeed, to form any accurate estimate of what the sums owing them by foreigners previously to the late French war, or at present, may amount to; but there can be no doubt that at the former period the amount was immense, and that it is still very considerable. M. Demeunier (*Dictionnaire de l'Economie Politique*, tome iii. p. 720.) states the amount of capital lent by the Dutch to foreign governments, exclusive of the large sums lent to France during the American war, at *seventy-three* millions sterling. According to the author of the *Richesse de la Hollande* (ii. p. 292.), the sums lent to France and England only, previously to 1778, amounted to 1,500,000 livres tournois, or sixty millions sterling. And besides these, vast sums were lent to private individuals in foreign countries, both regularly as loans at interest, and in the shape of goods advanced at long credits. So great was the difficulty of finding an advantageous investment for money in Holland, that Sir William Temple mentions, that the payment of any part of the national debt was looked upon by the creditors as an evil of the first magnitude. 'They receive it,' says he, 'with tears, not knowing how to dispose of it to interest with such safety and ease.'

" Among the subordinate causes which contributed to the decline of Dutch commerce, or which have, at all events, prevented its growth, we may reckon the circumstance of the commerce with India having been subjected to the trammels of monopoly. De Witt expresses his firm conviction, that the abolition of the East India Company would have added very greatly to the trade with the East; and no doubt can now remain in the mind of any one that such would have been the case. The interference of the administration in regulating the mode in which some of the most important branches of industry should be carried on, seems also to have been exceedingly injurious. Every proceeding with respect to the herring fishery, for example, was regulated by the orders of government, carried into effect under the inspection of officers appointed for that purpose. Some of these regulations were exceedingly vexatious. The period when the fishery might begin was fixed at five minutes past twelve o'clock of the night of the 24th of June! and the master and pilot of every vessel leaving Holland for the fishery were obliged to make oath that they would respect the regulation. The species of salt to be made use of in curing different sorts of herrings was also fixed by law; and there were endless regulations with respect to the size of the barrels, the number and thickness of the staves of which they were to be made; the gutting and packing of the herring; the branding of the barrels, &c. &c. (*Histoire des Pêches, &c. dans les Mers du Nord*, tom. i. chap. 24.) These regulations were intended to secure to the Hollanders that superiority which they had early attained in the fishery, and to prevent the reputation of their herrings from being injured by the bad faith of individuals. But their real effect was precisely the reverse of this. By tying up the fishers to a system of routine, they prevented them from making any improvements; while the facility of counterfeiting the public marks opened a much wider door to fraud, than would have been opened had government wisely declined interfering in the matter.

"In despite, however, of the East India monopoly, and the regulations now described, the commercial policy of Holland has been more liberal than that of any other nation. And in consequence, a country not more extensive than Wales, and naturally not more fertile, conquered, indeed, in a great measure from the sea, has accumulated a population of upwards of two millions; has maintained wars of unexampled duration with the most powerful monarchies; and, besides laying out immense sums in works of utility and ornament at home, has been enabled to lend hundreds of millions to foreigners."

2995. *The French revolution* produced a movement so great, and with which Holland was in such close contact, that it acted powerfully upon her political destinies. The revolutionary armies, after having defeated those of all the allied powers on the plains of Belgium, advanced into Holland; where, meeting with support from a powerful internal party, they had no difficulty in subverting the dynasty of the house of Orange. In its stead was formed the Batavian republic, virtually united to, and ruled by, the republican government of France. A vigorous attempt, made in 1799, by Britain and Russia, to re-establish the old order of things, was baffled; and no sooner had Napoleon been made emperor of France, than he bestowed Holland, formed into a kingdom, on his brother Louis. This prince, of a mild and amiable temper, was disposed to promote the welfare of the Dutch; but he was allowed only to act as viceroy to his brother, and was obliged to assist in forwarding those measures by which Napoleon, in the vain hope of ruining Britain, endeavoured hermetically to seal all the ports of the Continent against foreign commerce. This system was most distressing to all countries subjected to it; but to Holland it was peculiarly ruinous: that maritime commerce on which her whole greatness had rested, received a blow from which, perhaps, it will never recover.

2996. *The kingdom of the Netherlands* grew out of the measures adopted by that great coalition which, after a long series of triumphs, totally overthrew the colossal fabric that had been raised by the genius of Napoleon and the bravery of the French. After its fall, Austria might have advanced a claim to the Netherlands, so long a portion of her extended dominion. Being, however, so remote, and so much detached from her other territories, it was likely to prove a dependency inconvenient and difficult to defend. She therefore consented to accept indemnification in another quarter, and to allow Belgium, with Holland, to be formed into a representative kingdom, under the house of Orange; believing it might serve as a barrier against any future encroachment of France. The kingdom of the Netherlands, thus formed, was divided into two distinct parts, Holland and Belgium; but the latter, differing in religion, language, and manners, was always discontented at this union, and considered itself as a subject state. Inspired by the example of France in 1830, the people rose in arms, and, after a short but desperate struggle, succeeded, with the ultimate consent of the great powers, in forming themselves into a separate kingdom, under the name of Belgium. It comprises the provinces of South Brabant, East and West Flanders, Antwerp, Hainault, Namur, Liège, the greater part of Limburg, and a small part of Luxemburg. Holland, besides the ten United Provinces, has nearly all Luxemburg, and a small part of Limburg, containing, however, Maestricht, its largest town.

Sect. IV. *Political Geography.*

2997. *A limited monarchy,* modelled pretty nearly after that of Britain, was the constitution established for the new kingdom of the Netherlands, and continued in both the parts into which it has been separated.

2998. *The legislative power* is vested in the states-general; a popular assembly, modified, however, somewhat differently from those either of Britain or France. Each province, as under the ancient Dutch system, has an assembly of its own, which regulates local affairs, and has even the power of imposing local taxes. It cannot, however, injure commerce, by imposing heavier duties on the produce of other provinces than its own. The members of these assemblies are chosen by electoral colleges formed in every great town; not by public meeting, or open election; but by the police officers going from house to house, and collecting billets signed and sealed. The members of the second chamber are chosen for three years, one third of the number being annually renewed. The upper chamber does not consist of hereditary nobles, but of a council of from forty to sixty, named by the king for life. The members of the upper house have a salary of 270*l.*, and those of the lower of 220*l.*

2999. *The revenue* of the kingdom of the Netherlands amounted to about 7,500,000*l.*, raised by the usual expedients of land-tax, excise, customs, stamps, post-office, and by a tax on *patents.* These are required to be taken out by all persons exercising trades or professions; and partake of the character of an income tax, inasmuch as their magnitude is determined by the extent of the sales made by the parties during the preceding year.

3000. *Produce of the principal branches of the Revenue* of the Netherlands. In Florins.

	1816.	1821.	1826.	Average for the 11 years.
Direct Taxes	25,363,700	32,049,316	28,972,818	29,156,436
Stamps, Registration, &c.	12,316,266	13,425,534	12,501,902	12,294,551
Import and Export Duties and Excise	22,127,999	22,349,155	31,121,666	23,727,855
Warranty on Gold and Silver	131,786	174,029	188,908	181,749
Posts	1,066,308	1,828,224	1,984,476	1,614,759
Lottery of the Netherlands	448,952	595,540	584,448	527,212
Lottery of Brussels	1,475,047	526,276	1,029,567	753,418
High Roads	1,546,080	1,010,799	1,108,823	1,057,375

The total average annual produce of the revenue, during this period, was 88,044,152 florins, or about 7,337,012*l.* sterling a year.

3001. *Principal branches of the Expenditure* of the Netherlands. In Florins.

	1816.	1821.	1826.	Average for the 11 years.
King's Household	2,600,000	2,600,000	2,100,000	2,531,636
Great Offices of State	1,468,685	1,211,285	1,065,430	1,202,811
Foreign Affairs	937,838	705,503	766,969	787,638
Justice	3,394,511	3,221,347	2,191,049	3,243,567
Interior and Waterstaat*	7,245,910	5,019,322	6,159,249	5,744,439
Religions, except the Catholic	1,264,261	1,423,449	1,327,311	1,351,813
Catholic Religion	1,325,176	2,086,730	1,631,413	1,662,863
Education, Arts, Commerce, and Colonies	3,894,736	1,723,882	73,019†	2,155,520
Finances	23,314,342	34,309,517	38,707,562	31,553,101
Navy	6,554,531	5,037,745	6,582,842	5,775,711
Army	27,128,574	17,427,732	18,444,535	22,852,651

The article finances means chiefly the interest of the public debt. This amounted, in 1826, to upwards of four per cent. on a capital of 832,334,500 florins. The debt was almost wholly contracted by the Dutch, principally during their protracted and glorious struggle for independence, and partly during the period that Holland was connected with France.

The total annual average expenditure, during the above-mentioned years, was 98,106,820 florins, or about 8,175,568*l.*; exceeding the ordinary revenue by about 800,000*l.* a year.

3002. *The military force* of the kingdom of the Netherlands was in a somewhat large proportion to its resources. This was supposed to be rendered necessary by the proximity of so great a power as France, whose attack, or at least whose dictation, there might be room to apprehend. The army, before the late changes, amounted to about 62,000 men. The Belgic provinces, having been long the principal theatre of hostility between France and Austria, were guarded by a line of strong fortresses. These had been allowed to fall somewhat into decay; but the allies, having brought their contest with France to a triumphant conclusion, determined to strengthen them as a barrier against the future encroachments of that power; and the large contributions levied upon her were, in a great measure, employed in restoring the fortresses to their original condition. Several of these, however, by an agreement made between the French and English governments, have been recently dismantled.

3003. *In naval affairs,* Holland, no longer the maritime rival but the close ally of Britain, made only faint attempts to raise her navy from the low state to which it was reduced by the disasters of the revolutionary war. Its present force does not exceed sixteen ships of the line and ten frigates. Those in active service, in 1829, carried 720 guns, and 4314 men.

3004. *The foreign possessions of Holland,* after being entirely wrested from her during the war, were, with the exception of Ceylon, the Cape of Good Hope, Demerara, and Berbice, restored in 1814. In the East Indies, she possesses the Moluccas, the extensive and fertile island of Java, with settlements on Sumatra, Celebes, and Borneo; and some factories on the coast of Malabar and Coromandel. In Africa, she retains El Mina, and other factories on the Gold Coast. Her West India colonies are not, and never were, very considerable, unless as commercial depôts. Both the navy and the colonial possessions, in the separation of the two kingdoms, remain with Holland.

Sect. V. *Productive Industry.*

3005. *There is no country,* perhaps, which, in proportion to its extent and original resources, produces so great an amount of valuable and useful commodities as Holland and Belgium.

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* The expenses of canals, dikes, and navigation in general.

† The charges for education are now included under the head of "Interior."

3006. *The agriculture* of the Belgic provinces, though, contrary to the usual course, it was founded upon their manufactures and commerce, being exempted from the vicissitudes which befell them, continues to form the most ample source of wealth. The whole territory of Flanders is cultivated like a garden. A great proportion consisted originally of harsh, barren sands, producing nothing but heath and fir; yet by the application of manure these were gradually reclaimed, and brought into their present state of high fertility. The culture of artificial grasses, and especially of clover, is the characteristic process of Flemish husbandry, which it has taught to the rest of Europe. The care of the Flemish farmers in collecting manure was early conspicuous, and as naturally grew out of the use of artificial grasses, and consequent stall-feeding. The use of liquid manure, collected in large reservoirs, is common to this country with China, and not known in any other part of Europe, except, perhaps, Norway. Turf ashes, especially those imported from Holland, are in high estimation, and are said to produce an almost magical effect on the vegetation of clover. In general, the Flemish agriculture is conducted on a careful, economical, antique practice; the farmers not having adopted many modern improvements in the arrangements of husbandry, such as the crossing of the breeds of cattle, and the use of machinery, which have been adopted in England with such happy effect. But this system of agriculture, after supplying the most dense population in Europe with the standard productions of the soil, yields several articles, such as madder, rape, clover, and mustard seeds, hops, &c., for exportation.

3007. *The objects of culture* in the Dutch provinces, in consequence of their humid climate, and of the demand for animal food for the great cities, are almost entirely connected with pasturage. Holland is as it were one great meadow, intersected by canals, and traversed by rows and groups of trees. The cattle are stalled in the winter, and fed on hay, turnips, &c.; but in summer they are kept constantly grazing in the open air. The produce of the dairy has been brought to such a state of improvement as to be an object of exportation; Dutch butter enjoys a high reputation, and their cheese is in good repute over all Europe.

3008. *Horticulture*, which elsewhere is only a recreation, has in the Netherlands attained such importance, as to become a national object. Besides amply supplying its own markets with culinary vegetables, Holland exports them in large quantities to Norway, and other districts, where the growth is prevented by the rigorous climate. Ornamental gardening has been cultivated with peculiar ardour, especially its floral department. When the tulipomania reigned in Holland, it was carried to such an excess, that lots of 120 tulip-roots sold, in 1637, for 8250*l.*; and particular specimens have brought 733*l.* and 825*l.* In point of fact, however, these roots formed a kind of imaginary currency, or medium for a systematised species of gambling. They were never actually transferred from one individual to another; but, like the shares in our bubble companies in 1825, were a sort of stock whose whole value was derived from caprice. The government at length put down this species of gambling, and the prices of tulips fell to their natural level. — Careful enquiries carried on by the government of the Netherlands, are considered as having proved that the agricultural capital of the whole country amounted to 10,395,000,000 livres, about 433,000,000*l.* sterling. The following estimate was made of the growth and produce: —

	Hectares.	Value in Francs.
Wheat	350,000	154,000,000
Rye	700,000	168,000,000
Buckwheat	200,000	32,000,000
Barley	280,000	84,000,000
Pulse	110,000	48,000,000
Potatoes	131,000	41,000,000
Oats	300,000	84,000,000
Orchards	54,000	3,000,000
Vegetables	92,000	55,000,000
Hemp and flax	210,000	126,000,000
Madder	30,000	21,000,000
Cattle and animals		150,000,000
		966,000,000

About 40,250,000*l.* sterling.

3009. *Manufacturing industry* is the branch in which the Belgic provinces formerly most excelled, and in which their decay has been most conspicuous. Three centuries ago, the linens and woollens of Ghent, Louvain, Brussels, and Mechlin clothed the higher ranks in all the surrounding countries. Since that time, the fabrics of France and England have attained such an astonishing superiority, and are at once so cheap, and so well adapted to the taste of the age, that the Low Country manufacturers can with difficulty maintain their ground even in internal consumption. In cottons, especially, they are quite unable to withstand British competition. There are still, however, some fine linen fabrics, laces, lawns, cambrics, in which the manufacturers of Mechlin, Brussels, &c. continue unrivalled, and which, though so much superseded by muslin and Nottingham lace, still enjoy a certain demand throughout Europe. The fine laces have been sold for seventy or eighty Napoleons a yard. The Flemish breweries are also very extensive.

3010. *The manufacturing industry of Holland* is not on so great a scale as her commerce. The pottery ware of Delft has lost most of its ancient reputation, and even in Holland is superseded by the earthenware of England. The spirit called gin, geneva, or hollands, is produced at Schiedam, Amsterdam, and other towns, of an excellence which is universally acknowledged. The refining of sugar, and the manufacture of snuff, are continued on a great scale, chiefly in Amsterdam and Rotterdam, and the making of tobacco-pipes at Gouda is said to employ 5000 persons. Silk, leather, woollens, are still manufactured, though not to such an extent as formerly, nor much with a view to exportation. The general value of Dutch and Belgian manufactures has been estimated as follows: — Iron, 46,000,000 francs; copper, 5,000,000; woollens, 80,000,000; linens, 95,000,000; lace, 25,000,000; cottons, 50,000,000; refined sugar, 14,000,000; salt, 10,000,000; spirits, 40,000,000; beer, 110,000,000; tobacco, 28,000,000; oil, 30,000,000; soap, 10,000,000; leather, 28,000,000; earthenware, 4,000,000; bricks, 6,000,000; books, 15,000,000; bleaching, 10,000,000; dyeing, 10,000,000; paper, 8,000,000: in all, 675,000,000 francs, or 28,000,125*l.* sterling.

3011. *The commerce* of the Netherlands has declined, both absolutely and relatively, but in a less remarkable degree. The causes have appeared in the historical survey. The total suspension of all maritime intercourse with other countries during the subjection of Holland to France, and the conquest of the Dutch colonies by England, rendered it necessary, as it were, to begin every thing afresh at the restoration of peace in 1815. But the large capitals in the hands of the Dutch merchants, their commodious situation in the centre of the most improved states of Europe, the recovery of some of the most valuable of their foreign possessions, and the considerable surplus of native commodities which their country affords for exportation, secured for them, as soon as the ports were open, a considerable trade. Since the peace, it has been continually increasing; and, previously to the late revolution, was more equally distributed than before among the Belgic as well as the Dutch ports. Holland exports, of its own produce, butter, cheese, geneva, tobacco-pipes; of the produce of its fishery, herrings, stockfish, whalebone, whale oil; from its foreign possessions, coffee, sugar, rum, cotton wool, cloves, nutmegs, mace, pepper; with linens, wool, and various articles from Germany and the Baltic. Belgium exports madder, vegetable oils, lace, lawn, and fine linen.

3012. *There are no official returns* of imports and exports published; but a very able writer in the *Foreign Quarterly Review,* to whose researches we have been much indebted, has given from original sources the following account of the *importation* of the principal articles of merchandise into the Netherlands ports during the year 1827: —

Articles.	Ports.			
	Amsterdam.	Rotterdam.	Antwerp.	Middleburg.
Coffee, bales - - -	111,059	97,397	576,102	2,678
Ditto, tons - -	2,693	1,079	3,539	117
Sugar, chests - - -	12,160	7,508	56,556	
Ditto, mats - -	2,927	8,145	50,939	79
Ditto, tons - - -	18,653	3,829	4,028	2,609
Tobacco of America, tons	15,205	13,934	1,331	
Rice, bales - - -	1,980	13,892	16,359	
Ditto, tons - -	8,412	5,301	14,935	
Cotton, bales - - -	12,092	19,907	22,856	158
Indigo, chests - -	66	476	1,332	
Ditto, syrons - - -	128	88	611	
Tea, quarter chests -	15,124	9,527	1,467	4,900
Skins, pieces - -	9,271	34,501	215,044	
Pepper, bales - -	31	5,247	21,847	
Wheat, lasts - - -	12,494	1,602	26	
Rye, ditto - - -	7,835	5,130	96	
Barley, ditto - -	878	1,412		
Potash of Russia, puds * -	50,583	24,791	106,920	
Linseed Oil of Do. do. -	1,246			
Tallow of Ditto do. -	9,416	835	1,191	
Hemp of Ditto do. -	19,110	4,555	8,372	

3013. *The fishery,* which once formed so ample a source of Dutch wealth. (though in this respect its importance has been greatly exaggerated,) was almost annihilated during the war; and the ground having since been occupied by neighbours and rivals, Holland has been able to recover only a small portion. Instead of 1500 herring busses, in 1818 she sent out only 200. Not more than sixty ships go annually to the whale and cod fisheries; and, during the late war, the English undertook the task of supplying their own markets with fresh fish; in which business, however, the Dutch still employ about 6000 boats. The entire produce of the Netherlands fisheries is not reckoned to exceed 1,000,000*l.* sterling.

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* A Russian weight of 36 lbs.

3014. *For other commercial particulars,* M. de Cloet states, that on an average of twenty years, between 1775 and 1795, the number of vessels entered inwards in all the Dutch ports was 4140, and outwards the same; making a total of 8280 a year. The entries inwards, in 1822, for Amsterdam, Rotterdam, and Antwerp, were 4051; which, adding 500 for Harlingen and Dort, becomes 4551. The numbers outwards for the same three ports were 4045, which we may, with a similar addition, call 4545; making a total of 9096 ships. In 1827, the number entered inwards was 5203, outwards 4548, making 9751 altogether. Taking the average number, however, at 10,000 (instead of 9751), so as to cover the trifling trade of Ostend and Nieuport, and valuing each cargo, with M. de Cloet, at 40,000 francs, a sum moderate enough, the amount of the trade by sea will be 400,000,000 francs. The trade by land with France and Germany, which, in 1814, was estimated at 152,000,000 francs, may now be taken at 160,000,000; so that, if the calculations be at all within the bounds of truth, the annual value of the foreign commerce of the Netherlands is altogether about 560,000,000 francs, or 24,666,666*l.* sterling.

3015. *Mines.* The south-eastern provinces in the neighbourhood of Mons, Charleroi, and Liège, are said to contain 350 mines of coal, employing 20,000 men; but this number we should think, must be a good deal exaggerated. Turf is the fuel chiefly used, especially in Holland. There are also in the southern district ironworks, supposed by Mr. Jacob to yield about 1000 tons. Clay suited for the manufacture of porcelain is found in Holland, and there are stone quarries in the south.

3016. *Canals* form one of the most remarkable features in the economical arrangements of Holland, and a leading source of her prosperity. From the structure of the country, these are formed with peculiar facility, and it is every where intersected with them; every town, every village, being connected by canals of greater or less dimensions. They run through the streets of the cities, enabling vessels to load and unload under the eye of the merchant. When frozen, they serve as highways, on which the Dutch females, heavily laden, convey themselves along on skates with surprising rapidity. In general, from the flatness of the country, and the abundance of water, canals may be made without much exertion of art or skill. There is an exception, however, in the canal of Pannerden, constructed with the view of draining off the superfluous water of the Rhine, by which a great extent of ground was converted into a marsh. It is two miles long, and 200 feet below the level of the sea, the waters being received into three different sets of sluices. It is considered a masterpiece, and completely answered its object. Another, on a most magnificent scale, connecting Amsterdam with the Helder, was commenced in 1819, and finished in 1825, at an expense of about 750,000*l.* It is 50 miles long, 125 feet wide at the surface, 38 feet wide at the bottom, and 20 feet deep. It is calculated to admit ships of war of 46 guns, and merchantmen of 1000 tons' burden. It was constructed to avoid the troublesome navigation to and from Amsterdam through the Zuyder Zee, and the necessity of lightening large vessels before crossing the Pampus. We understand it has answered the expectations of its projectors.

3017. *The canals in Belgium* are spacious and commodious, connecting all the great cities, though not nearly in equal number, nor uniting every village, as in Holland.

Sect. VI. *Civil and Social State.*

3018. *The population* of the kingdom of the Netherlands, though not comparable, as to absolute amount, with that of any of the great states, is superior to them all in one highly important particular, that the country contains a greater density of population on the same surface than any other in Europe, or perhaps in the world. This, in the Belgic provinces at least, is the more remarkable, as they are inhabited, not by a manufacturing population, drawing subsistence from agricultural countries, but by a population subsisting exclusively on the produce of the land itself. The census of 1816 gave a total population of 5,491,945: 2,476,159 for the northern provinces; 3,249,841 for those of Belgium; and 225,945 for the duchy of Luxemburg. This gives an aggregate average density of about 212 to the square mile; but the rate rises much higher in certain provinces. Throughout Belgium the proportion is 296 to the square mile; in the province of East Flanders, however, it is as high as 560. In the united Netherlands the average density is only 180 per square mile; and in Luxemburg, which has much of a German character, it is as low as 66. The census of 1825 gives a population of 6,013,578; and some further augmentation has taken place since.

3019. *The following details* with respect to the population of the Netherlands are extracted from the publications of M. Quetelet, one of the ablest statistical writers of the Continent:—

Table of the Movement of the Population in Holland and Belgium for Ten Years.

Provinces.	Population.		Births.	Deaths.	Marriages.	Divorces.
	1815.	1825.				
Zealand - -	111,108	129,329	55,331	42,436	10,645	27
Gueldres - -	264,097	284,363	90,86[illegible]	59,818	19,337	[illegible]
North Brabant - -	294,067	326,617	100,863	69,507	20,380	1
North Holland -	375,257	393,916	145,744	121,725	34,789	209
South Holland - -	389,505	438,202	165,741	143,850	34,942	148
Utrecht - -	107,947	117,405	41,038	29,928	8,982	30
Friesland - -	176,554	202,530	65,565	38,219	15,327	46
Overyssel - -	147,229	160,937	51,951	37,479	11,629	13
Gröningen - -	135,642	156,045	51,673	30,539	11,492	37
Drenthe - - -	46,459	53,368	16,723	9,858	3,954	3
Limburg - -	287,613	321,246	101,781	70,549	22,960	5
Liège - - -	358,185	331,101	113,623	82,698	24,387	24
Namur - -	164,400	189,393	58,690	34,134	12,592	8
Luxemburg - -	213,597	292,610	92,242	58,095	18,740	1
Hainault - -	488,595	546,190	183,198	118,289	39,591	27
South Brabant - -	441,649	495,455	169,181	119,109	36,423	5
East Flanders - -	615,689	687,267	218,830	162,834	43,120	[illegible]
West Flanders - -	516,324	563,826	191,139	141,310	37,882	6
Antwerp - -	291,565	323,678	101,471	70,623	23,075	2
-	5,424,502	6,013,478	2,015,648	1,421,600	430,247	605

3020. *The births and marriages* in the Netherlands are proportionally more numerous, while the deaths are about equal to those of France, and exceed those of Great Britain in the ratio of three to two. The account stands thus:—

		Netherlands.		France.	Great Britain.
100 births	to	2,807	inhabitants - -	3,168 - - -	3,534
100 deaths - -		3,981	- - - -	4,000 - - -	5,780
100 marriages - -		13,150	- - - -	13,490 - - -	13,333
100 marriages - -		468	- - - -	426 - - -	359

There has been a very material increase in the healthiness of the people of the Netherlands, and particularly of Holland, during the last thirty or forty years.

3021. *The provision* for the support of the poor in the Netherlands is pretty ample, and it is applied with great economy and skill; forming, indeed, an important branch of the public administration. The following table, compiled from authentic sources, by M. Quetelet, cannot fail of being interesting:—

Charitable Institutions of the Netherlands.

Nature of Institution.	Number of Institutions.	Individuals relieved.	Expenses of Relief.	Expense for each Individual.
			Florins.	Florins.
Administrations for relieving the Poor at home	5,129	745,652	5,448,740	7·51
Commissions for distributing Food, &c. -	36	22,056	82,424	3·73
Societies of Maternal Charity - -	4	1,448	13,493	9·32
Hospitals - - - -	794	41,172	4,091,157	99·37
Funds for Military Service - -	1	2,277	110,942	48·73
Royal Hospital of Messine * - -	1	156	23,290	149·30
Poor Schools - - - -	285	147,296	247,176	1·67
Workhouses of Charity - - -	34	6,169	406,704	65·92
Depôts of Mendicity - - -	8	2,598	229,587	88·37
Societies of Beneficence for the Colonies -	2	8,553	353,529	41·33
Establishments for the Deaf and Dumb -	4	239	41,994	175·70
Totals - -	6,228	977,616	11,049,036	Average 11·30
Monts de Piété - - - -	124	- -	4,208,068	—
Savings Banks - - - -	50	18,035	2,771,608	Average 153·93

3022. *The national character of the Dutch* has been long moulded into the form natural to a highly commercial people; solid, steady, quiet, laborious, eagerly intent on the accumulation of wealth, which they seek rather by economy, steadiness, and perseverance, than by speculation. They carry the virtue of cleanliness to an extreme. Outward decorum of manners, at least, is better observed than among the neighbouring continental nations. Yet the *spiel* houses in the great towns, where the most respectable citizens used to mingle with persons entirely destitute of character, presented in this respect a strange anomaly. But at present these can hardly be said to exist; and are frequented only by the very dregs of the populace. A traveller in Holland will rarely meet with a drunken person; or with a man, woman, or child, in rags. Every class of people seems comfortable, the result of their great frugality and unwearied industry. Were a young sturdy beggar discovered teasing passengers for alms, he would instantly be sent to the workhouse; where, if he refused to perform his allotted task, he would be compelled to save himself from drowning by working at the pump! Holland is, and always has been, a country of short credit. Bankruptcy is rarer in it than any where else. Notwithstanding the invasion of the French in 1795, and the consequent interruption to all sorts of business, the bankruptcies were not comparatively so numerous as in England in ordinary years. (*M'Culloch's Com. Dict.*, art. *Amsterdam*.) The Belgic provinces, long subjected to a foreign yoke, and in constant intercourse with foreigners, seem to have lost in a great measure the original Flemish character, and to present no very distinctive features.

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* In West Flanders, for the daughters of soldiers invalided or killed in service.

3023. *It is not very easy*, from the differences of their judicial organisation, to compare the state of crime in different countries. In this respect, however, the Netherlands would have nothing to fear from a comparison with France and England. In Holland, the police is excellent, and robberies very rare.

3024. *The prevailing religion* of Holland is Calvinism, while that of Belgium is almost exclusively Catholic; a difference which contributed not a little to that rooted dislike entertained by the inhabitants of the latter to those of the former. The Dutch have the honour of being the first people who established a system of unrestrained toleration. Even popery, notwithstanding the grounds which the nation had to dread and hate it, was allowed to be professed with the utmost freedom. The French government carried liberality a step farther, by allowing salaries, of a greater or less amount, to the clergy of every persuasion, only making those of the Presbyterian ministers higher than the others. The latter retain, besides, the old parish churches, and the exclusive privilege of using bells. They amount to about 1600, and are all paid and appointed by government, which, however, respects the wishes of the leading parishioners. Their salaries are very moderate, 250*l.* in the great cities; 60*l.* or 70*l.*, with house and glebe, in the country. They are divided, as in Scotland, into moderate and high Calvinistic parties; the former, which are said to be the most numerous, having the command of the university of Utrecht, while that of Leyden is attached to the opposite interest. There are about 300 or 400 catholic congregations, in general very small. The Arminians, who originated in Holland, have only about forty or fifty ministers; but their tenets are preached in many of the presbyterian churches. The anabaptists, called here Mennonists, have about 100 congregations, composed of many opulent and respectable members. The Lutherans have fifty or sixty churches; and the French protestants about thirty.

3025. *In Belgium*, the catholic clergy have shown a very rooted spirit of intolerance, with the bishop of Ghent at their head, and vehemently objected to the indulgent treatment of the other sects. The bishop was imprisoned for two years by Napoleon, on account of his obstinacy in this particular. The great possessions of the church, however, have been forfeited, and the clergy receive very moderate salaries from government. The monasteries have been rooted out, and generally also the nunneries, though that of Ghent still retains all its pomp.

3026. *Learning in the Netherlands* no longer boasts such names as Erasmus, Grotius, and Boerhaave; but the institutions for its diffusion continue to be very ample. Holland retains its two famous universities of Leyden and Utrecht. The former, which, under Boerhaave, had once the reputation of the first medical school in Europe, is still highly respectable, though attended only by about 300 students. The professors, who are twenty-one in number, receive salaries of 255*l.*, independent of fees; and this being a better income than any of the ecclesiastical livings, the university draws from the church its most learned members. The professors are still considered the most eminent medical men in Holland; and while other physicians receive only a fee of 20*s.*, they are paid 10*l.* or 12*l.* The medical education, however, cannot be completed unless at Amsterdam, which affords the advantage of hospitals and other accommodations peculiar to a large city. The university of Utrecht is not so considerable as that of Leyden; and that of Gröningen is still inferior. In 1827, the number of students was, in Leyden, 588; in Utrecht, 498; in Gröningen, 287.

3027. *The universities of Belgium*, of which the most celebrated were Ghent and Louvain, were partially stripped of their ample endowments, first by Joseph II., and then by the French, who in their room substituted lyceums, which are now continued nearly on the same footing, under the name of colleges. Only the languages, and some general branches, are taught; education for professional purposes being received in separate appropriate seminaries. Ghent and Brussels have the highest reputation; but the salary of professors in the former does not exceed 60*l.* The three universities of Louvain, Liège, and Ghent, have lately been restored; and in 1827 the first was attended by 678 students; the second by 506; and the third by 404 students. Besides athenæums, which are only colleges on a smaller scale, Holland has primary schools in every village, by which the benefits of education are communicated to the lowest ranks. Belgium is at present very deficient in institutions for popular education. But at an average of the Netherlands, the proportion of children at school to the entire population, in 1827, was as high as 1 to 9·5; a proportion not exceeded in any European country, with the exception, perhaps, of Prussia.

3028. *The fine arts* were cultivated with zeal and success in both parts of the Netherlands. Wealthy merchants liberally patronised the arts of design; and the gentry and landholders being induced by the constant wars, of which the Low Countries were the theatre, to live much in towns, acquired more refined tastes than could have been formed in a country residence. Antwerp, during its prosperity, became, in some measure, a Belgic Athens. Yet the Flemish and Dutch painters never attained that grandeur of design, and that pure and classic taste, which was formed in Italy, by the study of the antique, and the refined taste of its nobles. The Flemish school, under its great masters Rubens and Vandyke, displayed, however, many excellences in a degree not inferior to any other in modern times; splendour of colouring, grandeur of composition, and force of expression. The Dutch school has been eminently successful in a lower sphere. Under Rembrandt and his disciples, subjects of common life and vulgar humour were treated with a native force, which, being aided by brilliant effects of light and shade, have rendered this school exceedingly popular, though it has failed in all attempts at high and heroic delineation. The landscape painters have seldom employed their pencils upon the grand scenery delineated by Claude and Poussin; but Berghem, Cuyp, Ruysdael, Hobbima, Vandevelde, and others, have represented, in the most natural and pleasing colours, the pastoral scenery of their country; its meadows, its woods, and the banks of its seas and rivers.

3029. *Amusement* is far from being a primary object with the Dutch. They have most of the diversions of the neighbouring nations, though they do not follow them with much ardour. A great portion of their time is passed in smoking; the Dutchman having seldom the pipe out of his mouth. The rivers and canals passing through the streets, afford the opportunity of fishing from the windows.

3030. *The great Flemish kermes, or fairs,* though no longer subservient to commerce, exist still as festivals, at which there is a great display of humour and character, such as we find happily illustrated in the works of the Flemish painters. There seems nothing peculiar in the Dutch style of cookery. The peasantry both of Holland and Flanders have their peculiar local costume; as the huge breeches of the men, and the short jacket of the females; but the higher classes dress in the French or German style.

Sect. VII. *Local Geography.*

3031. *The following,* according to recent official statements, is the extent and population of Belgium and Holland, respectively:—

Belgium.								
Provinces.	Extent in hectares.	Population in Dec. 1827.	Principal Towns.					
South Brabant	328,000	499,728	Brussels	72,800			Louvain	18,580
Antwerp	283,000	338,994	Antwerp	65,000	Mechlin	16,000		
East Flanders	282,000	708,705	Ghent	81,941	St. Nicholas	10,980		
West Flanders	316,000	575,807	Bruges	36,000	Ostend	10,500	Ypres	15,150
Hainault	372,000	567,300	Mons	18,400				
Namur	347,000	194,845	Namur	15,100	Verviers	10,070	Spa	3000
Liège	288,000	347,625	Liège	45,300				
Limburg	460,000	328,234	Tongres	4000				
	2,676,000	3,560,538						
Holland.								
Holland, South	287,000	453,818	Rotterdam	63,033	Hague	45,144	Leyden	29,045
			Dort	18,400	Delft	13,285	Gouda	10,568
Holland, North	245,000	391,586	Amsterdam	201,000	Haarlem	18,453	Zaandam	9,016
			Alkmaar	8,435	Hoorn	8,155		
Zealand	158,000	133,932	Middleburg	20,800	Flushing	6,380		
Utrecht	133,000	122,213	Utrecht	34,087	Amersfort	9,395		
North Brabant	501,000	352,551	Herzogenbusch	13,340	Breda	13,000	Bergen-op-Zoom.	
Gueiders	509,000	293,396	Nimeguen	12,780	Arnheim	10,050		
Drenthe	326,000	59,915	Assen	1,100				
Friesland	263,000	200,332	Leuwarden	18,380				
Overyssel	338,000	165,936	Deventer	9,530				
Gröningen	204,000	153,982	Gröningen	28,351				
Limburg, part of	uncertain.		Maestricht	21,000				
Luxemburg	650,000	298,655	Luxemburg	10,250				
	3,654,000	2,606,000						
	2,676,000	3,560,538						
	6,330,000	6,166,354						

3032. *South Brabant*, which nearly coincides with what was formerly the Austrian part of that large province, forms a rich plain in the heart of Belgium and is the seat of the finest manufactures carried on in that country.

3033. *Brussels* (*fig.* 392.) is the capital of Belgium. Considered as such, it is small, yet it is one of the gayest and most elegant cities of Europe. Its situation is fine, in a valley watered by the Senne and the canal to Antwerp. The Allée Verte, consisting of three rows of trees bordering the canal, makes a beautiful approach. The market-place and the park are the two great ornaments of Brussels. The former is of great extent, and surrounded by the town hall, one of the most elegant Gothic structures in Europe, adorned with a tower, 348 feet high, and by the old halls of the different corporations. The park forms an extensive range of pleasure ground, interspersed with rows of lofty trees, and pleasing lawns, ornamented with fountains and statues; and it is surrounded by all the most spacious and sumptuous edifices. The church and chapel of St. Gudule are also distinguished for the elegance of their ornaments. Brussels has an academy of painting, attended by 400 or 500 students; and in the palace there is a library of 12,000 volumes, and a small but valuable collection of paintings.

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3034. *Another ancient and important city* is Malines, or Mechlin (now in the province of Antwerp), still retaining traces of the prosperity derived from the lace bearing its name, which is considered the strongest, though not the finest, made in the Netherlands. Another branch of industry consists in the making of excellent brown beer. The houses are ancient, and very spacious, often constructed in a curious and grotesque manner, and most nicely whitewashed. The tower of the cathedral is highly finished, and rises to the height of 348 feet. The other churches contain many of the masterpieces of Rubens and Vandyke. Louvain is equally fallen from the period when its extensive cloth manufactures and its university, one of the first in Europe, gave it a population of 150,000. It is a large ill-built town, whose bulky walls, seven miles in circumference, are now falling to decay. Its catholic university, an attendance on which was once required as a qualification for holding any office under the Austrian government, perished in the French revolution, and was replaced by what could only be called a lyceum; but the ancient institution has since been restored. The town hall, enriched by numerous carved figures, and the collegiate church, whose spire, before its fall, at the beginning of the seventeenth century, rose to the height of 500 feet, are the chief ornament of Louvain.

3035. *Antwerp* (*fig.* 393.), formerly the port of Brabant, has now a province, to which it gives its name. This territory is situated along the Lower Scheldt, and is covered to a great extent with pleasure-grounds and houses, erected by the rich merchants during the period when Antwerp was in its glory. That city, down to the close of the fifteenth century, was almost without a rival among the commercial states of Europe. In the great struggle which then arose, Antwerp embraced with ardour the reformed cause, in support of which it suffered the most dreadful calamities. In 1576 it was sacked by the Spaniards; and being afterwards wrested from them, surrendered on favourable terms, after being besieged for more than a year, to the Prince of Parma. Subjected to the bigoted and tyrannic sway of Spain, and oppressed by the active rivalry of Holland, it lost all its commerce, and presented the mere shadow of its former greatness. Its renewed prosperity dates from its occupation by the French. Bonaparte made it one of his grand naval arsenals, and erected immense works, in the vain hope of creating a fleet which might rival that of Great Britain. Since the peace, Antwerp, having been placed on an equal footing with the ports of Holland, has availed itself of the advantages of its situation, and regained a considerable commerce. Having a ready navigation into the interior, and communicating by canals

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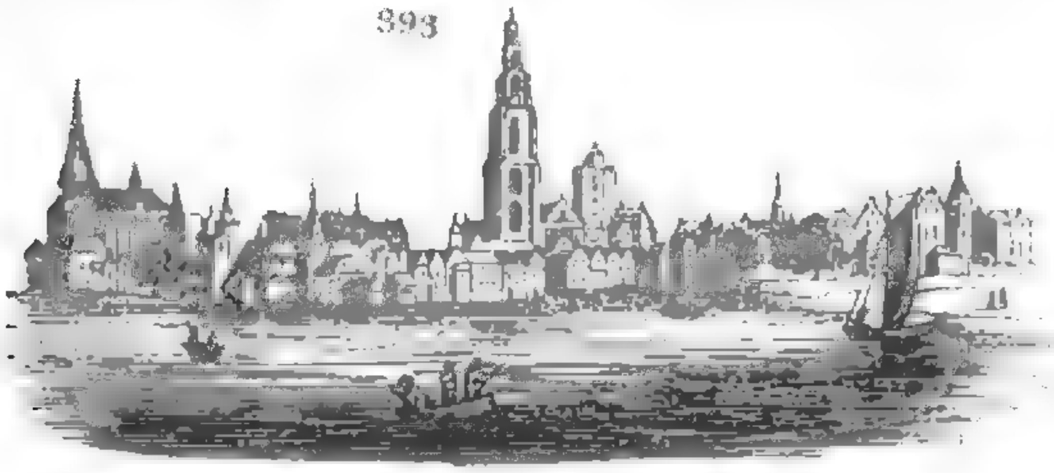

ANTWERP

with the principal seats of manufacture, it is destined by nature to be the chief emporium of Belgium. In 1825 there entered its port 800 vessels, of which 291 were British. In 1828 the number had increased to 955. Antwerp is still a noble city, containing numerous stately buildings, both private and public, which include some of the finest specimens of Gothic architecture existing. The cathedral, which occupied 100 years in building, is celebrated over Europe. It is 500 feet long, 230 wide, and 360 high. The spire is 466 feet high, of extreme beauty, and from its summit is obtained a magnificent view of the windings of the Scheldt, with the distant towers of Ghent, Malines, and Breda. The interior is adorned with the greatest masterpieces of Rubens and Vandyke, which, after being carried off to Paris, have been again restored. Numerous fine specimens of the Flemish school are found in the other churches, as well as in private mansions. Antwerp has always been the centre of Flemish art; the birth-place of Rubens, Vandyke, Jordaens, Teniers, and all its greatest masters. Zealous patronage is still bestowed upon the art; an academy is supported, at which 400 or 500 students are almost gratuitously taught; annual prizes are given, and crowns placed on the heads of the successful candidates. This encouragement has called forth some respectable talents, though none, as yet, to rival the fame of the old masters.

3036. *East Flanders* is chiefly an inland district, and is the part of Belgium in which culture has been carried to the highest perfection. It displays an aspect of uniform luxuriant fertility, resulting altogether from the application of art and capital. Even in journeying along the road, the traveller finds the wheels of his carriage sinking in the sand, while beyond the hedge on each side, the soil consists of the richest black mould. The most fertile district is called the Waes, or St. Nicholas.

3037. *Ghent*, even in its fallen state, is still one of the noblest of the old cities of Europe. That vast circuit of walls which, according to the boast of Charles V., could contain all Paris within them, may still be traced. It is built on twenty-seven islands, most of them bordered by magnificent quays, and connected by three hundred bridges. The streets, with a few exceptions, are spacious and handsome, and there are many fine old churches; but the great cathedral does not display the architectural grandeur of that of Antwerp, though the interior is rich in the extreme, adorned with numerous pillars of white marble. This and the other churches, as well as the academy, contain numerous paintings by the old Flemish masters. Ghent, though it can no longer send its 40,000 weavers into the field, is still one of the most manufacturing cities of Belgium. Prior to the revolution, its staple was sorted lace; but since the great improvements in the cotton manufacture, several large fabrics have been established at Ghent. The society is good, this being a favourite residence of the old Flemish nobles, and now frequented by a considerable number of English families.

3038. *The other towns in East Flanders* are Dendermonde, a small but strong place, which has stood repeated sieges; Alost, on the eastern frontier; St. Nicholas and Tokerem, two large villages, of more than 11,000 inhabitants each, in the centre of the Waes, flourishing by means of corn markets and of some considerable manufactures. Sas-van-Ghent is the centre of the sluices on the canal to the Scheldt, by which the whole country can be laid under water. Hulst is a strongly fortified little town.

3039. *West Flanders* is a continuation of the same richly cultivated plain which has now been described; yet, being partly mixed with sand and marsh, and exposed to the blighting influence of fogs and sea breezes, it does not display altogether the luxuriant aspect of the Pays de Waes. It has no place comparable to Ghent, yet it comprises an extraordinary number of ancient cities, which still retain a portion of their former prosperity.

3040. *Bruges*, formerly the residence of the counts of Flanders, and one of the factories of the Hanseatic league, was the greatest commercial city in the Low Countries, and perhaps in the north of Europe, till it was first surpassed by Antwerp, and then, from the same causes, shared its fall. Its situation in the midst of so fertile a country, and its communications by spacious canals with the sea and with the interior, still secure to it a considerable trade. Bruges has the character of an old town, the streets being narrow, and the houses lofty. The town hall is its most conspicuous edifice, and it is adorned also with many noble churches, containing some of the finest works of the great Flemish painters. The invention of painting in oil has been ascribed to this city.

3041. *Ostend* is an ancient town, early celebrated for its fortifications. The siege by Spinola, which began in 1601, and lasted two years, was one of the most memorable in modern history; and upon its issue the destiny of the Low Countries was considered to depend. But though it ultimately fell, the exhaustion of the Spanish army, and the time which had been afforded to Holland for collecting her energies, prevented its capture from having the ruinous effects that were anticipated. Under Austrian sway, Ostend, which has one of the few good harbours in Flanders, became the chief theatre of the limited trade of the Belgic provinces. Napoleon restored its fortifications, which were still farther strengthened by the allies. It has not now above a third of its former population, but still carries on a brisk intercourse with England, and has almost the appearance of an English town. In 1828, 574 vessels entered its port.

3042. *Other large fortified places*, celebrated in the military annals of Europe, are found in West Flanders. Courtray, Ypres, and Menin have the usual character of Flemish towns. They are large, rather well built, with handsome churches and town halls; fallen from their ancient prosperity, yet retaining considerable manufactures of linen and beer; and having in the long course of the Low Country wars been repeatedly taken and retaken. Courtray is noted for the very fine flax grown in its neighbourhood. Oudenarde, the scene of one of Marlborough's victories; Dixmuyde, and Furnes, present the same characters on a smaller scale. Nieuport is rather a noted fishing and trading town, surrounded by sluices, by means of which the neighbouring country can be inundated. Lisle and Dunkirk have been finally included by France within her boundaries.

3043. *Hainault*, to the west of Flanders and the south of Brussels, presents a long range of military frontier to the once hostile frontier of France. It is watered by the upper courses of the Scheldt and the Sambre; and, instead of presenting the same dead level with Flanders, is varied by gentle undulations, still highly cultivated, yet not with the same extreme care or ample expenditure. In this province are rich mines of coal, a mineral not found in any other part of the Low Countries; and though Hainault never formed any of the great seats of manufacture, it is by no means deficient in this branch of industry.

3044. *Mons, Tournay, and Charleroi* are the chief towns of Hainault. The description given of the secondary cities of Flanders may apply to them. Mons, called once Hannonia, is very ancient; it is well built, but appears often almost buried under the smoke of the steam-engines employed in working the neighbouring coal mines. It has a very extensive foundling hospital. Tournay, a fine, large, old city, with a handsome cathedral, has stood many sieges. Charleroi, besides its military reputation, has that of making very fine nails, with which it supplies all Belgium. In front of Mons is Genappe, and eight miles east of Charleroi is Fleurus, both celebrated for signal victories gained by the French during the revolutionary war. The large and strong cities of Condé and Valenciennes are now annexed to France.

3045. *Namur*, to the east of Hainault, presents a striking variety from the tame and flat surface which covers the greater part of the Low Countries. Consisting of the valley of the Meuse, which traverses the whole province from north to south, it contains numerous rugged eminences, which give to it a varied and picturesque character. The banks of the river, from Namur to Liège, overhung by wooded rocks, and opening into deep valleys, abound in the most romantic scenes.

3046. *Among the cities, Namur* is one of the most ancient in the Low Countries, its origin being traced to the time of the ancient Germans. It lies in a beautiful valley bordered by high mountains, at the confluence of the Sambre and Meuse. The castle, on a high rock, was formerly considered almost impregnable, and stood many sieges, till Joseph II. dismantled, and the French afterwards almost entirely demolished it. The cathedral and the Jesuits' church are fine edifices, and, unlike the other churches of the Low Countries, of Grecian architecture. Namur has in its neighbourhood extensive iron mines, which employ many of the inhabitants; the manufactures of the city consist in working up this metal into fire-arms, cutlery, &c. Ascending the Meuse towards the French frontier, we come to the small fortified towns of Dinant and Charlemont.

3047. *The provinces of Liège and Limburg*, which are much intermingled with each other, form the eastern frontier of Belgium. They run from north to south along the Meuse, fronting Germany, and are, indeed, half German. On the banks of the Meuse, and in some particular districts, the territory is broken and rocky; but most of it consists of an extended and highly cultivated plain. The eastern district is distinguished by the peculiar richness of its pastures, which produce butter and cheese of great value. Its manufactures also, especially those of fine woollens, are very flourishing.

3048. Of *the cities* in these two provinces, Liège, once the seat of a sovereign bishop, is ancient and large, but upon the whole ill built and gloomy; and though some of its buildings are large, they do not display the taste conspicuous in other Belgic cities. The church of St. Paul is, however, admired, as was that of St. Lambert, till it was destroyed during the revolution. Liège has a manufacture of fine woollen cloths, which sell at a high price. The town of Limburg, now included in Liège, has lost much of its population and industry; and a great part of its precincts is in ruins. Spa, situated amid romantic rocks, is one of the most celebrated watering places in Europe. The resort, though much diminished, is still considerable, and composed of persons of distinguished rank. The inhabitants work the beechwood, which grows in the neighbourhood, into a variety of toys, for which they find a ready sale among the visiters. St. Tron and Tongres are ancient towns, the former having a celebrated Benedictine abbey. Eupen, like Verviers, has flourishing manufactures of cloth. Hervé is the chief market for the Limburg cheese, which goes by its name.

3049. The Kingdom of Holland, or, as it was termed under the former régime, the *United Provinces*, now claims our attention.

3050. *The province of Holland* is of paramount importance, including all the great cities and principal seats of commerce; so that its name was most usually given to the whole republic. It forms a long narrow stripe, almost every where enclosed and penetrated by water; on one side it is washed by the North Sea; on the other, by the Zuyder Zee; in its centre it has the large lake called Haarlem-Meer; while the Rhine and the Lech intersect its numerous channels. The whole country is so low, that it is habitable only by means of enormous dikes, which exclude the sea: when these give way, the waters rush in, and inundate the whole territory. The country forms, in fact, one vast well-watered meadow scarcely any where subjected to the plough, though extensive gardens are cultivated, both for use and ornament. But the chief products are cattle, butter, and cheese, for the supply of the population of the cities, and for export.

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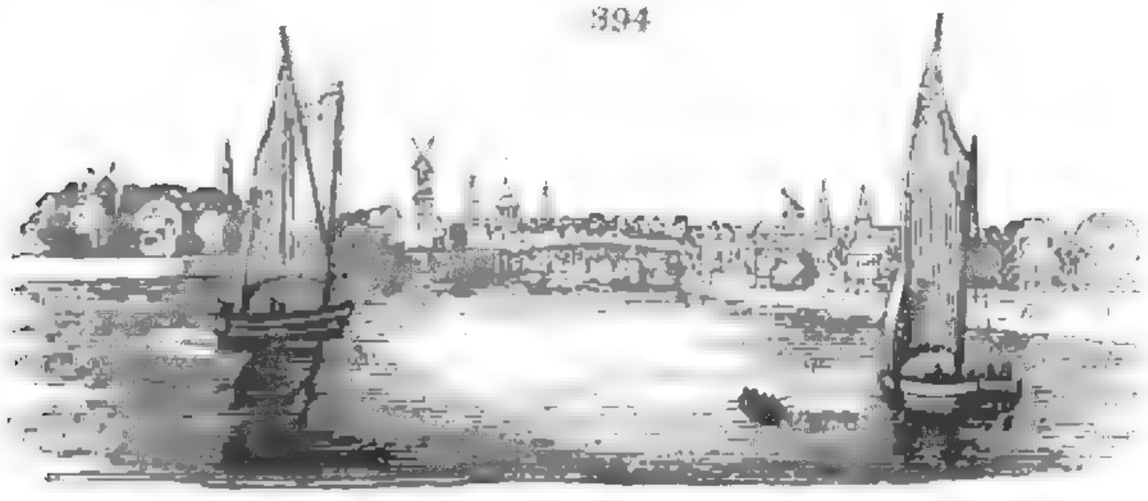

AMSTERDAM.

3051. *Amsterdam* (*fig.* 394.), the capital of the province and kingdom of Holland, is situated at the point of confluence of the river Amstel with the Y, an arm of the Zuyder Zee, in lat. 52° 25′ N., long. 4° 40 E. It was a considerable town in the fourteenth century; but it was not till the sixteenth century, when the persecutions of the Spaniards in Belgium proved fatal to the trade and navigation of Antwerp and the southern provinces, that Amsterdam attained to the distinction which she enjoyed till about the middle of last century, of being the first commercial city of Europe. It is but justice, however, to state, that her extraordinary progress depended as much, or more, on the liberal and enlightened policy of her rulers, as on external events. Every individual, whatever might be his country or his religion, was received with open arms at Amsterdam; and acquired, by means of a trifling payment, the right of citizenship, and the enjoyment of all the privileges of a native. All the public institutions were calculated to promote commerce; and at a time when trade and industry in other countries were oppressed by prohibitions, in Holland they were comparatively free. When most prosperous, Amsterdam is supposed to have contained about 240,000 inhabitants; but at present the population is not supposed to exceed 200,000. Being built in a marsh, the foundations of the city are laid on piles; and it is a common complaint that a house costs as much below as above ground. The three principal streets are parallel to each other, and are not easily to be matched for length, breadth, and the magnificence of the houses; many of which, though antique, are splendid, and are kept in the best possible repair. The city is intersected by an immense number of canals, communicating by drawbridges, and having sluices for the purpose of regulating the level of the water: these canals are for the most part bordered by fine trees. The expenses incurred in keeping the sluices in order, and in clearing the canals and port of mud, are very heavy. The matchless industry and perseverance of this wonderful people is in nothing so signally displayed as in their works and contrivances for conquering the difficulties incident to their situation, and making the waters, which threaten to overwhelm them, contribute to their comfort. The stadt-house (*fig.* 395.), now the royal palace, is the finest building in the city; and is, indeed, one of the noblest any where to be met with: it is of large dimensions, and is adorned with pillars, and with sculptures emblematical of commerce and navigation. Above 13,000 piles are said to have been employed in forming its foundation. The harbour is inconvenient, large ships being obliged to lighten before they can pass the Pampus or bar at the mouth of the Y, and the navigation of the Zuyder Zee is also difficult. To remedy these inconveniences, the large canal to the Helder, already alluded to, has been constructed. The trade of Amsterdam has increased considerably within the last few years; and about 2200 ships now annually clear out for foreign countries. None of the water from the canals is made use of for culinary purposes; the town being supplied with fresh water, conveyed in carts from the Vecht, about five or six miles distant; but most of the houses have cisterns, where the

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STADT-HOUSE, AMSTERDAM.

rain-water is collected. There is a national museum of pictures, which contains many fine specimens of the Dutch school. The various prisons and houses of correction and industry at Amsterdam are said to be managed on more approved principles than similar institutions in most parts of Europe. The police is excellent; crimes rare; and no beggars to be seen in the streets. The inhabitants seem vigorous and healthy; but the mortality, though materially diminished within the last thirty or forty years, is still greater than in most European cities; a consequence, probably, of the humidity of the climate, and of the effluvia arising, in summer, from the canals.

3052. *Rotterdam* (*fig.* 396.), the second city in Holland, is more conveniently situated for commerce than Amsterdam, having a readier access to the sea; and the Maese, on which it is situated, being so very deep as to admit vessels of the largest draught of water to lie close to the quays. Its commerce is rapidly increasing. Its principal exports are geneva and madder; and it carries on the business of sugar-refining on a large scale. It has all the characteristics of a Dutch town; being neat, clean, uniform; the houses high, and built of very small bricks. The canals intersecting it are numerous, deep, and, unless in a few of the most crowded streets, connected by draw-bridges. Rotterdam boasts of being the birth-place of Erasmus; to perpetuate whose memory she has erected a handsome statue (*fig.* 397.).

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ROTTERDAM.

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STATUE OF ERASMUS.

3053. *Other large and important cities* are included within the limits of the province of Holland.

3054. *The Hague* (*fig.* 398.), though ranking only as a village, is, in fact, one of the handsomest cities in Europe. The streets and squares are well built, bordered with fine walks and avenues of trees. Neither the old nor the new palace can boast of any splendid architecture; but the former is large, and contains some valuable collections. An avenue of two miles leads to the neat fishing town of Scheveling, whence the dealers are daily seen bringing their commodities in little carts drawn by large dogs. Leyden (*fig.* 399.) is a fine old city, situated in the heart of the Rhineland, where this ancient bed of the river is cut into an infinity of canals, which render this the richest meadow land of Holland. The beer, the butter, and the bread of this district are held in the highest estimation. Leyden, during the war with Spain, was the most important city in Holland, and on the event of its siege the fate of that country was supposed to depend. The Spaniards, by a lengthened and strict blockade, reduced it to the last extremity; while the Dutch could muster no force adequate to its relief. It was then that they formed the magnanimous resolution of breaking down their dikes, and admitting the ocean. It was some time before the full effect was produced; but at length, impelled by a violent wind, the sea rushed in, overwhelmed all the works of the besiegers, and forced them to a precipitate flight. The little fleet of boats, which had been prepared for the relief of Leyden, immediately sailed over the newly formed expanse, and triumphantly entered the city. The Prince of Orange offered to Leyden the option of two benefits, — an immunity from taxes for a certain period, or the foundation of a university in the city. The citizens crowned their former glory by choosing the latter alternative, and a university was accordingly founded, which speedily became one of the most eminent schools in Europe; and, though much injured by the numerous rivals which have since sprung up, it continues to maintain a high reputation, particularly

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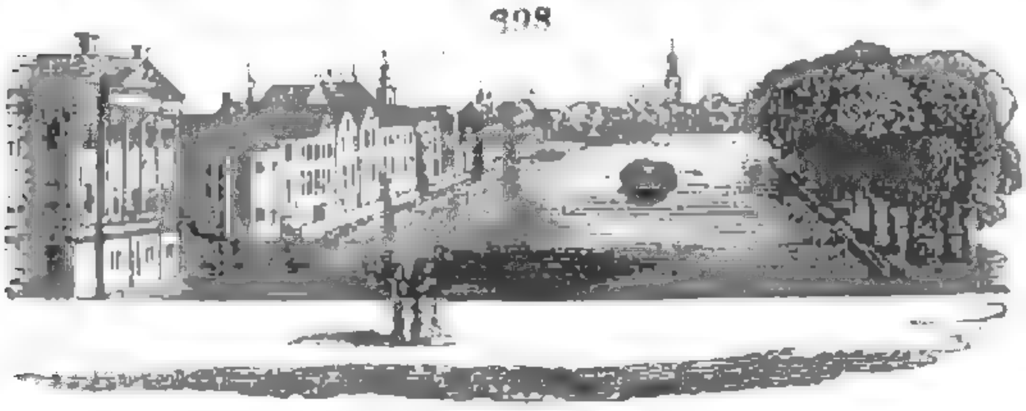

THE HAGUE.

as a classical school. Leyden is still a handsome and flourishing town; carries on the woollen manufacture with success, though on a diminished scale; and is a great market for butter and cheese. Haarlem (*fig.* 400.) is another city of ancient importance. In the great struggle for independence, it stood a memorable siege of seven months; when it surrendered upon honourable terms, which were basely violated by the Duke of Alva. Haarlem is still spacious and flourishing, and excels peculiarly in the bleaching of linen and cambric, which it performs for all the neighbouring provinces. The matchless and brilliant whiteness of the Haarlem linens has been imputed to a peculiar quality in the water, but is more probably the result of the extreme skill of the inhabitants, acquired by long practice. Flowers are principally raised for sale in the vicinity of Haarlem. Delft, an ancient gloomy town, was formerly celebrated for the manufacture of the ware which bears its name; but this, as already observed, has been almost entirely supplanted by English earthenware. Dort, or Dordrecht, enclosed by branches of the Maese, was the ancient capital of Holland, while the main commerce of that country continued to centre in this its most natural quarter. It still retains very considerable traces of this early importance. The town-hall and great church are magnificent structures. There is a considerable trade in goods coming down the Rhine, particularly floats of timber, so large that one of them has been valued at 30,000*l.* Gouda is a large flourishing village, in a rich country, and carries on an extensive manufactory of tobacco-pipes. It is celebrated for the excellence of its cheese.

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LEYDEN.

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HAARLEM.

3055. *North Holland* forms a considerable peninsula, almost entirely encircled by the Zuyder Zee and the North Sea, and bordered by sand-hills of some elevation; but the interior is covered with rich pastures, on which are fed large herds of cattle. The ancient and not ungraceful costumes (*fig.* 401.) of the Dutch peasantry are preserved with greater exactness in this sequestered part of Holland, than in any other; and the fishery, for which their situation is peculiarly adapted, is carried on with great activity. Alkmaar is an agreeable town, with a great traffic in butter and cheese, and a manufacture of nets. The most important places in North Holland are the Helder and the Texel, two grand naval stations; the one a strong fort, commanding the entrance of the Zuyder Zee; the other an island opposite, in which the Dutch fleets used to rendezvous, from the facility it afforded for their getting to sea. Along the coast of the Zuyder Zee are the considerable towns of Hoorn and Enkhuysen, and the smaller ones of Edam and Purmerende.

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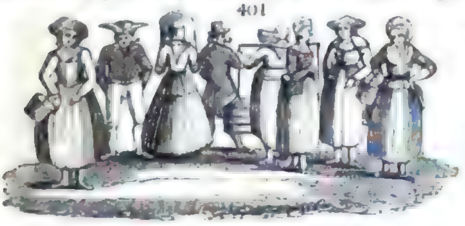


PEASANTRY OF HOLLAND.

3056. *Zealand* is a region more completely enclosed by, and sunk below, the level of the water, than any other part of the United Provinces. It consists of nine islands, formed and environed by branches of the Maese and the Scheldt, as, passing from the state of rivers into friths, they unite with the ocean. The mariner, in approaching, sees only points of the spires peeping above the immense dikes which defend them from inundation. The soil is moist and rich, peculiarly adapted to the cultivation of madder. The damp air, however, and the exhalations from the waters, render these islands unhealthy, and even fatal to foreigners, as was too dreadfully experienced by our troops while quartered at Walcheren; but the natives do not experience the same pernicious effects. Middleburg is a considerable city, with a town-hall and several churches, which afford fine specimens of Gothic architecture. Flushing, with its attendant town of Ulyssingen, is an eminent naval station, and has a considerable trade and fishery. The island of Schowen has Zieriksee, the ancient capital of the counts of Zealand; and South Beveland has Goes, or Tergoes, with a considerable trade in salt.

3057. *Utrecht*, a more inland province than Holland, forms a continuation of the same tract of flat meadow land, interspersed with gardens and country residences. Utrecht, the capital, is a remarkably agreeable city, and being a little elevated, the view from its ramparts and the top of its cathedral over the vast plains and broad waters of Holland is extensive and delightful. The Romans called it Ulpii Trajectum, as commanding an important passage over the Rhine; and in the middle ages it was held by the warlike bishops of Utrecht. In this city was concluded the treaty of confederation, in 1597, by which the United Provinces were constituted, and also the celebrated treaty of 1715, which terminated the long war of the Spanish succession. Amersfort, pleasantly situated on the Ems, and noted as the birthplace of Barneveldt, has considerable fabrics of dimity and bombazeen, and extensive bleaching grounds. Naarden, a small town, forms the key of all the water communications of Holland.

3058. *North Brabant*, comprising that which was the Dutch part of the province, is a flat, sandy, marshy tract, not distinguished by either the natural fertility or manufacturing industry so conspicuous in the rest of Holland and Belgium. Forming, however, the barrier by which the Dutch maintained their independence, it contains several of the strongest fortresses in Europe, which have indeed the reputation of being almost impregnable. Breda is one of the most conspicuous. After Prince Maurice of Nassau took it by surprise, in 1590, its fortifications were greatly extended, and the surrounding country, being intersected by rivers and marshes, can be laid under water. It is an agreeable city, commanding from the ramparts a fine view, and both its church and its town-hall are admired Gothic edifices. Bois le Duc, on the Dommel, so named from an old hunting-wood of the Dukes of Brabant, is a large town, and equally strong. It is so intersected by canals, that eighty bridges are required to cross them; in winter the place is entirely surrounded by water, and can be approached only in boats. Bergen-op-Zoom, farther to the west, is similar as to strength, and was esteemed the masterpiece of the celebrated Coborn. The glorious but disastrous attack made upon it by the British in the last war is well remembered.

3059. *The outer provinces* of Guelderland, Friesland, Overyssel, Drenthe, and Gröningen, which lie between the Zuyder Zee and the Ems, are rather appendages than integral portions of Holland, and form by their situation part of the great level plain of northern Germany. The country is similar to Holland, however, in its aspect and the general state of cultivation, though a somewhat greater proportion of the land is employed in the raising of grain. Friesland has a very fine breed of horses and horned cattle; and the linen manufacture flourishes to a considerable extent. In these provinces, however, particularly in Guelderland and Overyssel, there is a large extent of sandy and marshy ground, which is not forced into cultivation with the same minute care as in the central provinces. Much benefit, however, is expected from the pauper colonies lately established there.

3060. *The towns of this region* are pretty numerous and considerable, though none are of the first class. Nimeguen, in Guelderland, is ancient, strong, and handsome, commanding a noble view over the Rhine. Zutphen is an old imperial city, dreadfully pillaged in 1572 by the Duke of Alva. It has a magnificent church; and the fens round it have been so completely drained, as to render the air no longer unwholesome. Arnheim is a large and beautiful town, at the foot of the hills of Veluwe, and forming a great thoroughfare into Germany. Deventer, in Overyssel, is an ancient member of the Hanseatic league, and has a venerable cathedral. Zwoll, on the Yssel, is strong, large, and well built. Assen, though capital of the new province of Drenthe, is only a village. In Friesland, Leuwarden, on the Ee, is a large and populous town, in a country surrounded and intersected with canals, which enable it to communicate with the sea, and to carry on a considerable trade. Campen, an ancient Hanse town, has lost its importance, the harbour being now choked up. Harlingen, Franeker, Dokum, Bolswaert, are ports on the Zuyder Zee, and manufacturing places of some importance. Gröningen, capital of the province of the same name, is the most important of all the towns east of the Zuyder Zee. It is well built, and adorned with noble edifices; and its university was once a distinguished place among Dutch seminaries, but is now seldom attended by more than 100 students. Large vessels can ascend the Hunse from the Zuyder Zee.

3061. *Luxemburg*, an extensive province, though political revolutions attached it to the Netherlands, and now to Holland, forms part of Germany, entitling the king to a vote in the Germanic diet. Its character is every way in decided constrast to the rest of Holland and Belgium. Instead of a dead, rich flat, traversed by navigable streams and canals, Luxemburg presents almost throughout high mountains and woods, forming scenes of savage grandeur, similar, though on a smaller scale, to those of Switzerland. The country is destitute of water communications, is imperfectly cultivated, and does not contain a population of more than sixty-six to the square mile. Its breeds of cattle and sheep are of small size; but, as usual in mountain pastures, of delicate flavour. The horses are active and hardy; and the tract which borders on the Moselle produces valuable wine.

3062. *The cities and towns* are by no means on the same scale as those in the rest of the kingdom. *Luxemburg*, the capital, situated on two rocks, whose steep sides form a glacis, while the river Else, at their feet, serves as a wet ditch, is one of the strongest fortresses in Europe. The horse and cattle markets are considerable. Theux has in its neighbourhood mines of a beautiful black marble; and Stavelot carries on a considerable trade in leather. Maestricht, the principal town of *Limburg*, has, along with all the part of that province east of the Meuse, been assigned to Holland. It is large, handsome, and well fortified. Ruremonde and Venlo, also neat towns of some strength, are included in the same district.

Chap. XII.

HUNGARY.

3063. *Hungary*, called by the Germans *Ungarn*, with Transylvania, Sclavonia, Croatia, and the Bannat, forms a wide range of territory. Long the grand field of conflict between the Ottoman and Christian powers, it was finally possessed by the latter, and has for several centuries formed an integral and important part of the hereditary states of the house of Austria; which has recently annexed to it the portion of Dalmatia obtained from Venice.

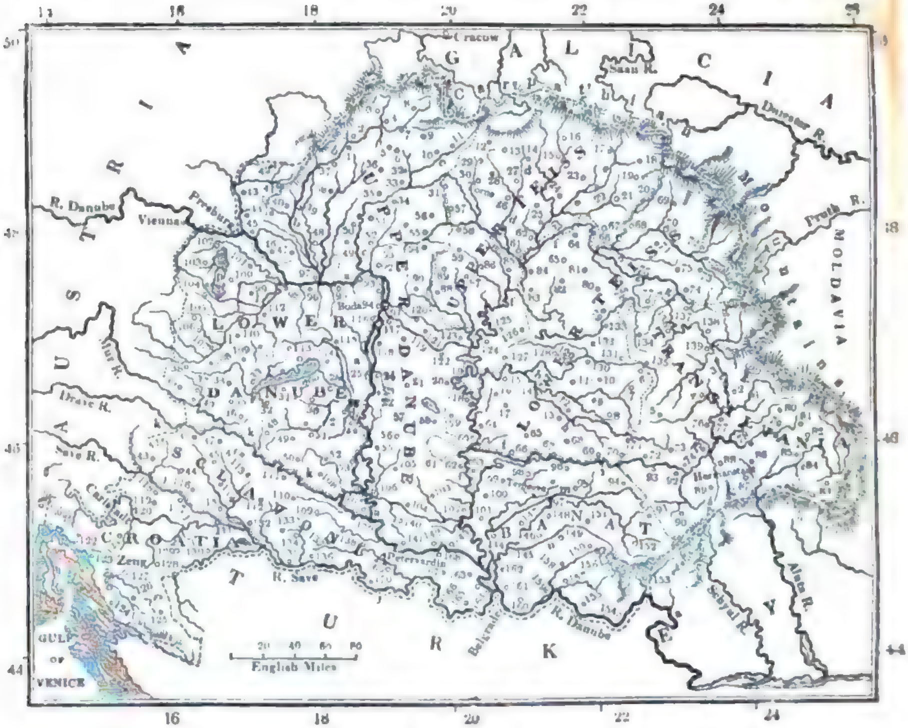
Sect. I. *General Outline and Aspect.*

3064. *Hungary* is bounded on the west by Germany; on the south and east by the tributary Turkish provinces of Bosnia, Servia, Wallachia, and Moldavia; on the north, by the Carpathian mountains, which separate it from Poland. It forms nearly a square of 400 miles in each direction, comprehending, with all its appendant states, an area of 133,000 square miles, inhabited by upwards of 12,000,000 people.

3065. *Surface.* The great mountain girdle of the Carpathians ranges nearly in a semicircle round the northern and eastern border of Hungary. Several connected chains penetrate into the heart of the country, of which the most elevated are those of Tatra and Matra; the Julian Alps, and the mountains of the Bannat, on the southern border, render a great part of the country at least very hilly. On the other hand, there are plains of almost boundless extent, such as that to the east of the Danube, watered by the Teisse, which covers a space of upwards of 22,000 square miles; and another to the west of that river, reaching to the borders of Styria. Hungary, protected by the Carpathians from the blasts of the north, and sloping downwards to the south, enjoys a milder climate than any part of Germany. On the Carpathian terraces, particularly, the richest wines, and the choicest productions of southern Europe, are raised in perfection. There is a vast variety of country, however; many tracts being naked and rocky, others covered with marshes, and some even forming deserts of barren sand.

3066. *The rivers of Hungary* are very important. The Danube, making a grand circuit, rolls through it, chiefly from north to south, and receives here its mightiest tributaries. The Drave and the Save, from the east, bring to it all the waters of the great alpine border of Southern Germany. The Teisse, after collecting, in a course of 400 miles, nearly all the streams which flow from the Carpathians, falls in from the east, near the southern frontier The Maros is the greatest tributary of the Teisse; and the Gran and the Waag are considerable streams, which flow into the Danube itself.

3067. *The lakes of Hungary* are numerous, but only two are large; the Platten or Balaton, which receives the waters of nine streams, and is supposed to pour them under ground into the Danube; and the Neusiedler, the water of which is salt. The long and sluggish streams of the Teisse and the Maros spread into wide morasses, which, acted on by the rays of a burning sun, exhale pestilential vapours, often more fatal than the sword to the armies which have been led into their vicinity.



References to the Map of Hungary.

NORTH PART.
1. Illava
2. Podhrad
3. Okadnid
4. Budatin
5. Trebesloe
6. Moszcz
7. Szucsan
8. Arva
9. Rozenberg
10 Presno
11. Batzuk
12 Leutsenau
13. Korolnok
14. Eperies
15. Dobra
16. Mirro
17. Dubrinitz
18. Polena
19. Jabovitz
20. Dollut
21. Szereda
22. Unghvar
23. Vinno
24. Vasarhely
25. Galszecz
26. Kaschau
27. Lemes
28. Metzen
29. Rosnyo
30. Torna
31. Tiszoltza
32. Newsol
33. Altsol
34. Schemnitz
35. Pola
36. Kremnitz
37. Trentsent
38. N. Topolcsany
39. Leopoldstadt
40. N. Zsombath
41. Sanderfalva
42. V. Eihelar
43. Sz. Janos
44. Malataka
45. Presburg
46. Samor
47. Szerdahely
48. Ereg
49. Sarlo
50. Hara
51. Ujfalu
52. Lonto
53. Hont
54. Balashagyarmath
55. Torinca
56. Gasca
57. Eszekas
58. Geszlete
59. Paract
60. Mishkotz
61. Mudjazno
62. Tokay
63. Semplin
64. Mandok
65. Kereszkut
66. Tarpa
67. Kaszony
68. N. Szollos
69. Gylincz
70. Huszt
71. N. Tarna
72. Bocsk
73. Akno
74. Banya
75. Ujvaros
76. Szathmar
77. Dobra
78. Korolg
79. Er Semjen
80. Lugos
81. N. Kallo
82. Dorog
83. Czege
84. Polgar
85. M. Keresztes
86. Agria
87. Kapela
88. Hatvan
89. Pata
90. Varseg
91. Pest
92. Arx Nograd
93. Estergom, or Gran
94. Buda
95. Somlyo
96. Acs
97. Komorn
98. Gyor, or Raab
99. Csorna
100. Valla
101. Moson
102. Brictsbrun
103. Szera
104. Edenburg
105. Koszeg
106. Szombathely
107. Hidveg
108. Saal
109. Turgye
110. Miske
111. Vasherhely
112. Gyanmath
113. Vesprim
114. Polgardi
115. Sz Fejervan
116. Tetenny
117. Soroks
118. Loczhaza
119. Ocsa
120. Suly
121. Pilis
122. Czegled
123. Abany
124. T. S. Miklos
125. Div Banhatma
126. Kardsag
127. Turkevi
128. Zsaka
129. Komadi
130 Great Waradin
131. Tottes
132. Bahar
133. Szekelyhed
134. Somlya
135. N. Barod
136. Siho
137. Kovar
138. Kacika
139. Des.

SOUTH PART.
1. Vasarhely
2. Maros
3. Clausenburg
4. Torda
5. K. Aranyas
6. Bratka
7. Ketcad
8. Kertes
9. Okrosa
10. Mihelo
11. N. Zalonta
12. Kis Jeno
13. Nadab
14. Bekes
15. Szarvas
16. Ruins of the Temple of Ecser
17. Monor
18. Csongrad
19. Ugh
20. Alpar
21. Izsak
22. Kis Karos
23. K. Harta
24. Solt
25. Miklos
26. Paks
27. Kolesd
28. Ozora
29. Sio Fok
30. T. Koppany
31. Sz Gyorok
32. Marczaly
33. Keszthely
34. Pak
35. Korpovo
36. Sz Peter
37. Csaztreg
38. Sz Gotthard
39. Martyanez
40. Lendva
41. Varasd
42. Krapina
43. Klanyecz
44. Popovecz
45. Kreutz
46. Virie
47. Kopreinitz
48. Henesd
49. Galosta
50. Sz Lorinez
51. Dombovar
52. Pets
53. Szekeso
54. Szexard
55. Baja
56. Jankovacz
57. Halas
58. Maisa
59. Kis Telek
60. Szeged
61. Sz. Maria
62. K. Kanisa
63. Josephova
64. Vasarhely
65. Batonya
66. M. Csenad
67. Arad
68. Ug Sz Anna
69. Monorostya
70. Soborsin
71. Szirb
72. Zam
73. Ruda
74. Renged
75. Carlsburg
76. N. Enyed
77. Lapod
78. Medias
79. Schassburg
80. Sikiod
81. Udvarhely
82. Bajl
83. Cronstadt
84. Sarkany
85. Kohalon
86. Stoltzenburg
87. Hermanstadt
88. Muhlenbach
89. Lunkany
90. Rea
91. Marga
92. Deva
93. Dobra
94. V. Facset
95. Thes
96. Allies
97. Benkenas
98. Knez
99. Komlos
100. Beodra
101. Melencze
102. Becze
103. Topolya
104. Oz Szivais
105. Ragusa
106. Berdan
107. Bellye
108. Szalantz
109. Nasicze
110. Vucsin
111. Verovidits
112. Kuttina
113. Belovar
114. Dambra
115. Ivanitsh
116. Duguzello
117. Nowigrad
118. Verdatzka
119. Petrovina
120. Carlstadt
121. Tuin
122. Nava
123. Zeng
124. Carlopago
125. Onatsh
126. Pernitsch
127. Ottoshat
128. Dreenik
129. Buzin
130. Zrin
131. Siszeg
132. Ostrusets
133. N. Gradiska
134. Posega
135. Gradiska
136. Brod
137. Varos
138. Vinkovecse
139. Eszek
140. Hodsak
141. Bacs
142. U. Videk
143. Retty
144. N. Becskerek
145. Uidin
146. Partos
147. Fény
148. Zsbel
149. Denta
150. Szekas
151. Jerszeg
152. Ruen
153. Mehadia
154. Masova
155. Neu Moldova
156. Majdan
157. Veiskirchen
158. Lagerdorf
159. Dubovacz
160. Balvanistic
161. Pancsova
162. Delwiacsa
163. S. Pazua
164. Semlin
165. Progan
166. Klenak
167. Ruma
168. Peterwaradin
169. Marovich
170. Sollane.

Rivers, &c.
a Danube, R.
b Waag, R.
c Gran, R.
d Jarosa, R.
e Ung, R.
f Teisse, R.
g Szamos, R.
h Koros, R.
i Maros, R.
j Save, R.
k Drave, R.
l Raab, R.
m Bega Canal
n Berzava Canal
o Balaton Lake
p Neusiedler Lake.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3068. I. *Primitive rocks.* Primitive rocks are not abundant, and they do not occupy great tracts in the districts where they occur. They form the group of Presburg, the group of Nyitra, that of Tatra, to the south of which are situated the mountains of Gomor, of which they form the principal mass. They re-appear in Transylvania on the frontiers of Buckovina and Moldavia; to the south, in the chain of Fagaras, which ranges into the Bannat; to the west, in the mountains of Gaina and Bibar. They re-appear at Peterwaradin, and on the frontiers of Styria. A *central granite* appears to form the group of Presburg; the Krivan in the group of Ostrosky; of Polana, a little farther to the north; and the Tatra. Gneiss, containing beds of granite, of mica slate, &c., occurs in the mountainous parts of the county of Gomor, at the foot of the Tatra, on the frontiers of Buckovina, in the group of Fagaras, in the Bannat. *Mica slate* and *clay slate* occur on the acclivities of all the groups, the rocks of which have been already enumerated. Mica slate forms the group of Nyitra; it is very abundant in the mountains of Zeleznik, Jolsva, Rosenau (in the county of Gomor), where we observe it passing into clay slate, which rock often alternates with it, and at length becomes predominant, forming the whole superior part of the deposit.

3069. *Mercury* occurs at Szlana, in unctuous mica slate: *rhomboidal iron ore*, or iron glance, in the mountains of Ensiedel and Golnitz; *prismatic iron ore*, or hydrate of iron, in beds in clay slate at Zeleznik, and in the vicinity of Rosenau.

3070. *Euphotide*, or *diallage rock*, and *serpentine*, are found at Dobschau, and in the mountains which form the eastern point of Esclavonia and Peterwaradin.

3071. *Porphyritic greenstone* is met with in the upper part of the valley of Tiszolez, where the castle is situated.

3072. II. *Transition rocks.* The rocks of this class begin at Presburg, where they rest on the primitive group: they range from S. W. to N. E. into Gallicia, in their course passing behind the Tatra; they cover a considerable space from north to south, where they join the group of Nyitra, the mountains of Zolyom and Gomor. They form the small group of Diosgyor to the north of Erlau; they appear in different points of the chain of sandstone which extends from Tatra into Transylvania; they become more abundant in Marmaros, on the eastern frontier of Transylvania, where they join again with the chain of Fagaras. We meet with them again in the countries of Nagy-Ag and Offenbanya, in the Bannat; and, lastly, in Croatia.

3073. *Deposits of transition quartzy sandstone*, and *compact limestone*, with greywacke, occur near to Neusohl, in the group of Tatra, and on the borders of Dunajec, towards the frontiers of Gallicia; but this compact limestone occurs alone in a great number of places, where it also terminates the transition deposits.

3074. *Transition syenite and porphyritic greenstone* are found at Pila near to Königsberg, at Schemnitz, Kremnitz, in the mountains of Borsony, of Karancs, on the northern foot of the Matra. It re-appears in the mountains of Kapnick, of Nagy-Ag, Zalathna, Voros-Patak; and it appears also to occur in the Bannat.

3075. III. *Secondary rocks.* The following secondary deposits are described as occurring in Hungary:—

1. *The coal formation* rests upon transition strata at Jablunicza and Steurdorf, near to Oravicza, in the Bannat; and the same formation occurs at Fünfkirchen,

2. *The Jura limestone formation* occurs principally in the south-western parts of Hungary.

3. *A sandstone formation*, containing coal, the *sandstone of the Carpathians*, which, in the regular succession, lies upon the Jura limestone, and below the chalk formation, forms the whole chain extending from the foot of the Tatra into Moldavia; it also penetrates into Transylvania, of which it occupies all the central part; it also forms the Kahlengebirge, near to Vienna, where it appears to be connected with the coal formation and old red sandstone of Moravia.

4. *The chalk formation* also occurs in Hungary: thus a remarkable kind of this deposit appears at Ofen and Buda Oros, and a particular compact marly limestone, abounding in green talcy disseminated parts, which may be referred to this chalk, occurs in Transylvania.

3076. IV. *Tertiary rocks.* Molasse, or sandstone with lignite, is the most abundant of the Hungarian tertiary rocks, and covers at the same time the secondary rocks and the conglomerates belonging to trachyte. It covers the southern declivity of all the mountains which form the north-western part of Hungary; it extends into Gallicia, at the foot of the Carpathians; it is found in the centre of Transylvania, at Clausenburg, Carlsburg, Hermanstadt, and Cronstadt. It covers, towards the west, the foot of the mountains which form the western limit of that principality, and extends even into the Bannat; it forms nearly the whole south-western part of Hungary, from whence it extends into Croatia. The *coarse marine limestone of Paris* occurs in the neighbourhood of Buda and Œdenburg, on the banks of the Lake Balaton, and at Fünfkirchen. It occurs also in Buckovina, and in Eastern Gallicia. The *limestone containing lymnea* occurs at Nagy-Vasony, and in the marshes of the great plain of Hungary.

3077. *Tertiary Plutonian rocks. Trachyte.* This Plutonian rock appears to rise through the tertiary deposits, and is therefore to be considered as having been sent from below after the deposition of these strata. It forms five groups; one occupies the districts of Schemnitz, Kremnitz, and Königsberg; the second occurs to the north of the Danube, where it forms the mountains of Dregeley and Vissegrade; a third forms the mountains of Matra, on the northern border of the great plain; a fourth includes the mountains between Eperies and Tokay; lastly, a fifth occurs at Vihorlet, and extends into the counties of Ungh and Beregh. The same formation forms a considerable group in Transylvania, on the frontiers of Moldavia; and every thing seems to indicate that it will also be found in the district of Nagy-Ag and Zalathna. The porphyritic variety of trachyte is the most abundant; the other varieties occur only in the Schemnitz group. Pitchstone, pearlstone, pumice, and obsidian occur, associated with the trachyte, around the trachyte hills; and, extending from them into the plains, there are vast beds of trachyte conglomerates or tuffas. These conglomerates are formed of debris, often transported and triturated in water. Near to the hills, they are composed of very large blocks, but in the plains of scoriaceous and earthy matters; and, lastly, of a pumiceous matter, sometimes, ground down into an earthy form. These deposits contain fossil organic remains; viz., opaline wood, impressions of plants and shells of various kinds. The trachytic conglomerates are the principal repository of precious opal, and the pumiceous conglomerates that of jasper-opal and wood-opal. The conglomerates composed of broken down and decomposed pumice are very abundant between Tokay and Tolesva. The porphyroidal varieties form the mountains between Erdo-Benye and Tallya; they appear again in the county of Beregh, where they contain considerable masses of aluminous rock. The auriferous deposits of the trachyte formation are found in masses in the pumiceous conglomerate, or in veins in the vesicular variety of trachyte which is used for mill-stones.

3078. V. *Alluvial rocks.* Old alluvial rocks, and also those of modern formation, abound in Hungary. Of these, the most interesting are the calcareous tuffas, some of which are diluvial, others modern, and daily forming.

Subsect. 2. and 3. *Botany and Zoology.*

3079. *The Botany and Zoology* of Hungary are similar to those of Germany.

Sect. III. *Historical Geography.*

3080. *To the Romans* Hungary was known under the name of Pannonia, and was the domain of tribes still more rude, wild, and wandering than those of ancient Germany. The Romans formed out of it the province of Dacia, including the district lying south of the Danube, which, for a lengthened period, was the bulwark and boundary of their empire in this quarter. The fatal step of allowing a passage, in the fourth century, to the flying Ostrogoths, laid open the defenceless empire; and, from time to time, a continued torrent of barbarous invaders poured in from the extremities of eastern Europe, and even of central Asia.

3081. *The Huns,* in A. D. 433, established themselves in this country, which from them has ever since retained the name of Hungary. Attila, whom Gibbon has styled the supreme monarch of the barbarians, established his court and camp on the Teisse and the Danube. In the ninth century followed the Magyars, whose posterity form still the ruling body in the nation.

3082. *Hungary was erected into a kingdom,* partly hereditary, and partly elective, in A. D. 1000. Its most powerful monarch was Louis the Great, who, in the fourteenth century, carried his arms into Italy.

3083. *The union with Austria* took place in 1438, through the marriage of Albert of Austria with Elizabeth, heiress of the deceased king. The crown was afterwards held for a time by Ladislaus king of Poland, and by the gallant chiefs Huniades and Matthias Corvinus; but it ultimately reverted to, and remained with, the house of Austria. Dreadful wars were, however, waged with the Turks, who repeatedly ravaged the whole kingdom, and even laid siege to Vienna; but, for more than a century, that declining power has been completely expelled from Hungary, and has considered it quite enough to preserve its own borders from Austrian invasion.

Sect. IV. *Political Geography.*

3084. *The political relations* of Hungary, considered as a member of the Austrian empire, have been already considered. It has, however, some features peculiar to itself. The kingdom is now hereditary in the Austrian dynasty; but, in case that should become extinct, the right of choice would return to the nation. The Hungarian Diet possesses high prerogatives. Without their vote the king cannot make or change the laws, impose taxes, or even levy troops. Every new king, before his coronation, must take an oath to maintain the constitution of Hungary. The diet consists of four states or orders: — 1. The bishops and abbots. 2. The magistrates or great nobles. 3. The knights. 4. The free cities. The two former appear in person, and constitute what is called the magnate table, the two latter, who form what is called the state table, appear by their representatives. The diet assembles every three years, at Presburg or Buda, and sits during the king's pleasure. If three of the orders agree to any proposition, the fourth must give its consent.

3085. *In the administration*, the body of the people, with the exception of those who form part of the corporations in the free cities, have no share: a circumstance of which advantage is taken to throw upon them the whole burden of taxation, from which the nobles and clergy hold themselves exempt. The peasantry, though nominally emancipated, are still really held in a state of predial slavery. They are allowed, indeed, a considerable extent of ground; from thirty to forty acres each. Out of the produce, however, the occupant has to pay one tenth to the church, and one-ninth to his landlord, who also claims one hundred and four days' labour in the year, besides sundry other little gifts and services, which are liable to indefinite overcharge. They are also required to co-operate in the making and repairing the roads, and have troops quartered upon them. On the whole, their condition appears decidedly the worse for the privileges enjoyed by a proud and turbulent aristocracy, who have always resisted every measure proposed by the sovereign to ameliorate the condition of the great body of the people.

3086. *The army*, in time of peace, amounts to about 100,000 men, and in time of war it is increased to about 235,000. The expense is defrayed by a peculiar tax, called *kriegssteuer*, or war-tax. The revenue is supposed to amount to about 20,000,000 florins.

Sect. V. *Productive Industry*.

3087. *The agriculture of Hungary*, notwithstanding the rude manner in which it is conducted, and the extent of unfavourable soil, yields very copious products, out of which a large surplus arises for the supply of the neighbouring countries. According to an estimate which Grellman has founded on the *cadastre* instituted by Joseph II., it contains 23,905,000 jochs of productive land, out of an entire surface of 39,329,000; the rest being waste, water, and morass, or otherwise useless. Among these are about 5,000,000 arable, 7,500,000 pasture, 9,000,000 woodland, 1,000,000 vines, and 600,000 garden ground. Schwartner and Blumenbach agree in rating the produce in grain at 105,000,000 bushels. A little maize and rice is grown in the Bannat; otherwise the kinds of grain are those used in Germany. The agriculture is very rude. Light carts; a plough, of which the share is almost horizontal, and which seldom penetrates above three inches; and meagre cattle, present themselves in the dirty farm-yard (*fig.* 403.). In the rotation of crops, every third year is fallow. Cattle and sheep are bred, and even exported, in vast numbers; though the breeds, before late improvements, were by no means distinguished. The horned cattle, however, are large, vigorous, and active, of a dirty white colour, and excellently adapted for the plough. The breed of horses had fallen into total disrepute, till it was improved by the pains bestowed upon the imperial stud. The native Hungarian sheep bears very coarse wool: but in all the western districts it is much improved by crosses with the Spanish. Some of it is now very fine, and is even imported into England as the best Saxon wool. In 1810, there were found 451,000 horses, 2,400,000 oxen and cows, and 8,000,000 sheep; now probably more. Besides the ample supply of bacon, which is found at the table of almost every peasant, the number of hogs annually exported is from 200,000 to 250,000. Wine is a special object of Hungarian culture. That which bears the name of Tokay, and is produced there, and in a number of surrounding districts, is most celebrated. It is sweetish, luscious, and does not attain to perfection till it is very old. A good deal of the superior richness of the finer sorts is derived, according to Dr. Townson, from mixing the essence or juice of a small number of half-dried and shrivelled grapes with the ordinary wine of the country. Two sorts are produced in this way, *ausbruch* and *maxchlap*; the only difference between them being, that for each pint of essence put into the maxchlap, two are put into into the ausbruch. Tokay is consumed chiefly at the tables of the great Hungarian, Polish, and Austrian nobles. The total annual produce of the Hungarian vineyards is estimated at about 18,000,000 eimers. The Hungarians make their wines a subject

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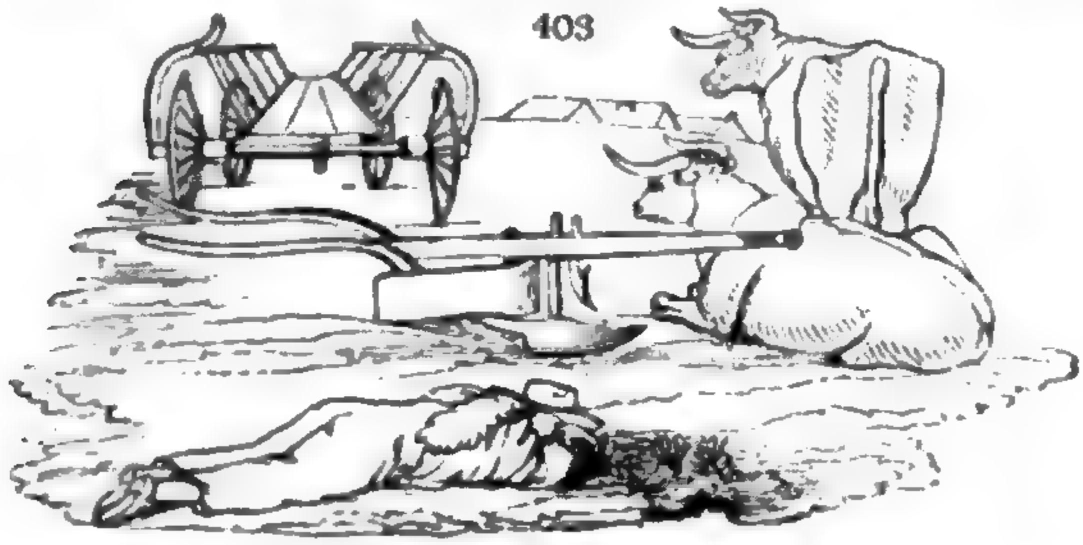

HUNGARIAN FARM-YARD.

of especial pride, absurdly pretending that the worst is superior to the best French wine. Tobacco is cultivated to a greater extent than in any other European country, and is largely exported. Hemp, flax, and madder are also staple products. Bees are very extensively reared; and the exports of honey and wax are estimated at about 250,000*l.* To these articles may be added, though no longer to the same great extent as formerly, cabbage and other garden products, with some fruits, as plums and melons.

3088. *Manufactures*, in the sense understood in England, can scarcely be said to exist in Hungary. There are, however, coarse domestic fabrics of linen and woollen for home consumption. Hides and skins are tanned, after a simple process, and on a small scale, chiefly by the peasants.

3089. *The subterraneous wealth of Hungary* is equally copious with that which its surface yields. Gold and silver, in particular, the most brilliant and precious of the metals, are raised from the mines of Schemnitz and Kremnitz in greater abundance than in any other part of Europe. The mines are chiefly royal property, or, where private individuals are allowed to collect the ore, they must, at least, give it to the royal smelting-houses at a fixed rate. The annual quantity is stated by Hassel at 1050 lbs. of gold, and 41,600 lbs. of silver. There is a great reduction of the former quantity, partly owing to the exhaustion of the mines, and partly to the poverty of the Austrian government, which can no longer afford to make the same exertions. According to Delius, the value of the gold and silver extracted between 1740 and 1773 was upwards of ten millions sterling. The engine employed at Schemnitz (*fig.* 404.), for drawing up the ore, and letting down machinery, is moved by water, and was considered the finest existing, before the invention of the steam-engine. The mines of Hungary yield also 10,000 tons of iron, 19,000 tons of copper, 1225 tons of lead, besides a great quantity of coal and salt. According to Hassel, the entire number of miners and labourers employed amounts to 45,000.

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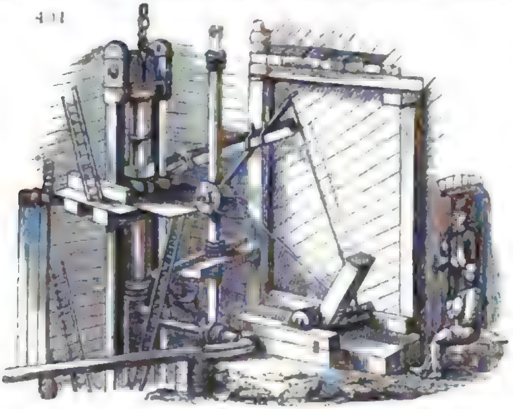

MACHINE FOR WORKING MINES.

3090. *Fishery.* The rivers and lakes of Hungary are full of fish; and the fishery is of considerable importance and value. The Teisse is said by the inhabitants to consist of two parts, one of fish and one of water. In 1810, the importations of fish from Hungary into Lower Austria were estimated at 86,000*l.*

3091. *The commerce of Hungary*, notwithstanding its fine rivers, labours under great disadvantages, from the want of sea-coast, from the navigation of the Danube being frequently impeded, and from its embouchure being in the possession of the Turks, whose barbarism has hitherto baffled every attempt to open a communication with the Black Sea. The inland traffic is tolerably brisk, and the roads are continually covered with animals, and with waggons, driven by the Jews, gipsies, and other foreign races, to the 2000 fairs which are annually held throughout the country. The great centres of this internal traffic are Pesth and Debretzen. The exterior commerce of Hungary consists in the exchange of rude for manufactured produce. In 1802, the leading exports were, cattle, 8,483,000 florins; grain, 2,367,000; wine, 2,381,000; wool, 5,039,000; leather, 1,245,000; which, with minor articles, made 24,515,000. The leading imports were, woollen cloth, 4,668,000; cottons, 1,611,000; linens, 2,692,000; silk, 1,223,000; coffee, &c. 2,790,000; hardware, &c., 1,299,000; making, with minor articles, 18,390,000 florins.

Sect. VI. *Civil and Social State.*

3092. *The following* is a statement of the progressive population of Hungary and its dependencies, as deduced from the conscription lists: —

Places.	Date.	Population.	Date.	Population.	Date.	Population.	Date.	Population.
Hungary - -	1785	7,098,574	1805	7,961,414	1817	8,063,680	1829	9,659,686
Transylvania -	1786	1,416,035	1811	1,501,406	1817	1,664,800	—	2,027,566
Military limits -	1803	871,237	1807	911,760	1815	940,598	—	924,315
Dalmatia - -	1807	256,863	—	—	1817	304,055	—	329,727
		9,642,709		10,374,580		10,973,133		12,941,294

3093. *If these returns* may be depended upon, they show a gradual and considerable augmentation. The apparent diminution of the population within the military limits was occasioned, we believe, by a transference of territory.

3094. *The Hungarians consist chiefly of two races,* the Magyars, or ruling race, who are estimated by Csaplovicz at 3,500,000; and the Sclavonians, the subject people, at 4,050,000. There are also 640,000 Wallachians; 577,000 Germans; 170,000 Jews; 50,000 gipsies; besides Arnauts, Greeks, Armenians, &c. There is no middle class in Hungary. Society consists of haughty nobles, poor peasants, and peddling traffickers. The nobles are a brave, generous, and hardy race. To them applies Voltaire's character of the Hungarians, as "a proud and generous nation, the scourge of its tyrants, and the defender of its sovereigns." They have the most devoted attachment to their ancient privileges and customs, and to every thing Hungarian; the most rooted dislike of the Germans and every thing German. The peasantry present an uniform aspect of rudeness and barbarism, not one being advanced beyond another, nor the whole beyond what they were in a remote age. It is impossible, according to Mr. Sherer, that when the Romans invaded Illyria, the peasants could, as respects dress, aspect, and manners, be more completely barbarous than at present; nor could the waggons of the Scythian camp be ruder than those which still crowd the streets of Presburg. The traffic is chiefly carried on by Germans, Jews, and the gipsies, a numerous race, who present the same aspect as in other parts of Europe.

3095. *In respect of religious worship,* full freedom has been long established in Hungary, and all Christian professions are considered equal in the eye of the law; but, in practice, it is complained that this equality does not go beyond toleration. The Catholic is the most numerous and powerful; its professors are estimated by Csaplovicz at about 5,000,000; at the head of whom are three archbishops, thirty-nine bishops, twenty-two abbots, and about 9300 clergymen, secular and regular. The Protestants amount to about 2,100,000, and have 1867 clergymen. The Greeks amount to 629,284, and have an archbishop, three bishops, and nearly 4000 clergy. The bishops possess extensive property, and are bound to take the field with their vassals in the national insurrection. Seven bishops were killed in the battle of Mohatz. Schwartner estimated the Hungarian clergy at 15,600; which, taking the population at 9,600,000, gives one clergyman for every 610 individuals.

3096. *Learning* is not altogether neglected in Hungary. Latin is, in some places, the ordinary language of the higher ranks, and mathematics and natural history meet with encouragement. There are only fifty-eight printing presses, and sixty paper manufactories in the kingdom. Such is the want of information, that Dr. Bright found the leading people at Schemnitz impressed with the belief that Mexico was an English island, and that sugar and coffee grew in Great Britain! Hungary, however, has a university, with a library of 60,000 volumes, and a valuable museum. In 1820, it was attended by 985 students. According to Dr. Bright, many of the nobles are exceedingly anxious to promote the intellectual improvement of their countrymen.

3097. *The amusements* of the body of the people consist chiefly of some national dances, particularly on occasion of the vintage, which is a season of unbounded gaiety. The national military dress being the same commonly denominated hussar, is picturesque and martial, and has been imitated by the other European nations. The peasantry wear a broad-brimmed varnished hat, with a low rounded crown; they have their matted long black hair negligently plaited or tied in knots, a blue jacket and trousers covered with a cloak of coarse woollen cloth or sheepskin, still retaining its wool. They live in small villages, or rather clusters of cottages, arranged on each side of a muddy road, whitewashed, roofed with thatch, but the interior containing, generally, three tolerably comfortable apartments.

Sect. VII. *Local Geography.*

3098. *Hungary* is divided into, 1. Lower Hungary, which forms the western; and, 2. Upper Hungary, which forms the eastern part of the kingdom. 3. Croatia. 4. Sclavonia.

3099. *Upper Hungary* is divided into two parts by the Danube. That on the north of the river is the most important; and contains both the leading capitals and the great mining districts of Schemnitz and Kremnitz.

3100. *Presburg,* established, in 1536, as the place where the kings were to be crowned, and the diets to be held, passes often as the capital of Hungary, though it is neither so large nor so handsome a city as Buda. Csaplovicz estimates its population at 32,026. The houses and streets are ordinary in their appearance; and the suburbs only can boast a few palaces of the nobles. The castle, lately burned down, except the walls, overlooks the very extensive plain in which the city stands. Presburg has a few manufactures, and a considerable trade, chiefly in corn and wine, up and down the Danube. There is a large Lutheran seminary, attended by about 500 students.

Buda, or Ofen (fig. 405.), and Pesth, separated by the Danube, form, in conjunction, by much the most important city in Hungary. Buda, on the right bank, is the first in dignity, being now the seat of government, which was transferred thither by Joseph II. from Presburg, in 1784. It consists chiefly of an extensive fortress seated on a lofty rock, somewhat resembling the castle of Edinburgh, and containing the houses of the Palatine and of some of the principal nobility. Along the foot of the castle several streets extend upon the river. One of the most remarkable features consists of the baths, which are ancient, and of Turkish construction. The citizens resort to them in crowds, exhibiting themselves in a very unscrupulous state of nudity. Pesth, on the opposite bank, is a larger and now more important city, forming the centre of the inland trade of Hungary. Four immense fairs are held there, which present an epitome both of the people and productions of the country. The native products are chiefly sold without the city, on both sides of a long road, as they arrive in the waggons, disposed for that purpose so as to form a species of square enclosure. An immense space is covered with horses, sheep, and cattle, the latter often amounting to 30,000. The goods brought down from Vienna are displayed in a large open space within the town, and in ranges of booths, which are penetrated by two broad streets crossing each other at right angles, and by other smaller streets and passages. The Danube, also, for the space of half a mile, is covered with boats and barges, which, with the banks, serve as a market-place for the goods. For recreation are prepared various sights, puppets-shows, fruits, especially water melons in immense quantities, and refreshments cooked and presented by the gipsies. Great commercial roads branch off from Pesth through every part of the country, and towards Austria, Moravia, Gallicia, Transylvania, Croatia, and Italy. Pesth contains 61,502 inhabitants, and Buda 27,470; making in all 88,972. Pesth is chiefly modern, and well built; containing many good streets and handsome houses, besides churches. There is considerable magnificence in the grenadiers' caserne, built by Charles VI., and in a large unfinished edifice, raised by Joseph II., which Townson calls a palace; but Bright does not think it possible to say what it is. The national university, already mentioned, is in Pesth. The city is without walls, and is connected with Buda by a bridge of forty-seven boats, which are moveable, and through which, at stated times, an opening is made to allow the passage of vessels and rafts. In winter it is taken down, and the two cities communicate over the ice.

BUDA.

3101. *The mining capitals*, Schemnitz, Kremnitz, and Neusatz, are situated on the declivities of a bold and mountainous country, forming a lower ridge of the Carpathians. Schemnitz, the great centre of the mining operations, is in a position peculiarly rugged, the streets being built along the sides of hills, and separated from each other by cliffs and woods: of its 17,000 inhabitants, 8500 are employed in the mines. The town was founded in 745; but it was Maria Theresa who established the mining college, which is conducted on a very liberal footing; comprehends lectures on every branch of natural knowledge; and is attended, even in bad times, by 200 or 300 students. The mines have been already noticed. The water is drained off by a subterraneous stream of about twelve miles in length, which empties itself into the river Gran. Kremnitz (*fig.* 406.) is only about half the size, and has a more straggling and neglected appearance; though one of its churches is very profusely ornamented. Neusol, about the size of Gran, is supported by the copper-mines, and has a large manufactory of arms in its vicinity.

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KREMNITZ.

3102. *There are also other towns of some importance* in this division of Lower Hungary. Gran, on the Danube, was once a military post of the first importance, though its strong castle is now in ruins; but it is still the ecclesiastical capital, its archbishop being the primate and chancellor of the kingdom. Mineral waters, resembling those of Epsom, have also been lately discovered there, from which a manufactory of magnesia has been established. This district extends also along the lower course of the Danube, on its eastern bank, where it approaches the Turkish frontier. Here occur several large towns. Theresopol, named after Maria Theresa, in a wide plain, with 30,000 inhabitants; Neusatz, a free city on the Danube, with 17,000 inhabitants, and a considerable trade with Turkey; Zambor, not far from the Fruns canal, with 18,776 inhabitants, and a large trade in corn and cattle. The bulk of the inhabitants in all these three towns consists of Greeks and Servians.

3103. *That part of Lower Hungary which lies to the south-west of the Danube*, enclosed between that river and the Austrian and Illyrian frontiers, contains also a number of places of considerable importance. Œdenburg, sometimes spelt and pronounced Edinburg, is finely situated in a country variegated with wooded and vine-covered hills, which surround the great lake of the Neusiedler See. Of 11,487 inhabitants, 4600 are Protestants. There is more manufacturing industry than in most Hungarian towns; but still it owes its main prosperity to its position; being the route by which supplies of provisions are conveyed from Hungary to Vienna. For this purpose, 40,000 cattle, and 80,000 hogs are annually brought to its markets. There is also a great trade in wine, of which 32,000 eimers are produced in its neighbourhood; and we trust there is little ground for the allegation of Debretzki, that the young ladies who are employed in the sale of it partake rather too copiously of this beverage. Œdenburg has also in its neighbourhood a mine of coal, which yields about 12,000 tons annually. Raab, on the river of the same name, near its junction with the Danube, once celebrated as a fortress, is now more noted for its fairs and markets. Of its 16,000 inhabitants, more than half live in the suburbs. Comorn, at the junction of the Danube and the Waag, is still more celebrated for its ancient strength; and so early as the year 1272 it was considered one of the bulwarks of the Austrian monarchy. Its situation gives it still a considerable trade; which, since the year 1805, has caused its population to increase from 9300 to 11,000. It suffered severely by shocks of earthquake in 1763 and 1783. Stuhlweissemberg, in the heart of this marshy district, was anciently a splendid town and a royal residence, called Alba Regalis. For five centuries the kings of Hungary were crowned and their remains deposited here. Since the beginning of the last century, it has been entirely neglected; and though there are a number of buildings which bear the stamp of grandeur, it is but a poor and mean place. It has a population of 18,776. A little to the west of Stuhlweissemberg is the great lake of Balaton or Platten, about eighty miles in length and twelve in breadth, surrounded by vast woods, and by precipitous though not lofty banks. Vesprim, Guns, and Sturamger are small country towns, the last only remarkable by being the seat of a bishop and of a clerical academy. Fünfkirchen is an ancient city, which makes a somewhat magnificent appearance by its ecclesiastical edifices, and its university, which was once attended by 2000 students, and has produced a number of eminent men. The bishop has a good library, of 20,000 volumes, to which the citizens are allowed access; an advantage, however, of which they rarely avail themselves. There are, moreover, a great quantity of hogs and cattle brought for sale to Fünfkirchen. Population above 11,000. Mohatz, on the Danube, is only a large assemblage of cottages; but it is celebrated as the scene of the great battle gained by the Turks in 1526, when Louis II. perished, with twenty-eight magnates, 500 nobles, seven bishops, and 22,000 troops. Szigeth is a strong post, celebrated in Hungarian warfare, situated on the Almas, near its junction with the Danube.

3104. *Upper Hungary* consists of a vast range of territory, extending from the Danube to the eastern boundaries of the kingdom. The hills and mountains of the northern part, being finely watered, produce in the highest perfection those delicious wines for which Hungary is so famous. The southern part consists of one unvaried and almost unlimited plain, through which flows the Teisse, which traverses Upper Hungary from north to south. This plain consists, in some places, of barren sand blown into hillocks; in others, of immense expanses of fine pasturage covered with numberless flocks and herds; while a great part of the tract immediately bordering on the Teisse is marshy and inundated.

3105. *Debretzin, or Debreczin,* for extent and importance, takes decidedly the lead of all places in Upper or Eastern Hungary; yet it may be called an enormous village, rather than a city, or even a town. Population about 40,000. The houses, with scarcely any exceptions, are mere cottages, one story high, roofed with thatch, and arranged on no regular plan. There is no pavement, and in the most frequented quarters the passenger flounders through sand and mud. Instead of a wall, it is surrounded by a hedge, and the town-gates are, like our field-gates, stuck with thorns and brambles. The greater part of the inhabitants are Calvinists; and by their plain attire, their simple deportment, the stillness and earnestness which sits upon every countenance, give a character to the place very different from that of a gay capital; yet, next to Pesth, it is the most commercial town in the kingdom. Every quarter of a year there is a market, when a space of ground which the eye can scarcely command is covered with flocks and waggons, bales and cases, tents and huts. A fine species of soap made here is considered a luxury even at Vienna; and a great deal of saltpetre is manufactured. The Calvinists have an extensive college, attended by 550 students, and possessing a library of 20,000 volumes.

3106. *Among other towns of Upper Hungary* must be mentioned Grosswardin to the east of Debretzin. It is a pretty frontier town of the district of Hungary inhabited by the Wallachians. The inhabitants, unlike those of Debretzin, are particularly gay; music and dancing are heard in every house; and there are four warm baths, to which the inhabitants resort for pleasure as well as health. Kaschan, in the northern hilly country, is called by Townson the metropolis of Upper Hungary, but does not seem to be at present considered in that light, nor can it any way rival Debretzin: it contains 15,500 inhabitants. The principal street is broad and pretty regular, adorned with some good houses of the nobility, an elegant coffee-house, and a fine Gothic church. At about a day's journey is a mountain, which produces that fine stone the true opal, which, as some suspect, is found nowhere else in the world; those called the oriental being alleged to be all brought from this mine. Erlau, or Agria, a larger town, but ill-built, is the seat of a richly endowed archbishopric; one of the late incumbents of which, otherwise not much extolled by Townson, founded a very handsome college. Mischkoks is also a large town in the same neighbourhood, in a rich wine and fruit country, of which it collects the products; with a population of 21,400. Tokay is only a village; and the surrounding district is only one of a number producing the celebrated wine already mentioned, which bears its name. Szegedin, farther down the Teisse, at its junction with the great tributary of the Maros, is a large and strong city, with 30,000 inhabitants, and a flourishing trade in wool and tobacco, of which 60,000 cwt. are sent down the Danube; salt from Transylvania, and cotton from Macedonia. A Greek protopapa resides here; and there are several seminaries and convents. Temeswar, in the south, the capital of the Bannat, is one of the strongest, and also of the most beautiful, towns in the kingdom. It has a number of public buildings which are admired; as the Gothic cathedral, the Greek church, the synagogue, the military and burgher hospitals. There are some manufactures, and a considerable trade on the Bega canal.

3107. *Croatia* is a district which, though possessing a people and language of its own, has for some time been attached to Hungary, and sends deputies to the Hungarian diet. Since the re-annexation of Carlstadt, which a long time formed part of the kingdom of Illyria, its extends over 3356 square miles, and contains about 370,000 inhabitants. The district of Carlstadt, on the Illyrian frontier, is mountainous; but westward the country declines into a level plain, traversed by the Save. Corn, cattle of small size, and tobacco of good quality, are its staples. The Croats form bodies of light horse rather distinguished in irregular warfare. Agram is a large and strong town, on the Save, without manufactures, but with a good deal of trade, both on the river and between Hungary and the Adriatic. Population, 17,000. Varesdin and Carlstadt are smaller places, deriving some importance from being in this last line of commerce.

3108. *Sclavonia* is a district to the east of Croatia, and the only one bearing the name of a nation whose colonies and language are so widely diffused. It enjoys a mild climate and fertile territory, yet more than half of its surface, of 3478 square miles, is covered with wood, and the rest is by no means cultivated to the extent of which it is capable. Its political relations are in many respects the same as those of Croatia; its products and trade similar, and it is equally destitute of manufacturing industry. Posega is accounted the capital; but Essek, a strong place on the Drave, near its junction with the Danube, is of more importance.

3109. *Transylvania*, meaning the country beyond the Carpathian hill forests, and called by the Germans *Siebenbürgen*, (a name brought by German colonists from Siebengebirge, near the Rhine,) is a very elevated territory: the Carpathians, which enclose it in the form of a half moon, present summits of 7000 or 8000 feet. To the height of 5000 feet they are covered with wood, but beyond that altitude they are rugged and alpine. The mountains are perforated by numerous caves. There are many little lakes; and the morass of Kovaszna is remarkable for its almost unfathomable depth. Notwithstanding its rugged surface, Transylvania has a mild climate, and is well cultivated. Its produce in grain is reckoned about 17,000,000 bushels. Cattle form a principal staple: the flesh of the oxen is good; but the milch cows are not of great excellence, and the wool of the sheep is coarse. Wine is produced in abundance, to the extent of 3,640,000 eimers, according to Blumenbach; but, as it does not keep, it is not an object of trade. Transylvania is rich in minerals, particularly gold, of which it yields 2750 marks; also 3500 tons of iron. It might supply the whole empire with salt; and sends, in fact, 25,000 tons into Hungary. The miners, chiefly German, amounted, in 1791, to 4328. There are no manufactures, except the most common fabrics. The people consist almost entirely of strangers, who have immigrated from the neighbouring and distant countries. Lichtenstein reckons 828,165 Magyars, 302,000 Saxons, and 507,700 Wallachians; which, with other small sects, made up, in 1817, a population of 1,664,800. In 1829, the number appears to have risen to 2,027,566. The Protestants predominate in Transylvania; amounting, by Hassel's enumeration, to 348,000, with 40,000 Unitarians; while the Catholics are 110,000, and the Greeks 150,000. These, we presume, are heads of families, as otherwise they would not nearly compose the amount of the population. The religious professions have each seminaries for rearing their respective students; and there are two societies for the culture of the Hungarian language and history, both established by Count George Banky. Hermanstadt, situated in the Saxon district, and considered the capital, is surrounded with a double wall, and contains 16,000 inhabitants, an extensive Lutheran seminary, two public libraries, comprising 20,000 volumes, a picture gallery, and a national museum. Cronstadt, however, also Saxon, and on the most eastern frontier, is a still larger place, containing 25,000 inhabitants, with various little manufactures, and enjoying very extensive intercourse with Turkey and Greece, to the amount of 1,000,000*l.* sterling. Clausenburg, near the western frontier, is a large open town, containing three seminaries, catholic, Lutheran, and unitarian, attended by about 1200 students. Carlsburg is a smaller town, defended by a strong castle on a hill above the Maros, and honoured by the tombs of the Huniades.

3110. *The military frontier* is a long range of territory, appropriated from the southern border of Croatia, Sclavonia, Hungary, and Transylvania, and placed under a peculiar régime, in the view of forming a barrier upon this side against the inroads of the Turks. For this purpose it is placed under a system completely feudal, all the lands being held under the condition that their occupants take the field in person whenever they may be called upon. Each individual receives a certain number of acres, which cannot be sold, pledged, or dismembered, though it may be exchanged for another of equal amount. That his fields may not suffer when he is called out, the inhabitants are divided into families of about sixty, at the head of whom is a directing patriarch, and among whom the culture and produce of the land is in common, each family, according to the number that it has sent out, and their length of service, having allowances or remission of tax of twelve guilders a head. The country is divided, not into provinces, but into regiments; the Carlstadt regiment, the Gradisca regiment, &c. This singular arrangement began with Croatia, in 1566, and ended with Transylvania in 1764. Of late its chief use has been to form a cordon for preventing the irruption of the plague. This frontier partakes physically and morally of the peculiarities of all the countries and all the people from which it is severed. The industry is chiefly pastoral, not much more than a fourth of the lands being under the plough. The cities are called Free Military Communities; but none of them contain 10,000 inhabitants. Semlin, in the Sclavonic frontier, is the largest. Peterwaradin, Brod, and Gradisca are strongly fortified little towns.

3111. *Dalmatia* is the rudest province of the Austrian monarchy. It forms a line of coast, about 300 miles in extent, from the border of Illyria to the Gulf of Cattaro, having a long chain of islands running parallel. This coast is bleak and arid, covered with woods and bushes; till, in the interior, it rises into long ranges of bleak and rocky summits. Dalmatia produces scarcely any grain; but its cattle, though small, are numerous: honey is produced in great perfection from the numerous aromatic plants on its hills; the fishery employs 8000 men, and is supposed to produce in value nearly 80,000*l.* The population consists of Morlachians (sometimes called also Dalmatians and Montenegrins), both of Sclavonic race, and a mixture of Italians. Zara, the capital, is a little town, on a promontory of land, severed from the continent by so deep an abyss, that there is no communication unless by a bridge. Spalatro (*fig.* 408.) is a larger town, on a little peninsula, strong by art and nature. It contains a number of large old houses, forming narrow and irregular streets; but it is chiefly distinguished by the remains of the superb palace of Diocletian, one of the grandest monuments of ancient architecture. Pola, once a great and splendid city, is reduced to a village, but still contains a most magnificent amphitheatre (*fig.* 409.), in high preservation, one of the most celebrated remains of Roman antiquity. Sebenico, Ragusa, and Cattaro are tolerable seaports, with good harbours; and the latter, on the Turkish border, is an important military position.

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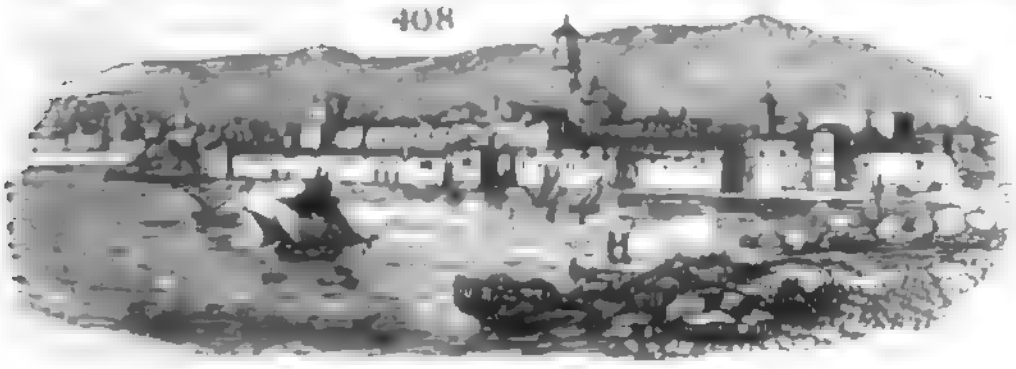
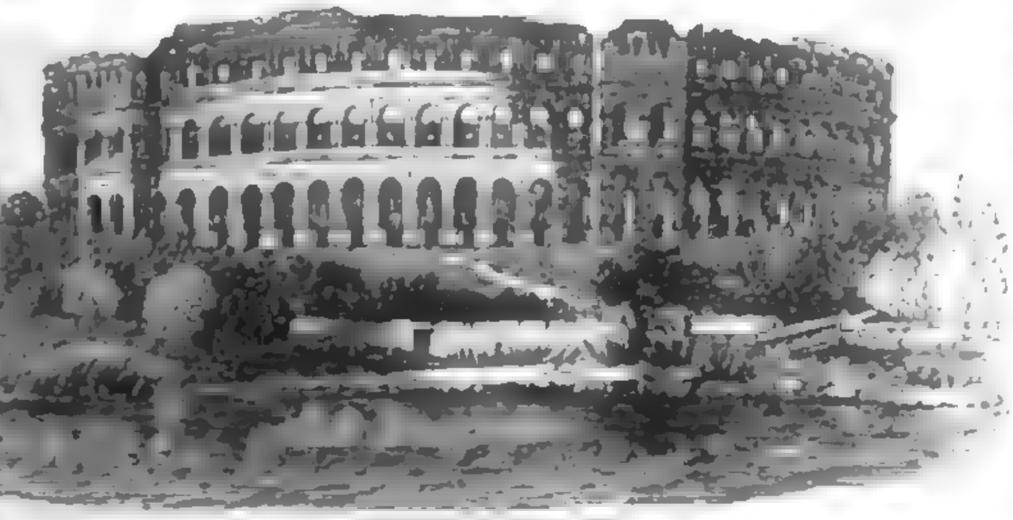


SPALATRO.

409



AMPHITHEATRE OF POLA.

Chap. XIII.

POLAND, WITH DUCAL PRUSSIA.

3112. *Poland* is a large country, which, though it has been so studiously expunged from the map of Europe, seems still to retain its claim to be considered as separate and distinct. The same physical aspect characterises it, and the people, in their character, their language, and all their national feelings, are still Poles. We do not annex Lombardy to Austria, nor Hanover to Great Britain, because they are ruled by the respective sovereigns of these countries; neither, it should seem, ought the partitioned members of the Polish monarchy to be yet viewed as actually incorporated into the territory of their successful invaders. We shall include Ducal Prussia, as being entirely enclosed by Poland, and participating in all its natural features.

Sect. I. *General Outline and Aspect.*

3113. *Poland* forms a vast level expanse of territory, the most easterly in Europe, except Russia. On the north it is bounded by the Baltic; on the east it has Russia, from which it is divided chiefly by the courses of the Dwina and the Dnieper. On the west it has Germany, mostly the Prussian territories; while on the south it is separated by the Carpathian mountains from Hungary and Transylvania; and it borders also on the tributary provinces of the Turkish empire.

3114. *The surface of Poland* forms part of that immense and unvaried plain which covers the northern portion of all the central European countries. This plain, which includes only about half of France and of Germany, occupies the entire extent of Poland. Even the Carpathian and the Silesian mountains, which border upon it, and shoot branches into it, make scarcely any sensible change in its level immensity. A great portion of this plain is overspread with a deep layer of sand, alternating, however, with large clayey tracts and extensive marshes. A cold and humid atmosphere, a winter nearly as severe as that of Sweden, and violent winds, blowing uninterruptedly over this wide open region, are consequences of this physical structure and position.

3115. *The rivers of Poland* are large, long, and navigable; seldom obstructed by rocks or cataracts. They frequently overflow their low banks, and convert the neighbouring provinces into a sea, communicating to them a luxuriant fertility. They rise, generally, not from mountain chains, but from marshy plains in the interior of the kingdom; and a plateau of almost insensible elevation separates those which direct their courses to the Baltic, from those which flow to the Black Sea. The Vistula, however, the most important and the most decidedly Polish, rises in the mountainous frontier of Silesia, passes Cracow, and, by a winding course to the east and north, reaches Warsaw, where it is augmented by the copious united streams of the Bug and the Narew, flowing from the rich plains to the eastward. It then holds a course almost due north; and, after passing Thorn, enters the sea by two mouths, one of which forms the Frische Haff, the other the great commercial port of Dantzic. The Vistula has a course of upwards of 500 miles, and is one of the most commercial rivers in Europe, being the main channel through which all the produce of Poland passes. The Niemen, more easterly, has almost as long a course; but the poor tracts of Lithuania, through which it flows, afford a much smaller amount of valuable commodities to be brought down to the port of Memel. The Dwina, though not quite so long, is a more valuable river, but, with its port of Riga, is almost entirely Russian. The Dnieper rises amid the marshes in the heart of Poland, and communicates, during the flood, with some of the tributaries of the Vistula; but the greater part of its long course is through Russia. The Dniester also rises from the Carpathians, and waters part of Austrian Poland before it becomes Russian. Even the Pruth, the present boundary of the Russian and Turkish empires, takes its rise in Poland.

3116. *The marshes of Poland* can scarcely be dignified with the name of lakes; though they are extensive, and in the wet season some of the interior provinces almost resemble a sea. Several extensive *haffs*, partaking of the character of lake and bay, occur on the shores of the Baltic, at the mouths of the great rivers.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3117. *The Geology* of this country is described with that of Russia.

Subsect. 2. *Botany.*

3118. *Poland*, from its situation, and, as may be judged, also, from the nature of the surface of that country, has no peculiar vegetation. The plants it produces are scarcely in any way different from those of the territories which circumscribe it; of Germany on the one hand, and of Russia on the other. It may have political, but it has no natural boundaries.

Subsect. 3. *Zoology.*

3119. *The zoology of Poland* is essentially the same as that of central Europe, and need not therefore be here dwelt upon. The pigs, like those of Russia, are generally very small, and of a reddish colour.

Sect. III. *Historical Geography.*

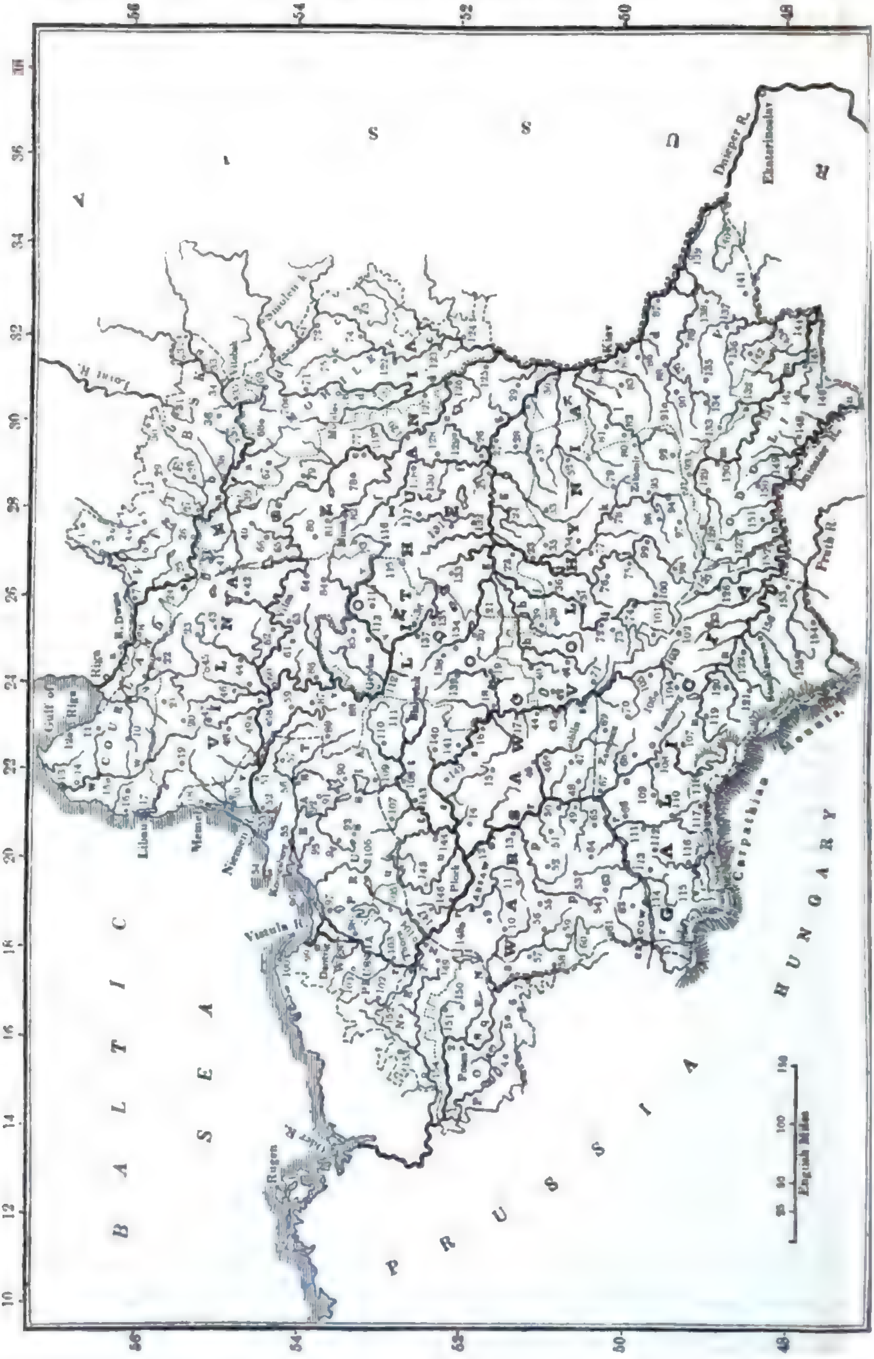
3120. *Poland, in ancient times,* formed the chief portion of that vast plain, called by the Romans Sarmatia, and viewed by them as a still ruder and more barbarous region than Germany. Sarmatia and Scythia are, in their descriptions, always combined together, as the abode of nomadic and savage tribes. The Roman arms penetrated to no part of this immense plain. From the earliest era to which our records ascend, it appears to have been peopled by the tribes called Sclavonic; a race widely diffused, distinguished by a peculiar language, by a strong national feeling, and by a particular train of superstitious ideas. Though shepherds, they do not seem to partake the migratory character of either the Teutonic or the Tartar nations. The impulses which actuated them were derived chiefly from the Huns, the Goths, and other nations of Asia, for whom their country was a path to the conquest of western Europe. The Sclavonic tribes were long held in the most cruel bondage by these eastern invaders; and their name was employed even to designate the most degraded state to which human nature can be reduced; but many ages have elapsed since they shook off this ignominious yoke.

3121. *The early annals of Poland* are obscure, and possess little interest. In 999, Boleslaus assumed the title of king. The Poles continued a powerful and warlike nation, though dreadfully harassed, for several centuries, by the inroads of the Tartars. In the end of the fourteenth century, the country obtained a most important accession. Hedwig, the heiress of the crown, married Jagellon, grand duke of Lithuania, on condition of that prince embracing Christianity, and incorporating his dominions with those of Poland. Poland thus united, became one of the most powerful monarchies of Europe, and its martial character gave it a commanding influence. The exploits of Sigismund and Sobieski hold a conspicuous place in military history; and Poland, for two centuries, was the main bulwark of Christendom against the alarming progress of Turkish invasion.

3122. *The decline of Poland* may be dated from the beginning of the last century, and may be ascribed, partly to the improvement and augmented influence of Russia and Prussia, but in a far greater degree to the incurable defects in the constitution of the state. The nobles, about 500,000 in number, formed the nation; the rest of the inhabitants being slaves, incapable of acquiring any property in land, without any privileges, and sold, like cattle, with the estates to which they belonged. After the extinction of the princes of the Jagellon line, the power of the nobles became quite illimitable: each of them might aspire to the throne, the sovereign being merely the *first citizen of the order.* Among themselves they formed a perfect democracy, the poorest being, in respect of privileges, quite on a level with the most opulent. They were authorised to maintain troops and fortresses; and were rather, indeed, a sort of independent princes than the subjects of a constitutional monarchy. By a singular absurdity, any one noble might, by interposing his *veto,* suspend the whole deliberations of the diet, and prevent the possibility of their coming to any conclusion. Hence the country was the constant theatre of intestine commotion; and foreign influence and corruption had unbounded scope, not only at the election of sovereigns, but in the whole proceedings of the diets. How much soever we may detest the means by which it was effected, no one can regret the abolition of a system of government which combined all the mischiefs of anarchy without its stimulus to enterprise; which made every landlord a petty despot, and every cultivator a slave.

3123. *The partition of Poland,* justly regarded as one of the most iniquitous measures which have disgraced modern times, was begun in 1772, by Frederick II. of Prussia, and the Empress Catherine II., chiefly, it is believed, at the suggestion of the latter; while Austria was reluctantly dragged into the league. At this time, however, each cut off only a corner, to round their own territories, and Poland remained still extensive, and nearly entire. But nothing was done to repair the defects in the constitution; and the weakness and disunion that prevailed left the country as open as ever to foreign aggression. In 1792, the three powers again joined, and made a fresh partition, which reduced Poland to little more than half her original dimensions. She now roused herself, and made a glorious effort for her deliverance. She saw, and endeavoured, though too late, to obviate, those abuses in her system of government of which she had been the victim. But the partitioning powers had gone too far to recede, and were not to be disappointed of their prey. The Poles, under their hero Kosciusko, made the most gallant efforts to preserve their independence and their newly acquired liberties. Unfortunately, however, their exertions were unavailing.

MAP OF POLAND. *Fig. 410.*



They were overpowered by the energies of Suwarrow, and the valour and number of his troops. The Russian general marched direct upon the capital, and, storming the fortress of Praga, to which the patriots had retired as their last hold, extinguished, apparently for ever, the rights and glories of Poland. An entire and final partition was then made, in which Russia had by far the most extensive portion; Prussia, the best situated and most commercial; Austria, on the whole, the most productive.

3124. *Considerable vicissitudes have befallen Poland* since this attempt finally to fix its destiny. Napoleon, after his great victory at Jena, penetrated into the country, and obtained the cession of all which had been given to Prussia at the period of the partition. He erected it into the Duchy of Warsaw, and vested it in the house of Saxony, who had reigned for a considerable time as elective kings of Poland. In his next grand expedition, destined finally to humble the power of Russia, the design of restoring Poland to its existence as a kingdom was openly proclaimed. It was hailed by the Poles, and even by their hero Kosciusko; and, in supporting it, they displayed, on several occasions, a valour worthy of the most glorious eras of their monarchy. Napoleon, had he conquered, might here have found cordial and attached subjects of his empire. Amid the downfall of his whole usurped power, and the liberation of Europe from the universal monarchy with which it was threatened, the relapse of Poland under its old oppressors was a solitary evil, which was scarcely perceived. The spirit which had been displayed by the Polish nation procured some melioration of its lot. The sovereigns felt that they could not trample with impunity on the feelings of so great and brave a people. Alexander formed the central regions on the Vistula and Bug into a separate state, to which he gave the lost, but still fondly cherished, name of the kingdom of Poland. Austria and Prussia were forced to grant to their portions certain privileges, and a form of representative government before withheld. A recent and gallant attempt of Poland to regain her independence has had a disastrous issue.

Sect. IV. *Political Geography.*

3125. *The political existence of Poland* as a great independent kingdom was finally extinguished by the last fatal partition. The name of the country, however, and the memory of its ancient glories, still live among the people of Poland; and an opportunity to renew its political existence would, it has appeared, be eagerly embraced.

References to the Map of Poland.

NORTH PART.
1. Lipna
2. Naalt
3. Beltinovo
4. Malnovo
5. Liutzin
6. Rejitza
7. Glazmans
8. Frederickstadt
9. Bansk
10. Bekgof
11. Tukum
12. Ugentzem
13. Windau
14. Pilten
15. Goldingen
16. Tasenpol
17. Libau
18. Memel
19. Telsh
20. Shavil
21. Janishky
22. Birji
23. Svidost
24. Veem
25. Dunaburg
26. Pridruisk
27. Drissa
28. Zapolitza
29. Sebe
30. Yazna
31. Nevel
32. Veleika
33. Vietac
34. Suraz
35. Vitepsk
36. Gorodock
37. Kurilov
38. Polotzk
39. Ullno
40. Glubakoe
41. Braslav
42. Zventziani
43. Utzian
44. Vilkomir
45. Ponevieg
46. Kiedan
47. Pakopo
48. Rosien
49. Wielona
50. Heydekrug
51. Tilsit
52. Mehlaucken
53. Curische Haff
54. Dirschkeim
55. Königsberg
56. Insterburg
57. Kussen
58. Szaky
59. Neustadt
60. Kovno
61. Nov Troki
62. Resha
63. Wilna
64. Smorgoni
65. Veleika
66. Retchki
67. N. Lepel
68. Sienno
69. Babinovitchi
70. Orsha
71. Kopis
72. Malistayl
73. Klimovitchi
74. Tcherikov
75. Tchausi
76. Moghilev
77. Yakshitzi
78. Igumen
79. Kastchini
80. Radoskowice
81. Gorodow
82. Minsk
83. Koldanov
84. Losk
85. Lida
86. Daugi
87. Mariampol
88. Kapeczewo
89. Praecozlen
90. Lotzen
91. Gerdauen
92. Friedland
93. Wartenburg
94. Heilsberg
95. Eylau
96. Frische Haff
97. Elbing
98. Marienwerder
99. Dantzic
100. Grossendorf
101. Neuenburg
102. Tuchel
103. Culm
104. Thorn
105. Neumark
106. Allenstein
107. Choszellen
108. Ostrolenka
109. Johansburg
110. Goniadz
111. Bialystok
112. Grodno
113. Bielitza
114. Novogrodek
115. Nesvig
116. Pesotchna
117. Sloutsk
118. Gorodock
119. Klitchev
120. Bobrouisk
121. St. Bichov
122. Glinka
123. Sviatilovitchi
124. Bielitza
125. Cholmitch
126. Gorval
127. Jlobin
128. Zelenkovitza
129. Koreni
130. Ourietche
131. Morstskoi
132. Lenino
133. Liubashev
134. Beriuza
135. Bilien
136. Zamostze
137. Slonim
138. Seletzi
139. Proujeni
140. Rudzka
141. Siemiatycze
142. Vengrow
143. Ostrolenka
144. Pultusk
145. Radzanowo
146. Plock
147. Sierpe
148. Brzesc
149. Inoraclaw
150. Gnesen
151. Rogowo
152. Lobsens
153. Crono
154. Fliehne.

SOUTH PART.
1. Schwerin
2. Posen
3. Czempin
4. Liesa
5. Jaroczewo
6. Sduny
7. Grabov
8. Kalisca
9. Kutno
10. Lenczye
11. Rawa
12. Warsaw
13. Warka
14. Radzimin
15. Seltze
16. Yanav
17. Channa
18. Brest Litov
19. Kobrin
20. Bezlej
21. Ebloshi
22. Stolin
23. Visotsk
24. Gorka
25. Petrikov
26. Biesadka
27. Mozir
28. Elsk
29. Bragin
30. Tchernobil
31. Ouvroutch
32. Tgenatpol
33. Olevsk
34. Golishi
35. Sekki
36. Bladimirets
37. Kolki
38. Manevitchi
39. Chevifka
40. Ratno
41. Kovel
42. Svitiaj
43. Ugruisk
44. Vlodava
45. Kotzkerniki
46. Lybartov
47. Lublin
48. Urjendov
49. Soleta
50. Gora
51. Radom
52. Opotchno
53. Mnin
54. Konietzpol
55. Petrikau
56. Widawa
57. Sieradz
58. Boleslaviec
59. Dzialoszyn
60. Tchenstochov
61. Slevierez
62. Moravitza
63. Sinakoe
64. Keltze
65. Opatov
66. Zachov
67. Radomist
68. Tarnograd
69. Zamoscz
70. Tomashov
71. Vladimir
72. Loutzk
73. Lavrovo
74. Dubno
75. Ostrog
76. Rovno
77. Lydvipol
78. Novgrod Volinsk
79. Sokolov
80. Zitomir
81. Pejov
82. Smorde
83. Molijin
84. Damidovka
85. Kiev
86. Vasilkov
87. Kanev
88. Tzerkov
89. Tarastcha
90. Skvira
91. Pavolotch
92. Rai Gorodock
93. Kimielnik
94. Tchernov
95. Oulkha
96. Laboun
97. Constantinov
98. Touripol
99. Zaslav
100. Krementz
101. Brody
102. Zlotchov
103. Busk
104. Lemberg
105. Augustrov
106. Zolkiew
107. Przemisl
108. Przeworsk
109. Przeszov
110. Vraiso
111. Pilsno
112. Tarnow
113. Briesko
114. Cracow
115. Nowylarg
116. Sandecz
117. Dukla
118. Sanok
119. Sambor
120. Stry
121. Perigensk
122. Kalusz
123. Brjezanti
124. Tslovice
125. Tarnopol
126. Strachov
127. Kobim
128. Pruskurov
129. Letitchev
130. Vinitza
131. Bratzlav
132. Gaisin
133. Lipovetz
134. Jivotov
135. Piatigori
136. Sokolovka
137. Zvenigorodka
138. Olishana
139. Tcherkask
140. Tchigrin
141. Slipola
142. Ouman
143. Golovanevsk
144. Bogopol
145. Savrah
146. Balta
147. Olgopol
148. Yampol
149. Mogilev
150. Verbovetz
151. Kamenetz
152. Zaleszick
153. Sniatin
154. Kuti
155. Delatyn
156. Stanislawow

Rivers
a Dwina
b Ulsha
c Soz
d Dnieper
e Berezina
f Pilitch
g Pripet
h Strochod
i Stir
j Balavaka
k Stoutch
l Teterev
m Boug, or Bug
n Dniester
o San
p Pilica
q Wartz
r Vistula
s Bug
t Narew
u Wukra
v Niemen
w Windau.

3126. *Among the three partitioning powers, Russia* availed herself of her own strength and favourable circumstances to seize a most unequal and preponderant share. Instructed, however, by the events of the last war, and the spirit displayed by the Polish people, she afterwards affected to pursue a liberal and conciliatory course. The fallen and proscribed name of Poland was revived, and the shadow of their ancient diet was still fondly cherished.

3127. *The modern kingdom* on which Alexander vouchsafed to confer the name of *Poland*, comprises only a small, but fine and fertile, portion of that once mighty monarchy; the rich and cultivated banks of the Vistula, the Bug, and the Narew. In 1829 it contained, on a surface of 2270 German square miles, a population of 4,088,000. A certain form of representation was granted to this kingdom, including even provincial assemblies, which send their deputies to the general diets; but a body which deliberates under the eye of 30,000 foreign troops can enjoy only a precarious exercise of its functions. Yet they did not hesitate to break forth into daring flights, such as their proud ancestors were wont to indulge in; occurrences which soon gave disgust to the emperor, who had granted these privileges under the hope of their being exercised in a very different spirit. The freedom of the press, also, which he at first made a show of granting, was soon employed in a manner so little congenial to his views, that he determined to withdraw it, and restore the abolished censorship. Upon the whole, however, in consequence of this imperfect freedom, the privileges of the different orders were better respected, and property more secure, than in any other part of Poland. It is impossible as yet to foresee what may be the consequence of the late abortive attempt to shake off the yoke. The revenue is estimated at 1,300,000*l.*; and the army, when at its full complement, has been fixed at 30,000 infantry, and 20,000 cavalry.

3128. *Gallicia*, the name which Austria gives to her portion of Poland, has also a form of representation, though, in compliance with the temper of the Austrian government, it rests on a much narrower basis. The states consist of four orders; the clergy, the nobles, the knights, and the representatives of cities: they meet annually; but the imposition of taxes, and the making of laws, the two primary functions of a national assembly, do not lie within their competence. They are allowed, however, some concern in the distribution of the land-tax, and the mode of levying the troops; though the amount of both is fixed by the sole will of the sovereign. The revenues of Gallicia are estimated at about 10,000,000 guilders, of which the extensive salt mines furnish one of the most copious sources.

3129. *Prussian Poland* is now reduced to the grand duchy of Posen, by no means the most fertile or productive part of the kingdom, but valuable from the manner in which it consolidates and connects the detached parts of that scattered monarchy. The people have since obtained provincial states, on the same footing as the other parts of the Prussian dominions. The representation is chiefly of the landed interest, and the king agrees that he will not make any alteration in the laws or taxes without their consent; but any proposed change must originate with him; and, as the debates do not take place in public, we have yet little opportunity to judge of the working of the new system thus established.

Sect. V. *Productive Industry.*

3130. *The industry of Poland* is in a more rude and infant state than that of any other country in Europe, some parts of Russia and Turkey alone excepted.

3131. *Agriculture*, the first and simplest form of industry is that by which alone Poland provides for herself both the necessaries and the luxuries of life. Almost every part of the country is under culture; and the plains of Volhynia, Podolia, and of the Upper Vistula, produce good crops of the finest wheat in Europe. This abundance, however, is not the result of any skilful or intelligent labour, or judicious application of capital. The cultivators, within the period of fifty, and in some cases twenty years, were bondmen fixed to the glebe, and toiling in a mechanical round for the profit of their masters. Though now raised to the rank of free labourers, and in many cases having received even a permanent interest in the soil, they have not yet acquired the character suited to this new station, but continue nearly in the same degrading dependence on their landlords as formerly. Each peasant is a species of little farmer, cultivating a small spot with his own hands, and paying the rent partly in kind, and partly in personal service. Wheat is cultivated chiefly on speculation, to supply the richer countries of Europe. In the country where this fine wheat is produced, the body of the people never taste it; and the traveller who passes through Poland can scarcely, unless in the great cities, obtain a loaf of wheaten bread. Rye is the grain almost exclusively cultivated for national subsistence. Hence it is always sure of a market, though at a low rate; but wheat depends upon the state of foreign markets for bringing any price at all. It is raised only on the finest parts of the land; and does not, in Mr. Jacob's opinion, occupy more than one acre in ten. Yet it is to the sale of this wheat that the grandees almost exclusively look for a supply of money, and, through it, of the finer manufactures and foreign luxuries. The recent depression in the prices of grain, and its exclusion for some years from the markets of Britain, reduced the Polish landlords to extreme distress; and, in order to relieve themselves from embarrassment, they adopted a system of over-cropping, which Mr. Jacob suspects has seriously injured the fertility of many of the lands. But, latterly, the exports from Poland to Britain have again become very great. In 1830 no fewer than 404,000 quarters of wheat were exported from Dantzic, of which 311,000 were for England; and during 1831 the amount was still more considerable.

3132. *Manufactures* are in a state decidedly inferior to that of agriculture. Even the rude fabrics which are almost every where else carried on for domestic use, are wanting in some districts. In others, however, they are conducted with some diligence; particularly in the countries on the Vistula, and those belonging to Prussia. In them, coarse but good linen is made, to an extent which affords a surplus for exportation. Within the last few years the manufacture of woollen cloth has remarkably increased in the new kingdom of Poland. In 1830, it produced 7,000,000 yards, part of which was sent as far as China. The timber, with which the country is so largely covered, affords ample materials for cabinet and wood-work; and this, in the mountain districts, is carried on under its ruder forms; but in the cities are fabricated articles of a more elegant and splendid nature. The manufacture of coaches at Warsaw is extensive, finding a ready market from the pomp and profusion of the Polish nobles.

3133. *The chief and almost only mineral production* of Poland is salt, the deposit of which in the southern provinces is the most copious in Europe, and the mines are more extensively worked than any other in the world. The Carpathian mountains contain also some iron; but the metallic wealth of Poland is, on the whole, unimportant.

3134. *Commerce in Poland* is carried on with some activity, in consequence of the large surplus of rude produce to be disposed of, and the many foreign fabrics and luxuries of which the country stands in need. Its grain and timber are transported along the rivers; — by the Dwina, to Riga; by the Niemen, to Memel and Liebau; and, above all, by the Vistula, to Dantzic and Elbing. Dantzic is the great emporium of Polish grain, of which it usually contains large magazines. There is a large monied interest in Poland, entirely in the hands of the Jews, who have made such large advances to the distressed nobles, that they may be considered the real proprietors of a great part of the lands. They carry on, also, most of the little trade and handicraft which exists throughout Poland.

Sect. VI. *Civil and Social State.*

3135. *The extent and population* of Poland, in 1825, were estimated, in Plater's elaborate Geography of the East of Europe, as follows; they have since somewhat increased: —

	German Square Miles.	Inhabitants.
1. Old Polish Prussia	500	800,000
2. Grand Duchy of Posen	540	980,000
3. Gallicia	1500	4,000,000
4. Republic of Cracow	20	110,000
5. Kingdom of Poland	2270	3,700,000
6. Russian Poland	7600	8,800,000
7. Courland	450	600,000
	12,980	18,990,000

3136. *The Poles, as already observed, belong to the Sclavonic race*, which occupies nearly the whole extent of the vast plains of eastern Europe. They have emerged more than the others from the generally rude and unimproved state which characterises this race; remaining, however, far in arrear of the Teutonic and other western nations. The feudal system, broken up in the greater part of western Europe, exists here in almost undiminished operation. Society consists altogether of two distinct and distant orders, the nobles and the peasantry, without any intermediate degrees. The nobles, who are more numerous than in any other country in Europe, have always, in the eye of the public, formed the people of Poland. They are brave, prompt, frank, hospitable, and gay. They have been called the French of the north, and, both from habits and political connection, are attached to that nation. On the contrary, they regard the Germans with mingled contempt and aversion, calling them *Niemic*, or dumb, in contrast with their own fluency and loquacity. Before their fall, their neighbours called them "the proud Poles." They consider it the deepest disgrace to practise any profession, even law or medicine; and, in case of utmost necessity, even prefer the plough. The luxury of modern times, and the variations in the price of grain, have very generally involved them in pecuniary embarrassments, and placed many of their fortunes in the hands of Jews. The Jews, sober, industrious, parsimonious, crafty, form a numerous and separate people in the heart of Poland. Once a year occur what are called the Polish contracts, when the nobles repair to the principal towns, Kiev, Minsk, Warsaw, Wilna, Novogrodek, &c. to sell their lands, pay their interest, and negotiate all their money transactions. Hither their wives and daughters resort for amusement; speculators bring their wares; usurers, musicians, strolling-players, sharpers, courtesans, come to ply their respective trades. The Poles, in personal appearance, are handsome and vigorous, though subject to that loathsome and sometimes dangerous disorder called the *plica polonica.* The Polish ladies are celebrated for their beauty, and are considered also more intelligent and agreeable than those of Russia. The peasantry are not absolute slaves, but they are raised little above that degrading condition; an estate being usually estimated by the number of its peasants.

3137. *The religion of Poland,* contrary to that which prevails in the great body of the Sclavonic nations, is Roman catholic. This is, perhaps, one main cause of higher civilisation; for the catholic religion, though, in comparison with the protestant, it be unfavourable to intelligence and improvement, has an opposite character when compared with that of the Greek church. Preaching has always formed an essential part of its worship, which gives it a decided superiority over a system which excludes that mode of instruction, and deals merely in a round of childish ceremonies. There is a considerable number of Greek Christians on the eastern and southern frontiers of Poland; and the numerous body of the Jews, of course, profess their national faith.

3138. *Knowledge has made greater progress in Poland* than in any other of the Sclavonic nations. In the brilliant eras of Casimir and Sobieski, she produced men eminent in science; among whom we distinguish Copernicus, the discoverer of the true system of the world. Hosius, advanced to the dignity of president of the Council of Trent, enjoyed, in his own day, a high reputation. Strangers to the language of the more enlightened western nations, the Poles have acquired the talent of speaking and writing Latin with peculiar facility. Nowhere has national history been more diligently cultivated. Every great family keeps a chronicle, in which it records the public and private incidents that have come under its observation, and bequeaths them as a legacy to future generations. A very poetical spirit animates the Poles, and is diffused through all ranks. The peasant sings the beauties of rural nature; while the noble bards celebrate the fortunes and glories of their country. Poland, however, within the last two centuries, has not kept pace with the rapid strides which other nations have taken in science and literature. The authorities of Aristotle and of Albertus Magnus still predominate in its schools of philosophy: its separation from Germany, and its distance from the other literary nations, prevent it from fully imbibing their spirit. Yet the Poles enumerate several living authors, whom they consider as vying with the classic names of the western countries, though their fame has not yet made its way beyond the limits of Poland itself.

3139. *The universities of Poland* have enjoyed considerable reputation: that of Cracow, three centuries ago, was one of the most flourishing in Europe: it not only attracted crowds of native students, but drew others from all the neighbouring kingdoms. The distracted state of the country, with the rising reputation of the German seminaries, gradually thinned their number; and the final blow was struck by its subjection to Austria, which introduced the German language, of all other things the most abhorrent to the Poles. A revival seemed to be promised, by the arrangement which fixed Cracow as an independent republic; but this expectation has not yet been fulfilled. The emperor Alexander founded, in 1821, a university at Warsaw, which he endowed with a revenue of 35,200 Polish florins, supporting an establishment of forty-two professors. It was attended, in 1830, by 589 students. Another, in 1820, had been formed at Wilna, also well endowed and regulated; and containing, in its dependent gymnasia, no less than 433 teachers. The university of Leopol, in Gallicia, is entirely German. Amid all these aids, however, knowledge is still far from being widely diffused among the body of the people.

3140. *The fine arts* of architecture, painting, and statuary, can scarcely be said to exist in Poland. Some of the carvings in the middle ages are said to possess a degree of merit; but no modern artist has given lustre to the kingdom. Music, on the contrary, is cultivated with ardour and success; though it is the performers, rather than the composers, of Poland that have attained distinction.

3141. *The amusements and mode of life* among the higher ranks are chiefly copied from the other nations of Europe, particularly the French. The Polish dances, however, are strictly national, and very graceful. That, especially, called the Polonaise is marked by a slow majesty of movement, which has been remarked as worthy of a nation who elected their kings. The Poles have a singular manner of shaving the head, leaving only a tuft of hair on the crown, and mustachios are generally worn.

Sect. VII. *Local Geography.*

3142. *The local description of Poland,* in its present dismembered state, must necessarily be given according to the three portions now held in such wide separation from each other: — 1. Prussian Poland, with which we shall combine Ducal Prussia; 2. Austrian Poland, which has received the name of Gallicia; 3. Russian Poland, including the recently formed kingdom of Poland.

Subsect. 1. *Prussian Poland, with Ducal Prussia.*

3143. *The two Prussias* form an extensive range of sea-coast, describing a sort of semicircle of nearly 400 miles round the southern shore of the Baltic, and extending their territories from 50 to 100 miles into the interior. The whole is a continuous and almost dead level, scarcely rising above the surface of the water on which it borders. Only in the south-east quarter appear a few sand-hills, blown together by the winds: one of them rises to 500 feet, but none of the others attain half that elevation. Yet, in the absence of any real mountains, these are called by the natives Berge. A range of such sand-hills, or banks, defends the flat coast from the incursions of the sea. In West Prussia there are a few similar *mountains*, and the river banks are somewhat higher than the rest of the country; while there is a gradual, but insensible, rise from the shore to the interior. The lands near the coast, however, would be scarcely secure from inundation, were not the sea itself so extremely shallow. Prussia has scarcely any important rivers exclusively its own, the Pregel forming almost the only exception; but the Vistula and the Niemen, or Memel, after traversing some of the finest provinces of Poland, enter the sea within its territory, and thus afford ample range both for foreign and interior trade. Two extensive waters, called haffs, the Frische Haff and the Curische Haff, exist in an intermediate state between lakes and bays. They form long canals, separated from the sea by a narrow partition. The water is fresh; and it is only when the waves of the Baltic are impelled into them by high tides or storms, that a saline tincture is communicated.

3144. *Prussian industry* is divided between agriculture and commerce; manufactures being yet in their infancy. The soil is in many places sandy and marshy; yet there are few parts which are not fit either for grain, flax, or hemp, and many tracts are very productive. West Prussia, however, which remained, till 1772, under the Polish régime, is much behind in respect to cultivation, though considerable improvement has taken place since its annexation to Prussia. The cattle are numerous, and the breeds in general good: that of horses, in some parts of East Prussia, is extremely fine. The breeding of cattle, however, seems to have declined remarkably since the disastrous year 1806; the number, which, in 1807, was 228,800, having fallen, in 1812 and 1813, to 151,560. The sheep cannot be compared with the fine breeds of Silesia and Saxony, but a good deal has lately been done to improve them. Hogs are reared in very great numbers; and honey is also a copious article. The woods are very extensive, covering, in East Prussia, upwards of 3,000,000, and in West Prussia more than 2,000,000 acres; and their products, timber, pitch, tar, ashes, form an important branch of national wealth. Amidst the generally low state of manufactures, that of coarse woollens, for domestic use, is extensively carried on; flax is well spun, and exported in the shape of yarn; and the tanning of leather flourishes. The commerce of Prussia is extensive; her ports and rivers affording the chief outlet for the copious productions of the soil of Poland. Memel, Königsberg, Elbing, and, above all, Dantzic, rank with the most flourishing commercial places in Europe. The chief staple of export is grain, in large quantities, and of the finest quality; wood, potashes, linen yarn, leather, hemp; in return for which, they receive the fine manufactures, wine, colonial produce, and all the luxuries of life.

3145. *The population of East Prussia* is stated by Jacob to have amounted, in 1827, to 1,171,000; that of West Prussia to 752,000. The former country has a character almost entirely German: the religion is Lutheran, with only about a sixth of Catholics, and a very few Jews. The means of knowledge and instruction are very widely diffused, and accessible to all ranks. In West Prussia, on the contrary, the two religions are nearly equally divided, most of the Polish population being catholic; there are upwards of 12,000 Jews, and the same number of Anabaptists.

3146. *Königsberg*, the capital of East Prussia, and formerly of the Prussian monarchy, is advantageously situated on the Pregel, not far from its junction with the Frische Haff. It is divided into three principal parts, the old city, the Lobenicht, and the island of Kneifhof, where a considerable number of the houses are built on piles, as in Venice and Amsterdam. The walls are nine miles in circuit: a great proportion of the space enclosed by them, however, consists of open ground; but they no longer render Königsberg a strong place, and the citadel of Fredericksburg, in the island, is now covered with shops. Beyond the walls are four suburbs. The university is well endowed, and attended by 200 or 250 students. All the manufactures that exist in the country are concentrated at Königsberg; and they are various, though none of them extensive. Königsberg was an eminent Hanse town, and still carries on a very extensive trade. In 1816 were laden here 634 ships, of which 491 took 23,000 lasts of grain. Kant, the celebrated metaphysician, was a native of this city.

3147. *Of the other towns of East Prussia*, one of the most considerable is Memel, strongly fortified, and which, notwithstanding its smaller size, carries on nearly as great a trade. In 1828, 869 vessels entered, and nearly the same number cleared out. Of the ships entering inwards in 1828, no fewer than 428 were British. Pillau, on a channel somewhat more than half a mile broad, serves as a sort of subsidiary haven to Königsberg. In 1820 it received 623 vessels, of 43,675 tons burthen, and sent out 638 of 46,292 tons burthen. Braunsburg, near the mouth of the Passarge, exports a large quantity of linen yarn, with masts and corn. Tilsit, on the Niemen, is rather a handsome and considerable town, with some manufactures; but is chiefly remarkable for the treaty of 1807, between Napoleon and Alexander. Gumbinnen and Insterburg, both on the Pregel, are considerable towns. Friedland and Preuss-Eylau deserve mention, chiefly for the great battles fought there in the campaigns of 1806 and 1807.

3148. *Dantzic*, the grand emporium of Poland, stands undoubtedly foremost among the towns of Western Prussia. It lies on the western branch of the Vistula, immediately before its entrance into the sea, at the point where it receives two small tributaries, the Radau and the Mollen. Dantzic is divided into a number of parts, of which the principal are the old city, ill built, wholly in the style of the middle ages, with narrow, gloomy, angular streets; the "high city," as it is called, more modern, and better built, but still far from handsome; the "low city," divided into the Long Garden, which contains the best and most agreeable houses, and the Magazine Island, containing, as its name imports, the chief warehouses of the merchants. The suburbs were, till lately, extensive, one of them being named Old Scotland, from a colony of that nation established at an early period. These suburbs were burned, however, in the sieges by the French, in 1807, and the Russians, in 1813; and, though partly rebuilt, their population has been reduced from 7860 to 1788. The only handsome building is the Lutheran church, with a celebrated picture of the Last Judgment. The commerce of Dantzic is very great. In 1828, 1050 ships entered the port, of the burthen of 101,234 tons; of which, 211 ships, carrying 30,095 tons, were from England. During the last three or four years, this commerce has increased still further. As already observed, the exports of wheat from Dantzic, in 1830, were 404,000 quarters, of which *three fourths* were for England. Between 1807 and 1814, it is estimated to have suffered a loss of 62,500,000 guilders (5,250,000*l*.). The population, in 1817, was 52,821, including the military; but, independent of them, was 47,934. At present it may amount to 60,000. Dantzic has a public library of 27,000 volumes, and also several literary institutions.

3149. *Other towns in West Prussia* are, Elbing, on the river of its own name, which falls into the Frische Haff. Though not nearly equal to Dantzic in respect of foreign trade, it carries on a very extensive interior traffic; and about 1400 vessels, though of comparatively small size, enter and leave its port. It is a fortress, though not now of much importance. Thorn is a considerable city, about an hundred miles up the Vistula, once very strong, and celebrated as the birthplace of Copernicus. Marienburg and Marienwerder are capitals of circles, and places of some consequence.

3150. *Posen*, bearing the title of grand duchy, is now the principal part of the Polish territory annexed to Prussia. It forms an extensive level plain, analogous in all its features to that which crosses the whole north of Europe. The country is finely watered, having the Vistula for its eastern boundary; while the Wartha, receiving the considerable tributaries of the Netze and the Obra, traverses it from east to west, enters Germany, and falls into the Oder at Kustrin. The canal of Bromberg unites the Vistula with the Netze, and, consequently, gives it a communication with the Oder. Agriculture is in a very backward state, and conducted only according to antiquated processes. The peasantry have been freed from personal slavery, but they are still ignorant, drunken, and poor. Yet Posen yields a considerable surplus of grain, which is transported, partly to Dantzic, by the Vistula, and partly, by the Oder, to Stettin. The produce in cattle and sheep, which was once most extensive, has suffered severely from the repeated ravage of hostile armies; yet a considerable quantity is still furnished to Silesia. Although this cannot be considered a manufacturing district, yet it fabricates a considerable quantity of coarse woollen and linen cloth, which is even sent to Russia and Germany. The inhabitants, who are estimated by Hoffmann at 847,000, are divided, as to religion, into 553,000 Catholics, 238,000 Lutherans, 52,500 Jews, with some minor sects. According to Mr. Jacob, the governments of Posen and Bromberg had risen, in 1827, to 1,045,000. The heads of the catholic church are the archbishop of Gnesna and the bishop of Posen. The establishments for public instruction are yet in their infancy.

3151. *Posen* is a large town, on the Wartha, well and regularly built, with broad streets, and a spacious market-place. Population, 25,000. There are several handsome private houses, both in the city and in a spacious suburb on the opposite side of the river. The chief public buildings are, the Stanislaus church, built in the Italian style; the bishop's palace, and the theatre. The governor, who, under the title of *stadtholder*, represents the king, resides at Posen. The city contains 4000 Jews, and a number of families who report themselves as descended from English and Scotch ancestors. The Catholics have a gymnasium, with 500 scholars.

3152. *The other towns of Posen* are, in general, small. Gnesna, formerly a city of great importance, and the ecclesiastical capital of Poland, does not now contain four thousand inhabitants. Lissa is now a large place, with pretty extensive manufactures, and a population of 7934, half composed of Jews. Bromberg, on the canal which bears its name, enjoys a considerable trade.

SUBSECT. 2. *Austrian Poland.*

3153. *The portion of Poland* annexed to Austria is erected into a kingdom, under the titles of Gallicia and Lodomiria. These names are derived from the ancient Russian principalities of Halicz and Wlodomir. Its surface is considerably distinguished from that flat marshy level which covers almost the whole of Poland. A great part of it is situated upon the slope of the Carpathian chain, which separates it from Hungary. This is, indeed, only a border range, all whose loftiest peaks are Hungarian; but branches or spurs from it cover a great part of Gallicia, before they descend to the great Polish level. The country is thus of very various character. A considerable part consists of mountain forest, the elevations of which do not, however, rise to more than 4000 or 5000 feet: many of the plains are sandy; but the greater portion, diversified by gentle hills, is of the most exuberant fertility; and, notwithstanding its imperfect cultivation, forms a sort of granary of the surrounding countries.

3154. *The various changes which this southern part* of Poland has undergone have rendered it not so strictly Polish as some of the others. About the twelfth century it formed part of the Russian kingdom of Kiev, and bore in great part the name of Red Russia. When Kiev became Russian, Hungary, once united, but now separated from it, laid claim to the Polish provinces; but it had to contend with the Polish monarchy, then in the zenith of its power, under Boleslaus and his successors. After a struggle of several centuries, Hungary was compelled to cede these districts; though still, by a singular clause, reserving a certain claim to them. Maria Theresa, therefore, when she achieved the partition, could boast of a certain ancient right; and Hungary even claimed the incorporation of these new provinces, and a seat for their nobles in the diet; but the Austrian cabinet, however much disposed to avail themselves of the claim, did not choose to press it to this conclusion. The extent of Austrian Poland has not been materially altered since the final partition in 1792. Austria has given to Gallicia a form of states, but without allowing them any voice in the making of laws, or in fixing the amount of taxes, though they have some control over their distribution. The states are composed of four orders; the clergy, the nobles, the knights, and the cities: but the Gallician House of Commons consists merely of two deputies from Lemberg, no other place having yet been raised to the rank of city.

3155. *The different branches of industry* are in a less advanced state in Gallicia than in any other part even of Poland. The peasantry are no longer in the legal condition of serfs; but the general poverty, sluggishness, and apathy, which prevail among this order, render them nearly as much as ever enthralled to their landlords, and strangers to every kind of improvement. Still the produce of corn on these fine plains is very considerable, being estimated by Blumenbach at 34,000,000 metzen, a large proportion of which is sent partly by the Vistula to Dantzic, and partly to the neighbouring districts of Hungary and Silesia. Although a great portion of Gallicia is peculiarly adapted to pasturage, yet the diligence of the people in rearing cattle, &c. is so slender, that not only the breeds are poor, but their amount does not correspond to the extent of pastures. The number of horses in 1817 was 311,000, which, unless in some studs formed by government, had few properties of the noble Polish breeds; horned cattle 1,116,000, and sheep 480,000; not so many as are found in some of the small Saxon provinces. The woods are of considerable value, and some coarse articles of furniture are made out of them and exported. The hills enclose several thousand little lakes, or ponds, remarkably well stocked with fish. The country is infested with wild animals, which the Austrian government has been at great pains to extirpate. In 1812, premiums were paid on the bodies of 10 bears and 2046 wolves. Manufactures even of the coarsest and most necessary articles are almost unknown to the native Gallician, who follows nothing but his plough and his horse, and leaves the care of clothing him to the Jews, who have multiplied in this kingdom more than in any other part even of Poland. They exceed 200,000, and have 294 synagogues. It is but fair to state that the Austrian influence, however violently and unjustly established, has been employed to introduce a certain improvement in all the above particulars.

3156. *The mineral kingdom* affords one branch of industry in which Gallicia excels every other part of Europe, and of the world itself. The whole soil at a certain depth contains a mineral layer variously impregnated with salt. The two grand works are at Bochma and Wieliczca, the former of which produces the finest salt; but the latter are the most extensive of any in Poland, or, indeed, perhaps in the world. They extend 6700 klaftern in length, 1100 in breadth, and reach to a depth of 750. The alleys and passages cut out in the solid salt present a brilliant and magical appearance. Some elegant little chapels, adorned with saints and crucifixes, are also cut out in the mineral; but it is said there is no truth in the current report that there are habitations for the workmen, though there are stables for the horses employed. Of the different kinds and qualities of salt, the purest is called crystal salt, appearing in the shape of cubes and prisms; another, called green salt, contains a large proportion of earth; while the most inferior kind is fit only for cattle. These two great salt mines produce annually upwards of 800,000 cwt.; besides which there are twenty-six on a smaller scale, yielding about 900,000 cwt.

3157. *The commerce of Gallicia* is necessarily inland. Occupying, however, the heads of the Dniester and the Vistula, it sends a considerable quantity of commodities down those rivers. It has also a great inland carrying trade, being the principal channel by which intercourse is maintained between Germany and Prussia. The exports consist of grain, salt, some wood, and honey; in exchange for which are received manufactured goods of every description, and exotic luxuries of every denomination. The quantity of these must be somewhat strictly limited by the means of purchase, and the small number who consume more than the absolute necessaries of life; yet the German politicians labour under some dread of an unfavourable balance.

3158. *The social state of Gallicia* presents an aspect less altered from the feudal system and habits, than that of almost any other European region. The census of 1818 gave 3,760,000, while in 1829 it is stated by Colonel Traux at 4,385,000. These inhabited ninety-five cities, 191 market towns, and 6009 villages. The nobles amounted in 1817 to the enormous number of 31,006; some of them possessing immense property, even whole provinces; though, in consequence of trusting the management of their affairs to stewards, they are generally embarrassed. But a great proportion are in a state of extreme poverty, and even cultivate their fields with their own hands. The burghers were reported at the singularly small number of 11,513; while the country labourers are supposed to be rated too low at 353,419. The Jews constitute every where the most flourishing part of the citizens. The Christians are divided between the Romish and Greek persuasions: the former have 1066, the latter 2800 cathedrals. There are about 5000 Armenians, and thirty protestant congregations scattered through the kingdom. Knowledge is in a most defective state; and the few institutions which exist for its diffusion have been introduced by the Austrians. They have made great exertions to improve the university at Lemberg, which has twenty-six professors, and a good library. The Gorales, or inhabitants of the mountains, form an entirely different race from the Mazurakes, who occupy the level districts; and an old enmity reigns between these two tribes. The Gorales are a fierce, highland race, constantly armed with the axe, with which they can strike an object at the distance of forty yards; and they brandish this weapon even at their dances and festivals. Till repressed by the vigorous measures of the Austrian government, they were accustomed to make most formidable *raids* upon the low country adjoining. The inhabitants of the eastern part of the kingdom are of Rousniak or Russian origin: they speak a language compounded of the Russian and Polish; they are more industrious than the Poles, and employ themselves in the fabrication of coarse linen. A considerable number of Wallachians, of Magyars, the prevailing people in Hungary, and Germans to the number of 73,000, have found their way into Gallicia.

3159. *The cities and towns in this part of Poland* are neither very ample nor elegant. Lemberg, however, called by the Poles Leopol, or the city of Leo, founded in the twelfth century, though its interior streets be narrow and old-fashioned, has four handsome suburbs. In 1808 it contained 41,500 inhabitants; of whom 12,700 were Jews. By the small river Pelleir it communicates with the Bug; but its chief trade is by land with Turkey and Russia. The intercouse with this last country, however, is chiefly carried on by the large but ill-built frontier town of Brody, containing from 16,000 to 20,000 inhabitants, of whom more than a third are Jews. The other towns contain only about 5000 or 6000 inhabitants. Among these may be mentioned Przemyzl, once the seat of a principality; destitute of walls, but still defended by a strong castle, and having in its vicinity large manufactures of wood. Jaroslaw, the city of Prince Czartoryski, has a fine cathedral, and may boast of some industry, the Austrians having introduced a fine cloth manufacture. Zlaczow borders on Russia, amid extensive woods and numerous ponds. Sambor and Drohobitz, on the Dniester, have some manufacture and trade, chiefly carried on by Jews. Tarnopol, farther to the north, is tolerably flourishing. Stanislaus, in the south, is a handsome town, which the Austrians propose to convert into an important fortress. Stry is situated in the heart of the mountain district, amid woods, streams, and torrents. Cultivation is extremely rude; yet the Jews have introduced some slight branches of industry. Halicz, from which Gallicia derives its name, is now a small place, chiefly occupied by a particular sect of Jews. Bochnia and Wieliczca, entirely supported by the salt mines, do not contain more than 3000 people.

Subsect. 3. *The Kingdom of Poland.*

3160. *The partial revival of the kingdom is an act of Russian policy.* The name of Poland, even after the downfall of the great power which it once designated, and the division of the country among the surrounding potentates, was still grateful to the ear of every genuine

Pole. This disposition was manifested in a manner not to be mistaken, when Napoleon over-ran Poland, and proclaimed its erection again into a kingdom. Although the Poles could not, under his sway, hope for much civil liberty, they rallied round him; and, had not his ambition overleapt itself, by urging him into the frozen and hostile regions of Muscovy, his dominion over Poland might have become stable and permanent. Napoleon fell; and Alexander, in reward of his own achievements in the common cause, grasped the regions of the Vistula, including the capital, which had formerly belonged to Prussia, and had been erected by Napoleon into the Duchy of Warsaw. These, with the country on the Bug and the Narew, he formed into the kingdom of Poland, containing only a small portion of what that country had been in her glory, but yet comprising its most improved districts, and those most decidedly Polish.

3161. *The kingdom of Poland* contains an extent of 2270 German square miles, of fifteen to the degree, belonging generally to the vast Polish level, except its southern border, along the waiwodats of Cracow and Sandomir; along which is an extensive and steep though not lofty branch of the Carpathians. The highest point is called the Sysa Gora. The plain, of which the greater part of the newly erected kingdom consists, is rather of a sandy character, and the overflowing of its large rivers often converts it into marsh. It does not possess the exuberant fertility of the Ukraine, and of other southern provinces, celebrated for that very fine wheat with which the port of Dantzic supplies the rest of Europe. Generally speaking, however, it is a good grain country, and under tolerable cultivation. The manufactures of linen and woollen cloth for domestic consumption are considerable, though they produce none of fine quality. In the capital, the making of carriages and harness is of such extent as to assume almost a national importance. Minerals are not a leading feature, though there are iron mines of some value in the southern range of hills. There is a great transit trade of grain down the Vistula, partly the produce of the kingdom itself, but chiefly of the more fertile regions to the south; but the new Poland labours under a severe disadvantage in not possessing the mouth of that river, and its port of Dantzic, which has been annexed to the Prussian territory.

3162. *A representative constitution*, as already observed, was granted by Alexander, in his quality of king of Poland. The new diet was divided into two chambers, one of which is elected by the nobles and the provincial assemblies, while the senate consists of ten waiwodes appointed by the emperor in his character of king of Poland, ten castellans nominated by the senate, and ten bishops. This constitution, however, granted in a liberal and conciliatory spirit, was not found to work so agreeably as a sovereign elsewhere despotic could have desired. It became the aim of the prince to abridge the privileges which appeared to him to be too liberally used. The diet was less frequently assembled; the liberty of the press, at first granted, has been withdrawn. These encroachments kindled a discontent, which broke out in the late strenuous effort to effect an entire emancipation from Russia, the unfortunate issue of which, it is to be feared, will for the present deprive Poland of many of the advantages she has hitherto enjoyed.

3163. *Warsaw*, capital alike of old and of new Poland, is finely situated on the Vistula. During the war which terminated in the subjugation of Poland, Warsaw stood the heaviest brunt; and its population in 1782 was reduced to 75,000; but since that time it has rapidly improved, and in 1829 it contained 150,000, of which, however, about 14,000 were garrison. Among these are 30,000 Jews. The whole city consists of one long street, with others branching from it; but these are narrow and dirty, and, as is usual in aristocratic cities, no provision is made for the comfort and accommodation of foot passengers. The new town is built in a better style; the government palace (*fig.* 411.), and the palace of the minister of finance (*fig.* 412.), are both splendid buildings; but the finest part of Warsaw consists of its four suburbs having separate rights and jurisdictions. That of Praga, once a strong citadel, was almost destroyed in the dreadful assault by Suwarrow, in 1795: it is now, however, rebuilding. Warsaw originally consisted almost entirely of wooden houses; but that material is now prohibited; and out of its 4000 houses, 3000 are constructed of stone. During the period of its calamities, Warsaw lost the finest collections made by its former sovereigns. The gallery of paintings formed by king Stanislaus, and the Za-

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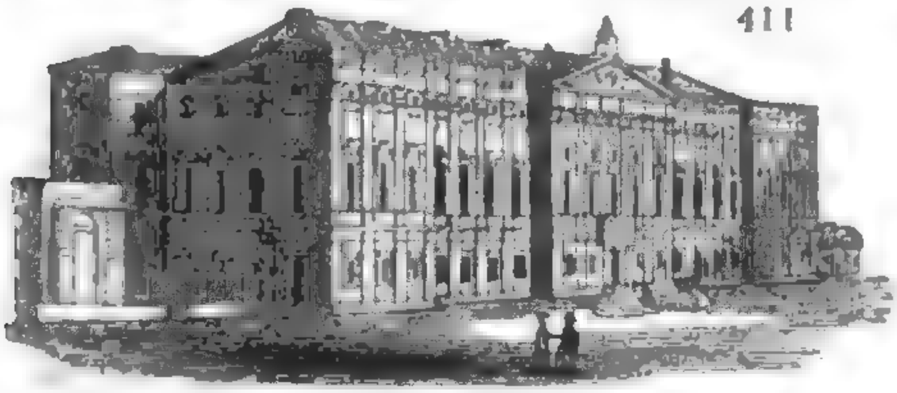
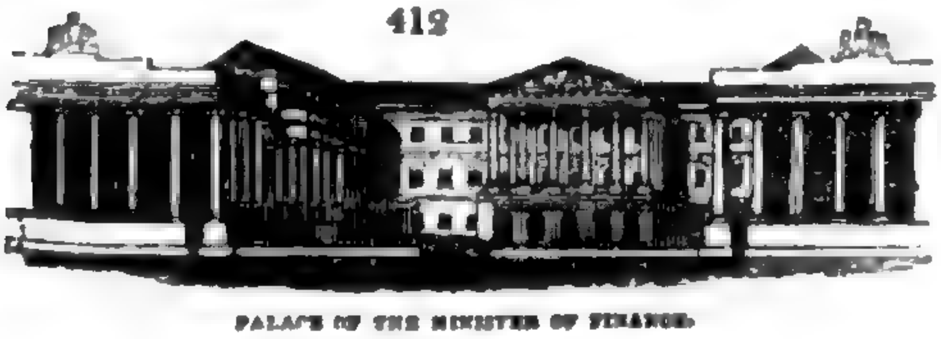


GOVERNMENT PALACE AT WARSAW.

412



PALACE OF THE MINISTER OF FINANCE.

gitized by

louski library, were transported to Petersburgh; and another library, of more than 45,000 volumes, was transferred to Volhynia. Alexander, however, in 1821, founded, or rather re-endowed, the university.

3164. *The other towns in the kingdom of Poland* are only of secondary importance. Lublin, which ranks second, contains 10,000 inhabitants. It is situated on the Bug, in one of the most fertile districts of the kingdom, and communicating on the south with others still more fertile. It is distinguished by the castle of Casimir the Great, the palace of Sobieski, some fine churches, and the largest synagogue of Poland. Zamosc, in the same vicinity, is an important fortress, while Pulaway, a seat of Count Czartoryski, and Klemerzon, the residence of the Zamoiski, are adorned with some elegant and classic edifices. Kalisch, on the Proswa, is rather a well-built town, with 8000 inhabitants, a military school, and some manufactures. The voivodat of Sandomir contains a city of the same name, with a fortified castle, but only 2700 inhabitants; and Radow, also a small town, ranks as its capital. Kielce, capital of the mining district, in the voivodat of Cracow, has a school of mines, and about 5000 inhabitants.

3165. *The republic of Cracow*, in default of any place more strictly appropriate, may be here introduced. The three great powers who decided on the destinies of Poland, by a species of caprice, established at a central point between them this free and neutral city, an ancient and venerable capital of Poland. The degree of freedom which it enjoys, though only by sufferance, has rendered its environs more fertile and smiling than those of the rest of Poland. Its surface contains 2360 square leagues; and in 1819 the population of the city amounted to 24,800, that of the territory to 71,000; of which 12,000 were Jews. The university, once the great school of the north, and frequented by crowds of students, was broken up during the civil commotions, and the attempts to restore it have been fruitless. It has at present thirty professors, but not more than 276 students. Cracow is decidedly a catholic city, and contains eighty-seven monasteries and 164 nunneries. The revenues of the republic amount to 1,379,000 florins. The cathedral is remarkable for the tomb of St. Stanislaus, the monument of Sobieski, and other venerated mausoleums.

Subsect. 4. *Russian Provinces.*

3166. *The Lithuanian provinces* form an extensive portion of Poland, the character of which is materially different from that of the rest. The two states, after being entirely separate, were united, as already mentioned, in the fourteenth century, by the marriage of Jagellon, grand duke of Lithuania, with Hedwig, the heiress of the Polish monarchy. This union, however, produced on Lithuania nearly the effect of a subjugation; the kings fixing their residence at Warsaw, and the diet being oftener held there than at Grodno. They passed with comparatively little reluctance under the Russian yoke, and made no movement to meet the attempts of Napoleon to re-establish Poland. The soil is very generally either sandy or marshy, and buckwheat is the crop principally raised. The pastures are excellent, and the forests fine and very extensive; honey and potashes are staple productions. The forests are infested with numerous wolves, bears, and other wild animals; and specimens of the urus are still found in them. The inhabitants appear to rank lower in industry and civilisation than either the Russians or Poles. Every branch of trade is in the hands of the Jews, who sometimes even buy the corn before it is in the ear. The appearance of the peasantry indicates the most extreme poverty. Many of them are clothed merely in sheepskin, their shoes made of the bark of trees, their carts of mountain ash, joined together without iron. White and Black Russia are names applied to several of the more eastern provinces of this part of Poland. They were, as the name implies, conquered at an early period from Russia, by the dukes of Lithuania. Those provinces present in a more decided manner all the features which characterise Lithuania. The forests and marshes are more extensive, the industry of the people still more relaxed, and the arts in a ruder state. The roads are almost impassable, the villages mean; and in the houses men, women, and cattle, are often lodged under the same roof. The palatinates of Polotsk, Witepsk, Mcislaw, Mohilew, and Minsk, were comprehended in White Russia, while Black Russia was a name applied only to that of Novogrodek.

3167. *The cities, and even the towns*, in this quarter of Poland, are neither numerous nor generally important. Wilna, the capital of Lithuania, is situated on the Wilia, a large tributary of the Niemen, and carries on a very considerable trade. The inhabitants are stated at upwards of 40,000, of whom 5000 are Jews. The emperor Alexander bestowed considerable pains on its improvement. He revived and richly endowed the university, which, with its dependent gymnasia, now contains 433 teachers; and is well regulated. It has also an observatory, and a school of navigation, which last does not seem very well placed. The Polish contracts, during their proper season, produce a great stir. Grodno, once a capital of Poland, and the frequent place of assembling for the diet, has lost its silk, velvet, and cloth manufactures. Its palaces are falling to decay; and its population is reduced to 4000 or 5000. Kowno, Troki, are towns of 3000 or 4000 inhabitants. Mohilow, on the Dnieper, a town of 16,000 souls, has an extensive trade, maintaining the communication of these provinces with the Black Sea; while Witepsk, on the Dwina, communicates with Riga, and has a population of about 13,000. Mstizlawl and Dubrowna are rude towns, built almost entirely of wood. Minsk, though small, is the capital of an extensive province, in the south of which are Slonim and Rinsk, the latter situated in the district called anciently Polesia, still almost entirely overspread with forests, lakes, and marshes, which in the wet season convert its surface nearly into a sea. It yields, however, fish, honey, timber, and iron. Brzest Litow, in its eastern border, has a strong castle on the Bug, and contains a Jewish academy, the resort of students from every part of Poland, and even of Europe. Bialystock, situated near the western extremity of the Russian empire, is a rather modern town, with a fine castle, and several public buildings.

3168. *The Polish Ukraine,* comprehending the provinces of Podolia and Volhynia, forms a rich extensive level, producing the finest grain and pasture of all the Polish provinces. This vast tract of the Ukraine, divided by the Dnieper into two nearly equal parts, formed the ancient and flourishing kingdom of Kiev, the eastern side of which was afterwards annexed to Russia; while the western, the most fruitful and valuable, was attached to Poland. All, however, has now been absorbed in the wide-spreading dominion of the former empire. Volhynia is a vast, almost unvaried, low level; but Podolia has, along the banks of the Dnieper and its tributaries, ranges of hills of small elevation, forming romantic vales and cascades, without, however, interrupting the general level character. Though the climate is comparatively mild, the southern products of wine and oil cannot be brought to perfection; but there is a great surplus of grain of the finest quality, and of cattle and sheep. According to the tables of M. Marczinski, there are in Podolia 93,000 nobles, 136,000 Jews, 197,000 Latin, and 838,000 Greek Christians. He reckons also 781,000 peasants bound to the glebe.

3169. *The towns, in a district so decidedly agricultural,* are not of much importance. In Podolia, Kaminiec, once the mighty barrier of Christendom, has lost its importance, since the limit of the Russian monarchy has been extended so far beyond it. The provincial authorities still reside there, and it retains its strong castle seated on a rock. The commerce of this province is chiefly carried on in Moghilev and Szarnygrod, which are of about the same dimensions. Bau and Targonitz, the seats of two political confederations, possess a gloomy celebrity in the history of Poland. Berdyczew, the largest town in Volhynia, is ill built, and filled with crowds of Jewish traffickers. The nobility carry on their contracts at Dubno, a smaller town, and Irlomitz, still smaller, yet holding at present the rank of a metropolis. Wlodomir, a celebrated city, which gives name to a kingdom, is now only a colony of Jews; and Ostrog, with a district round it, has been assigned as the last refuge of the knights of Malta.

Chap. XIV.

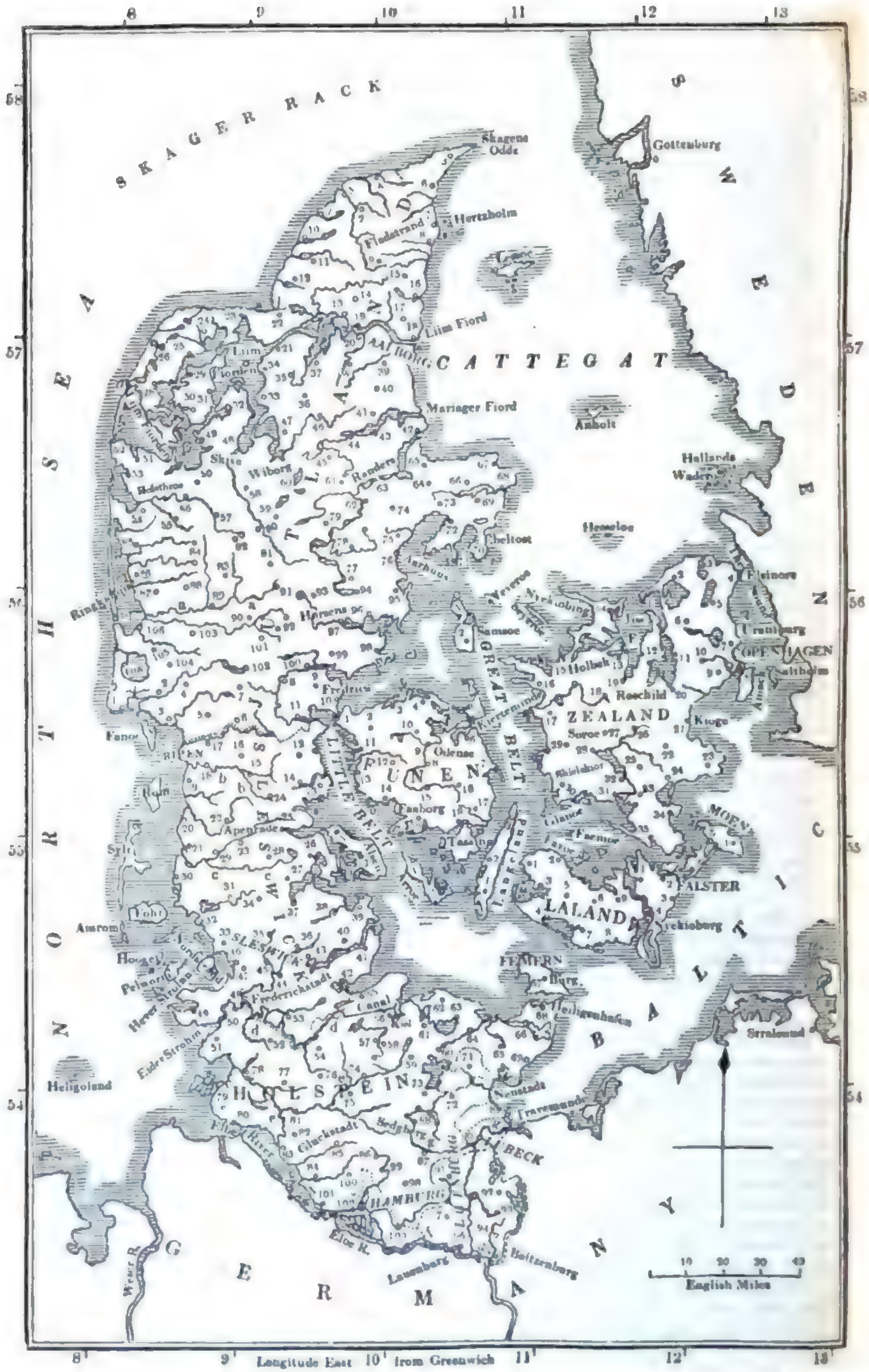
DENMARK.

3170. *Denmark* is an ancient kingdom, formerly very powerful, holding sway over the surrounding regions, and, as a predatory state, the terror of all Europe. Though now reduced to the secondary rank, her situation renders her of importance in the general system of the Continent.

Sect. I. *General Outline and Aspect.*

3171. *Denmark consists mainly of an extensive peninsula,* shooting out from the north-west corner of Germany, and a cluster of large islands to the east of the peninsula. The northern shores of Denmark approach close to the southern point of the Scandinavian peninsula, bounding the great interior sea of the Baltic. She commands the only channel by which the countries around this sea can transmit their products to the rest of Europe; a circumstance which gives her some consideration as a maritime state, at the same time that the toll she imposes on ships passing and repassing the Sound is productive of revenue. The Danish peninsula is termed Jutland; and the islands in the interior of the Baltic, interposed between Jutland and Scandinavia, are Zealand, Funen, Odensee, and a few others of smaller note. Denmark holds also the German territories of Sleswick and Holstein; with Iceland, the Faroe Islands, and some settlements on the coast of Greenland, remnants of her former maritime power.

3172. *The extent of the dominions of a country* broken into such a variety of detached portions can with difficulty be estimated. The only compact mass consists of Jutland, Sleswick, and Holstein; bounded on the west and north by the North Sea or German Ocean; on the east by the sounds which form the entrance of the Baltic; on the south by the Elbe. This tract lies generally between 53½° and 57½° north latitude, and 8° and 11° east longitude.


SKAGER RACK
NORTH SEA
CATTEGAT
SWEDEN
BALTIC
GERMANY
Skagens Odde
Hertzholm
Fladstrand
Gottenburg
Liim Fiord
AALBORG
Mariager Fiord
Anholt
Hallands Wadero
Hesseloe
Ebeltoft
Randers
Wiborg
Skive
Holsthroe
Ringkiobing
Aarhuus
Horsens
Neveroe
Samsoe
Nyekiobing
Elsinore
Uraniborg
COPENHAGEN
Saltholm
Holbek
Roeschild
ZEALAND
Kioge
Soroe
Kiertemynde
GREAT BELT
Fredricia
LITTLE BELT
FUNEN
Odense
Faaborg
Taasing
Langeland
Skielskor
MOEN
LALAND
ALSTER
Nyekiobing
Fanoe
RIPEN
Rom
Sylt
Amrom
Fohr
Hooge
Pelworm
Hever Strom
Apenrade
SLESWICK
Frederichstadt
Canal
Kiel
FEMERN
Burg
Heiligenhafen
Neustadt
Travemunde
LUBECK
HOLSTEIN
Eider Strohm
Heligoland
Gluckstadt
Segeberg
Elbe River
HAMBURG
Elbe R.
Lauenburg
Boitzenburg
Weser R.
Stralsund
10 20 30 40
English Miles
8 9 10 11 12 13
54 55 56 57 58
Longitude East from Greenwich

We have thus a length of 280 miles, and a breadth of 120. The total area is estimated, in the Weimar Geographical Almanack for 1832, at 1012·76 square miles, of fifteen to the degree.

3173. *The surface of Denmark* is nearly flat; forming, with the exception of Holland, the lowest part of the great plain of Northern Germany. The islands, in particular, in many places, rise only a few feet above the level of the sea. The soil, as in the rest of this plain, is frequently sandy and marshy; the climate humid, though not liable to those severe frosts which prevail in the interior of Scandinavia. Hence it affords good pasturage, and its soil is favourable to the growth of the coarser species of grain.

3174. *The waters of Denmark* consist chiefly of its numerous sounds and bays; the Skagerrack, which comes in from the North Sea, and separates Jutland from Norway; the Cattegat, which, running southward nearly at right angles to the Skagerrack, separates that peninsula from Sweden; the Sound, a narrow strait at the extremity of the Cattegat, between Zealand and Sweden, and which forms the main entrance into the Baltic. The insular and peninsular character of her territory gives Denmark an extent of coast which certainly does not fall short of 600 miles; and there is said to be no part of the land more than ten miles distant from the sea. This structure leaves no room for the formation of any rivers of the least consequence, except the Eyder in Holstein, and the canal of Kiel, by which an important communication is formed between the ocean and the Baltic. Jutland contains a number of shallow but extensive lakes, closely bordering on the sea, with which they in many places communicate, and may hence be regarded as bays.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3175. *Denmark.* The geology of this low and flat country has not been completely ascertained. As far as is known at present, it contains neither primitive nor transition rocks: the only secondary deposits are Weald clay, and the various members of the chalk formation; both of which are generally covered up with tertiary soils; which, in their turn, are as deeply covered with diluvium of sand, and calcareous loam; which latter are occasionally concealed by newer alluvial deposits.

3176. *Iceland.* This island, so far as is known to geologists, is entirely composed of ignigenous rocks. These are of two classes; viz. Plutonian and volcanic. The Plutonian

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References to the Map of Denmark.

NORTH PART.
1. Lykenshuus
2. Hiering
3. Harshals
4. Toersted
5. Skagen
6. Aalbek
7. Fladstrand
8. Sæbye
9. Botsergaard
10. Blokhuus
11. Tolstrup
12. Thuus
13. Brulet
14. Biersted
15. Vaar
16. Aas
17. Ulsted
18. Hals
19. Sundbye
20. Aalborg
21. Logstor
22. Kollerup
23. Klorup Præstegaard
24. Kolbye Herregaard
25. Tisted
26. Forbye
27. Agger
28. Vilsbye
29. Sundby
30. Rested
31. Nykiobing
32. Hierk
33. Strandbye
34. Malle
35. Gundersted
36. Aars
37. Bisley
38. Klitshoy
39. Kongsley
40. Stem
41. Vive
42. Sedringholm
43. Mariager
44. Hobroe
45. Isindam
46. Boldrup
47. Ulbierg
48. Skive
49. Kaas
50. Borbierg
51. Lemvig
52. Harboe Ore
53. Nees
54. Ulborg
55. Vringelberg
56. Holstbrue
57. Hodsager
58. Sorup
59. Knudstrup Over
60. Wiborg
61. Skierne
62. Laurberg
63. Randers
64. Horning
65. Oersted
66. Ulstrup
67. Gierild
68. Greenaae
69. Alboge
70. Ebeltost
71. Helgenaes
72. Agrie
73. Thorager
74. Hornslet
75. Skeibye
76. Aarhuus
77. Dover
78. Dallerup
79. Midstrup
80. Aggerskov
81. Engisvang
82. Sunds
83. Arenberg
84. Noromme
85. Sondervang
86. Rinkioping
87. Dijbergdund
88. Herningsholm
89. Faurgaard
90. Brandholm
91. Snee
92. Give
93. Grundstrup
94. Scanderborg
95. Tvenstrup
96. Haldrup
97. Horsens
98. Aastrup
99. Engum
100. Veile
101. Ringgive
102. Greene
103. Oddam
104. Frostrupgaard
105. Lundager
106. North Bork
107. Haureig
108. Kiergaard.

SOUTH PART.
1. Hoe
2. Varde
3. Jerne
4. Holde
5. Giording
6. Folding
7. Vaarbaae
8. Odsted
9. Smidstrup
10. Frederica
11. Colding
12. Christiansfelde
13. Aaroe
14. Hadersleben
15. Gram
16. Hvam
17. Hiortland
18. Ripen
19. Relsbye
20. Hallum
21. Hoyer
22. Lygum Kloster
23. Holst
24. Schrudstrup
25. Apenrade
26. Gravenstein
27. Holebul
28. Ucke
29. Tonder
30. Embsbull
31. Leck
32. Ockholm
33. Bredstedt
34. Medelburg
35. Jorl
36. Arenholt
37. Flensborg
38. Steerup
39. Gelting
40. Kappel
41. Windemark
42. Eckernforde
43. Sleswick
44. Hollingstede
45. Treya
46. Husum
47. Mildsted
48. Frederickstadt
49. Garding
50. Tonningen
51. Wesslingburen
52. Tellingstedt
53. Rendsburg
54. Harloch
55. Schnelm
56. Kiel
57. Rumor
58. Remsdorf
59. Preetz
60. Ploen
61. Stenen
62. Krokau
63. Dransau
64. Lutgenburg
65. Halendorf
66. Oldenburg
67. Burg
68. Heiligenhafen
69. Grommiz
70. Neustadt
71. Eutin
72. Sarau
73. Schamersdorf
74. Neumunster
75. Wildenschaven
76. Ostersted
77. Gribbom
78. Meldorf
79. Marne
80. Brunsbuttel
81. Itzehoe
82. Krempe
83. Gluckstadt
84. Uetersen
85. Barmstedt
86. Hohenhorst
87. Oldesloh
88. Sedgberg
89. Travemunde
90. Lubeck
91. Labenz
92. Sterley
93. Gudow
94. Greven
95. Boitzenburg
96. Lauenburg
97. Stunau
98. Wolhorn
99. Lemsal
100. Pinneberg
101. Wedel
102. Hamburg
103. Bergedor.

Rivers.
a Skiern
b Gielst
c Widaw
d Eyder
e Stor
f Elbe
g Trave.

LALAND.
1. Fredericksdal
2. Raunsholt
3. Nakskov
4. Skibbelunde
5. Ryde
6. Marieboe
7. Rodbye
8. Nysted
9. Saxkioping.

FALSTER.
1. Onslev
2. Stubbekioping
3. Karleby
4. Nyekioping.

MEON.
1. Mondemark
2. Stege
3. Phanefiord.

ZEALAND.
1. Tommaerup
2. Ramlos
3. Gillelye
4. Elsinore
5. Fredensborg
6. Slangerup
7. Lyngbye
8. Copenhagen
9. Glostrup
10. Ballerup
11. Gylling
12. Krobbesholm
13. Holbek
14. Nyekioping
15. Egemark
16. Callundborg
17. Giorlov
18. Undlose
19. Aggerup
20. Roeschild
21. Kioge
22. Ottestrup
23. Tryggevelde
24. Ruholte
25. Glumsoe
26. Ringsted
27. Soroe
28. Antvorskov
29. Slagelse
30. Skielskiov
31. Saltmelot
32. Vallensved
33. Nestved
34. Proestoe
35. Wordingborg.

SAMSOE.
1. Nordbye
2. Selveg.

FUNEN.
1. Middelfarth
2. Indslov
3. Bogensee
4. Bederslov
5. Kierteminde
6. Ronkebye
7. Nyborg
8. Bellinge
9. Odense
10. Broebye
11. Hunsbye
12. Oersted
13. Assens
14. Dreslette
15. Sallinge
16. Risling
17. Gudbier
18. Svendborg
19. Faaborg.

ALSEN.
1. Nordburg
2. Augustenburg
3. Sonderburg.

ARROE.
1. Soebye
2. Kioping.

LANGELAND
1. Humble K.
2. Rudkioping
3. Stoense.

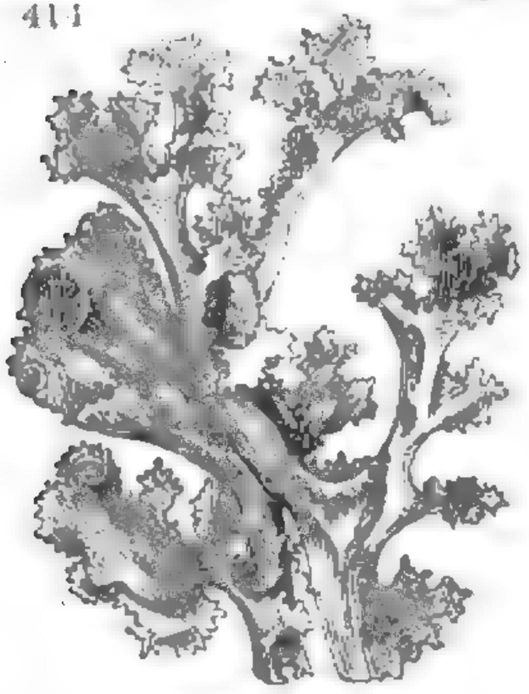
formations are *greenstone*, and its accompanying rocks, and *basalt*, with its associated tuffas, amygdaloids, &c. Of all the rocks of the trap series, amygdaloid is that which contains the greatest variety of minerals; and of these the zeolites and calcareous spars are the most interesting and beautiful. The volcanic rocks exhibit the usual characters, and in Iceland are spread around in vast abundance.

3177. *Faroe Islands.* This small insular group consists of seventeen large inhabited islands, and of many smaller, with and without inhabitants. In none of the inhabited islands are the most elevated summits lower than 1000 feet: the highest land is in the island of Osteroe, which rises to fully 2800 feet above the level of the sea. The two prevailing rocks are *greenstone* (dolerite) and *claystone.* The greenstone is sometimes basaltic, sometimes porphyritic, or amygdaloidal. The claystone is red, yellow, brown, and green. It alternates with the greenstone, in beds of varying thickness. The beds of greenstone and claystone of the group all incline or dip towards a central point of the group, rendering it probable that the islands are but portions of one whole. The upper surface of the greenstone is slaggy, showing that the mass had been in a state of igneous solution. There are two principal varieties of greenstone; one porphyritic, with crystals of glassy felspar, the other without the porphyritic structure. In some of the islands there are beds of *pitchcoal*, associated with fire clay, slate clay, and sphærosiderite, resting upon the trap, and covered by it. The beds of greenstone and slate clay are often traversed by veins or dikes of basaltic and porphyritic greenstone, which, however, do not appear to occasion any change in them; but the greenstones are changed in position and direction by the invasion from below of a conglomerated rock, a kind of trap tuffa. The trap rocks of the Faroes have been long celebrated, on account of the splendid zeolites they afford: some species of this beautiful family appear to be daily forming. The chloropæite, peridote, and precious opal, are also productions of this insular group.

Subsect. 2. *Botany.*

3178. *Denmark and Sweden, Norway and Lapland, the Faroe Islands, and Iceland,* — the latter giving a name, indeed, to a plant equally common in the other countries, Lichen islandicus, or Iceland Moss (*fig.* 414.),—may be considered under one head, so far as regards their vegetable productions; for it is difficult to draw an exact line of demarcation, and even of these the very nature of our work does not allow us to treat much at large: this is the less to be regretted, because the classical works of Linnæus and Wahlenberg are in the hands of every botanical student; and they contain a mine of valuable information, in the *Flora Lapponica* and *Suecica* of both these authors, and a fund of interesting and delightful narrative in the *Lachesis Lapponica* of the great Swedish naturalist. The various writings of Œder, Vahl, and Hornemann afford much useful matter relative to the plants of Denmark. The vegetation of a great portion of these countries may also be considered the same as that of the more northern and mountainous parts of Great Britain already detailed. Yet, as the northern regions of the continent of Europe present an alpine and arctic vegetation, in a much more perfect degree than islands, we should scarcely do justice to our subject, did we not offer some remarks on the distribution of the vegetable productions of a portion of that more interesting and extreme northern European territory; namely, Lapland. The natural boundaries of this country are represented by Wahlenberg as formed by some low mountains, about 500 feet in height, at a distance of from five to eight Swedish miles from the extremity of the Gulf of Bothnia. They present no naked summits, but are covered with forests of Spruce Fir* (*fig.* 415.): these may be considered as the last of the subalpine ranges in northern Europe. Commencing in the south-east, a little beyond the lake Kemistrask, in lat. 67°, it tends towards Upper Tornea, and near to Ofover Calix in the west; stretches south to Edifers, in Lulea; and reaches its southernmost point at the Tafvelsjon, in Umean Lapland, lat. 64°. This mountain chain exhibits Calla palustris (*fig.* 416.), (a plant of a poisonous family, closely allied to our Arum maculatum or Wake-robin, and to the Caladium esculentum of the tropics; and, as with them, a kind of bread called Missenbröd, or the bread of famine, is made by the Laplanders from the roots); Sweet gale*, common Speedwell*, Ox-eye*, Meadow Fescue-grass*, and Carex stellulata.* The Birch* there produces its leaves in the beginning of June.

414



ICELAND MOSS.

3179. *The inferior and woody district of Lapland* has its upper limit at Sondankyla in Kemean Lapland, between Kengis and Munoniska in Tornea, at Jockmock in Lulea, and at Falstrak, in Umean Lapland; and it yields, besides, the Spruce Fir, the Meadow Trefoil *, the Lysimachia thyrsiflora *, Lily of the Valley *, and White Water Lily *, which grow abundantly. Some plants which are peculiarly subalpine begin to appear, as Tofieldia palustris * and Serratula alpina.*

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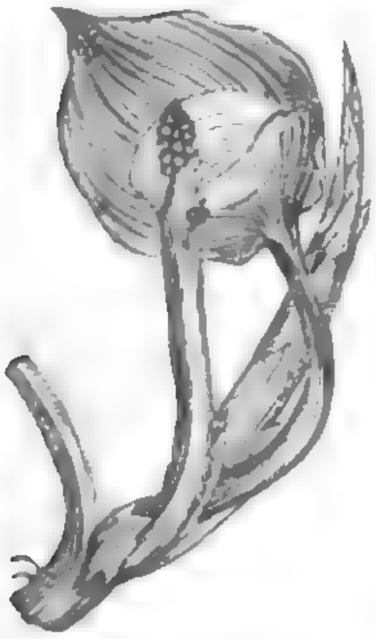
* The names marked with an asterisk are those of plants also found in Britain.

415

SPRUCE FIR.

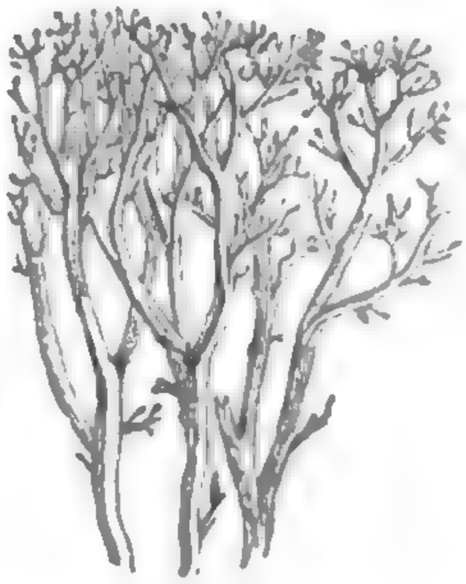
3180. *The upper woody district* is distinguished by the absence of the last-mentioned plants; but the forests of Spruce still abound. Where the Spruce ceases, in places of warm exposure, the upper limit of this region is indicated. Its boundary in Kemean, Tornean, and Pitean Lapland, is more distinctly marked, because the country is flatter, and destitute of deep valleys; but in such situations, in Lulea and Umea, the Spruce Fir approaches nearer to the Alps, and the sides of the mountains are covered with it. There its utmost northern limits are found to be at Kyro, near the great Lake of Enare, in lat. 69° north. Here, too, is the most northern boundary of many well known plants, such as Trifolium repens *, Festuca rubra *, Rumex aquaticus *, the Yellow Water Lily *, and several other aquatics. Many alpine plants commence, as Salix glauca *, extending south to the middle of this region, Salix hastata *, confined to the north, and Bartsia alpina *, with Lychnis alpina * on the banks of the streams. The culture of barley still succeeds; but scarcely beyond this line.

416



CALLA PALUSTRIS.

417

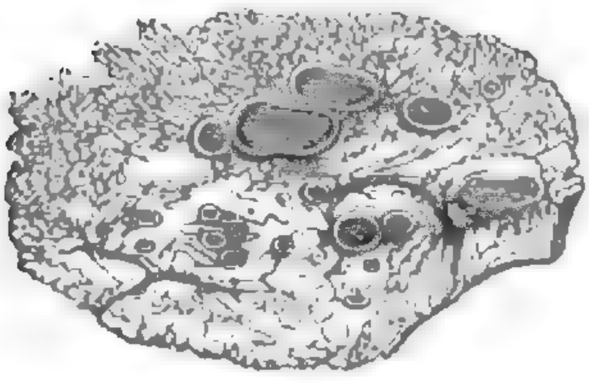


REIN-DEER MOSS.

3181. *The subalpine mountains* in this region are very dry and remarkably gravelly and stony; abounding in that plant which Linnæus has so beautifully described, in his *Flora Lapponica*, as the main support of the Rein-deer, and consequently of the Laplander, Lichen rangiferinus * (*fig.* 417.), or Rein-deer Moss. Ill could the Laplander subsist without the supplies afforded by that useful animal; it is his sole wealth. It yields him almost every necessary of life: it serves him instead of horse, cow, and sheep: the rein-deer supplies him with milk, butter, and cheese; draws him in sledges with great speed from place to place, over ice and snow; gives his flesh for food, his skin for clothing, his tendons for bowstrings, and, when slit, for thread, his horns for glue, and his bones for spoons. And the almost only winter food of this serviceable animal is the moss we have just mentioned, and which the deer are so fond of, that though it is commonly buried at that season under a great depth of snow, yet, by scratching with their feet, and digging with their antlers, they never fail to get at it. In short, without this lichen, both the rein-deer and the Laplander must perish. " Thus," adds Linnæus, " things which are often deemed the most insignificant and contemptible by ignorant men, are, by the good providence of God, made the means of the greatest blessings to his creatures." Linnæus assures us that this lichen grows so luxuriantly in Lapland, as to be found sometimes a foot in height.

3182. *But as the hills* scarcely rise to the limits of perpetual snow, about 200 or 300 feet higher than the woods are found, they are fertile in such plants as flourish in a dry and barren soil; viz., Menziesia cærulea *, Arbutus alpina *, Juncus trifidus *, Lycopodium alpinum *, Azalea procumbens *, and, though rarely, Diapensia lapponica. Here the Lichen tartareus (*fig.* 418.), or Cudbear, abounds, and is, both here and in Sweden and Norway, collected, and exported to the dye-manufacturers. Wahlenberg distinguishes by the term "Regio subsylvatica," or partially wooded region, that where the Scotch Fir grows, but not the Spruce. This is more contracted than the other regions, and more difficult to be defined. It is not unfrequently eight Swedish miles broad in northern Lapland; in Kemea extending to nearly 70° of lat. Before the Scotch Fir ceases, the Carex globularis disappears, and, in the more northern parts, Prunella vulgaris. Within the Fir region, the beautiful Pedicularis lapponica appears scattered through the woods; Viola bifolia, and Thalictrum alpinum * following the course of the streams; Salix lanata *, with its splendid golden catkins, at the margins of marshes and springs, and also Ranunculus lapponicus. The cultivation of barley scarcely succeeds, and the colonists are miserably poor. The Birch comes into leaf at the summer solstice. The lakes and rivers have an elevation of about 1000 feet above the level of the sea. The subalpine region still yields the Birch * (*Betula alba*), though other trees will not grow. Its upper boundary is marked by the dwarf stature of these, where they scarcely attain a height of six feet. The Aspen * (*Populus tremula*) and the Bird-cherry (*Prunus Padus*) cease before the Birch: the Sorbus Aucuparia *, or Mountain Ash, extends as far. The Birch always in Lapland reaches to a much greater elevation and more northern latitude than the Scotch and Spruce Firs. Its limits are more easily determined; yet, on a geographical map, they are with difficulty expressed, because the Birch ascends to the alpine regions, circumscribes all the mountains, and penetrates all the lesser valleys: thus it extends almost to lat. 71° in Western Finmark, and stops but little short of the celebrated North Cape. The dry portion of this region is again the habitation of the Lichen rangiferinus, and of Azalea procumbens *, Luzula spicata *, and Juncus trifidus.* On the borders of Russia, the Birch as well as the Scotch Fir extend even to the Northern Ocean.

418



CUDBEAR.

3183. *The lower alpine region*, or the Lower Alps, commence where the Birch ceases to exist, and where the snow, not of perennial duration, except in caves and hollows, melts before the middle of July. There the Diapensia lapponica, Silene acaulis *, and Andromeda hypnoides are found. The Salix myrsinites * and Dwarf Birch still grow erect. It is under the description of this latter plant, in the *Flora Lapponica*, that Linnæus has drawn so admirable a picture of the felicity of the natives of that country: — "Oh happy Laplander," he says, "who thus livest in cheerfulness and innocence, at the extremity of the habitable world! thou neither fearest dearness of provisions, nor cruel wars, which cannot reach thy shores; but which often lay waste and destroy the most flourishing provinces and cities of Europe. Here thou liest down to rest, beneath a covering of skins, free from every care, free from strife and disputes; unconscious of the very existence of envy; fearless of every thing but the thunders of the Almighty. Thou passest thy days in innocence, frequently till thou attainest the age of an hundred years; and that, too, with a happy old age, and in the enjoyment of the highest health. A thousand diseases, common to the natives of Europe, are unknown to thee. Thou livest in woods, like the birds; like them, thou neither sowest nor reapest, yet an all-bountiful Providence sustaineth thee. Thy dwelling is among the trembling foliage of the trees, and in grassy thickets; thy drink is water, pure as crystal, which neither causes intoxication, nor those jugular swellings which affect the natives of other Alps. Thy food is either fresh fish in spring, or curd produced from milk in summer, or moorfowl in autumn; or, in winter, the flesh of the newly slain rein-deer, without bread or salt, one dish being an ample feast to thee! When thou risest in the morning, and hunger assails thee, thus it is satisfied, without incurring the danger of those poisons which lurk in our highly-seasoned dainties. Neither scorbutic diseases, nor intermittent fevers, nor corpulence, nor gout, destroy thy constitution; but thou possessest, to thy last moments, vigour both of body and mind! Oh, sacred Innocence, is not thy throne erected here, among the wilds of the extreme North, and in the most desolate parts of the earth? And dost thou not appear to prefer a couch made of the slender branches of the birch, to the softest down, with coverings of silk?" — Nearly the same vegetation as is met with on the Lower Alps exists upon the maritime alps of Finmark, to the most northern promontory, with this difference only, that the steep and precipitous rocks harbour more moisture and snow, and the affinity is greater with the alpine range in the higher mountains, which retain the snow during the whole summer, the partial melting of which creates a moist and even a boggy soil. Here, therefore, are seen the little Dwarf Willow* (*fig.* 419.) (*Salix herbacea*), Ranunculus glacialis and nivalis, Pedicularis hirsuta and flammea, Stellaria biflora, and Erigeron uniflorum*; plants eminently alpine, and peculiar to those situations.

419

DWARF WILLOW.

3184. *Beyond these is the region of perpetual snow.* Towards the Norwegian Ocean, another form of the alps presents itself; lofty mountains without any plains, circumscribed with very narrow zones, which Wahlenberg defines as *the more elevated sides* of the alps, reaching nearly to the limits of perpetual snow, consequently always irrigated with snow water: they nourish a few, and those marshy, plants. The Ranunculi (Crowfoots) principally abound.

3185. *The lower, or less elevated, sides of the alps,* generally destitute of perpetual snow, yield the Dwarf Birch* in the moister spots; and, on the drier, Andromeda hypnoides, the Alpine Speedwell*, Juncus bifidus*, and the Procumbent Azalea.*

3186. *The bases of the alps* are where the Birch grows, but no Pines. Among the Birches, scarcely six feet high, the Purple alpine Saxifrage*, with Saxifraga nivalis and cernua, abound in the moist and precipitous places, and, in those that are more dry, Aspidium Lonchitis. The lower portion of this zone affords tall birches, such as are found in the more northern regions, only in the inmost recesses of the deep bays, and, beneath them, Aspidium Filix Mas*, Osmunda Struthiopteris, the Blue Alpine Sowthistle*, and the Red Currant.*

3187. *The maritime alps* include the islands and promontories; so exposed to the winds that they derive their alpine character more from their peculiar situation than from their elevation above the level of the sea: and so bare are they of trees and shrubs, that even the Juniper will not succeed there. They are almost equally destitute of the more alpine shrubs, such as Andromedas; but they are adorned with succulent alpine plants, such as Saxifraga oppositifolia*, Silene acaulis*, and Dryas octopetala. Near the shore occur some productions of the alps of the south of Europe, such as Erigeron alpinum*, Sedum villosum* and Gentiana involucrata, which in Lapland are found nowhere inland. The Norwegian alps nourish numerous annual plants; but the dryer ones of Sweden, remote from the sea, are remarkable for the little alpine shrubs, particularly Azalea lapponica, which scarcely occurs in Norway; Salices alone, such as S. myrsinites*, occupying their place.

3188. *The subalpine spots and valleys* are marked by the presence of the Pine; but the most extended Fir forests are only found at the heads of the deep inlets of the sea, in narrow ravines, sheltered by the loftiest mountains. These valleys enjoy a much milder climate than all the rest of Lapland: there are found the Convallaria verticillata*, Campanula latifolia* and Fragaria vesca*, in abundance; but no alpine plants will grow, except the Starry Saxifrage* (*Saxifraga stellaris*) along the margins of the rills.

3189. *A more interesting account of the vegetation of Lapland,* at different elevations, is published by Sir J. E. Smith, in the Appendix to the *Lachesis Lapponica* of Linnæus. It is translated from the Swedish of Dr. Wahlenberg; his "Observations made with a view to determine the height of the Lapland Alps." (1.) On approaching the Lapponese mountains (*Fjäll*), we first reach the line where the Spruce Fir ceases to grow. This tree had previously assumed an unusual appearance; that of a tall slender pole, covered from the ground with short, drooping, dark branches: a gloomy object in these desolate forests! The Arctic Raspberry* (*fig.* 420.) (*Rubus arcticus*) had already, before we arrived at this point, ceased to bring its fruit to maturity. With the Spruce we lose the Cinnamon Rose (*Rosa cinnamomea**), and the Twin-leaved Solomon's Seal (*Convallaria bifolia*), &c.; and the borders of the lakes are stripped of their ornaments of Reeds (*Arundo Phragmites**), Lysimachia thyrsiflora*, Galium boreale*, and Carex globularis. Here is the true station of the Arctic Coltsfoot (*Tussilago nivea*). The last beaver-houses are seen in the rivulets; and no pike nor perch is to be found in the lakes higher up. The boundary of the Spruce Fir is 3200 feet below the line of perpetual snow, and the mean temperature 37° of Fahrenheit.

420

THE ARCTIC RASPBERRY.

3190. (2.) Scotch Firs* (*Pinus sylvestris*) are still found, but not near so tall as in the lower country. Their stems here are low, and their branches widely extended. Here are seen the last of Ledum palustre *, Salix pentandra *, Veronica serpyllifolia *, &c. The bogs have already a very sterile appearance. Near the utmost boundary of the Scotch Fir grows Phaca alpina. Higher up, hardly any bears are to be met with; and the fruit of the Bilberry * does not ripen well. The Gwiniad and Grayling, two species of the Salmon tribe, soon after disappear from the lakes. The upper limit of this zone, at which the Scotch Firs cease, is 2800 feet below the line of perpetual snow, and the mean temperature about 36° Fahrenheit. A little short of this point, or about 3000 feet before we come to perpetual snow, Barley will not ripen; but small farms, the occupiers of which live by grazing and fishing, are met with as far as 400 feet higher; for instance, Naimaka in Enontekis, and so far also potatoes and turnips grow large enough to be worth cultivating.

3191. (3.) *Beyond this, the dwarf and stunted forests* consist only of Birch.* Its short, thick stem, and stiff, widely-spreading, knotty branches, seem prepared to resist the strong winds from the Alps: its lively light green hue is delightful to the eye, but evinces a weakness of vegetation. The birch forests soon become so low, that they may be entirely commanded from the smallest eminence. Their uppermost boundary, where the tallest of them do not equal the height of a man, is 2000 feet below the line of perpetual snow. This zone is therefore much wider than the preceding. Long before its termination, the Alder * (*Alnus incana*), the Bird-cherry * (*Prunus Padus*), and the Aspen (*Populus tremula* *), were no more to be seen. A little before the Birch ceases, we miss the Mountain Ash *, which for some time had not presented us with any fruit; the Arctic Bramble * (*Rubus arcticus*) was already likewise barren; the Ling * (*Erica vulgaris*), Aconitum Lycoctonum, &c. Where the birch forest becomes thinner, the reflection of the heat from the sides of the mountains is the strongest. Here, in many spots, we find the vegetation of Sonchus alpinus *, Struthiopteris, and Aconitum Lycoctonum remarkably luxuriant. The drier spots now become covered with the Iceland Moss * (*Lichen rangiferinus*): Tussilago frigida and Pedicularis sceptrum-carolinum extend to the utmost boundary of the Birch. Thus far only the Char (*Salmo alpinus*) is found in the lakes, and higher up all fishing ceases.

3192. (4.) *All mountains* above this limit are called Fjäll (alps). Near rivulets, and on the margin of bogs only, is found a little brushwood, consisting of Salix glauca *, whose grey hue affords but little ornament to the landscape. The lower country is covered with the dark-looking Dwarf Birch * (*Betula nana*), which still retains its upright position. A few Juniper bushes *, and some plants of Salix hastata *, are found scattered about. Every hill is covered with Arbutus alpina *, variegated with Andromeda cærulea *, and the Wintergreen * (*Trientalis europæa*). The more boggy ground is decorated with Andromeda polifolia * in its greatest beauty, and Pedicularis lapponica. On the sides of the mountains, where the reflected heat bears most power, grow Veronica alpina *, Viola biflora *, Pteris crispa *, and Angelica archangelica.* This zone extends within 1400 feet of the line of perpetual snow. The glutton (*Mustela Gulo*) goes no higher than this. The berries of the Cloudberry (*Rubus Chamæmorus*) still ripen here, but not at a greater elevation.

3193. (5.) *Now no more brushwood* is to be seen. The white Salix lanata * is not above two feet high, even about the rivulets, and Salix myrsinites * is of still humbler growth. The Dwarf Birch * occupies the dry spots, and creeps entirely upon the ground. The hills are clothed with the rather brown than green Azalea procumbens *, and A. lapponica, which give this zone its most peculiar feature. Verdant spots between the precipices, where the sun has the greatest power, produce Lychnis apetala *, Erigeron uniflorum *, Astragalus leontinus and montanus, with Ophrys alpina. In boggy places, Aira alpina *, Carex ustulata *, and Vaccinium uliginosum * are observable. The only berries, however, which ripen at this degree of elevation are those of the Crowberry * (*Empetrum nigrum*); but these are twice as large as what grow in the woodlands, and better flavoured. The upper boundary of this zone is 800 feet below the line of perpetual snow. The Laplanders scarcely ever fix their tents higher up, as the pasture for their rein-deer ceases a very little way above this point. The mean temperature is about 34° Fahrenheit.

3194. (6.) *Next come the snowy Alps*, where are patches of snow that never melt. The bare places between still produce a few dark shrubby plants, such as the Crowberry *, destitute, however of fruit; Andromeda tetragona and hypnoides, and Diapensia lapponica. Green precipices, exposed to the sun, are decorated with the vivid azure tints of Gentiana tenella and nivalis *, and Campanula uniflora, accompanied by the yellow Draba alpina. Colder and marshy situations, where there is no reflected heat, produce Pedicularis hirsuta, and Dryas octopetala.* This zone reaches to within 200 feet of the limits of perpetual and almost uninterrupted snow.

3195. (7.) *Beyond it*, the eternal snows begin to cover the ground, and we soon arrive at a point where only a few dark spots are here and there to be seen. This takes place on the alps of Quickjock at the elevation of 4100 feet above the sea; but nearer the highest ridge, and particularly on the Norway side of that ridge, at 3100 feet. Some few plants with succulent leaves are thinly scattered over the spongy brown surface of the earth, where the reflected heat is strongest, quite up to the line of uninterrupted snow: these are Saxifraga stellaris *, rivularis *, and oppositifolia *; Ranunculus nivalis and glacialis; Rumex digynus *, Juncus arcuatus *, and Silene acaulis. The mean temperature, at the boundary of perpetual snow, is 32¼° of Fahrenheit.

3196. (8.) *Above the line of perpetual snow,* the cold is occasionally so much tempered, that a few plants of Ranunculus glacialis, and other similar ones, may now and then be found in the clefts of some dark rock rising through the snow. This happens even to the height of 500 feet above that line. Farther up, the snow is very rarely moistened, though some umbilicated Lichens (*Gyrophora*), &c. still occur in the crevices of perpendicular rocks, even 2000 feet above the line of never-melting snow. These are the extremes of vegetation, where the mean temperature seems to be 30° Fahrenheit. The Snow Bunting (*Emberiza nivalis*) is the only living being that visits this elevated spot.

Subsect. 3. *Zoology.*

3197. *The native Zoology,* in conjunction with that of Norway, has been ably illustrated by the celebrated Danish naturalist Müller, and shows that the fauna of those kingdoms is much richer than their northern and ungenial climate would lead us to imagine. The total number of land quadrupeds, including the domestic species, is forty-one. Among these we find the lynx, the glutton, the beaver, the leming, and the flying squirrel; together with four of the largest deer inhabiting Europe; namely, the elk, the stag, the rein-deer, and the fallow-deer.

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THE ELK.

3198. *The Elk* (Cervus Alces) (*fig.* 421.) of Europe is the same with the Moose-deer of America: it is found in Europe between latitude 53° and 65°: in size it is higher than a horse; and, to support the enormous weight of its horns, sometimes nearly fifty pounds, its neck is short, thick, and very strong. Its movements are rather heavy: it does not gallop, but ambles along, the joints cracking so much at every step, that the sound is heard to some distance. During winter it chiefly resides in hilly woods; but in summer it frequents swamps and the borders of lakes; often going deep into the water, to escape the stings of gnats, &c., and to feed without stooping. With its enormous horns it turns down branches of trees, to feed upon the bark, with great dexterity; and these are also used as shovels, to get at pasture when covered with snow. The young are so simple and fearless, that they will suffer themselves to be taken by the hand. An unusually large elk, killed in Sweden, is said to have weighed 1200 lbs. These animals do not now appear to be employed in any domestic office.

3199. *The Wolverine, or Glutton,* is one of those animals whose history has long been shrouded in fiction and romance. It is only now that its true habits have been given to the world, by that enterprising traveller, Dr. Richardson. The Wolverine of America, generally considered the same with the European Glutton, feeds chiefly upon beasts that have been accidentally killed; but it will hunt smaller animals, as meadow-mice, marmots, &c. and occasionally attack disabled animals of a larger size. In its gait it resembles the bear; and, although not fleet, is very industrious. Mr. Graham observes, that it does more damage to the small fur trade than all the other rapacious animals conjointly; as it will follow the martin-hunter's path round a line of traps extending sixty miles, and render the whole unserviceable, merely to get at the baits. Yet it flies from the face of man, and may be killed with a stick. Its total length is not more than two feet and a half.

3200. *The Birds,* according to Müller, amount to 232 species: the greater part of these are common to the northern countries of Europe; but the Mocking Jay (*Corvus infaustus* Lin.) (*fig.* 422.), and the Nutcracker (*Nucifraga caryocatactes*) are unknown in Britain and more southern latitudes: the bill of the latter is shaped much like that of a woodpecker, and is said to be used for breaking the shells of nuts: whence its name. The species of fish, from the maritime nature of the region, are numerous.

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THE MOCKING JAY.

3201. *Domestic animals.* It appears that the breeds called the lesser and greater Danish Dogs are much more common in other countries than in that from which they have been named. The horses and cattle are of very large-sized breeds, generally called the Holstein. The greatest number of oxen seem to be bred in Jutland: they are fattened, during summer, in the rich marshes of Holstein, and driven, in the autumn, to Hamburg.

Sect. III. *Historical Geography.*

3202. *During the early period of the middle ages,* the swarms of pirates sent forth by Denmark spread desolation and terror to the remotest extremities of Europe. Canute king of Denmark even ascended the English throne in 1017; upon which, however, his posterity were unable to support themselves; but, during the whole of the Anglo-Saxon period, the kingdom had to maintain a hard and doubtful struggle against the Danish invaders. Denmark, at the same time, carried on frequent wars against the contiguous districts of Germany and Poland, and often held sway over large portions of them. But her most brilliant era was the reign of Margaret of Waldemar, surnamed the Semiramis of the North, who, by her courage, popularity, and address, succeeded in effecting the union of Calmar, which placed on her head, and on that of her nephew Eric, the crown of the three northern kingdoms of Denmark, Sweden, and Norway.

3203. *The decline of Denmark* began in the thirteenth century, under the violent and tyrannical reign of Christian I. The sanguinary course by which he sought to punish an insurrection of the Swedes roused all the dormant spirit of that brave people, who found a deliverer in Gustavus Vasa, and were finally freed from the Danish yoke. During the two following centuries, Sweden, led to victory by a succession of heroic monarchs, rose to the highest pitch of military glory; while Denmark, always defeated, was stripped of many of her most important territories, and sunk into the rank of a secondary state. Still she successfully cultivated maritime commerce and shipping, and obtained some valuable possessions in the East and West Indies.

3204. *In the great crisis produced by the conquests of Napoleon,* Denmark was thrown into an unfortunate predicament. Placed, as it were, at the point of collision between France and Russia, she could with difficulty escape being crushed between them. Circumstances of peculiar hardship threw her into the arms of France, to whose cause she adhered, and at the great contest which ended in the downfall of Napoleon, she became a victim. First, she was deprived of Norway, that it might be ceded to Sweden, and that Russia might retain Finland. Denmark received in return Swedish Pomerania as an inadequate compensation. Next, she was required to exchange Pomerania for Lauenburg, a territory of still inferior extent and value; but, as it borders on Sleswick and Holstein, it has rendered her dominion more compact, and extended her frontier to the Elbe, so that she is perhaps rather a gainer by the exchange.

Sect. IV. *Productive Industry.*

3205. *The agriculture of Denmark* is conducted under considerable disadvantages both of climate and soil. The climate, though not subject to severe frost or intense cold, is chill and damp; and the land consists in a great measure of sand and marsh. Every part of the kingdom, however, is capable of some cultivation, and occasional tracts of luxuriant fertility occur. Such are the islands of Zealand, Laaland, and Falster; and, in a still greater degree, the sea-coast of Sleswick and Holstein; for the interior is arid and sandy. The industry of the peasant in Denmark Proper suffers many severe checks; he has been but recently emancipated from personal bondage, and is still subjected to many feudal usages. Life-leases, under which the payment is made in produce or personal services, are common. The proprietors are generally embarrassed, and unable to expend much on the improvement of their lands. The farmers of Holstein and Sleswick carry on the process of cultivation with great skill and activity, and are considered almost on a level with those of England. The chill moisture of the climate is less favourable to the cultivation of wheat than of barley, rye, and oats; all of which afford a large surplus for exportation. The rearing of cattle is also an extensive branch of industry, though too little attention has been paid to the improvement of the breeds, unless on the west coast of Sleswick, on whose moist and rich meadows is produced what bears a high reputation under the name of "Hamburg beef." Over all Denmark, the produce of the dairy forms the basis of a large export trade. The value of all the land in Denmark, according to Mr. Smith, has been rated officially at 104,000,000 dollars.

3206. *The manufactures of Denmark* are extremely rude, and consist chiefly in working up the flax and wool of the country in a coarse form for domestic use. A great proportion also of the wool is exported. Government have employed great efforts to raise Denmark to the rank of a manufacturing country; and some fabrics in the different kinds of cloth, brandy, sugar-refining, &c., have, under its patronage, been set on foot in the large towns; but these are all languishing, and with difficulty support foreign competition.

3207. *The commerce of Denmark* is in a more active state than the other branches of industry; though it is still not such as to give her a prominent place among the powers of Europe. The basis consists in the exportation of its raw produce. The grain exported from Jutland and the islands, at an average of seven years to 1827, amounted to 29,000 quarters of wheat; 141,000 quarters of rye; 190,000 quarters of barley; 43,000 quarters of oats. The rye was chiefly exported to Norway, to be used as bread-corn, and the barley to be employed in distillation. The value of these articles amounted, in 1825, to 476,000*l.* That of butter and cheese exported was, in the same year, 276,000*l.* Holstein and Sleswick, called the duchies, exported at an average also of seven years, 78,000 quarters of wheat; 55,000 of rye; 75,000 of barley; 130,000 of oats. The value of butter, cheese, and salted meat, is still greater. Denmark, from its situation between the northern and middle states, has a considerable carrying trade of the bulky articles produced by the former; and has also a good deal of ship-building. Both the whale and herring fisheries are likewise carried on to some extent.

Sect. V. *Political Geography.*

3208. *The constitution of Denmark*, originally formed on the basis of the most complete feudal independence, to the extent of rendering the monarchy itself elective, underwent a complete change in 1660, when Frederick III. had the address to obtain an act by which the crown was declared hereditary, and himself invested with supreme and absolute power. The sway of the Danish princes has, however, been exceedingly mild and popular, and their despotic power exerted in a manner beneficial to the people, as it limited the oppressive rights exercised by the nobles. These, however, continue to be extremely obnoxious; and it is only within a very few years that the body of the people were emancipated from a state of personal slavery. The nobles are few in number, consisting only of one duke, nineteen counts, and twelve barons. The king himself presides at the supreme national tribunal.

3209. *The revenue* has been lately stated, by official documents, at 1,479,000*l*. There is a nominal debt of 15,000,000*l*.; but the interest paid upon it is small.

3210. *The military and naval establishments* are on a scale suited to a greater country than what remains of Denmark. The army is kept up to nearly 40,000 regular troops and 60,000 militia. The navy has not recovered from the severe shock which it received during the last war: at present it consists of six ships of the line, six frigates, and four corvettes, besides smaller vessels. The sailors being all registered, no difficulty is ever found in manning the navy.

Sect. VI. *Civil and Social State.*

3211. *The population of Denmark*, according to the census at the end of 1828, was found to amount to 1,992,729; of which 1,521,278 were in its ancient domain of the islands, Jutland and Sleswick, 374,745 in Holstein, 35,640 in Lauenburg, 49,826 in Iceland, 11,240 in Greenland and the Faroe Islands.

3212. *National character.* The Danes are generally quiet, tranquil, and industrious. The inhabitants of the towns, who are chiefly engaged in trade, have a great share of the patient, thrifty, and persevering habits of the Dutch. The peasantry, poor and oppressed, are beginning, however, to raise their heads; and the nobles, no longer addicted to those rude and daring pursuits which rendered them once so formidable, live much in the style of opulent proprietors in other European countries.

3213. *The Lutheran religion* was early and zealously adopted in Denmark, to the extent, indeed, of granting toleration to no other; but the liberal principles now diffused throughout Europe have made their way fully into that country. Science was at one era somewhat brilliantly patronised in Denmark. The observatory at Orienbaum was the theatre of many of the most important modern observations; and Tycho Brahé ranks as one of the fathers of modern astronomy. The fame of Denmark in this study has diminished; but her writers, though little known to the rest of Europe, are said to have displayed considerable activity in investigating the antiquities of the North. More recently, Œschenslager and other writers have introduced a school of poetry and dramatic literature, founded upon that of the modern German. The government has bestowed a very laudable attention on the general education of its people, and has even passed a law, requiring every child of a certain age to be sent to school. The schools, on the plan of mutual instruction, amounted, in 1829, to 2500, and more were in progress.

Sect. VII. *Local Geography.*

3214. *The local divisions of continental Denmark* present little variety, in consequence of the uniformity of its surface, and the small number of considerable cities. With the exception, indeed, of a few leading points, there is no country whose interior excites less interest, or is less the object of resort to strangers. Its divisions are, Zealand and the other islands; Jutland, Sleswick, Holstein. Lauenburg; with the remote territories of Iceland, Greenland, and the Faroe Islands.

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COPENHAGEN.

3215. *Zealand* is a flat, fertile, and extensive island, separated from Funen by the Great Belt, and from Sweden by the Sound. Including the capital, and chief seats of trade, it forms the most important part of the Danish dominions.

3216. *Copenhagen* (*fig.* 423.), (in Danish, Kiobenhafn, or the "merchant port,") the capital of Denmark, is situated on the east coast of Zealand, with the island of Amak opposite to it, and several little lakes in its vicinity. Its walls enclose a circuit of five miles, a great part of which, however, is covered with open spaces, and with the harbour and docks. The houses, with a few exceptions, are built of brick, plastered over, and painted in different colours. The number of houses is estimated at 3300, and the inhabitants at about 105,000, which implies that the houses are lofty, and contain many families in each. The city is divided into three parts: the old town, which contains the greater part of the population; the new town, in which are all the finest edifices; and the port, or Christian's Haven. In the midst of the principal square is the bronze statue of Frederick V., weighing 45,000 lbs., and which cost 400,000 rix-dollars. This square, with the adjoining one called the King's Mark Place, surrounded by the palace of Charlottenburg, the theatre, the principal hotel, and other stately buildings, forms the handsomest part of Copenhagen. The cathedral was destroyed during the bombardment by the English, and is left in ruins; but the Frue Kirke is an elegant Grecian edifice, 215 feet by 180, with a Doric portico, and for which Thorwaldsen is preparing statues of the apostles and evangelists. The palace of Rosenborg was built from a design of Inigo Jones; and, though now unoccupied, contains an extraordinary display of jewels, precious stones, and porcelain. The collections in science and art are equal to those of the greatest capitals. The king has a library of 250,000 volumes, with numerous manuscripts illustrative of the history and literature of the North, as well as those brought by Niebuhr from the East; an extensive museum of northern antiquities; a gallery of pictures, comprising some fine specimens of the greatest masters, and a numerous collection of engravings. The arsenal is said to equal that of Venice in beauty, and to surpass it in extent. The mint, constructed on the plan of Boulton and Watt, throws off 200 pieces in a minute.

3217. *The other towns in Zealand* and the islands are of comparatively small magnitude. Roeskilde, the ancient capital of Denmark, which contained once thirty convents and thirty churches, is now remarkable only for its Gothic cathedral, in whose vaults are deposited the remains of the kings of Denmark. Several of the monuments are fine. Elsinore, with its castle of Cronborg, is important from its situation on the Sound, which being commanded by the castle, the government is enabled to levy what are called the Sound dues. The passage to Helsinborg, in Sweden, may be made in half an hour. Elsinore, from its favourable situation and good roadstead, carries on a considerable commerce, and contains, among its inhabitants, many British, and also many Jews, and even Mahometans. It has a handsome cathedral, with some fine tombs. Population 7000. At Cronborg is shown the chamber in which the unfortunate Matilda was confined. This castle commands a noble view over the sea, the islands, and the opposite coast of Sweden. The terrace from which these are viewed recalls to the English reader the first scenes of Hamlet, the tradition of whose story is still prevalent here. Soroe, in the interior, surrounded by a fine country, has a noble academy; and contains the tombs of Eric, Canute, and other princes. Odensee, the capital of Funen, has a college, and is rather a thriving town, with manufactures of woollen and soap. Nyeborg, in Zealand, and Corsoer, in Funen, derive some importance from their situation on the passage of the Great Belt; and Middelfarth, in the latter island, from the passage of the Little Belt.

3218. *The towns of Jutland* are of small interest, and have been little observed, with the exception of those which lie on the high road from Hamburg to Copenhagen. Aalborg, near the northern extremity, is the seat of one of the four bishoprics; and, being situated on a narrow arm of the sea, with a good harbour, carries on some trade. Aarhus, on the eastern coast, is the seat of another bishopric; and, being in the midst of a fertile country, exports some grain. Colding derives some importance from its vicinity to the passage of the Little Belt. Wiborg and Ripen are also deserving of mention.

3219. *In Sleswick,* the city of that name is agreeable, though irregularly built. Its cathedral, with numerous monuments of ancient dukes, is viewed with interest. Flensburg, on a deep and winding *haaf,* or bay, with an excellent harbour, possesses a much greater commercial importance, while it carries on the communication with the Baltic. Tonningen, on the other side, near the mouth of the Eyder, communicates with the countries situated round the German Ocean; and, by the canal of Holstein, it has now a water communication with the Baltic.

3220. *Holstein,* the most southern province of Denmark, ranks as part of the German empire, to which it once belonged, and gives to the king of Denmark a vote in the diet. Reaching to the Elbe, and being more in the commercial circle, it has a considerably brisker trade than the northern or peninsular territory. Altona, a few miles below Hamburg, is a repetition of that city on a smaller scale; having 25,000 inhabitants, busily employed in the commerce of the Elbe, in shipbuilding, and in several manufactures. Gluckstadt, about twenty miles lower, though inferior in extent, is a handsome and regular town, with considerable naval establishments. Kiel, on the eastern or Baltic coast, has an excellent harbour, and derives importance from its situation at the extremity of the canal which connects the eastern and western seas. Lauenburg, a level tract, intersected with several small lakes, though it rounds the Danish borders, does not possess much importance, either in itself or its little capital.

3221. *Iceland*, an appendage of the Danish crown, unimportant in a political view, but very interesting from its physical and moral aspect, is situated in the Northern Ocean, on the border of the arctic circle, and at the farthest verge of the civilised world. It is a large island, 220 miles in length, and 210 in breadth; containing about 40,000 square miles. Iceland belongs, by its situation, to the polar world; and the mountain chains, from 3000 to 6000 feet high, with which it is every where intersected, give it a still more severe and stern character. Barley is the only grain that can be raised, and this only in patches; cabbages, and a few other imported vegetables, may be produced, but by no means in perfection. The dependence of the inhabitants is chiefly upon the abundance of fish which the surrounding seas afford; so that the interior, comprising about half of the island, is a desert of the most dreary character.

3222. *The mountain phenomena of Iceland* are very striking, and have excited the wonder of all Europe. According to Glieman, the jokuls, or hills covered with ice, rise to the following heights: Oerefe, 6240 feet; Snafell, 4572; Findfiall, 5368; Hecla, 5210; Eyafiall Oester, 5794. All these mountains are, at the same time, glaciers capped with ice which never melts; but these glaciers consist not, like those of Switzerland, of great masses sloping down from upper regions of the mountains to the valleys; they are the snows of winter melted and frozen where they fall. Beneath this mantle of ice and snow burns a perpetual fire, which in every part of the island bursts forth in the most strange and fearful phenomena. Hecla (*fig.* 424.), with its flaming volcano, is the most celebrated; but its eruptions, of which six have occurred in the course of a century, are at present suspended. The crater, when reached by Sir George Mackenzie, was found not to be more than 100 feet in depth, with a large mass of snow in the bottom, and the thermometer stood at 39°. In many places in the vicinity, however, the heat was much higher, and in some rose to 144°. "Fantastic groups of hills, craters and lava, leading the eye to distant snow-covered jokuls; the mist rising from a waterfall; lakes embosomed amid bare bleak mountains; an awful and profound silence; lowering clouds; marks all around of the furious action of the most destructive of the elements, gave to the region a character of desolation scarcely to be paralleled." There are six other volcanoes, which, in the course of a century, have emitted twenty eruptions; but no great quantity of lava has ever issued from any one orifice.

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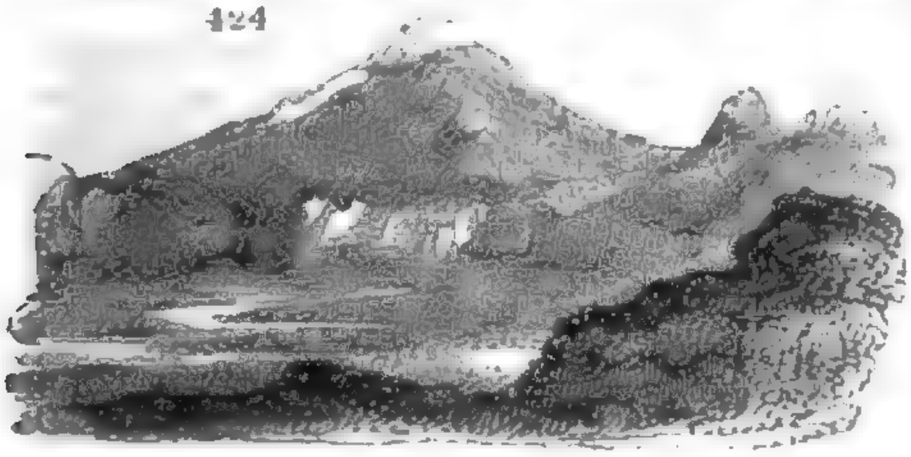

HECLA.

3223. *The Geysers* form a phenomenon strikingly characteristic of Iceland, and rank with the most extraordinary that are produced on any part of the globe. They consist of fountains, which throw up boiling water, spray, and vapour, to a great height into the air. The eruptions are not continuous, but announce their approach by a sound like that of subterraneous thunder; immediately after which, a column of water, accompanied with prodigious volumes of steam, bursts forth, and rushes up to the height of fifty, sixty, ninety, or even a hundred and fifty feet. The water soon ceases; but the spray and vapour continue to play in the air for several hours, and, when illuminated by the sun, produce the most brilliant rainbows. The largest stones, when thrown into the orifice, are instantly propelled to an amazing height, and, remaining often for some minutes within the influence of the steam, rise and fall in singular alternation. Stones thrown into the fountain have the remarkable effect of acting as a stimulus to the eruption, and causing it to burst from a state of tranquillity. The basin of the Great Geyser (*fig.* 425.) is of an oval form, with diameters of fifty-eight and sixty-four feet. Every spot around the Geysers is covered with variegated and beautiful petrifactions. Leaves, grass, rushes, are converted into white stone, preserving entire every fibre.

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GREAT GEYSER.

3224. *The Sulphur Mountains*, with their caldrons of boiling mud, present another phenomenon which the traveller beholds with the utmost astonishment. These consist chiefly of clay, covered with a crust, which is hot to the touch, and of sulphur, from almost every part of which, gas and steam are perpetually escaping. Sometimes a loud noise guides the traveller to a spot where caldrons of black boiling mud (*fig.* 426.), largely impregnated with this mineral substance, are throwing up, at short intervals, their eruptions. That on the Krabla, observed by Mr. Henderson, had a diameter equal to that of the Great Geyser, and rose to the height of thirty feet. The situation of the spectator here is not only awful, but even dangerous; standing, as Sir George Mackenzie observes, "on a support which feebly sustains him, over an abyss where fire and brimstone are in dreadful and incessant action; having before him tremendous proofs of what is going on beneath; enveloped in thick mists, and stunned with thundering noises."

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CALDRON OF BOILING MUD.

3225. *The civil and social state of Iceland* presents features no less interesting. It was discovered about the year 840, by Nadod, a Danish pirate. After its settlement, it became a little independent republic; and the arts and literature, driven before the tide of barbarism, which then overwhelmed the rest of Europe, took refuge in this remote and frozen clime. Iceland had its divines, its annalists, its poets, and was for some time the most enlightened country then perhaps existing in the world. Subjected first to Norway, in 1261, and afterwards to Denmark, it lost the spirit and energy of an independent republic. Yet the diffusion of knowledge, even among the lowest class, which took place during its prosperous period, still exists in a degree not paralleled in the most enlightened of other nations. Men, whose outward accommodations might denote them to be little removed from the savage state, and who, in their little barks, seek, amid the storms of the surrounding ocean, a scanty provision for their families, possess an acquaintance with the classical writings of antiquity, and a sense of their beauty. The traveller finds the guide whom he has hired able to hold a conversation with him in Latin, and on his arrival at his miserable place of rest for the night, is addressed with fluency and elegance in the same language. "The instruction of his children," says Dr. Holland, "forms one of the stated occupations of the Icelander; and while the little hut which he inhabits is almost buried in the snow, and while darkness and desolation are spread universally around, the light of an oil-lamp illumines the page from which he reads to his family the lessons of knowledge, religion, and virtue."

3226. *The Faroe Islands* compose a group in the Northern Ocean, between 61° 15′ and 62° 20′ N. lat., to the N.E. of Shetland, which they resemble. The principal are Stromsoe, Osteroe, Suderoe, and Norderoe, with the smaller islands of Nalsoe, Vagoe, and Sandoe. Their only wealth is produced by the rearing of sheep, fishing, and catching the numerous birds which cluster round the rocks. With the surplus of these articles they supply their deficiency of grain. Thorsharn, on Stromsoe, is the only place that can be called a town.

Chap. XV.

SWEDEN AND NORWAY.

3227. *Sweden and Norway*, now united into one kingdom, form an extensive region, stretching from the utmost verge of the temperate zone far into the frozen range of the arctic circle. Along the north and west stretch the wide shores of the Frozen Ocean, so far as yet known. The south-west point of the kingdom borders on the North Sea or German Ocean. The Baltic and the Gulf of Bothnia enclose it on the south and east; so that it forms an immense peninsula. The isthmus by which it is joined to Russia is above 200 miles broad, but so closely barred by mountains and frozen plains, that the kingdom is nearly inaccessible, except by sea.

Sect. I. *General Outline and Aspect.*

3228. *This kingdom is of vast extent.* Its length, from the extreme point of Scania to the North Cape, is twenty-eight degrees of latitude, or 1550 miles. Its breadth is by no means proportionate, and, taken from the extreme points of the provinces of Stockholm on the east, and Bergen on the west, will little exceed 350 miles. Of this large territory, scarcely a half can be considered as belonging to the civilised world. The Laplander, who derives his whole subsistence from the rein-deer, can hardly be included within the pale of civilised society. Even the southern districts have a rugged and repulsive aspect, when compared to almost any other European state. Forests of tall and gloomy pine stretch over the plains, or hang on the sides of the mountains; the ground for five months in the year is buried under snow; cultivation appears only in scattered patches, and was long quite insufficient to furnish bread to the inhabitants.

3229. *The mountains* consist chiefly of the dark and lofty chain of the Dofrines, which were for ages a barrier between the two separate and hostile states of Sweden and Norway but are now included within the united kingdom. It commences near Gottenburg, on a low scale, and becomes much more elevated in passing through Norway, where some of its pinnacles exceed 8000 feet. Chains of secondary elevation run through Lapland; but, in approaching the North Cape, they again rise as high as before, and face the polar seas with cliffs of prodigious magnitude.

3230. *The rivers are numerous*, Sweden being a country profusely watered; but, as they rise in the Dofrines, and traverse the divided breadth of the peninsula, they seldom attain any material length of course. The largest is the Dahl, which crosses Dalecarlia, and falls into the sea at Geffle, after a course of 260 miles. The most important as to navigation are those which form the outlet of the lakes, particularly the Gotha, reaching from the lake Wener to Gottenburg. The Glomme and the Dramme are pretty considerable rivers, running from north to south, and down which considerable quantities of timber are floated. Lapland pours a number of large streams into the head of the Gulf of Bothnia; but these are usually chained in ice, and at no time can be subservient to the purposes of agriculture or navigation.

3231. *Lakes* form the grand depositary of the surplus waters of Sweden. The Wener bears almost the character of an inland sea, and the completion of the canal of Tröllhätta, by enabling its coasts to communicate by the Gotha with Gottenburg, has given them almost the full advantages of a maritime site. The Wetter, though equal in length, covers not nearly so great an extent of ground. Mäler, or Malar, is a narrow, winding loch, or, more strictly, a bay, running sixty miles into the interior from Stockholm, to whose environs its variegated and rocky shores give a beautiful wildness. Small lakes, enclosed between hills, are of very frequent occurrence, both in Norway and Sweden.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3232. (1.) **Geology of Sweden.** — I. *Primitive rocks. Granite.* A certain part of Sweden is composed of this rock. It occurs in the mountains of Jämtland, in Herjeadalen, in Lulea Lappmark, in Pitea Lappmark. It occurs also in the plains, without any covering of other rocks, as in Upland, Westmanland, Sudermanland, and a part of East and West Gothland. It passes into gneiss and syenite.

3233. *Gneiss.* This rock is less abundant in Sweden than in Norway: it occurs in many places in Sudermanland, East Gothland, &c., with beds of copper and iron ore.

3234. *Mica slate* abounds not only in the principal, but also in the subordinate chains, and contains the greater number of the metalliferous beds met with in Sweden. It often alternates with vast beds of *primitive limestone, quartz*, &c. In the high mountain ridges, it is said, the strata of this rock, particularly in Jämtland, are generally disposed at an angle of 45°; while in the subordinate chains they are vertical. In many places it abounds in garnets, when it is known under the name *noorka*, or *murkstein*, the *garnet rock* of geologists.

3235. *Clay slate.* This rock occurs sparingly: *talc slate*, in several quarters, occurs in considerable abundance.

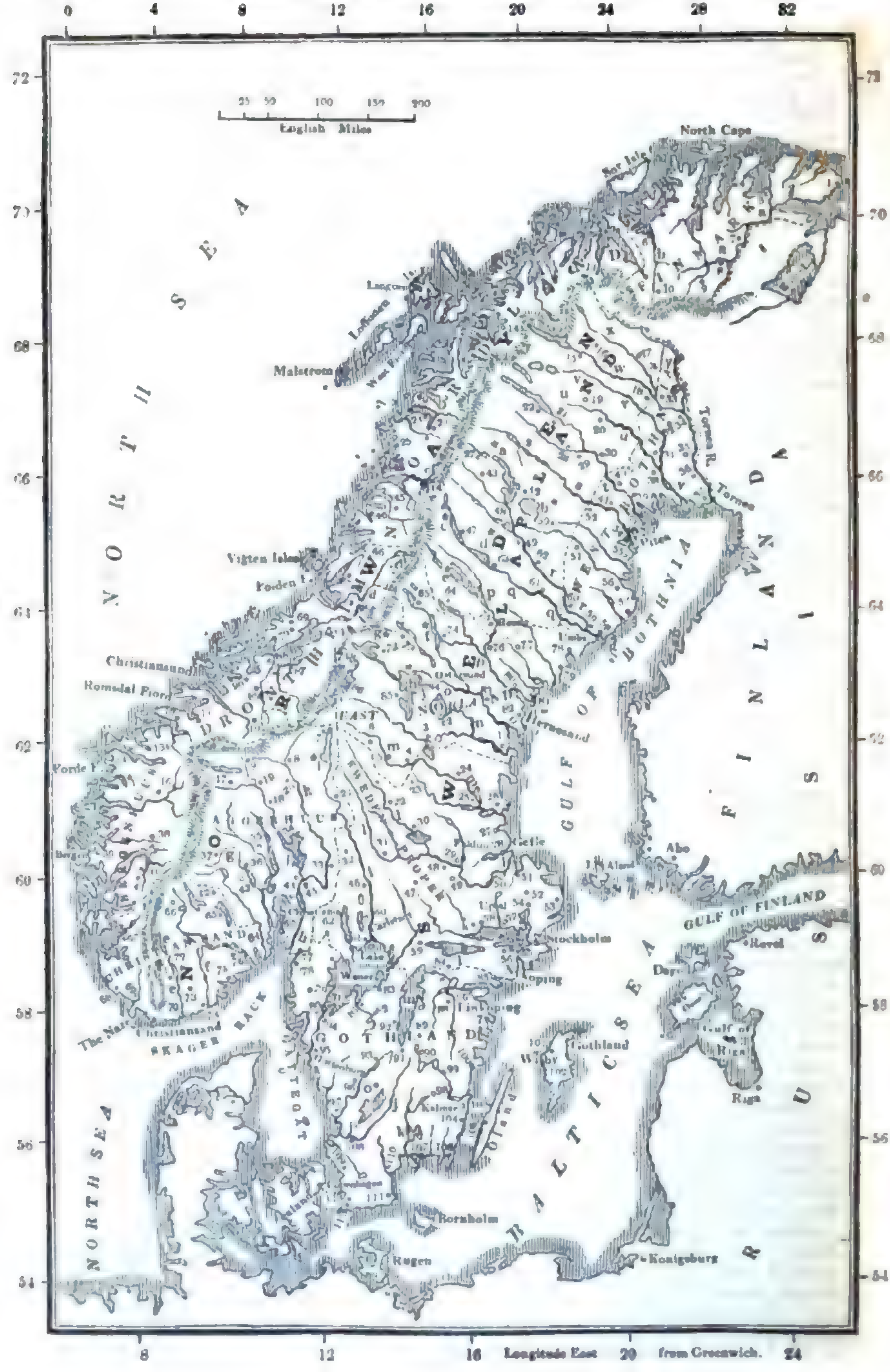
3236. *Porphyry* occurs only in Smaland, where the basis is a quartzy hornstone (*halleflinta*) with embedded crystals of felspar, and grains of quartz.

3237. *Primitive limestone* occurs generally in the secondary mountain chains, but seldom in the neighbourhood of the central chains. It is mixed up with hornblende, tremolite, quartz, serpentine, garnet, magnetic ironstone, and mica. It is often metalliferous, containing galena, copper, and iron pyrites.

3238. *Serpentine*, with the exception of masses in some metalliferous beds, seldom occurs pure: it is often mixed with limestone, when it occurs in primitive limestone.

3239. *Quartz rock.* It occurs either pure, and in whole mountains, as in Dahlsland, around the church of Froscog, and also the church of Bredesta, in Smaland, and many other places; or it alternates with mica slate, as in Dahlsland, and also in the metalliferous beds of Persberg and Klacka. The limestone of Danemora contains mica slate. It also occurs in veins in granite and mica slate, &c.

3240. *Porphyritic quartz.* This is granitic rock, with embedded grains and crystals of felspar: occurs in Smaland, Tornea Lappmark, &c.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4
8
12
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56
54
25 50 100 150 200
English Miles
North Cape
Sor Isle
Lofoden Isles
Malstrom
Vigten Isles
Foeden I.
Christiansund
Romsdal Fiord
Forde F.
Bergen
The Naze
Christianssand
SKAGER RACK
CATTEGAT
NORTH SEA
NORTH SEA
LAPLAND
NORWAY
SWEDEN
GOTHLAND
Tornea R.
Tornea
Pitea
Umea
Hernosand
Ostersund
Gefle
Upsal
Stockholm
Nykoping
Linkoping
Wener
Calmar
Oland
Gothland
Wisby
Bornholm
Rugen
Konigsburg
GULF OF BOTHNIA
Aland
Abo
FINLAND
GULF OF FINLAND
Revel
Dago
Gulf of Riga
Riga
BALTIC SEA
RUSSIA
8
12
16
Longitude East
20
from Greenwich.
24

3241. *Primitive trap.* Of this interesting group of rocks, the following kinds are met with; viz., *hornblende rock, hornblende with felspar,* and *hornblende with mica.*

3242. II. *Transition rocks. — Conglomerate and sandstone.* These rocks, which, in some places, are covered with transition limestone, occur in Jämtland, Tornea Lappmark, Angermanland, Dalecarlia, Schönen, islands in the Lake Wetter, East and West Gothland, Nerika, Dalarnia.

3243. *Transition porphyry.* In the parish of Elfdal, in Dalarnia. The basis is of the nature of hornstone. It rests upon transition sandstone, and is covered by syenite, porphyry, and transition greenstone.

3244. *Greywacke slate.* It lies upon sandstone, and is covered by transition limestone. It sometimes contains coal, and then passes into a kind of shale. It also contains fossil remains of marine animals.

3245. *Transition limestone.* It occurs in Gothland, Œland, Schönen, East and West Gothland, Nerika, Dalarnia, and Jämtland. In the regular succession, it lies immediately upon alum slate, but in Gothland directly upon sandstone. It is seldom covered by other rocks, excepting in West Gothland, where it is covered by clay slate and greenstone. It contains many different petrifactions, as orthoceratites, ammonites, anomites, echinites, corallites, and entrochites. Its colour is commonly grey, or bluish grey, and reddish brown, often varied with veins of a green colour.

3246. *Transition trap.* It is the youngest rock of the transition class in Sweden. In Elfdal it rests upon porphyry; upon transition clay slate and alum slate in Kennekulle, Billengen, the Hunne and Halleberge, and others, in West Gothland.

3247. III. *Secondary rocks. — Secondary sandstone.* The mountain chain around Helsingborg, in Schönen, is composed of secondary sandstone. It contains beds of slate clay, bituminous shale, and black bituminous coal. It is conjectured to rest upon the transition sandstone and conglomerate of Schönen. This sandstone, which belongs to the black bituminous coal formation, is covered with other secondary deposits, as limestone, the age of which is not well known. The only one of these newer secondary deposits, the geognostical history of which has been made out, is —

3248. *Chalk.* This interesting formation occurs at Limhamn, near to Malmo. It encloses balls of common flint, and, at its lower part, passes into a more solid chalk and secondary limestone.

3249. IV. *Tertiary rocks.* The tertiary deposits seem to occur in some points of the land not far distant from the sea-coast; but they have not been carefully explored.

3250. V. *Alluvial rocks.* Many tracts more or less deeply covered with gravel, sand, and clay, occur in Sweden.

3251. *Mines.* The mines of Sweden have been long celebrated all over the world, and have been frequently described by travellers.

3252. *Gold and silver mines.* The Adelfors mine, which formerly yielded thirty or forty marks of gold annually, now furnishes only three or four; those of Fahlun, where copper

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References to the Map of Sweden and Norway.

NORTH PART.
1. Kiberg
2. Nisseby
3. Tana
4. Lebabtje
5. Hammerfest
6. Altengaard
7. Jokaby
8. Aluspahta
9. Peiviashanta
10. Kautekeino
11. Kollojaurre
12. Finland
13. Ofoden
14. Ankenes
15. Kurravaara
16. Ragisvari
17. Soppero
18. Stranvo
19. Gellivare
20. Ripas
21. Quickjock
22. Reotivare
23. Saltdalen
24. Liones
25. Slipfes
26. Selmes
27. Silbojock
28. Rindijaur
29. Waimat
30. Lulea
31. Orne
32. Sopijaafri
33. Palla
34. Bajala Kengis
35. Pello
36. Upper Tornea
37. Tornea
38. Kalix
39. Ranea
40. Harads
41. Tvara
42. Arjepleg
43. Hytta
44. Henne
45. Dolstad
46. Hogholm
47. Tarna
48. Sorsele
49. Lomsele
50. Arvida
51. Nordo
52. Gumdtrasken
53. Lulea
54. Pitea
55. Albyn
56. Burtrask
57. Lofanger
58. Umea
59. Nyby
60. Jekrosele
61. Lycksele
62. Kaska
63. Busele
64. Ornsjo
65. Gaddedett
66. Foldereid
67. Strom
68. Oldernees
69. Homstad
70. Holmset
71. Undersaker
72. Kallsjon
73. Folinge
74. Strom
75. Asele
76. Junsele
77. Amund
78. Nordmaling
79. Parviken
80. Resele
81. Nordingra
82. Hernosand
83. Fors
84. Ostersund
85. Marieby
86. Herndal
87. Drontheim
88. Leinsvig
89. Garberg
90. Hevne.

SOUTH PART.
1. Sundswall
2. Bracke
3. Lans
4. Sveg
5. Lindsalls
6. Hede
7. Sorrag
8. Tyldal
9. Lessoe
10. Opdal
11. Romsdal
12. Orskoug
13. Sondelv
14. Stavum
15. Forde
16. Sognedal
17. Lom
18. Ringebo
19. Ovam
20. Grotte
21. Engedal
22. Asbyn
23. Hegen
24. Linsdel
25. Arbra
26. Soderhamn
27. Hamrange
28. Gefle
29. Fahlun
30. Mora
31. Malung
32. Danby
33. Grund
34. Moe
35. Flathen
36. Flan
37. Hoel
38. Kleiven
39. Bergen
40. Aarevig
41. Odden
42. Tussungdal
43. Nore
44. Christiania
45. Fryksande
46. Narens
47. Norrbarke
48. Tuna
49. Hedmora
50. Fernab
51. Lofsta
52. Lena
53. Waddo
54. Upsal
55. Stockholm
56. Mariafrel
57. Enköping
58. Westeras
59. Orebro
60. Phillpstad
61. Carlstad
62. Holmedal
63. Mose
64. Tonsberg
65. Ovamen
66. Ranland
67. Selsoe
68. Egersund
69. Bakke
70. Christiansund
71. Langnes
72. Valle
73. Mokland
74. Arendal
75. Sande
76. Holden
77. Friderikstad
78. Friderikshall
79. Uddevalla
80. Wenerborg
81. Lidköping
82. Skara
83. Mariestad
84. Ragna
85. Nyköping
86. Norköping
87. Westerwick
88. Linköping
89. Saby
90. Eksjo
91. Jonköping
92. Hjo
93. Oreryd
94. Garchem
95. Gottenburg
96. Ketajoy
97. Halmstad
98. Nottebark
99. Morlunde
100. Misterhult
101. Wisby
102. Nass
103. Rumpekulla
104. Calmar
105. Borgholm
106. Carlscrona
107. Carlshamn
108 Lalholm
109. Landscrona
110. Christianstad
111. Borum
112. Falsterbo
113. Malmo.

Rivers.
a Tana
b Alten
c Rannens
d Namsen
e Torris
f Nidelven
g Reina
h Glommen
i Klar
j Laga
k Morrins
l Dahl
m Ljusne
n Njurunda
o Indal
p Angermana
q Umea
r Windel
s Pitea
t Lulea
u Lina
v Kalix
w Tornea
x Lainio
y Muonio.

Lakes
a* Horn
b* Stora
c* Ave
d* Umea
e* Walgamas
f* Apunus
g* Kalls
h* Stora
i* Foemund
j* Miosen
k* Mäler
l* Hjelmar
m* Wetter
n* Wener
o* Bolmen.

predominates, return annually four marks of gold and fifty marks of silver. The silver mine of Sahla, which, during the reign of Queen Christina, yielded annually 20,000 marks of silver, does not at present afford annually more than 2000 or 3000 marks.

3253. *Copper mines.* The most considerable copper mines are those of Fahlun, which is also known under the name of *Kopparberg*. The mines of Atwidaberg, in East Gothland, furnish about a sixth part of all the copper which the Swedes obtain annually from mines; those of Fahlun yield more than the half of the copper raised in Sweden. The ore at Fahlun is copper pyrites, disposed in an immense irregular-shaped mass, in mica slate: 10,200 quintals of copper are yielded by it annually.

3254. *Iron mines.* The greatest iron mines are those in the province of Upland: of these the most important are those of Skebo, of Œsterby, not far from Danemora, of Gimo, of Ronaes. Iron is mined as far north as Gellvara, which is 200 leagues to the north of Stockholm. The island of Uto, on the east coast of Upland, also affords a considerable quantity of iron. The whole mines afford annually 1,800,000 quintals of iron.

3255. *Cobalt mines.* The principal mines of this metal are those of Tunaberg, near to Nyköping, and at Awed, in East Gothland. These mines afford excellent cobalt, but the quantity is not great.

3256. *Coal mines.* Coal mines have been worked for some time in Scania, two leagues from Helsinborg, and are affording a considerable return.

3257. *Sulphur and vitriol.* The pyritical minerals of Dylta afford annually 1050 quintals of sulphur, and those of Fahlun about 100 quintals of the same substance. The vitriolic waters of Fahlun afford annually about 600 quintals of green vitriol, or sulphate of iron, and a small quantity of blue vitriol, or sulphate of copper.

3258. *Alum.* The annual produce of alum is about 42,600 quintals.

3259. *Quarries.* Sweden possesses, besides its regular mines, also valuable quarries of granite, porphyry, and marble. The porphyry quarries of Elfdal are the largest and most celebrated in Europe. Nearly all the fine modern works in porphyry are in the porphyry of Elfdal.

3260. (2.) Geology of Norway and Lapland. — I. *Primitive rocks.* These wild but highly interesting countries are principally composed of primitive and transition rocks; secondary rocks occur but rarely, and alluvial deposits are not so abundant as in many other less extensive regions. *Granite,* contrary to the general belief of geologists, is but a rare rock in Norway and Lapland; it even occurs but seldom in Sweden, and may be considered one of the least abundant rocks in Scandinavia. The granite frequently appears in veins traversing the primitive stratified rocks, or running parallel with beds or strata; and sometimes it can be seen spread over the surface of mica slate, as at Forvig, or irregularly associated with clay slate and diallage rock, as in the island of Mageroe. *Gneiss* seems to be by far the most frequent and abundant rock in Scandinavia, all the other primitive rocks appearing to be in some degree subordinate to it. *Mica slate* rests upon and alternates with the gneiss, but is far from being so generally distributed as that rock. *Clay slate* along with the mica slate is not of frequent occurrence. *Quartz rock, various hornblende rocks,* and *limestone,* occur in beds subordinate to the gneiss and mica slate. *Gabbro,* or *diallage rock,* one of the most beautiful of the older rocks, occurs in great quantity, connected with clay slate, in the island of Mageroe, and other parts of Norway.

3261. II. *Transition rocks.* This class contains, besides *greywacke, alum slate,* and *limestone* (which contains much tremolite), and other rocks well known to mineralogists as members of this class, the following:—1. *Granite,* which sometimes contains hornblende. 2. *Syenite,* which contains a beautiful *Labradoric* variety of *common felspar,* and numerous crystals of the gem named zircon. 3. Porphyry, and, associated with it, various trap rocks allied to basalt and amygdaloid.

3262. III. *Secondary rocks.* The great primitive land of Scandinavia continues onward to the extreme northern point of Norway; but in this high latitude some new formations make their appearance among the older. The sandstone quartz of Alten has been known since the publication of the travels of Von Buch. On the East, towards the Russian dominions, there is a considerable tract which differs more from the primitive formations than the sandstone quartz of Alten does. *Sandstone* and conglomerate extend across the subjacent gneiss in a horizontal position. These rocks probably belong to the *old red sandstone.*

3263. IV. *Alluvial rocks.* Old alluvium occurs on the coast, and in the interior in many of the valleys, and the new every where in greater or less quantity.

3264. *Mines. Silver.* The only mines of this metal in Norway are those of Köngsberg, situated in mica slate, which formerly afforded rich returns, but of late years have yielded no profit. The *gold mine* of Edswold, in the district of Rommarge, and the mines of *lead* and *silver* in that of Jarlsberg, have been but feebly worked. The *copper mines* of Norway are principally situated in the northern division of the kingdom. The most considerable are those in the neighbourhood of Rœraas, which were discovered in the year 1644. They have afforded considerable quantities of copper: in 1805, the annual return was 7860 quintals of copper. The other mines of copper are from fifteen to twenty leagues of Drontheim, at Quikne, Lækken, Selboe, and in the district of Christiania, at Frederiksgave or Foledal. The principal *iron mines* occur in southern Norway; and of these the most distinguished are those of Arendal and Krageroe. The mine of Laurwig, near to the town of that name, affords annually 26,000 quintals of bar iron and 6000 quintals of cast iron. The establishment of the same kind at Moss affords annually 10,000 quintals of iron in bars and cast. The same annual quantity is afforded by the mines of Baerum, Bolvig, Ulfoss, Eidfoss, Egeland, Naes, Dikkemarken Fossum, and Oudalen. Lastly, the mines of Hassel, Froeland, Lessoe, and Mostmarken, furnish from 3000 to 5000 quintals of iron annually. The annual produce of the iron mines of Norway is estimated by a well-known statistical writer at about 150,000 quintals. The mines of *cobalt*, which are worked at Modum and Fossum, are extensive, but not deep. In the year 1792 they yielded 2817 quintals of ore. There is a mine of *plumbago* and *black lead* at Engledal. The mines of *alum*, which are worked in the mountain of Egeberg, near to Christiania, afford not only a sufficiency for the consumption of the Danish states, but also a considerable quantity for exportation. Norway possesses quarries of *granite*, *marble*, *millstone*, *whetstone*, *slate* and *clay* Granite is exported to Holland; the marble and other minerals supply the Danish states.

Subsect. 2. *Botany.*

3265. *The Botany* of these countries has been noticed under that of Denmark.

Subsect. 3. *Zoology.*

3266. *The Zoology of Sweden*, the native country of the celebrated Linnæus, is so well known to naturalists, by the writings of that great man, that to them the subject is familiar. Nor does it present any thing very different in its general character from that of Denmark. The bleak and inhospitable regions of Norway and Lapland, to which nature has denied the rich and verdant pasturage of Britain, and the consequent abundance of grazing animals, are, however, the chief metropolis of the Rein-deer, whose diversified qualities are beautifully adapted for supplying such deficiencies.

3267. *The Rein-deer* (Rangifer Tarandus *H. Smith*) (*fig.* 428.) forms the sole riches of the Laplander, and its care is almost his only occupation. According to the season, he migrates to the sea shore, the plains, or the mountains. The rich often possess 2000 head; and the poorer seldom less than 100. The adult male, in a wild state, is even larger than a stag; but the domesticated races are somewhat smaller: the sight and scent of these creatures are astonishing, and guide them with wonderful precision through the most dangerous passes and in the darkest stormy nights of an arctic winter. To this sagacity the Laplander trusts his life with confidence; and accidents rarely happen: they draw his sledge with such amazing rapidity, that in twenty-four hours a pair of Rein-deer have been said to perform a journey of 100 miles. In a wild state they are gregarious; and, when domesticated, evince an excessive attachment to each other. During summer they are much tormented by a species of gad-fly; but the old account of the glutton falling upon them from a tree, and then devouring them, is now considered fabulous. During life this useful animal supplies its master with labour and milk; and, when dead, every part becomes serviceable, the skin for clothing, and for boots; the horns to make utensils; the sinews for thread, and the flesh for food: the intestines are also used; and the tongue is a well-known article of commerce. Several attempts have been made to naturalise the Rein-deer in Britain, but as its principal food is two species of lichen not indigenous with us, there appears no probability of such trials ever succeeding.

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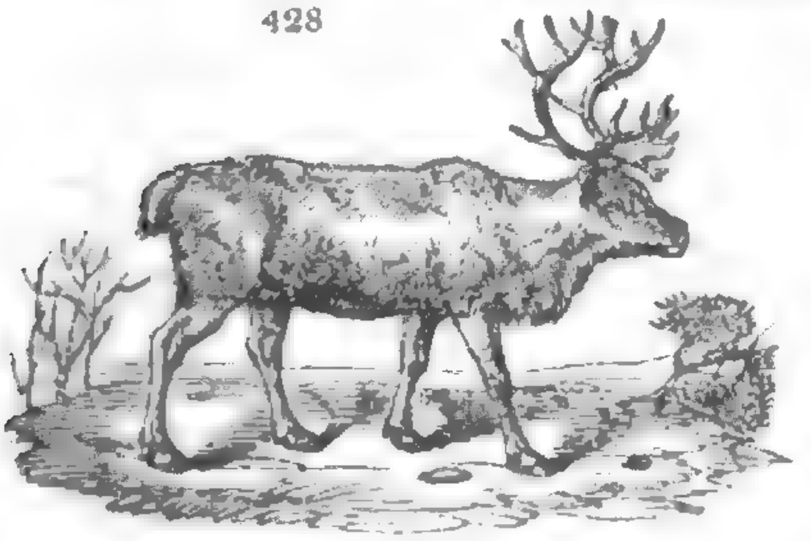
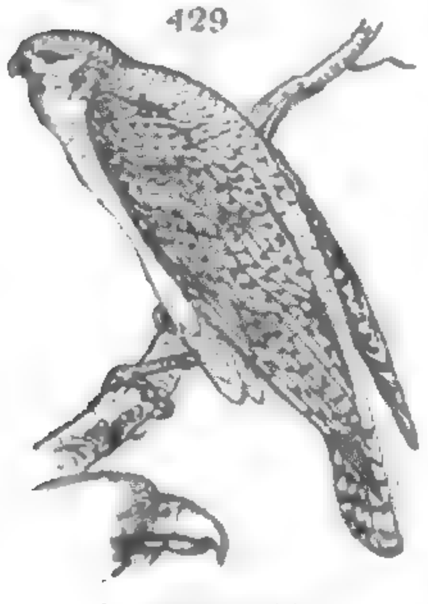


THE REIN-DEER.

3268. *The Birds* are not numerous, and, with few exceptions, differ not from those of Denmark and the other northern kingdoms. The Iceland Falcon (*Falco islandicus*) (*fig.*429.) rarely wanders to more temperate climes; and a gigantic Owl (*Strix lapponica* Lin.) is a peculiar inhabitant of the dreary solitudes of Lapland: to these we may add two other species, the large Ural Owl; and the Great Snowy Owl. These formidable birds prey upon numerous ptarmigans and grouse, great numbers of which inhabit the confines of the arctic circle. The Curruca suecica *Sw.* or Blue-throated Reed Warbler, one of the most elegant birds of Europe, is not peculiar, as its name would imply, to Sweden, being common in France and Switzerland.

429



ICELAND FALCON.

3269. *The insects of Sweden*, during its short summer, are very numerous; and many, enumerated by Acerbi, very beautiful; but, in autumn, nearly the whole country is terribly infested by Musquitoes, these tormenting little animals being beyond calculation more numerous in high northern latitudes than in the woods of tropical America.

Sect. III. *Historical Geography.*

3270. *The early history of Scandinavia* is deeply involved in fable and uncertainty. Ptolemy and Pliny, the best informed of ancient geographers, seem to distinguish it from "Great Germany," off the coast of which they represent Basilia, or Baltia, as a large island, though not nearly approaching to the real dimensions. The Goths were found in early possession of Sweden, and its southern provinces have been denominated Gothland; but the question, whether they were the native possessors, or entered it as conquerors, is one which can scarcely be now decided. Scandinavia has been called the "storehouse of nations;" and "the blue-eyed myriads from the Baltic coast" are supposed to have been among the most numerous of those who spread war and desolation throughout Europe. Dr. Clarke ridicules this idea, as inapplicable to a country of unbroken forests, and a slowly advancing population, making the first essays of agriculture; yet, though the population could never be great, the simple and pastoral habits of the people might dispose emigrants to seek subsistence with the sword in happier climates.

3271. *Scandinavia, first, by a series of formidable expeditions, made a figure in history* at the end of the ninth century. Harold Harfager, or the Fair-haired, the first of the great sea-kings of the North, having united the formerly independent districts of Norway under his sway, undertook triumphant expeditions against Shetland, Orkney, and the Hebrides. For several centuries the Danes and Norwegians held full possession of those islands; gave once a king to England, and formed a permanent establishment in Normandy. The defeat of Haco in Scotland, and of Harold III. in England, during the eleventh century, put an end to this maritime dominion: and the northern nations, notwithstanding their immense supply of naval stores, have never since attained to more than a secondary rank among the maritime powers.

3272. *The union of the kingdoms of Scandinavia,* in 1388, under Margaret, called the Semiramis of the North, forms a memorable era. Immediately, however, after the death of that able princess, the Swedes began to struggle for independence. But their repeated attempts to establish a separate kingdom were always defeated, till the cruel and tyrannical reign of Christian II. drove matters to extremity, and brought on a new revolution.

3273. *Gustavus Vasa,* in 1520, hoisted again the national standard in the province of Dalecarlia, and, in three years subsequently, entered Stockholm in triumph. After a long struggle, the Danes were compelled to recognise the independence of Sweden.

3274. *The reign of Gustavus Adolphus* formed a glorious era for Sweden. The protestant religion having been established under Gustavus Vasa, Sweden began to be looked to as its support when assailed by a formidable confederacy. In 1630, Gustavus took the field at the head of only ten thousand Swedes; but around this gallant band rallied all the protestant powers of Germany. The splendid victory of Breitenfeld humbled the house of Austria, and re-established the civil and religious liberties of the empire. Even after his fall, in the glorious field of Lutzen, his generals continued to wage that desperate war of thirty years, which was necessary to compel the catholic league finally to renounce its pretensions. Sweden, at the peace, obtained Pomerania, and other important possessions in Germany; and continued, till the end of the seventeenth century, to exercise a powerful influence on the affairs of Europe.

3275. *The victories and reverses of Charles XII.* threw a wild and romantic lustre around Sweden, which terminated, however, in the loss of her station and greatness. Being defeated at Pultowa, by the Czar Peter, and driven to seek shelter from the Turks at Bender, he was obliged to purchase peace by the sacrifice of Livonia, and others of his finest provinces. The influence of Sweden was thenceforth confined within its own barren limits, and it ranked with difficulty as a power of the second order. The only remarkable change in the course of the century was produced by the revolutions of 1772 and 1789, when Gustavus III. succeeded in converting the government into an absolute monarchy, though, in other respects, his reign was advantageous to Sweden.

3276. *The election of Bernadotte,* one of Bonaparte's commanders, to fill the throne, left vacant through the rash conduct of the legitimate monarch, made a great change in the relations of Sweden. To conciliate his new subjects, he restored in full plenitude the representative constitution, which had been reduced to a mere shadow. Having joined the confederacy against his former master, he received Norway in compensation for the loss of Finland, and had thus a more compact and defensible territory. The Norwegians exclaimed, not without some reason, against this compulsory transference; yet Denmark had deprived them of their free constitution, which they now regained, and had in so many respects depressed the country, with the view of concentrating every thing at Copenhagen, that the connection now terminated has been considered the bane of Norway.

Sect. IV. *Political Geography.*

3277. *The constitution of Sweden* is one of the few in Europe which has always preserved some portion of that representative system which had been formed in remote ages.

Towards the close, indeed, of the last century, it was reduced, by Gustavus III., to little more than a form. Bernadotte, however, an elected monarch, without any national claim, was obliged to court the favour of the nation, and, with that view, to re-establish the rights of its ancient diet. This is now rather an antique and cumbrous form of legislature, consisting of four orders; the nobles, the clergy, the peasants, and the burghers; who sit and vote in separate houses.

3278. *Of these houses*, that of the nobles consists of about 1200 members; the head of each family being, by inheritance, its legal representative. They are divided into three classes: — *herra*, counts, barons, &c.; *reddar*, knights; and *sivena*, or gentlemen who, though without any title, have received letters patent of nobility. The house of clergy consists of the archbishop and all the bishops; while the rest of the ecclesiastical body is represented by deputies. The burghers are chosen by the towns, every freeman who pays taxes having a vote: they form an independent body, partly, perhaps, because the honour of a seat is not eagerly contested. The peasants do not exactly correspond to our idea of that term: they consist of a body of little proprietors, or *lairds*, who cultivate their own ground, and who are numerous in Sweden. Their allowance of a dollar a day is provided by a subscription among their constituents; and, in some cases, two or three districts must combine to furnish out one deputy. The nobles have bestirred themselves much to keep down the attempts made by this class to rise in society. They have procured regulations, according to which no person could sit in the house who allowed himself to be called *Herr* (or Mr.), or who wore a coat of fine cloth. Notwithstanding all their efforts, however, this house, and that of the burghers, are daily increasing in strength.

3279. *In the division of powers*, the royal prerogative is ample. The king appoints to all offices civil and military, and he is obliged to convoke the diet only once in five years, and to continue its sittings three months; but he may make the meetings more frequent, and longer. He has also a negative upon the laws proposed by the diet. In regard to the diet itself, the division rests with a majority of the houses; but if they be two against two, the balance is struck by the committee of state, a body composed of a certain number of members from each. No tax can be levied, or loan obtained, without the consent of the diet.

3280. *The storthing of Norway*, restored by Bernadotte, is possessed of much higher privileges than the Swedish diet. It assembles more frequently, and at its own time, without any control from the king; and it allows to him only a suspensive *veto*, obliging him to accept any project which has been three times presented by the *storthing*. These rights having been once granted, Bernadotte, who found them pressing somewhat hard against his prerogative, has in vain made several attempts to abridge them. Mr. Lloyd, in his late Travels, informs us that a highly republican spirit prevails in Norway, and that the influence, and almost existence, of the nobles is nearly annihilated.

3281. *The revenue of Sweden* arises from a poll-tax of one shilling and threepence a head; of the produce of the royal demesnes, duties on exports and imports, mines and forges, distilled spirits, and in some monopolies. Dr. Thomson estimates the whole produce at 1,050,000*l.* a year, exclusive, however, of lands assigned to soldiers and sailors, and by which these classes, in time of peace, are chiefly supported. The *military force* is, at present, —

	Sweden.	Norway.	Total.
Infantry - -	26,221 -	9642 -	35,863
Cavalry - -	4580 -	1070 -	5650
Artillery - -	2400 -	1278 -	3678
Landwehr - -	83,368 -	10,000 -	93,368

The troops are raised by conscription: they only receive pay when on actual service; remaining, at other times, in the provinces, where they employ themselves in cultivating lands assigned to them for their support.

Sect. V. *Productive Industry.*

3282. *Sweden seems doomed by nature to be a poor country.* Her most southern districts are beyond the limits of the temperate zone, in which alone the finer and more valuable kinds of grain, and the richer fruits, come to maturity. Her scanty harvest consists solely of rye, bigg, and oats, scarcely accounted as food in more favoured climates. Scandinavia is described generally as one unbroken boundless forest, varied only in its aspect by little patches of cultivated land.

3283. *Agricultural industry* till of late had not done much to remedy natural deficiencies. According to the valuable statistical details collected by Dr. Thomson, the arable land in Sweden amounts to 1,818,450 English acres, which is only a sixty-second of the entire surface, or, throwing out the Norrland deserts, a thirty-second. Of this, 1,363,000 acres are returned as under cultivation. But the average size of a Swedish farm is only twenty-seven and a half; the annual average of grain sown on each farm does not amount to a Winchester bushel; and the annual produce of the whole country was only 5,700,000 spanns, or about 71,000 quarters. Hence Sweden was obliged to import grain to a great extent; and such is the scarcity, that the peasantry often grind the bark or even wood of the fir tree into flour; a nutriment equally scanty and unwholesome. These statements are given in 1812; since which time we find it mentioned that agriculture has made a very rapid progress; that improved processes have been introduced from Britain and other countries; and that, in the most southern provinces, a great extent of moving (and before entirely barren) sand has been rendered solid, and covered with plantations and grain. The consequence has been, that in 1827, Sweden even exported 39,000, and in 1828, 164,000 tons of grain of every description. Every farm has a tract of forest of about 1000 acres attached to it, on which cattle are fed: these are reported as only amounting to 403,000 horses, 1,475,000 cows, and 1,212,000 sheep. The most valuable product of land is formed by the vast forests with which nature has covered the whole country. The trees over all Scandinavia are small, and consist chiefly of the birch, the pine, the spruce and Scotch firs. Wooden inclosures (*fig.* 430.), of a peculiar form, are universally employed. The poplar and the willow are also indigenous. The timber of these trees, as well as the tar, pitch, and turpentine, drawn from them, form the chief objects of Scandinavian exports. Those on the hills of Norway are in much demand for masts. According to M. Hegelstamm, not more than the 115th part of the surface of Norway is under cultivation, chiefly in oats; a space which might be greatly extended; yet the annual production is stated at 2,650,000 tons. The great variety of climate and surface in Norway produces a corresponding variety of vegetation, which, however, is chiefly an object of scientific curiosity.

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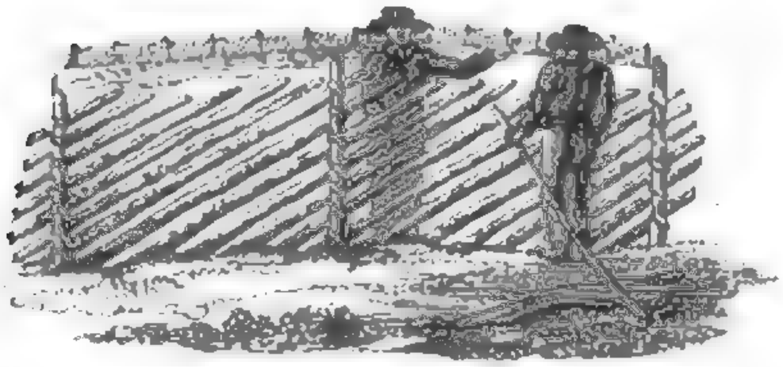

SWEDISH MODE OF INCLOSURE.

3284. *The manufactures of Scandinavia* are inconsiderable, unless we should class their mines as such. Even in the common trades the work is lazily and ill performed, and charged at a high rate, which renders this the most expensive country in Europe for those who live luxuriously. It is a curious fact that some great merchants in the western towns send their linen to be washed in London.

3285. *The mines of Sweden* are peculiarly rich in important products. Its iron, found chiefly in primitive rocks, is the finest in the world, and is widely diffused. In 1812, there were 176 mines; 624 smelting-houses; 764 forges; producing in all 1,293,411 cwt. of iron. The exportation, in 1821, amounted to 340,000 skippund, and in 1824 had risen to 373,000, of which 345,000 were in bars, and 28,000 in ruder forms. There are also some valuable mines in the southern provinces of Norway. A most extensive deposit of copper occurs in the province of Dalecarlia, particularly at Fahlun. Gold occurs at Adelfors, in Sweden, to no great amount; but the silver mines of Köngsberg, in Norway, are the richest in Europe. The metal occurs in masses, of which there was once found one weighing 600 lbs. There are also lead mines of some importance at Scola, and in other parts of Sweden.

3286. *Fishery* appears a pursuit peculiarly appropriate to the extensive coasts of Scandinavia. Yet the Swedes are not much addicted to it, probably because the Baltic during a great part of the year is frozen. Gottenburg had once a herring fishery, now nearly lost, the shoals having taken another direction. The Norwegian fishery is considerable, though bearing only a small proportion to the almost unlimited opportunities afforded by its wide seas, and its deep and commodious bays. Its chief theatre is far to the north, off the Isles of Loffoden. The season lasts only for seven or eight weeks in the year, when fishermen crowd thither from all quarters. Codfish is the chief object: it is cut in pieces, and spread on the rocks to dry, whence it receives the names of stockfish and clipfish. According to Mr. Brooke, the number taken in a year was 700,000, which may be worth 120,000*l.*; they are sent chiefly to Germany, Spain, and Italy. The roes are also salted and barrelled for exportation; also the fish oil to the amount of about 30,000 barrels.

3287. *The commerce of Scandinavia* is greater than its unimproved agriculture and total want of manufactures might lead us to suppose. But nature has gifted these bleak regions with an almost inexhaustible store of timber and iron, two of the prime necessaries of human life; the main implements in ship-building and in the construction of houses, machinery, and furniture. These articles are indeed also the produce of North America; and Britain, which affords the best market, has lately sought to favour her colonies in that quarter by a great inequality of duties. Yet the superior quality of the Scandinavian commodity always secures it a sale. In 1829, Britain drew from Norway 17,000 loads of timber; 3582 small masts; 9809 deals and deal ends; 6360 battens and batten ends. The entire exports of Norway are estimated by Dr. Clarke at 1,800,000*l.* sterling; but we believe that this is very much beyond the mark. The commerce of Sweden is not on so great a scale; her surplus timber being not nearly so ample, though her iron is superior. She has suffered much injury from the absurd prejudices of the peasantry, who obtained the prohibition of colonial produce, and of almost all foreign articles of consumption; and though these were regularly imported, and in daily use, the trade was greatly fettered by being carried on only as contraband. In 1828, however, commercial treaties were concluded on a more liberal footing. In 1824, the shipping employed between Great Britain and Norway was 130,000 tons, of which nearly the whole was Norwegian, while that employed in the trade with Sweden was 28,000 tons, of which two-thirds were Swedish. Mr. Wilson thus states the annual imports from Sweden into Great Britain: — 12,000 tons of iron, at [illegible] per ton, 200,000*l.*; wood, tar, and other articles, 128,000*l.*: total amount, 328,000*l.* Of these, the value of 105,000*l.* is from Gottenburg; 158,000*l.* from Stockholm; 65,000*l.* from other ports. The exports to Sweden, consisting of indigo, sugar, coffee, cotton, spices, dye-stuffs, &c., amount to 500,000*l.*; of which at least 70,000*l.* is contraband. The total number of merchant vessels belonging to the different towns of Sweden, in 1829, was 1178, of the burthen of 61,000 tons; so that the greater number must have been what are called in England boats.

Sect. VI. *Civil and Social State.*

3288. *The population of Sweden,* according to the latest census, made in 1825, amounted to 2,771,252; of whom 20,499 were nobles; 13,977 ecclesiastics; 66,604 citizens; the remainder belonged to the class of peasants. Of these, 1,332,970 were males, and 1,438,282 females; 2,489,973 resided in the country, 281,279 in the cities. This was a rise of 357,021 since 1811, and 186,562 since 1820.

3289. *The population of Norway,* by a census made in November, 1826, amounted to 1,050,132; of whom 105,021 inhabited cities, 934,414 the country. This was a rise of 164,662 since 1815.

3290. *The national character of the Swedes* is usually painted under favourable colours. Their honesty is described as proverbial; and Dr. Clarke considers the contrast between them and the Russian people, in this respect, as most striking. Highway robbery, though it has been known, is exceedingly rare; and charity boxes, which are often set up on the public roads, have never been plundered. "The nation," says Mr. James, "has its singularities: there exists something of a reciprocity between the moral and political constitution of Sweden. Rigidly ceremonious, they make their stiff and measured courtesies the essentials rather than the forms of life; and seem, in a stranger's eye, a people cold in their nature as the very snows they dwell upon. Their characteristics, a passive courage, not unmixed with indolence; a pride not free from ignorance; a disposition that is not ill-humoured, from having no humour at all, from indifference, from apathy. But a Swede is never in extremes; even these traits are not deeply marked; and if we review the more favourable side of his character, we shall find in him an undaunted spirit of perseverance, and an honest love of freedom, to which the feelings of every one do homage." The same writer mentions a cold-blooded obduracy, connected, perhaps, with a sanguinary turn of mind, displayed in those frequent assassinations which have stained the pages of Swedish history. The manners of the higher ranks, in consequence, perhaps, of political connection, have been studiously formed on the French model, which does not accord very happily with the somewhat rude simplicity of the Swedes, who find it easier to imitate the frivolity and dissipation of that people, than their easy and careless grace. Several habits are enumerated as prevalent even among the higher classes in Scandinavia, which seem to negative its pretensions to any high pitch of refinement. Among these are, spitting even on handsome carpets, blowing the nose with the fingers, and recording games on the table with chalk.

3291. *The religion of Sweden* is Lutheran, and the church episcopal. This country, which stood long at the head of the great protestant confederacy, is animated with an ardent zeal for the reformed religion. The Catholics, till of late, scarcely enjoyed common toleration, and they are still excluded from the diet and the higher offices of state. The Swedish people are commended for their regularity in performing the duties of their religion: at the same time it has been remarked that the dissenters from the established church are much fewer than in other protestant countries; which has been imputed to the want of any peculiar fervour upon the subject. The wide extent and thin population of the northern districts must often render the provision for their religious instruction very defective. The diocese of Tornea, in Lapland, is 750 miles in circumference; and, what is more blameable, the small number of clergy employed are not required to understand the language of the natives. The income of the largest bishopric in Sweden is only 1000*l.* a year.

3292. *In science*, the Swedes, considering their poverty and remote situation, have made a very distinguished figure. Gustavus Adolphus favoured the interests of literature with a degree of ardour not generally known. Of the spoils of places conquered by him, he set a particular value upon books, which he transmitted to Sweden, in order to form the foundation of several large libraries. Christina displayed an ardent, though somewhat fantastic and capricious taste for letters. After an interval of some reigns devoted to war, Adolphus Frederick, and particularly his queen, Ulrica Eleonora, undertook the patronage of science with a zeal which was seconded by their successor, Gustavus III. The Swedes cultivated with peculiar ardour botany and mineralogy, which some of their countrymen mainly contributed to raise to the rank of sciences. In botany, the name of Linnæus is yet without a rival; and Cronstadt and Bergman were in their day little inferior, though they now yield to Werner and other great names which have arisen in other countries. Bergman and Scheele made also large contributions to chemistry, which is still ably pursued by Ekeberg, Berzelius, and Afzelius. Although history and poetry have been cultivated, they have not produced any writers whose reputation has spread throughout Europe. From the limited sphere of the Swedish language, few works of science are written in it, or translated into it: hence the literati of Sweden are particularly well versed in the languages of foreign nations. One of the subjects in which Sweden may most justly exult is, the general spread of education among the lower orders, which seems to equal or exceed that which Scotland enjoys; and to this may probably be in a great measure ascribed their generally meritorious conduct. Norway is not nearly so literary a country as Sweden; Dr. Clarke even states that there is not in the whole country a single bookseller's shop. This was in a great measure owing to the mean jealousy of Denmark, which would not allow an university to be founded even in Christiania, which used to be a rival to that of Copenhagen. Yet Norway can boast of literary names; Holberg, Pontoppidan, Vahl the botanist, Torfæus, and Snorro Sturleson, the old historians. A vein of bold and rude poetry is cultivated with peculiar ardour; and Dr. Clarke exhibits a roll of names unknown to Europe, whose claims to distinction appear to be somewhat justified by a specimen given to us by Mr. Wilson.

3293. *Of the learned establishments of Sweden*, the most eminent is the university of Upsal, the chief nurse of all the great men who have distinguished her literary records. This celebrated seat of northern learning was founded in 1478, by Steno Sture, was enlarged by Gustavus Vasa and Gustavus Adolphus, but reached its highest eminence in the last century, when it was adorned by Linnæus, and all the men of science who have been distinguished as reflecting glory on Sweden. Since that time its lustre has been somewhat diminished, though statements on this subject vary considerably. These institutions bear no resemblance to the stately establishments of Oxford and Cambridge. The professors have salaries of 100*l.* a year; and are left thus almost wholly dependent on their students, who live in private lodgings, are subject to no discipline, and dine usually at what Dr. Thomson calls ordinaries, but Dr. Clarke tap-houses. They attend what and whom they please; and their exertions are not stimulated or tried by any public examinations. Dr. Clarke has drawn a most unfavourable picture of the Upsal student, whom he represents as slovenly, careless of study, and addicted to intoxication; but Mr. Wilson considers this censure as much too indiscriminate. The mineralogical collection is one of the most complete in Europe; and the library, founded by Gustavus Adolphus, and enriched by successive monarchs, contains 50,000 volumes. Its most precious treasure is the Codex Argenteus, a manuscript of the four Gospels, written in silver characters, and supposed to date as far back as the fourth century. The garden of Linnæus has been neglected for a larger one lately founded, but which scarcely corresponds to the botanical fame of Upsal. The royal library at Stockholm is still more extensive. It had been founded also by Gustavus Adolphus, but was chiefly indebted to Gustavus III., who presented to it his own valuable private collection. It is particularly rich in manuscripts, in sagas, and other historical works, and in original drawings by the great masters. This collection is open to the public. The Swedish academy of sciences, founded in 1739, by learned private individuals, has published above 100 volumes. It is considered one of the most distinguished in Europe, and the greatest men in other countries have viewed it as an honour to be enrolled among its members. In the college of mines are preserved copious specimens, drawn from a country so rich in metallic productions. The cabinet of models, presenting the various mechanical contrivances employed through the different parts of Sweden, is also considered very interesting.

3294. *The fine arts in Sweden* have been cultivated amidst considerable difficulties. The opera is conducted with splendour, and even taste; but, as Sweden cannot pay for performers of the first class, Italian airs are not sung with full effect, and the old national music is neglected. Greater success has attended the efforts to promote the arts of design. Lergell, as a sculptor, has been ranked second to Canova, and even called the Michael Angelo of the North. Breda in portrait, and Fulerantz in landscape, enjoy reputation; though the latter paints a nature very different from ours. Architecture is too costly an art to have arrived at much perfection in Sweden.

3295. *The habitations of Scandinavia* are very simple and uniform. "Having," says Dr. Clarke, "once figured to the imagination a number of low red houses, of a single story, and each covered with turf and weeds, a picture is presented of the oppidan scenery of Sweden." The houses, however, are well finished within, and elegantly furnished; and by means of stoves, double windows, and close doors, they are kept comfortably warm, even during the most rigorous winter. Swedes have even complained that they suffered much more from cold in London than in their native city.

3296. *The dress* is described by Dr. Clarke as equally uniform with the habitations. "A skull-cap, fitting close to the crown, edged with a little stiff lace, the hair being drawn as tight and straight as possible beneath the cap from all parts of the head, as if to start from the roots; add to this, a handkerchief thrown over the cap when they go out; a jacket; short petticoat; stockings of coloured or white woollen; and high-heeled shoes:" this is the general costume of the Swedish women. Mr. Wilson thus describes the dress of the representatives of the class of peasants: — "White worsted stockings, half boots extending above the calf of the leg, yellow leather small-clothes with knee-buckles, a short brown coat and waistcoat, and a plain handkerchief tied round their necks." The annexed cut (*fig.* 431.) may give an idea of the attire and aspect of the Norwegian peasantry. In winter these garments must be reinforced to the utmost ability of the wearer, as a fence against the excess of the cold. The peasantry wear a sheepskin cloak, with the wool towards the body, and close fur caps. Dr. Clarke mentions as a travelling dress, thick yarn stockings covered by stout leather boots, and over these again boots made of the hides of rein-deer, with the hair on the outside, and doubly lined with sheepskin covered with black wool. The people wear, besides, fur caps on the head, bearskin pelisses over the body, besides several flannel waistcoats, and on the hands, gloves of sheepskin covered by double gloves of fur and wool. Yet these accumulated guards are insufficient to prevent the feeling of the most intense cold, which, in those not duly fenced against it, sometimes produces death, and frequently a frost-bitten limb.

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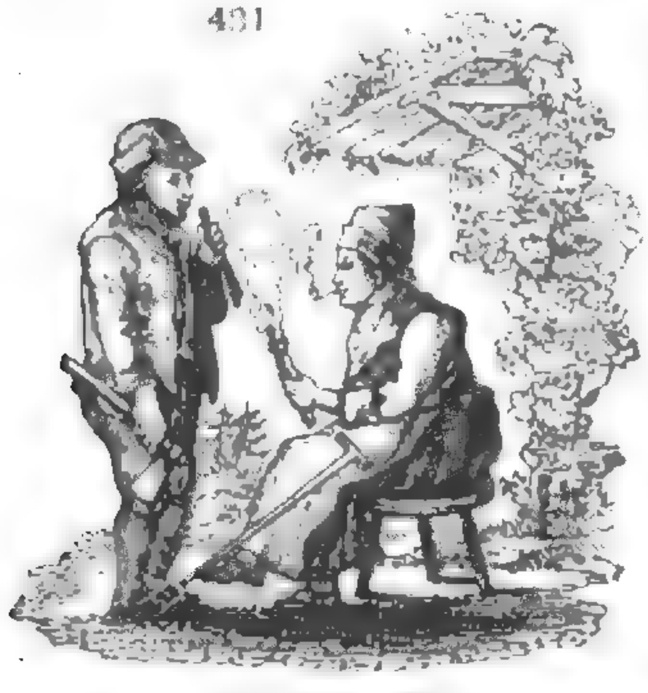

NORWEGIAN PEASANTS.

3297. *Food* is an article which, though scanty among the peasantry, is most abundantly consumed among the opulent classes. Indeed, eating is an affair of greater importance in Scandinavia than perhaps in any other part of the world. The heroes and even the gods of their ancestors are celebrated in song for the quantity of victuals consumed by them. Every Scandinavian dinner begins with a whet, administered in a separate apartment, and which consists of cheese, salt fish, salmagundi, and other dainties which seem rather adapted to satiate than excite appetite. The company then repair to the dining-room, where an almost endless succession of dishes is handed round, one after the other; nor does politeness allow any one to be called for, till the preceding dish has gone its round. This "never ending, still beginning feast," as Mrs. Woolstonecraft calls it, lasts usually two or three hours, when coffee is introduced, and the company break up. Nothing is considered so ill bred as not to eat enormously; so that Dr. Clarke considers two days' previous fasting as almost necessary to be an acceptable guest at a Swedish dinner.

Sect. VII. *Local Geography.*

3298. *This section* naturally divides itself into three subordinate parts: — 1. *Sweden*; 2. *Norway*; and 3. *Lapland*, which, though accounted partly Swedish and partly Norwegian, has a distinct character of its own.

Subsect. 1. *Sweden.*

3299. *Sweden is formed into three great divisions:* Svealand, or Sweden Proper; Gotaland, or Gothland; and Nordland or Norrland. In the following statistical table, the extent and arable produce are from materials collected in 1812, since which time cultivation has been greatly extended; but the population is from the census of 1825.

	Swedish Square Miles = 44·4 English.	Arable Ground, Tunnlands (1⅜ acre).	Being to the whole as 1 to	Number of Farms.	Operative Farmers.	Grain produced in Spanns (1-20th bushel).	Population.
Nordland.							
Norrbotten - -	751	8,080	2,151	522	22,824	37,570	40,624
Vesterbotten -	668	10,530	1,465	694	23,870	56,576	44,911
Vester Norrland -	217	22,780	220	1,563	36,812	103,509	72,237
Jamtland - -	425	10,720	917	945	20,281	48,348	39,122
	2,016	52,110	915	3,724	103,787	245,998	195,894
Sweden.							
Stockholm - -	67·48	71,416	22	4,056	58,649	316,987	103,095
Upsala - -	46·83	84,364	13	3,548	48,657	285,356	81,897
Vesteros - -	61·91	55,515	17	2,852	49,063	211,100	88,618
Nyköping - -	58·08	54,011	24	3,276	59,791	225,006	106,793
Orebro - -	74·27	46,223	36	2,774	61,720	198,279	109,254
Carlstadt - -	148·00	82,473	42	1,708	92,592	377,514	163,372
Stora Kapparberg	288·00	51,547	129	1,792	79,313	240,781	129,388
Gesleberg - -	172·50	28,367	140	2,089	50,024	153,996	96,736
	917·15	473,916	45	22,096	499,809	2,009,017	879,153
Gothland.							
Linköping - -	99·0	104,061	21	5,458	94,194	360,044	182,280
Calmar - -	98·0	66,121	34	3,347	83,404	230,566	160,720
Jonköping -	95·7	53,684	40	3,905	76,115	233,346	129,996
Kronoberg - -	84·2	37,695	48	2,837	56,010	175,229	102,709
Blekinge - -	26·6	21,715	27	1,089	31,522	139,143	85,314
Skoraborg - -	78·0	143,192	12	4,804	89,910	425,864	159,614
Elsborg - -	119·6	73,808	37	4,209	102,715	354,382	187,021
Gottenborg -	42·0	42,458	22	2,783	66,409	215,757	146,691
Halmstadt - -	45·0	48,983	[illegible]	2,922	47,485	167,120	85,657
Christianstadt -	53·4	89,344	13	3,002	79,331	306,027	145,380
Malmohus - -	38·6	222,609	4	4,033	95,637	548,334	192,199
Gothland - -	27·5	30,064	20	1,098	17,560	83,523	38,151
	807·6	928,734	20	39,467	840,262	3,204,184	1,625,632
Stockholm city -	- -	- -	- -	- -	- -	- -	79,473
Total -	3,870·85	1,454,760	62	65,309	1,443,858	5,702,835	2,771,252

3300. *Sweden Proper* occupies the centre of the kingdom, and includes the capital, and the great mining districts. It consists of an immense plain, covered by almost boundless forests, intermixed with patches of cultivation; only a few hills of moderate height breaking its vast uniformity. Three great lakes, like inland seas, the Wener, the Wetter, and the Malar, form almost a continuous chain across its centre. Besides these, there is an immense number of smaller lakes, especially towards the north, communicating by river channels with the greater. These lakes, not being bordered by mountain banks, do not display the grandeur which belongs to those of Switzerland, or even of England. But their wide and winding shores, broken with rocks, and fringed with a profusion of wood, present many romantic and almost fairy scenes.

3301. *The division into provinces, of Sweden Proper*, as well as of Gothland, as given in the above table, was made recently by government, and is the only one upon which statistical details have been collected. But there is another and earlier division, which remains still fixed in the Swedish mind; and corresponds, in fact, both to the aspect of nature and to the peculiarities in the people. These are Sudermanland, the province which contains the capital, and is situated on the south side of the lake Malar; Upland, a high territory on the northern side of that lake; Westmanland, to the west of Upland; Nerike, a beautiful little region, completely enclosed between the three great lakes; Warmeland, to the north of the Wener, covered with a multitude of little lakes; and lastly, Dalecarlia, called also Dalarne, or the Plains, a province which, of all others, presents the most striking and peculiar features. It is, above all, distinguished by the energetic character of its peasantry, whose exertions at one time reared the fallen monarchy, and who continue to form its most powerful defence. They still hold as a maxim, that one Dalecarlian is equal to two of any other Swedes. Their diet is poor in the extreme, consisting in a great measure of bark-bread: yet their health and vigour does not suffer; and a number of them, who were quartered as troops at Stockholm, were affected with fevers in consequence of the repletion caused by eating wheaten bread. The memory of the great Gustavus Vasa, the founder of the Swedish monarchy, is cherished in this province with the utmost warmth; and many memorials of him are preserved in different places.

3302. *Stockholm* (*fig.* 432.), with which we shall commence our details, is finely situated, at the junction of the extensive and beautiful lake of Malar, or Mäler, with the sea. It stands partly on some small islands, and two peninsulas, presenting a view as beautiful and diversified as imagination can conceive. Innumerable craggy rocks rise from the water, partly

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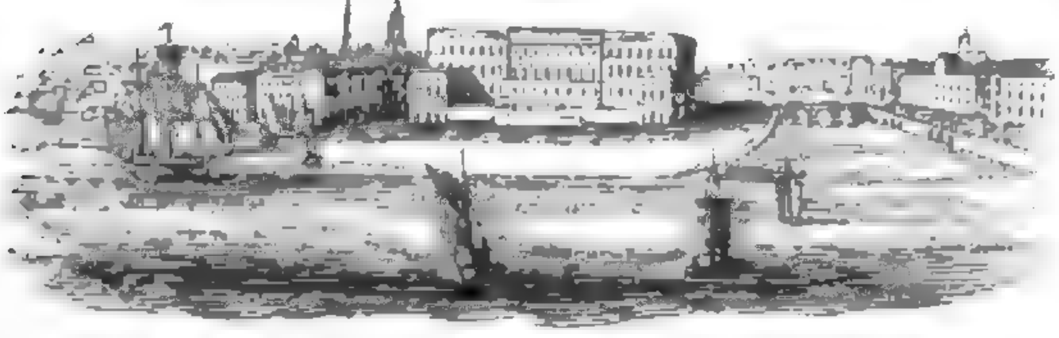

STOCKHOLM.

covered with houses, and partly planted with wood; while vessels of all forms and descriptions are seen passing to and fro. "From one point of view," Dr. Clarke observes, "it seems a Cyclopean heap of the most noble structures; palaces and churches all piled one above another, and the whole floating, as it were, upon the broad bosom of the deep. White edifices, consisting of public and private palaces, churches, and other buildings, rising from an expanse of waters, produce an effect of incomparable grandeur. When the lake and sea are frozen, they are covered with sledges of all kinds, and exhibit one of the gayest scenes imaginable. If external appearance were alone to be relied on, Stockholm might be deemed the most magnificent city in the world. This impression is not sustained by any beauty or convenience in the interior. Except the great square of Norden Malm, the streets, though of very considerable length, are neither broad nor handsome. There is no foot pavement; the houses are lofty, all whitewashed, and the shops are extremely poor. The different families reside in separate floors or stories, one above another, the ground-floors being usually occupied as shops. The royal palace, however, begun by Charles XI., and finished by Gustavus III., may vie with any structure of the kind in Europe. It is in the Grecian style, quadrangular, four stories high, built of brick only, but faced with stone-coloured cement. Its situation, facing the quay, and commanding a view of all parts of the city, adds greatly to its beauty. It contains some fine specimens of sculpture and painting, curiosities connected with Swedish history, and a range of small apartments embellished by Gustavus III. in a fanciful manner. This palace, with the finest buildings of the city, stands on one of the islands. The kings of Sweden have in the country other palaces: that of Drottningholm is a handsome stuccoed building, roofed with copper, and having side wings; but the gardens are barbarously laid out in the old fashion, with trees and hedges clipped into fanciful shapes.

3303. *Nyköping* is the only tract of Sweden Proper which is south of the lakes. The town of that name, though small, has an air of magnificence. The houses are of wood painted yellow.

3304. *The provinces of Wester Orebro, and Carlstadt*, along the north side of the lakes, reach across the kingdom. Enköping, on a branch of the Malar, is the first town which occurs westward from Stockholm, but it is not of great consequence. Westeras, on the same lake, has more commercial importance, as a link between the capital and the northern and western provinces. There is only one principal street, about two miles in length; the houses are only of one story, and often roofed with turf. It is the see of the richest bishopric in Sweden. The cathedral is a simple edifice; but one of the most elegant in Sweden, adorned with a very elegant porphyry monument erected to Eric IV., who died by poison in 1577. Next comes Köping, small and poor; but celebrated as having been the residence of Scheele. It lies at the extreme interior point of the Malar. Quitting that lake, and proceeding south-west, we come to Arboga, a beautiful little town on a river which falls into that lake, and near a canal which connects it with the lake Hjelmar. A steam-packet, established by an Englishman, now enables it to communicate with the capital. Nearly due west is Orebro, a more considerable town, and the occasional place of meeting for the Swedish diet. It is reckoned the fifth town in Sweden, containing about 4000 people, and the streets are broad and spacious, though the houses, as elsewhere in Sweden, are low, and of painted wood. The stadthus, or governor's residence, which includes also the prison, is a huge shapeless edifice. The church, which forms also the place of meeting for the diet, is an ancient structure, originally Gothic, and built of stone, but patched with brick, and in various styles. Proceeding westward, we enter Carlstadt, or, as anciently called, Warmeland, a region entirely of mines, forests, and lakelets, and bounded on the south by the extended shores of the Wener lake. Carlstadt is situated near the point where this lake receives the Clara, a considerable river, which traverses these wooded regions, and down which immense quantities of timber are floated; advantage for this purpose being taken of the floods to which it is occasionally subject. One company from Gottenburg has saw-mills, at which are annually cut upwards of 50,000 planks. Carlstadt is a place of from 2000 to 3000 people, presenting the ordinary aspect of Swedish towns. It collects the vast produce of the mines and forests of Warmeland, and transmits them across the Wener to Wenersberg, whence they find their way to Gottenburg. Considerably in the interior is Philipstadt, in the very heart of the iron mines, by which it is supported.

3305. *The most remarkable are those of Persberg* (*fig.* 433), a few miles to the eastward. They are thirteen in number, dug into a mountain entirely composed of veins and beds of iron ore. Dr. Clarke, after having, in the course of ten years' travel, inspected many of the principal works of this kind in different countries, declares, that he had never beheld any thing equal to this for grandeur of effect, and for the tremendously striking circumstances under which human labour is here performed. In the wide and open abyss suddenly appeared a vast prospect of yawning caverns and prodigious machinery. Immense buckets, suspended by rattling chains, were passing up and down; ladders were scaling all the inward precipices; upon which the work-people, reduced by their distance to pigmies, were ascending and descending. The clanking of chains, the groaning of the pumps, the hallooing of the miners, the creaking of the blocks and wheels, the trampling of horses, the beating of the hammers, and the loud and frequent subterraneous thunder from the blasting of the rocks by gunpowder, in the midst of all this scene of excavation and vapour, produced an effect that no stranger could witness unmoved. The miners work in spacious caverns, amid falling waters, tumbling rocks, steam, ice, and gunpowder. They receive two shillings a day; good pay in Sweden.

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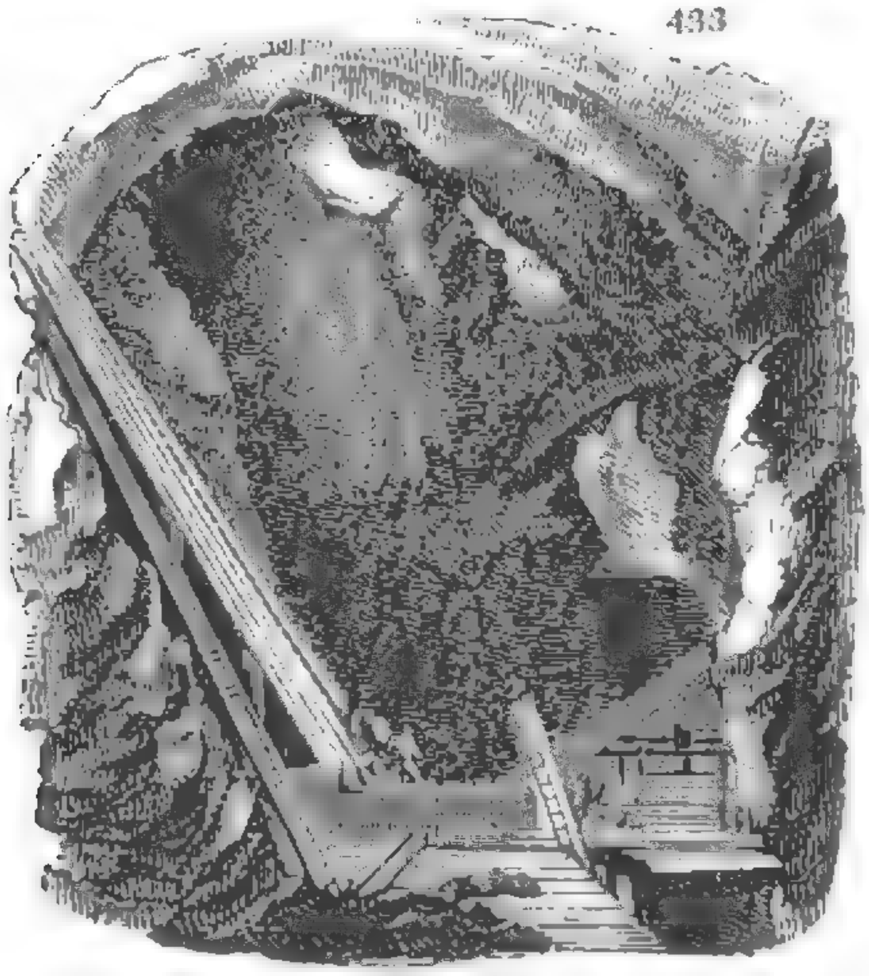

PERSBERG MINE.

3306. *Dalecarlia*, or Dalarne, extends to the north-east of Warmeland. It is covered with an extraordinary profusion of mosses and fungi, so that it is termed by Dr. Clarke the supreme court of the cryptogamia. We have already remarked the peculiar character of the people, who preserve entire the dress, habits, and the daring energy of the ancient Swedes. The most important branch of productive industry consists in the mines, particularly the great copper mine at Fahlun (*fig.* 434.). It is immediately adjoining to the town, and consists of an enormous conical mass with the top downwards. The bottom of the cone being the top of the mine was the first worked; and the galleries being made through it without due precaution, the whole fell in, producing an immense open crater which still remains. Regular staircases of easy descent traverse this immense crater or basin, from its outer lip to the lowermost point, whence arise vast volumes of smoke and vapour, giving it the appearance, on a greater scale, of the Neapolitan Solfatara. It is divided into no less than 1200 shares or sections, among which the ore is divided immediately on being brought up, and it is then smelted on a small scale by the different individuals. The ore is not rich. In 1600, this mine is said to have yielded 8,000,000 pounds of copper; in 1650, 5,500,000; but at present only 1,120,000 pounds. The workmen have now reached the bottom, or the surface of the cone, and are still working through the ground, in the fond hope of coming to the top of another cone, reaching downwards. Unless this chimera should be realised, the mine, it is said, will, in a few years, cease to be productive. Fahlun is a regularly built but old-fashioned and dirty town, subsisting solely by the mine. It has two churches, one covered with copper, but this has not a handsome appearance, the colour of that metal being converted into a whitish green soon after exposure to the weather. Near Fahlun is the house where Gastavus Vasa lay concealed, the proprietor of which has studied to preserve in its pristine state this asylum of the Swedish king. His chamber, bed, and clothes are still shown; his shirt of worsted mail fitted similar to those made by the Circassians, and his other weapons.

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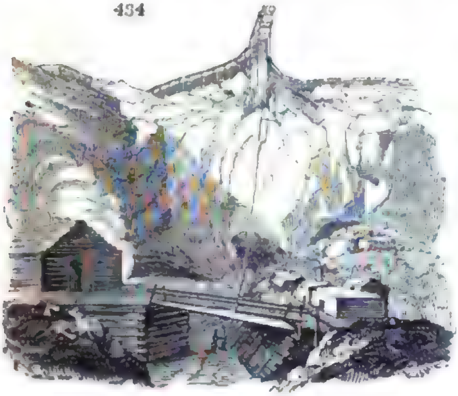

FAHLUN MINE.

3307. *Sala*, which is properly in Westmanland, may be mentioned here as another mining town on a smaller scale, neat, regular, but ill-paved. The only important mine is one of galena, which yields 2000 marks of silver, and 32,000 pounds' weight of lead. There is also a copper mine, which produces little; and one of iron, which is not considered worth the expense of working.

3308. *Upland*, coinciding nearly with the modern Upsala, is an interesting province, extending from a part of the lake to the river Dal. It is flat, but diversified with numerous little round knolls, which, with the small lakes and the numerous fine forests, render it picturesque. It contains Upsala, the seat of the great northern university, and Danemora, the most valuable of the iron mines.

3309. *Upsala*, or *Upsal* (*fig.* 435.), is the place in Sweden most venerable for its antiquity. It was long the residence of the kings, and has always been the chief seat of religion and learning. Even in pagan times it was the residence of the high-priest of Odin; and in 1026, Everinus, a bishop from England, was placed there, for the purpose of converting the natives to Christianity. The cathedral is the largest and finest ecclesiastical monument in Sweden, a country not eminent for such structures. The exterior is indeed only of brick, and there is an injudicious mixture of the Gothic with the Doric towers. But the interior is very striking, adorned with a double row of fourteen fluted columns, a magnificent altar, and above all by many monuments of the kings and heroes of Sweden. Particular notice is attracted by that of Gustavus Vasa, and the three Stures, successively regents of the kingdom, who, in that station, earned the title of fathers of their country. The shirt of mail of Margaret, the Semiramis of the North, is also kept as a warlike relic. Upsala contains also a palace founded by Gustavus Vasa, now half burnt down. It is at present supported solely by the university, of which an account has already been given. It is destitute of all trade or industry. It is therefore small, but very regular and neat, having a large square in the centre, where all the streets converge.

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UPSALA.

3310. *The mine of Danemora* is situated near the small town of Osterby. Swedish iron is the best in the world, and the iron of Danemora is the best in Sweden. Dr. Thomson was told at Sheffield, that cast steel could not be made with any other. Danemora was first wrought as a silver mine, but this was soon exhausted. The iron then began to be wrought, and soon established the high character it now holds. The great opening is fifty fathoms deep, and the mine has been wrought thirty fathoms lower down. The ore is blasted with gunpowder. At short intervals are heard tremendous explosions, like the discharge of the heaviest artillery, which are echoed through the caverns, and shake the earth like a volcano, while volumes of smoke burst forth after each crash. From the mouth of the cavern enormous masses of iron are raised up by machinery. The mine belongs to a number of private individuals, who have erected a steam-engine at an expense of 36,000 rix-dollars. The produce is estimated at 4000 tons. There are twenty-seven other mines in the province of Upsala.

3311. *Gothland, or Gotaland*, the southern division of the kingdom, forms a large peninsula, with a wide circuit of shores. It enjoys a considerably milder climate, and is the only part of the kingdom where wheat is raised in any considerable quantity. It is here also that the recent improvements in agriculture have been chiefly observable. There is thus more land in cultivation, and trees will not grow in the immediate vicinity of the coasts; so that Gothland is not so thoroughly covered with wood, as the provinces to the north of the lakes. If we except the capital, this division contains almost all the sea-ports and naval arsenals; and consequently engrosses nearly all the foreign commerce of the kingdom.

3312. *The modern and official divisions of Gothland* have been exhibited in the statistical table. The ancient divisions are into Eastern and Western Gothland, divided from each other by the long line of the lake Wetter; Smaland, an extensive but barren tract, to the south of that lake; and Scania, or Schönen, the southern peninsular extremity of Sweden, a better peopled, and better cultivated district than any other in the kingdom.

3313. *Eastern Gothland* comprises chiefly the modern provinces of Nyköping and Linköping. The town of Nyköping is agreeably situated at the extremity of a small bay of the Baltic, and though small has an air of magnificence; but it carries on little or no trade. It is now much outstripped by Noorköping, the largest of all the *köpings*, and the fourth town in Sweden. Noorköping lies upon the large river Motala, which communicates between the lake Wetter and the Baltic, and which is here broken into numerous rocky channels. The chief branch of industry consists in the manufacture of broad-cloth, which is produced so fine as to sell at twenty-seven shillings per ell, of one yard and three quarters broad. The breed of sheep in the neighbourhood has been considerably improved by the introduction of merinos. The town is regularly built, of neat wooden houses. (The term *köping*, it may be observed, signifies market, being synonymous with the Anglo-Saxon terms *cheap* and *chipping*.) Linköping is another provincial capital, handsomer in its aspect, though much smaller, than Noorköping. The cathedral, rebuilt four hundred years ago, is one of the finest ecclesiastical structures in the kingdom, and near it is a very handsome theatre.

3314. *The district of Smaland* has for its chief town Jonkoping, situated at the extremity of the Wetter, and commanding grand and beautiful views over that immense lake, which has here a wide border of low but finely wooded rocks. The town has been entirely rebuilt since 1790, when it was burnt to the ground. Though built chiefly of wood, like other Swedish towns, it contains many good and commodious houses, the residence of wealthy inhabitants, who have been attracted by the amenity of the site. A high court of appeal for this part of Sweden is established here. About ten miles distant is Tuberg, a long round-backed hill, composed wholly of one unbroken mass of fine magnetic ironstone. It presents such a colossal mass as in Hausmann's opinion must continue to afford a source of riches to the remotest posterity. The upper bed, 370 feet thick, has been wrought for 250 years. It is merely blasted with gunpowder, when the fragments fall to the bottom, and are conveyed to neighbouring furnaces. The ore is not very rich, the proportion of pure iron varying from 21 to 32 per cent.; but it is very tractable, and free from any hurtful ingredients. The hill, though only 400 feet high, commands an almost boundless view over the vast wooded flats of Smaland. This district contains also a considerable quantity of bog iron ore of inferior quality, and some copper mines. A celebrated but not valuable product is the gold mine of Adelfors. The working of it began in 1738, and was continued for half a century, with some advantage, when it ceased, as Dr. Thomson was informed; but Mr. James learned that in the year preceding his visit it had yielded the small amount of sixty or seventy ducats.

3315. *The sea-coast of Smaland*, consisting of the modern provinces of Calmar and Bleking, is of a naked and unpromising aspect, but contains some havens of importance. Calmar is noted in Swedish history as a strong fortress, and still more because in one of the apartments of its castle was signed the celebrated treaty which united the three crowns of the north on the head of Margaret. Carlscrona is the chief naval arsenal and one of the largest towns in Sweden. It is built on three small islands connected with each other and with the coast by long wooden bridges, while other islands serve for the erection of works for the defence of the harbour. These are square batteries of stone, well mounted with ordnance, which appear formidable enough, though probably not capable of coping with a ship of the line. Separate establishments exist for the large vessels, and for the flotilla; but one of the most remarkable features consists of the covered docks, partly excavated out of the vast masses of solid rock. The want of tides in the Baltic is supplied by sluices, which open into the port, and are emptied again at pleasure. Carlshamn is a smaller town, romantically situated, like a cluster of nests, on the tops of cliffs. During war it enjoyed a considerable proportion of the neutral trade, which it has since lost. Christianstadt is a fortress of considerable celebrity, the capture of which formed the first military achievement of Gustavus Adolphus. Some fragments of the fortifications remain, and the approach to them is defended by an extensive swamp which surrounds the place.

3316. *Scania* begins here, a flat and fertile peninsula, forming the most southern part of Sweden. It contains also, at Hogenaas, considerable coal mines of good quality; but when Dr. Thomson was in Sweden, their produce was sold at a higher rate than coal imported from Newcastle, and consequently found no sale in Sweden, where, moreover, wood is preferred. They were only sent into Denmark, then shut against the British trade. There are numerous German residents in Scania, supposed to have sought refuge there during the protestant persecution in Germany; and some Scotch farmers have also sought to introduce an improved system of agriculture. In the centre of Scania is Lund, the seat of the second university in Sweden, containing 30,000 volumes, a good observatory and botanical garden, and a noble cathedral in the Norman style of architecture. Its professors are zealous Lutherans, but they have not raised it to the same celebrity as Upsal. Malmo, formerly one of the Hanseatic towns, is the chief seat of trade. Helsenving and Ystadt, neat little ports, are the chief places of embarkation for Denmark and Germany. All these towns command magnificent views of the Sound, enlivened by the crowds of shipping that are continually passing.

3317. *Having turned the southern point of Sweden*, we come to the coast of West Gothland, situated on that great gulf of the German Ocean called the Cattegat. Being the part of the kingdom nearest to the great states of Europe, it carries on a principal part of the commerce of Sweden. Laholm and Halmstadt are ports of some consideration, in the gloomy and heathy province of Halland, but almost the whole of the western commerce of Sweden centres at Gottenburg.

3318. *Gottenburg* is built in the interior of a bay set round with rugged and naked rocks, and the whole country round is sterile and desolate. It is supported by its situation at the mouth of the Gotha, the broadest and most navigable of the rivers of Sweden, which by means of the canal of Trölhätta affords a full communication with the great interior lake of Wener, and the opportunity of bringing down those immense stores of wood and iron produced around its shores. The prosperity of Gottenburg was also greatly promoted by the French anti-commercial system, under which this port remained one of the few channels by which British goods could force their way into the Continent. It is a very handsome city, built entirely of stone, the use of wood having been prohibited since the last great conflagration, the second which had occurred in the course of ten years. A magnificent church, lately built, is constructed, in a great measure, of stone imported from Scotland. The principal street, which is long and wide, has a canal running through it; the others strike off from it at right angles. The principal merchants are Scotch, and live in a style of great magnificence.

3319. *West Gothland* presents still some other striking features. Among these rank foremost the cataracts and canal of Trolhätta. Above the former the river is a mile broad; but being confined between two lofty rocks, it pours down its waters with prodigious force. The descent, however, is only a hundred feet in the course of two miles, making thus a rapid rather than a fall; the water rushing along with inconceivable rapidity, boiling up, and covered with foam. The noise is prodigious, and clouds of vapour are thrown up. These cataracts opposed a complete obstruction to the navigation of the Gotha, which the kings of Sweden made incredible efforts, and expended immense sums, in endeavouring to overcome; but their works were too imperfect to resist the impetuosity of the current. At length, in 1793, the enterprise was taken up by a company of private merchants, who in seven years brought it to a happy completion. The canal is twenty-four feet wide, and eight feet deep. It extends only two miles; but being cut through a granite rock, sometimes to the depth of one hundred and fifty feet, it proved a work of very great labour. It now yields, however, a revenue of 12 per cent. on the original expenditure of 358,000 dollars. Wenersberg, at the junction of the Gotha with the Wener, is the channel by which the products of the interior are brought down the river; yet it does not derive from this trade much prosperity or importance. Uddervalla and Stronstadt are small seaports, with some trade and fishery, but they have suffered since the herrings deserted the coast. Skara and Fahlköping are places of some consequence, in the interior of West Gothland.

3320. *Norrland* forms a third division, which, if considered as including Lapland (and it is so considered politically), would be much more extensive than all the rest of the kingdom put together. It is, however, our intention to reserve for a particular section the vast and peculiar region known under the name of Lapland. Norrland, in a restricted sense, comprises the four provinces named in the table, but is better known under the divisions of Jamtland, Angermanland, Medelpad, and Helsingland. Jamtland, where it borders on Norway, includes some of the highest mountains, several of them rising to 6000 or 7000 feet. The rest of Norrland is flat, and the climate moist and variable, like that of Jamtland, but colder. Wheat scarcely ripens beyond Sundswall; near to the southern border, barley and rye ripen with difficulty. Almost the only fruits are cherries and gooseberries. The land under cultivation did not, in 1812, exceed 52,000 acres, which is, in proportion to the whole, only as 1 to 915. Yet the people are industrious; and Von Buch observed a greater air of prosperity here than in the rest of the kingdom. The woods, which cover almost the whole country, are infested by numerous herds of wolves. Of the entire population, amounting to 159,100, only 6318 live in the towns, which, of course, must be very unimportant. Sundswall and Hernosand are, however, seaports of some little consequence, as is Umea; but this last properly belongs to Lapland.

Subsect. 2. *Norway.*

3321. *This extensive portion of the Swedish monarchy*, recently, by compulsion, but in all likelihood permanently, united, comprises a very long line of maritime territory, facing the boundless expanse of the Northern Ocean. Throughout its whole length, in an oblique line parallel to the sea, runs the chain of the Dofrines, presenting many bold and lofty summits covered with perpetual snow. Sneehatta, the highest, is 8100 feet. These mountains throw out numerous chains, sloping downwards to the sea, which form romantic valleys and deep and winding bays. Norway produces some corn, not nearly sufficient, however, for its own consumption; but exports large quantities of timber and fish; receiving, in return, those commodities of which it stands most in need.

3322. *The southern Norwegian provinces* of Aggerhuus, Christiania, and Christiansund, include a considerably greater proportion of level territory than the others. They have the great range of mountains to the north and west, and are not separated from Sweden by these natural barriers. Through these provinces flow southwards into the bay of Christiania the Drammen and the Glommen, the two greatest rivers of the North, and bring with them an immense quantity of timber, which is cut into deals, and exported to all parts of Europe. The export of iron is also considerable.

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CHRISTIANIA

3323. *Christiania* (*fig.* 436.), *capital of all this district*, with a population of 20,581, now ranks as the capital of the whole kingdom. It is situated at the head of a long interior bay or fiord, and in a situation which Von Buch considers as altogether wonderful. The bay, its islands, the crowds of sails spread among them, with the view of majestic hills rising over hills in the distance, appeared to him equalled only on the lake of Geneva, which, however, has not the vessels and islands. Christiania is chiefly supported by the trade in deals; and those cut in its saw-mills are considered, by connoisseurs in this article, to be superior to all others. Some of its merchants, particularly the Ankers, maintain the state of princes, and are considered equal in wealth and liberal views to any in Europe. Christiania comes more into contact than Bergen with the more advanced countries of Europe, and has adopted almost exclusively the improvements which distinguish them. Dr. Clarke, indeed, complains that too much of an artificial polish has been substituted for the old frank Norwegian hospitality. Von Buch, however, conceives that intercourse with Christiania has materially benefited the inhabitants of the upland valleys. Sometimes, indeed, from those most remote, farmers come down in long-bottomed coats, with indented flaps over the pockets, monuments of what their ancestors were in the days of Harold Harfager or Snorro Sturleson; while at the view of their wives, the citizen imagines himself standing before one of his old northern grandmothers. Only a faint ray of intellect, however, beams from these antique features, and they are considered as decidedly inferior to the cultivated inhabitants of the towns. The buildings are regular, and mostly of stone; so that in the course of 200 years, while other Scandinavian towns have been repeatedly reduced to ashes, Christiania has suffered only slight injury from fire. Since the union with Sweden, it has received an university, with two professors, who have moderate incomes, chiefly derived from grain.

3324. *There are other havens of some importance in this southern tract of Norway.* On the western coast of Christiania fiord, the two, Bragenæs and Stromsoe, unite in forming what is called Drammen, at the mouth of the important river of that name. Tonsberg, at the bottom of the same side, is a town of some ancient celebrity, but now a good deal decayed. On the eastern side of the same bay is Moss, watered by a stream, turning twenty saw-mills, by which an immense quantity of deals are prepared for exportation. Frederickshall, an ancient and still important frontier town, is beautifully situated in an interior bay, winding among mountains. Near it is the strong fortress of Frederickstadt, the scene of the death of Charles XII. The pass of the Swinsund (*fig.* 437.), on the immediate frontier, presents one of the most romantic and picturesque scenes in Scandinavia. Christiansund, the most southern province of Norway, has a capital of the same name, the fourth town in the kingdom, which, from its situation on the Skagerrack, is visited for shelter and supplies by numerous vessels entering and leaving the Baltic. The interior from Christiania, though it includes Hedemarken and other large pastoral valleys, and though its communications are facilitated by the large lake of Miosen, does not contain a single town. That of Hammer attests its former magnificence, by the remains of a palace, and of several churches, now restored. The whole of this territory is hemmed in on the east and north by the gigantic ranges of the Doverfield and Fillefield, which separate it from Drontheim and Bergen.

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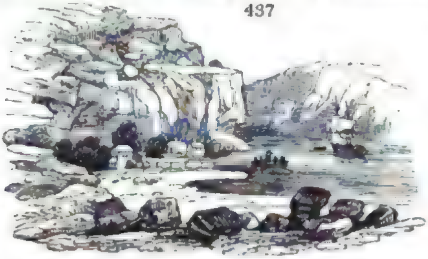

SWINSUND FERRY.

3325. *The province of Bergen* is rude, rocky, and mountainous, consisting of the slope downwards to the sea of the highest part of the Dofrine range. The town of Bergen (*fig.* 438.), at the head of a long interior bay, is the largest in Norway, was formerly accounted the capital, and contains a population of 18,511. Its commerce, which is considerable, is founded on the exportation, less of the produce of the country behind it, than of the northern fishery at Loffoden, of which the produce is brought to Bergen by numerous barks. Its merchants had long the monopoly of this, and still retain much the greatest share. They are chiefly Dutch, and send a vessel weekly to Amsterdam for a supply of the garden stuffs which their own soil does not yield. Bergen is built of large masses of wooden houses, amid rocks, and has suffered severely by fire.

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BERGEN.

3326. *The province of Drontheim*, to the north of Bergen and Christiania, and separated from them by vast mountains, corresponds in latitude with the Swedish Jamtland. The capital (*fig.* 439.), of the same name, is situated on the shore of a winding fiord, but subsists less by foreign commerce than by the internal communication between numerous valleys and districts to which it forms a central point of union. Of these valleys, that of the Guldal is the most extensive and beautiful, and singularly celebrated in Swedish story and tradition. Here, it is boasted, dwelt the mighty Haco, the noble and wise Olaf Tryggvason. The society of Drontheim is always held forth as representing under its happiest light the genuine Norwegian character; its warmth of kindness, and generous hospitality. Dr. Clarke praises chiefly its truly Norwegian simplicity; but Von Buch considers it as marked by more refined taste, more graceful and attractive manners, than the society of Christiania. In no district of Norway is there said to be such a feeling of patriotism and public spirit. Drontheim is built wholly of wood, and has in consequence been seven times burnt to the ground; yet the houses are handsome, and ornamented with taste. There is a spacious palace, built wholly of this material, and partaking its imperfection. Drontheim also contains the remains of a cathedral, the largest

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DRONTHEIM.

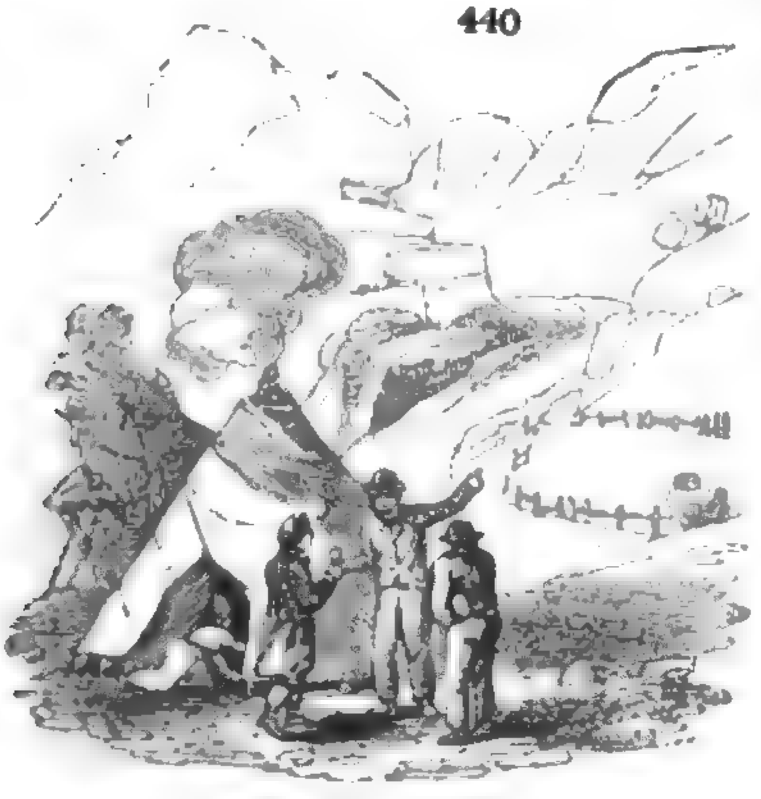
edifice in the country, and to which the whole population of the North came once in pilgrimage. The environs are very beautiful, with numerous country-seats, and lofty snow-crowned hills in the distance. Christiansund is also a small sea-port and fishing town in this province.

3327. *Beyond Drontheim commences Norrland*, a district rather than a province, the name being vaguely applied to all the north of Scandinavia. Relatively to Norway, it is marked by an increasing intensity of cold; the mountains, even at 3000 feet high, being capped with perpetual snow, and vast table plains or fields remaining covered with it during the whole summer. Potatoes, a branch of culture the absence of which is lamented by Von Buch, were found by Mr. Brooke to have been introduced; but they are small, sweet, and waxy. Grain, even of the coarsest descriptions, ripens only in a few favoured spots. The spruce fir gradually disappears, and shelter is necessary to allow the Scotch fir and the birch to spring up. The climate, however, is somewhat milder than that of regions under the same latitude on the Baltic; so that, while the ports of Stockholm and Carlscrona are shut during several months of the year, those of Norrland remain continually open. Yet in this dreary region occurs a busy scene of human action and existence. The numerous islands, and the deep bays between them and the land, afford spots to which shoals of fish come from the farthest depths of the North Sea to deposit their spawn. During the whole year, the herring affords a regular occupation to the Norrland boatmen; but from February to April, the shoals, migrating from thence, and from all the surrounding coasts, crowd to the Loffoden Islands, the central seat of the northern fishery. These islands form a chain parallel to the land, and separated by narrow channels through which the tides of the Northern Ocean rush with tremendous rapidity. The sea flows as in the most rapid rivers, and the name of stream is employed: — Malström, the famous whirlpool, Grimström, Sundström, which, when the tide is high, produce the effect of a mighty cataract. Waves are seen struggling against waves, towering aloft, or wheeling about in whirlpools; the dashing and roaring of which is heard many miles out at sea. The produce of the fishery, which has been rendered much more abundant by the introduction of large nets instead of hooks, is conveyed to Bergen in a great number of little barks. The Danish government endeavoured to form at Stromsoe a commercial depôt for the produce of Norrland; but in this bleak situation it has not flourished. The Russians come with numerous vessels from Archangel, bringing meal and provisions, which they give in exchange for the fish caught.

Subsect. 3. *Lapland.*

3328. *The vast region of Lapland* is divided from the rest of Scandinavia by a line drawn across it nearly coinciding with the Polar Circle, so as to render it almost entirely an arctic region. It consists partly of great chains of mountains, some of which are 4000 feet high, while other extensive tracts are level. Through these roll the Tornea, the Lulea, the Pitea, and other rivers of long course, and navigable for the few boats which have any occasion to pass along them. The Laplanders are a peculiar race, short, stout, brown, with black hair, pointed chin, and eyes rendered weak by exposure to the smoke and snow. They are divided into the mountain or wandering Laplanders, and those who dwell in what are called villages; but Kautokeino, which forms a sort of Lapland capital, when visited by Acerbi, was found to contain not more than four families and a priest. The swift-footed rein-deer, which they train to draw them in sledges over the snow, form their riches; the flesh and milk of these animals compose their food, and the skins their furniture. The tents of the Laplanders (*fig.* 440.) are formed by six beams of wood meeting nearly at top, covered with cloth, a flap of which left between two of the beams serves as the door. The floor is spread with rein-deer skins, having the hair upwards, and which thus serve for either lying or sitting, the tent being too low to stand in, except in one place. A stone frame is made in the middle, for the fire; and there is a hole at the top, to which the smoke must find its way; but this it does not effect till it has thickly impregnated the whole tent with its fumes; which, however, are valued as affording a protection in winter against the cold, and in summer against the swarms of musquitoes with which, during a period of short and extreme heat, the air is infested. The herds of rein-deer vary from 300 to upwards of 1000, according to the wealth of the possessor. All day they wander over the hills, and in the evening are driven, not without some occasional resistance, into an enclosed park, where they are milked. Each yields only about a tea-cupful of milk; but rich, aromatic, and of exquisite taste. Linnæus mentions nineteen farms in which milk is prepared for food; but cleanliness does not preside over their cookery; and the use of the hand, without knife or fork, to carry every thing to the mouth, and of the tongue to lick the dishes, prevents an European from joining these meals with any relish. The Laplanders travel from place to place, and move their families, at the beginning of winter and summer, in sledges made in the form of a boat, and drawn by rein-deer (*fig.* 441.). These animals are tamed and trained with considerable difficulty, and they are sometimes restive; but, in general, they bound over hill and dale with surprising celerity. The natives have also a species of snow shoe; not a broad flat board, like that of America, but somewhat in the form of a skate, with which they

440



MOUNTAIN LAPLANDER'S TENT.

glide rapidly along the surface of deep snow, and even up and down the steep sides of the hills (*fig.* 442.). Their dress is carefully contrived for the purpose of warmth. The under part, or shirt, is composed of a sheep's skin with the wool inwards; while the exterior coat is formed by the skin of the rein-deer, or some other animal, having the fur outwards. They add fur gloves, and a woollen pointed red cap (*fig.* 443.).

441

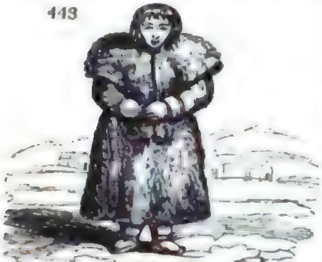
LAPLANDERS TRAVELLING.

3329. *The entire population of Lapland*, spread over a surface of 150 square miles, is stated by Dr. Thomson not to exceed 60,000, or one inhabitant to every three square miles. Even this scanty measure is supported only on the sea-coasts by a supply of fish. The parish of Kautokeino, in the interior, extending 200 miles in length and 96 in breadth, was reported to Acerbi as containing not more than ninety families, of whom twelve only are fixed. The Laplanders are a harmless race, among whom great crimes are unknown. Only one murder has been heard of in twenty years; and the absence of theft is proved by that of bars, bolts, and other safeguards. Mr. Brooke discredits the charges sometimes made of the laxity of the marriage tie, and of the indulgence of the husbands on this head; and observes, in general, that love is only a lingering spark, barely sufficient to answer the purposes of nature. They do not show that open hospitality and warmth of heart, for which rude nations are so often celebrated. They are cold, shy, mistrustful, and difficult to treat with, at least unless tobacco or brandy be brought in as mediators. They were formerly very superstitious; and the Lapland witches were famous for their empire over the winds, which they enclosed in bags, and sold to the mariner. The magic drum (*fig.* 444.) and the enchanted chain (*fig.* 445.) are still in occasional use. Yet the Laplanders have been converted to Christianity, and are attentive to its duties, coming often from vast distances to attend divine service, though the instructions are conveyed to them only through the broken medium of an interpreter.

442

LAPLANDER DESCENDING A SNOW FLAKE.

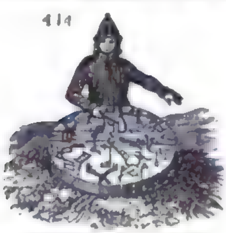
443



MOUNTAIN LAPLANDER.

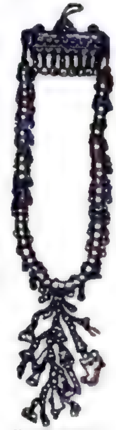
3330. *The sea-coast of Lapland* presents a continuation of the same bold and rocky features which distinguish that of Norway. Here, too, the fishery is carried on with activity. It is chiefly in the hands of a Finnish race, called Quans, who have pushed across Lapland, and exert an activity unknown to the natives of that region. The Russians from Archangel, also, not only bring their meal to exchange for fish, but carry on the fishery themselves to a great extent. In July and August they cover with their small three-masted vessels all the fiords and sounds, and throw out lines that are sometimes two miles long, and contain 600 or 700 hooks; so that their vessels are filled with the utmost rapidity. The government has founded, on the large island of Qualoe, the town of Hammerfest, the most northern in the world, and destined as a rival to Archangel; but the settlement has never taken root in this ungenial climate, and continues also, with one exception, to be the smallest that exists. On the other side of the North Cape, on the extreme frontier, the fort of Wardhuus, defended by twenty men, forms the only barrier to prevent the Russians from taking possession of the whole country. Mageroe, the most northerly of the islands, consists of steep rocks rising perpendicularly from the sea, and ascended as if by stairs. In a rocky recess stands Kielvig, with four or five families, on a level spot, barely affording a site for the houses, and exposed to the perpetual war of the elements. The tempests here rage with such fury, that it is often impossible to leave the house without danger of being blown into the sea. At the northern point of this island is formed by the North Cape the grand boundary of the European continent, facing the depths of the Polar Ocean. It consists of an enormous mass of naked rock, parted by the action of the waves into pyramidal cliffs, down which large fragments are continually falling.

444



LAPLANDER WITH MAGIC DRUM.

445



MAGIC CHAIN.

Chap. XVI.

RUSSIA IN EUROPE.

3331. *European Russia* is the chief portion of an empire of enormous extent, with vast capacities of improvement, and standing at present, if not first, at least in the very first rank, among military nations. It may be considered either as including that great part of Poland which has been absorbed into it; or as comprising only old Russia, as it existed previously to the violent partition of Poland. Although there is little prospect, at present, that the acquisitions in Poland will be wrested from the empire, yet we have reserved for that fallen, divided country, a place and a name, which has afforded the proper occasion for treating of the Russo-Polish provinces. The empire shall now be considered only in a detached and independent view.

Sect. I. *General Outline and Aspect.*

3332. *European Russia is bounded* on the north by the Frozen Ocean, and especially by its great gulf, the Bieloe More, or White Sea. On the east, those grand natural limits, the mountains called the Urals, and the rivers Volga and Don, separate it from the Asiatic continent. On the south, it is bounded by the Euxine Sea and its gulfs, and by European Turkey. Westward, it unites with Russian Poland, which brings it in contact with the dominions of Prussia and Austria. It extends from about the 45th to the 68th degree of north latitude, and from the 24th to the 59th degree of east longitude; making about 1600 miles from north to south, and 1400 from east to west. The superficial extent, notwithstanding very extensive admeasurements, under the direction of the government, is by no means precisely ascertained. The great map, of one hundred sheets, drawn up chiefly from provincial surveys, gives to it an area of 1,490,000 English square miles. In 1795, the amount was reduced to 1,293,000, by a map constructed with very great care; but, from some cause or other, this did not include the provinces of Pultowa and Cherson, which, in the great map, had been rated at 59,000 miles. Since that time, many new astronomical observations have been made, and many errors rectified. Wichmann, in his "Monarchy of Russia," published at Leipzig in 1813, raised it to 1,396,000. The latest estimate made by Mr. Bramsen, in his work of "Russia and the Empire of Russia," published in 1819, raises it to 1,424,000. Humboldt takes it at 2,040,000; but he includes, we presume, the Polish territories. The discrepancies, as to the details, are still more remarkable, and prove that more accurate observations remain to be made, before this vast territory can be considered as duly surveyed.

3333. *The surface* of the Russian territory is the most level of any in Europe. That great tract of low land, which begins in northern Germany, expands in Russia to its greatest breadth, exceeding 1200 miles. A great portion, in the south especially, consists of those immense levels, called *steppes*, over which the eye may range for hundreds of miles without meeting a hill; only some large ancient tumuli occasionally diversify their surface (*fig.* 446.). They terminate only at the long chain of the Urals, which, rising like a wall, separates them from the equally vast plains of Siberia. The Urals are scarcely known, unless where the road to Asia passes over them: there they are neither very lofty nor very steep, but well wooded, and rich in minerals, especially on the Asiatic side. The mountains of Olonetz, on the north, appear to be a prolongation of those of Sweden; while, on the extreme south, the Crimea displays some steep and picturesque, though not very lofty, ranges.

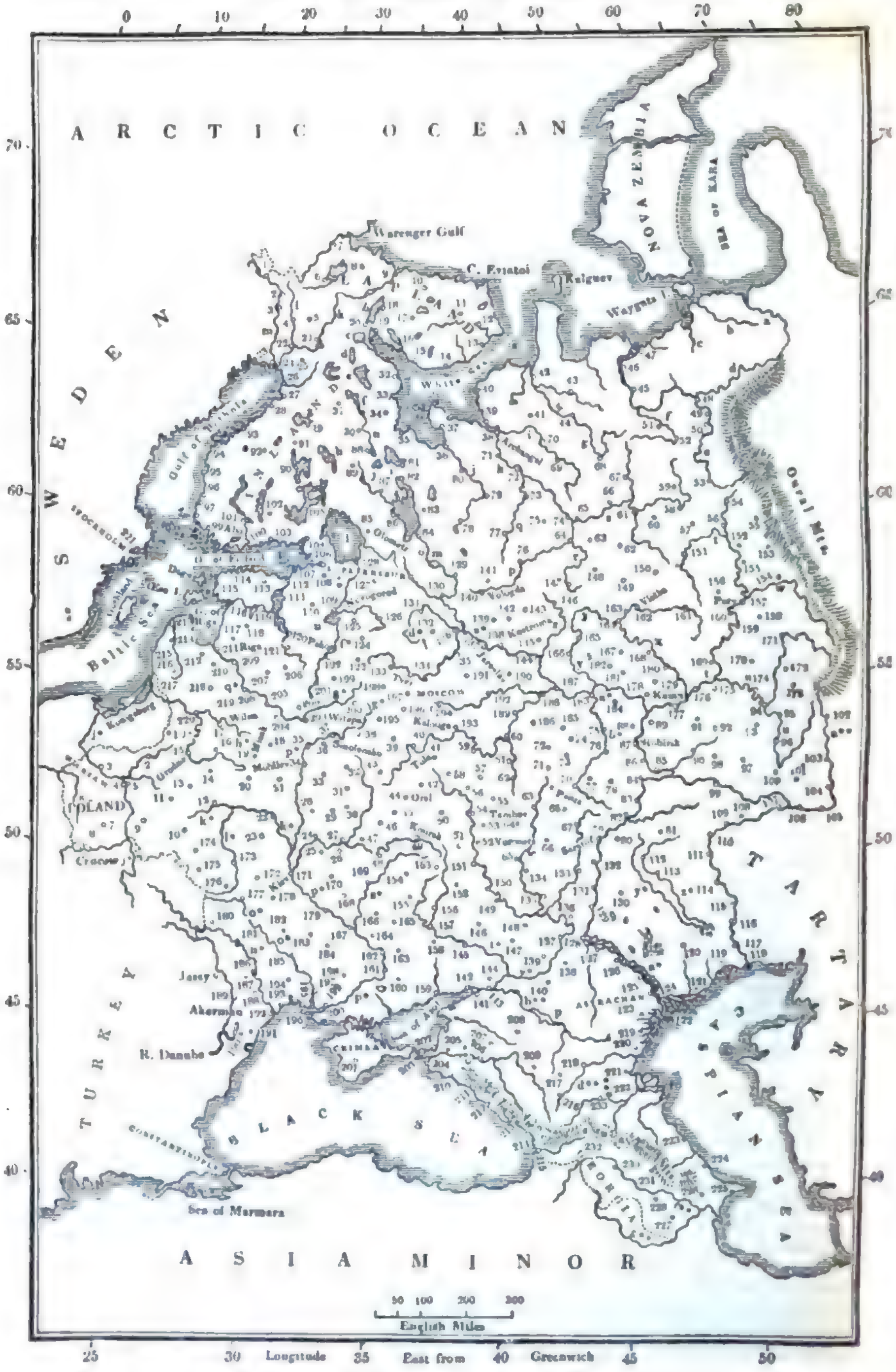
446

TUMULI ON THE STEPPES.

3334. *The rivers* of Russia are of the first magnitude; though the distant and insulated seas in which they terminate, incalculably diminish their commercial importance. The Volga is the greatest river of the empire and of Europe. It rises in the frontier of Novogorod, not far from the Baltic, and traverses in a S.E. line all the central provinces. After receiving from the Asiatic side the Kama, its greatest tributary, it flows chiefly S.S.E., forming the boundary of Europe and Asia, till, after a course of about 2700 miles, it opens by numerous mouths into the Caspian, near Astrachan. Large and broad streams, spreading over the southern plains, slowly make their way to the Black Sea. Of these the chief are the Dnieper, celebrated under the name of Borysthenes; the Don, or Tanaïs, one of the boundaries of Europe; and the smaller eastern stream of the Dniester. The Dwina, rising from a source not far distant from that of the Borysthenes, rolls a broad navigable stream towards the Baltic. Another Dwina, in the north, flows towards Archangel; and during

MAP OF RUSSIA IN EUROPE.

Fig. 447.



that brief portion of the year when it is free from ice, conveys to that remote haven the commodities of a wide extent of country.

3335. *Lakes* are not very characteristic of Russia; yet those of Ladoga and Onega, in the north, are several hundred miles in circumference, and form a sort of continuation of the Gulf of Finland. Finland also is covered with numerous winding lakes, of varied form and dimensions; but all these, surrounded by flat and bleak shores and frozen plains, present little that is striking in point of scenery, and afford few facilities for internal intercourse.

SECT. II. *Natural Geography.*

SUBSECT. 1. *Geology.*

3336. *Russia, including Poland.* In this region, which forms a vast plain, more or less completely bounded by mountainous and hilly country, the predominating formations are tertiary

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References to the Map of Russia in Europe.

NORTH PART.
1. Enontekis
2. Muonioniska
3. Kilangi
4. Ylyasko
5. Kittilia
6. Enara
7. Utjoki
8. Pitsa
9. Kola
10. Veremes
11. Kamennaga
12. Lounda
13. Ponoi
14. Pialitza
15. Barzouga
16. Oumba
17. Lavoser
18. Voronieoser
19. Kandalax
20. Baden
21. Kemitrask
22. Bavaniemi
23. Tornea
24. Kemi
25. Portimo
26. Norr Ijo
27. Uleaborg
28. Brahestadt
29. Kajana
30. Morgouba
31. Tchenavolok
32. Gridina
33. Pongamia
34. Kiemi
35. Ostrog
36. Onega
37. Oumkoi
38. Kholmogor
39. Archangel
40. Hoela
41. Pinega
42. Mezene
43. Limennikovo
44. Tsenogorsk
45. Elma
46. Pilimets
47. Konsero
48. Ousa
49. Oronetz
50. Naoust Siplemo
51. Niastia
52. Tschalia
53. Fogog
54. Atieva
55. Tchastikh
56. Tcherdin
57. Loupia
58. Kertchemskoe
59. Storodoumsk
60. Merdinsk
61. Siselsk
62. Mischanovsk
63. Salsk
64. Veliko Oustjug
65. Solvilchegodsk
66. Tarensk
67. Novolok
68. Boutkansk
69. Poganetz
70. Kokomagora
71. Siakos
72. Penda
73. Schenkorsk
74. Krasnoborsk
75. Semenovsk
76. Totma
77. Vtielsk
78. Kargapol
79. Fedotova
80. Touronovsk
81. Vigonersk
82. Povistnets
83. Pouloj
84. Vitegra
85. Olonetz
86. Petrozavodsk
87. Souma
88. Navolok
89. Lebesimo
90. Kuopio
91. Tidensalmi
92. Kivil
93. Great Carleby
94. Wasa
95. Christianstadt
96. Bjorneborg
97. Raumo
98. Nystadt
99. Abo
100. Helsingfors
101. Tavastehus
102. Heinola
103. Frederickshaam
104. Wiborg
105. Serdobol
106. St. Petersburg
107. Oranienbaum
108. Sophia
109. Novogorod
110. Louga
111. Gdov
112. Narva
113. Wesenburg
114. Revel
115. Hapsal
116. Pernau
117. Venden
118. Valck
119. Derp
120. Pskov
121. Ostrov
122. Kohlin
123. Ostachkov
124. Walday
125. Krestzi
126. Borovitchi
127. Tikhvin
128. N. Ladoga
129. Kirilov
130. Tcherepovets
131. Oustioujna
132. Krasniokolia
133. Torjok
134. Tver
135. Koliasan
136. Mologa
137. Jaroslav
138. Kostroma
139. Lioubim
140. Vologda
141. Kadnakov
142. Boui
143. Galitzk
144. Povovolskoi
145. Kadir
146. Koligriv
147. Nikolsk
148. Verkholamsk
149. Potchinok
150. Agatovsk
151. Kai
152. Solikamsk
153. Kirla
154. Tchizminsk
155. Romanova
156. Obva
157. Perm
158. Koungour
159. Osa
160. Okhansk
161. Glazov
162. Viatka
163. Orlov
164. Kotelnitch
165. Verlouga
166. Varnavin
167. Laransk
168. Ourjoum
169. Sarapoul
170. Mageihma
171. Krasnooufimsk
172. Metchi
173. Simsk
174. Birsk
175. Menzelins
176. Elabouga
177. Tchstopole
178. Kazan
179. Arsk
180. Malmisch
181. Tzarevokokachaisk
182. Tzarevosantchoursk
183. Vasil
184. Tzivilsk
185. Arzamas
186. Ardatov
187. Nizmei-novogorod
188. Gorbatov
189. Mourom
190. Schoura
191. Pereslav Zaliatsk
192. Vladimir
193. Kolomna
194. Moscow
195. Viazma
196. Borodino
197. Volokiamsk
198. Kiev
199. Toropetz
200. Biela
201. Great Louki
202. Gorodok
203. Witepsk
204. Ouschatch
205. Polotsk
206. Opotchka
207. Lutzin
208. Dunaburg
209. Zelburg
210. Bauske
211. Riga
212. Mittau
213. Pilten
214. Goldingen
215. Lieban
216. Telsch -
217. Rossiena
218. Poniwiech
219. Wilkomirz
220. Kowno.

SOUTH PART.
1. Suwalki
2. Lomza
3. Plock
4. Warsaw
5. Praga
6. Petrikau
7. Kielce
8. Miechow
9. Lublin
10. Kovel
11. Kobrin
12. Pinsk
13. Proujani
14. Slonim
15. Grodno
16. Lida
17. Wilna
18. Borisov
19. Minsk
20. Slutsk
21. Bobroinsk
22. Mozir
23. Ovroutch
24. Tchernigov
25. Nejin
26. Borsza
27. Sosnitza
28. Bielietza
29. N. Miasto
30. Starodoub
31. Mglin
32. Roslavl
33. Tcherikov
34. Mogbilev
35. Orcha
36. Krasnoi
37. Smolensko
38. Doregobouj
39. Lokhov
40. Kalouga
41. Tula
42. Tchern
43. Jezdra
44. Orel
45. Dmitrovsk
46. Sievsk
47. Korolevetz
48. Bielopol
49. Koursk
50. Livni
51. Dievitzk
52. Voronetz
53. Ousman
54. Zadonetz
55. Kozlov
56. Dankov
57. Oranienburg
58. Bogoroditzk
59. Rezzan
60. Elatom
61. Schatzk
62. Morschansk
63. Kirsanov
64. Tambov
65. Novokhopersk
66. Balaschev
67. Atkarsk
68. Serdobsk
69. Tchembar
70. Penza
71. Norovtchat
72. Krasnoslobodsk
73. Schenchkiev
74. Porchinki
75. Alatir
76. Kotiakov
77. Goroditch
78. Kouznetsk
79. Saratov
80. Konkoschkourovka
81. Vetliam
82. Volsk
83. Khvalinsk
84. Sizran
85. Stavropol
86. Singilei
87. Sinbirsk
88. Bouinsk
89. Spask
90. Sergievsk
91. Apatchka
92. Bourgoulma
93. Tevlekava
94. Oufa
95. Koultal
96. Sterlitamak
97. Norouvova
98. Borgoroslan
99. Bouzoulouk
100. Samotkina
101. Sinakova
102. Utalsk
103. Kirilsk
104. Terekinsk
105. Goulerlinsk
106. Gitialsk
107. Orenburg
108. Zajirnoi
109. Genvartaav
110. Ouralsk
111. Tcheganak
112. New Ouzen
113. Loukovsk
114. Merjenev
115. Kalimekova
116. Koch Ourlalsk
117. Tonoleva
118. Gouriev
119. Kopinskoi
120. Bieloi
121. Eruk Aman
122. Astrachan
123. Bachmatchchagi
124. Enotaevsk
125. Kopanovsk
126. Tchernoiler
127. Gorodok
128. Tzaritzin
129. Bolieklei
130. Tourgoun
131. Kimichin
132. Zalika
133. Krasnoilar
134. Ourioupinsk
135. Jotovsk
136. Rovlnsk
137. Goloubinska
138. Masov
139. Aksemk
140. Felisov
141. Azof
142. Teganrog
143. Old Tcherkask
144. Tcherkask
145. Donetz
146. Bistiovsk
147. Golov
148. Zaitzov
149. Bogoutch
150. Kalitva
151. Korotoiak
152. Livensk
153. Karotcha
154. Khotmijsk
155. Charkov
156. Koupiansk
157. Izioum
158. Slaviansk
159. Mariopol
160. Oriatkov
161. Alexandrovsk
162. Ekatherinoslav
163. Pavlograd
164. Alexopol
165. Konstantinograd
166. Poltova
167. Krioukov
168. Lubni
169. Gladiatch
170. Prilovki
171. Kiev
172. Zytomir
173. Novrad Volinsk
174. Rovno
175. Zaslav
176. St. Konstantinov
177. Khmiatlinik
178. Skvira
179. Tcherkasi
180. Kaminiek
181. Trekinovka
182. Ouman
183. Novomirgorod
184. Elizabethgrad
185. Olviopol
186. Dobezar
187. Kichenau
188. Bender
189. Leva
190. Ismail
191. Kilia
192. Akermann
193. Odessa
194. Fedorovka
195. Oczakow
196. Kilbourn
197. Nicolaev
198. Cherterina
199. Cherson
200. Perecop
201. Sympheropol
202. Enikale
203. Taman
204. Anacopia
205. Tchernoiles
206. Ekaterinodar
207. Novomaloroussisk
208. Razsipnoi
209. Stavropol
210. Vaulan
211. Mamai
212. Ardiler
213. Soukoum
214. Anacria
215. Poti
216. Gorgievsk
217. Alexandrov
218. Madniarsi
219. Batkalie
220. Bielom Ozer
221. Koulpitchla
222. Kisliar
223. Derbend
224. Chaderzend
225. Baku
226. Chamakia
227. Chucheh
228. Ghendieh
229. Karaklissa
230. Teflis
231. Signakhi
232. Gori
233. Mosdok.

Lakes.
a Enara
b Imandra
c Kowdo
d Piavo
e Top
f Koumto
g Ulea
h Pielis
i Vigo
j Sego
k Onega
l Ladoga
m Bielo
n Ilmen
o Tchouak.

Rivers.
a Kara
b Obio
c Kaipoudra
d Ousa
e Petchora
f Ijma
g Mezene
h Dwina
i Pinega
j Onega
k Kemi
l Ounas
m Tornea
n Tchirka
o Schekana
p Soukhona
q Vaga
r Joug
s Vitchegda
t Kama
u Biela
v Oufa
w Tchiourova
x Viatka
y Vetlouga
z Ounja
a* Volga
b* Soura
c* Oka
d* Mologa
e* Volkov
f* Lovat
g* Duna
h* Wilna
i* Memel
j* Vistula
k* Pripet
l* Slou
m* Pruth
n* Dniester
o* Bug
p* Dnieper
q* Desna
r* Seim
s* Psiol
t* Donetz
u* Oskol
v* Don
w* Khoper
x* Melvidita
y* Little Ouzen
z* Great Ouzen
a** Oural
b** Manitch
c** Kuban
d** Kouma
e** Terek
f** Kur
g** Agadan.

and alluvial; those of an older date, namely, the secondary, transition, and primitive, occupying but comparatively small spaces.

3337. *Primitive and transition districts.* These are the Uralian mountains, Finland, and Russian Lapland; the northern parts of Carelia, and part of the government of Olonetz; the narrow tract extending, from the Island of Oesel in the Baltic, through Esthonia, Ingria, to beyond Vitegra; the country around Lake Ilmen; around Wologda; part of the Waldai mountains; the mountains of Sandomir; the tract extending from Brody, across the Bug and the Dnieper; part of the Crimea, and part of the Caucasus. In these districts we meet with the usual primitive and transition rocks, exhibiting similar characteristics to those in other countries.

3338. *Secondary lands.* These frequently appear rising like little islands in the great Russo-Polish plains. The following formations are met with: — 1. Old red sandstone. 2. Coal formation, as seen in the coal-mines of Poland and Cracovia. 3. New red sandstone, with gypsum, salt, &c. 4. Shell limestone, which, in Poland, contains the famous lead-mines of Olkutz. 5. Keuper sandstone and marl, with gypsum and salt. In Russia there is a *northern salt district*, which stretches in a line parallel with what is called the Petersburgh limestone, for 1000 versts: it makes its first appearance in the Island of Oesel, and is worked in several parts of the south of Livonia. *Gypsum* is quarried in many parts of this great tract. Mr. Strangway describes a *central salt district*, of great extent, in the course of the Volga. There is also a rich and extensive tract of red marl, salt, and gypsum, which extends down the course of the Kama, and is probably connected, on the south, with the salt district of the Volga, and on the north by that of Wologda. The principal salt-works are in the neighbourhood of Solikamsk; and the gypsum grottoes of Koungour, in the government of Perm, are of great size and magnificence. 6. Lias and oolite limestones. 7. Green sand formation. 8. Chalk formation.

3339. *Tertiary.* The rocks of this class, which occupy vast tracts of the low country, are clay, loam, limestone, *brown coal*, with gypsum, and in many tracts, as in Gallicia, rich deposits of *rock salt*. In central Poland, a clay, with *lignite or brown coal*, rests upon chalk, and is the oldest member, according to some geologists, of the tertiary class. Resting upon this deposit, formed in part by rivers from continents, there succeeds a deposit almost entirely of marine origin, and, consequently, abounding in marine shells. It is the tertiary *oolite limestone*, very extensively distributed throughout Poland, Podolia, and southern Russia. This tertiary limestone has not been found either in England or Italy; and is peculiar to Poland, southern Russia, and Podolia. It occurs, however, in the basin of Vienna and Hungary, and in France. It is the last depôt of that sea which covered all the country to the north of the Carpathians, from the Baltic Sea to the foot of that chain, and to the Black Sea, in the middle of which rose the mountains of Sandomir, and the plateau, south-west, in the form of islands. It is covered by a *marly clay, and a sand*, formed by the last great alluvial catastrophe, which gave to Europe its present form, and buried in its depôts remains of unknown species of elephant, mastodon, rhinoceros, &c.

3340. *Alluvial.* In the alluvial soil we have not in general the same marked limits between the old and new deposits as in the secondary class. The ancient alluvial deposits consist of a great deposit of marly clay or loam, and of numerous blocks of primitive rocks. This loam must be carefully distinguished from that which is deposited from the present rivers. It is a clay mixed with much carbonate of lime, generally of a yellow colour, and very easily frangible when dry: it is distinguished from potter's clay by the lime it contains, and from the marly secondary slates by its want of bituminous matter. In Poland it varies in thickness from 30 to 100 feet, and covers vast tracts of country. It forms the high banks of the Vistula; associated with marly chalk, the excellent soil which affords the wheat of Cracovia and of Sandomir: but, as we advance towards the north, it becomes more and more mixed with sands, gravels, and primitive blocks, and less and less fertile. It is this deposit which contains that vast abundance of extinct terrestrial animals in Poland. The bones and teeth of elephants are the most frequent: remains of the rhinoceros, aurochs, horse, deer, and some great cetacea, or whales, are also found, but less frequently.

3341. *An alluvial sand*, different from the sand of rivers, is widely spread in Poland. It is in great part formed from disintegrated sandstone rocks; but in many countries it is certain that the sand has not been brought from a distance, and has been formed on the spot. In this latter case, it cannot be distinguished from the loose arenaceous beds of the tertiary class. In the southern part of the district of Lublin, near to Chelm, in the country situated between Chmielnik, Stassow and Klimonton, the sand occurs only near to tertiary depôts, and we may almost be sure that it forms a part of them, and that it is not alluvial. The sandy soil of Poland commences on the western part, along the frontiers of Silesia; in the grand duchy of Posen it is connected with the great sandy plain of Northern Germany: it covers a great part of the districts of Kalisch, Masovia, Plock, Augustowa and Podlachia, the portion north of Lublin, and extends from thence into Lithuania and White Russia. In this plain of sand, and particularly upon and in the *loam*, we found numerous large and small blocks of primary rocks. At first sight, we might conjecture that these blocks had come from the Carpathians; but a more careful examination proves the falsity of such an opinion. The only river which rises in the primitive soil of Tatra, and which intersects the great sandstone chain of the Carpathians, is the Dunajec; all the rivers rise from sandstone: hence the Dunajec could alone carry the primitive blocks into the plain of Poland. In truth, we find on the Vistula, at the débouché of the Dunajec, and a little lower down, boulders of granite and granitic gneiss, which are identical with those of Tatra; but these blocks occupy so small an extent, that they appear insignificant, when compared with those of the northern plain. There are, on the contrary, convincing proofs, that these primitive blocks have not come from the south, but from the north. First, their magnitude and abundance diminishes from the Baltic, towards the south, which is the contrary of what would be the case had they come from the Carpathians. Further, their southern limit passes, in the vicinity of Czenstochau, by Przedborz, along the northern foot of the mountains of Sandomir; and, on descending the Kamiona, by the Vistula, on Lublin, Lubartoro, across southern Lithuania, and still further into the middle of Russia. Lastly, the rocks do not correspond with those of the Carpathian and Sudetic chains; while they are identical with those of Sweden, Finland, and southern Russia. The observations of geologists on the same subject in Prussia, Livonia, and Courland, and in the north of Russia, concur to prove that they have been spread over the countries to the north of the Carpathians by a débâcle flowing from north-east to south-west. Our limits do not allow us to enter into detailed descriptions, but we may here cite the predominating rocks.

3342. *From Petersburg* to the Dwina and the Niemen, we every where meet with blocks of a granite resembling that of Wiborg, in Finland; another granite, with Labrador felspar, of Ingria; a red quartzy sandstone, on the borders from Lake Onega, and the transition limestone of Esthonia and Ingria. In eastern Prussia, and in the part of Poland situated between the Vistula and the Niemen, the blocks are of a deep red granite, with little quartz, calcareous mica, and very little hornblende; a porphyritic granite of the same tint, with large crystals of felspar (granite globulaire); a grey granite, with much hornblende or syenite; a small granular red granite, principally composed of felspar and garnets; a coarse granular granite, with much green, grey, and red felspar, often Labradoric, with black mica, and with numerous large, trapezoidal red garnets (Warsaw); of syenite, diorite, and hornblende rock; of grey and red quartz rock; more rarely of common and hornblendic gneiss, of common porphyry, and antique green porphyry.

3343. *Among these rocks*, the first three occur in Finland, from Abo to Helsingfors: the coarse granite and the syenite come also from the north; the hornblende rocks appear to be derived from the south of Sweden, or the middle of Finland; the quartz rocks are exactly the *Fioll sandstein*, between Sweden and Norway; and the porphyries are those of Elfdal, in Sweden.

3344. *From Wartovia, on the west, towards Kalisch and Posen*, the red granite of Finland diminishes; but the hornblende rocks and the gneiss become more abundant, and the same is the case with the porphyry. We find there, in general, few rocks of Finland, and many of Sweden. This correspondence with the Scandinavian rocks cannot be mistaken. The garnet, epidote, hornblende, Labrador felspar, the predominating hornblende rocks, show, to every one acquainted with the Carpathians, that these blocks do not come from that quarter: further, the red and porphyritic granite, which is the must abundant, is entirely wanting in that chain. In connecting with this fact the known opinion that all the primitive blocks of the sandy plain of Northern Germany, of the Low Countries, and even of the east coast of England, have been transported from Norway and Sweden: this dispersion of the Scandinavian blocks, on this side of the Baltic and German seas, becomes one of the most extensive and singular of geological phenomena; its extent is immense, when contrasted with that of the dispersed blocks observed in Switzerland. In the Jura chain, and the tertiary plain, the last-mentioned fact has been explained by sudden débâcles of Alpine lakes.

3345. *The débâcle* which transported those northern rocks into Germany, Poland, and Russia, has also formed the marly clay, or alluvial loam: it has interred the elephants and rhinoceroses of an ancient time; it has broken up the chalk plains of the north; it has separated Denmark from Sweden; and given, in general, to the Baltic, and the gulfs of Bothnia and Finland, their present forms. On the other hand, the idea of Hausmann, that these blocks belong to the tertiary period, does not seem plausible.

3346. *In regard to the river alluvia*, it may be remarked, that they are of but inconsiderable extent in Poland. The Vistula, as the largest river, has formed the greatest quantity. The rivers of the Carpathians, which are rapid in their course, as the Raba, Skaba, Sola, Wisloka, Dunajec, and San, running almost entirely among sandstone strata, which yield readily to their action, carry much débris into the Vistula.

3347. *Peat is formed abundantly* in the marshy valleys, and the great marshes of this plain, but is, in general, of indifferent quality. *Bog iron ore* occurs in the great marshes of Lithuania, and in the district of Augustowa, and of Plock, in the plain of Gallicia; and is abundantly distributed in Great Poland and Russia. *Calcareous tuffa*, notwithstanding the abundance of calcareous formations, is rare, in general, in Poland.

3348. *Volcanic rocks.* The only rocks of this class mentioned by travellers are *trachyte*, which abounds in the Caucasian chain.

3349. *Mines.* In European Russia and Poland there are but few mines of importance; the principal mineral repositories occurring in the Uralians, Altaïs, &c. The following may be particularised: —

3350. (1.) *Western Uralian mines.* These are situated amidst the primitive and transition rocks, and are principally iron and copper; the more precious metals occurring chiefly on the eastern acclivity of that great range.

3351. (2.) *Central mining district of Russia.* This tract includes parts of the governments of Nishney-Novogorod, Vladimir, Tambof, Reza, and Kalouga; extending from a little above Mourom, on the Oca, to near the town of Kalouga. It is, in general, a very poor sandy district, and probably belongs to the red marl formation. Along it are situated several extensive ironworks; for, in general, the iron is manufactured where the ore is raised. These supply the principal consumption of that metal in the interior of Russia. One of the most considerable is the establishment at Vixa, and its dependencies, in the forest of Mourom, belonging to M. Bataskoff. The crown works at Tula exclusively Siberian iron: this is the principal manufacture of arms in Russia. The manufactory at Kalouga formerly attempted the finer kinds of cutlery, but failed. The ore of the central mining district is described as occurring, at 60 feet below the surface, in regular beds. Some of the beds are dark red and argillaceous; others are mere layers of large concretions: there are also regular strata of pale yellowish brown-coloured ironstone, which is the ore principally worked. Of the two latter varieties, the lightest coloured ores produce the most iron.

3352. *Copper sand.* On both sides of the salt country of the Urals is a vast tract of what is commonly called *copper sand*, which extends through a great part of the governments of Viatka, Perm, and Oufa, and completely skirts the south and west sides of the Ural mountains. The sand is of a dull red or green, and is commonly worked for copper. It contains fossil wood impregnated with copper.

3353. (3.) *Finland mines.* At Petrozavodsk, near Lake Onega, there are ironworks, said to be the most considerable in the north of Russia. The only kind of iron now smelted there is the bog iron ore, which abounds in the neighbourhood. The usual way to procure it is to drag the small lakes, especially those north-west of Petrozavodsk, which yield vast quantities of the ore. It is not found equally spread over all the lakes: often different parts under the same sheet of water will afford ore of various degrees of purity. We may add, that there is another great ironwork, of the same description, four versts from Petersburg, on the road to Riga.

3354. (4.) *Salt mines.* The Russian salt mines have been already noticed. In Poland, those of Wielicza and Bothnia are the most considerable, affording annually a vast quantity of rock salt.

3355. (5.) *Coal mines.* In European Russia there are no considerable mines of coal. Good coal has been found at Tula, where it is worked; but the quantity is so small, and the difficulty of working it beneath a loose and half-liquid bed of quicksand is so great, that it seems unlikely to be of much utility. Coal has also been worked at Bakhmout, in the government of Ekaterinoslaf; but to no great extent. In southern Poland there are numerous beds of black bituminous coal, resembling that of Britain, some of which are ten yards in thickness; and deposits of brown coal occur in the tertiary districts, which also afford *amber.* The amber is shown in that country to be an exudation from a dicotyledonous tree. From the characters of the tree, and the insects in the amber, a former warmer climate is indicated.

Subsect. 2. *Botany.*

3356. *Russia in Europe.* Vast as is this country, extending from 40° latitude almost to the extreme arctic region, it exhibits, over the greater portion of its surface, a vegetation very similar to what has already been described in treating of other European countries. The western portion is eminently analogous to Germany and the north of France; its northern parts resemble what we have described under the heads of Sweden, Denmark, and Lapland. On the east, the great chain of the Ural mountains forms a strong line of demarcation, separating the northern European from the northern Asiatic botany; and over this vast surface, winter reigns with excessive rigour; while the short summer, characterised by an almost tropical heat, induces a most rapid growth in the vegetable productions, and as rapid a decay in autumn. It is in the southern and south-eastern provinces of the empire that we are to look for the chief peculiarities; where the widely extended and celebrated *steppes* are bounded from Asia Minor by those great inland seas, the Caspian and the Black Sea, or by the inaccessible heights of the Caucasian and Circassian Alps. This country has been well investigated by the celebrated Pallas; but, before mentioning some of the more important productions of Russia, in general, as of the districts nearer the capital, we shall give a short sketch of those of the Crimea, a peninsula of the Black Sea, which, from its geographical situation, climate, and soil, is the only region in the empire where all the productions of Italy and Greece might be introduced and multiplied, and where, indeed, many of them are indigenous; nor is any thing wanting to effect so desirable a state of things, save an industrious and well-governed population. No country, again, can be better suited to the Vine, Silkworm, Sesame, Olive, Cotton, Madder, Bastard Saffron, and other dyeing plants, which have hitherto been imported from the Baltic, the Caspian, and the opposite shores of the Black Sea, at a heavy expense. Even the indigenous produce of the country is most wantonly destroyed. The finest trees with which nature has clothed the mountains fall before the axe, in order to make miserable carriages, though only a small part be employed in their construction. For the naves, the strongest elms and ash trees are cut down, of which the solid root only is used; the most beautiful young oaks and beeches are felled for spokes, axles, and even for fuel; and the full-grown trees for fellies: yet when the wheels, constructed at such an enormous waste of timber, are brought to market, they frequently drop to pieces within a month after they have been purchased. Every winter, the Tartars burn, for their convenience, the fences of their fields and gardens; to replace which, the young shoots and coppices are unmercifully cut in spring; while the windfalls, and the wood needlessly felled, lie rotting in the forests. This waste of young timber, the sale of which affords the chief maintenance of the people, together with the numerous herds of goats, destroy all the young forests; so that large tracts of land, formerly clothed with lofty trees, are now overgrown with worthless bushes and underwood. The beauty of the spring season, which continues from March till the end of May, is well described by Pallas. At that time, not only are the senses gratified with the sweetest perfumes, wafted from the gardens and woods along the banks of the rivers, the last of which exhibit an infinite variety of wild fruit trees, white and red Roses, Lantana, wild Vines, Vitalba, and Jasmines intermingled; but likewise each hill and declivity, around the champaign country, is alternately diversified with the lovely colours of the flowers that every where clothe the earth; and sometimes one, sometimes another, species prevailing on different hills, according to their situation, aspect, or soil, vary and enrich the scene. Thus, at a distance, whole sides of mountains, and extensive tracts, covered with red and blue, purple or yellow tints, relieved by a background of shaded greensward, delight the eye with the most fascinating prospects. The fragrance arising from this profusion of flowers, especially March-violets, and the blossoms of trees, together with the grateful odours of the aromatic herbs, embalm the surrounding atmosphere.

3357. *The Tartars*, originally a wandering people, were induced to become husbandmen, in consequence of the narrow limits of their country; the increase of population; and, probably, from the example of the Greeks, Armenians, and Genoese, to whom they are indebted for their limited knowledge of rural economy, for their orchards, olives, figs, pomegranates, and their vineyards. Of wheats they have three kinds; summer and winter Rye, winter and summer Barley; Oats, but which scarcely come to perfection; Maize, Millet, of two or three different sorts; and Chick Peas. The Flax (*fig.* 448.) is much esteemed on account of its fineness, and the length of the fibre. Their Tobacco is the Nicotiana paniculata, of which the young leaves are gradually removed, dried in the shade, and buried beneath hay ricks: there they turn to a brownish-yellow colour, similar to that of Turkish leaf tobacco, to which they are nearly equal in value. Sesame used to be cultivated, and rice; but the Russian government has prohibited the latter, because of its unwholesome tendency. In the gardens, Melons and Water Melons, Cucumbers (of which they grow a remarkably large Turkish variety, sown in April, and gathered in May, and which, when filled with meat and rice, is greatly esteemed), Gourds of various sorts, the Egg-fruit (also eaten stuffed with meat), the Hibiscus esculentus, similarly treated with the last, Jerusalem Artichokes, Potatoes, White Cabbages, called Kapusta, celebrated on account of their enormous size, apparently quite different from those of any other part of the world: they appear to derive their excellence from being watered and nourished by the Dshuruksu, which is impregnated with all the filth of the neighbouring town; Onions, from the culture of which many Tartars derive their whole support; Garlick, Leeks, Broccoli, Celery, Parsley, Carrots, and Red Beet.

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FLAX.

3358. *The Grape* is not only an indigenous production of Crim Tartary, abounding in the mountainous parts, sometimes bearing oblong white berries, and sometimes small round black fruit; but it has been planted in different valleys and districts from the remotest periods of antiquity. Strabo mentions the culture of the vine near the Bosphorus, and the care taken to cover it with earth during the winter, or to bury its roots in the soil, in order to shelter them from the cold, as indeed is still practised in the vicinity of the Alma and

Katsha. Numerous kinds are grown, but comparatively with little success, owing to the prejudice and ignorance of the people; and they are exposed to injuries from various causes and circumstances. Caterpillars destroy the leaf and flower-buds, while locusts (the *Gryllus italicus*) devour what the Caterpillar has spared. Annually does the locust appear on the dry eminences, in the arid southern regions, from the European boundary, as far as the Irtish and the mountains of Altaï; but it is only in particular years that it multiplies in such numbers as to become pernicious. Thus, after the severe winters of 1799 and 1800, these locusts were so numerous in the Crimea, that they traversed the air in prodigious swarms, and, wherever they settled, they not only destroyed the herbage and culinary plants, but stripped the leaves from their favourite trees, committing great ravages, especially among the vines. The clusters of large but unripe grapes remained till the end of September on the denuded vines, without increasing in size, filling with juice, or ripening; so that they were hard and green, like peas, and thus afforded ocular demonstration of the detriment that must arise from the practice of pulling leaves from the vines, which is recommended by many cultivators. It was not till October, when the vines had again acquired leaves from the collateral buds, that they ripened, though imperfectly, and afforded bad acidulous must. In a winged state, these locusts at length devoured the foliage of the trees; and the Fraxinus Ornus, or Manna Ash, in particular, was every where seen stripped to its very summit; nor were Orange and Nut trees exempted from their depredations. In the following year, these vermin appeared still earlier, and in increased swarms, spreading over the country in vast bodies, and advancing at the rate of one hundred fathoms and more in a day. Although they prefer advancing by the roads, or over open tracts, yet they will penetrate through hedges and across ditches: their way can only be impeded by brooks or canals, as they are apparently afraid of every kind of moisture. Often they attempt to cross by means of overhanging boughs, and pass in close columns on the stalks of plants and shrubs, where they seem to rest, and enjoy the refreshing coolness. Towards sunset the whole swarm collect, and creep up the plants, or encamp on slight eminences. Woe, then, to the vineyards where they settle for the night; and if the following day be cold, cloudy, and rainy (in which weather they never travel), they not only consume all the weeds and vine-leaves in it, but, frequently, when these fail, they completely strip the bark and buds off the young twigs, so that these shoots remain throughout the entire summer as white as chalk, and full of sap, without producing fresh foliage. The same fate awaits those places on which they settle for the purpose of casting their skins. It is remarkable, that while the vine-blossoms continue closed the locust does not attack them; but as soon as they are blown it devours the whole, in the most rapacious manner, the stalk only being spared. Their favourite food is generally the plants found in vineyards, as Carduus tataricus, Salvia nemorosa, Millefolium, Melilotus, Cerinthe; the fetid and poisonous Conium maculatum, which does not, however, prove fatal to them; the Asparagus volubilis, Ebulus, Coronilla varia and valentina, various kinds of Geranium, Linum, and Inula; Centaurea solstitialis, and all bitter vegetables. On the other hand, the locusts do not prey on grasses; some species of grain, as Millet, are also spared by them, and Sedge, which is the favourite food of the great erratic locust, together with the Aristolochia Clematitis, which grows luxuriantly in vineyards; Clematis Vitalba, the Euphorbiæ, Rumex Patientia, Mentha sylvestris, Artemisia maritima, Contra, pontica, and austriaca; the rough Echia, all the Atriplices and Salsolæ, the Stellera passerina, the milky Sonchus, Chondrilla and Prenanthes, Rhus coriaria and Cotinus. After having consumed every other vegetable, they attack the Caper buds, the Beta Cycla, and Euphorbia; to the latter of which it must probably be ascribed that many of the locusts, firmly adhering to these plants, ultimately perished.

3359. *In the orchards*, the Crim Tartars have a great variety of fruit. Pears of several kinds, of which the Duli is particularly esteemed, and is remarkable for being thicker in the middle than at the top. Of Apples, numerous waggon-loads are, in the autumn, sent to Moscow, and even to Petersburg, especially of the sort called Sinap Alma, or Apple of Sinap, and, as may be supposed after such a trajet, they are sold at a very high price. These fruits will even keep till the July of the following year. There are summer and winter Quinces; with a third sort, that is cultivated along the Caucasus, and, possessing no astringency, may be eaten raw. Plums and cherries are of several kinds; but the larger description of stone-fruit, such as Peaches and Apricots, are scarce and indifferent. The Service tree, the Cornel Cherry tree, and the Lotos (*Diospyros Lotos*), are found both wild and cultivated: the first seems to be generally prized for its wood; and of the second, the fruit is gathered in large quantities, and suffered to ferment, for the purpose of converting it into brandy. To this list may be added the Pomegranate, Mulberry, Walnut, Hazelnut, the Corylus Colurna, and Figs.

3360. *With regard to the trees and shrubs*, the mountains of recent formation produce them of small stature, except along the banks of rivers and brooks; but the southern mountain district, where the old formation prevails, abounds in forests, and the valleys between the loftiest mountains are interspersed with enormous Oak, as well as red and white Beech trees, which are equally useful in naval and domestic architecture.

3361. *Among the evergreen trees* in the Crimea, the most conspicuous are the Sea Pine (*Pinus maritima*), called by the Tartars *tzaam*, and two species of Juniper. The former grows chiefly on the high mountains by the sea-coast. The largest beams afforded by it are about two or three fathoms long. Its wood is durable and resinous, but very knotty: the resin may be collected in large quantities from it. There are two kinds of Juniper, one bearing red, and another black berries. The former seems to be Juniperus Oxycedrus, and is a small inferior tree or brushwood; the other forms trunks more than a foot in diameter, with wood smelling like Bermuda Cedar. To these trees may be added the Yew: it attains a considerable height and thickness in the valleys of the Alps, or Yaila, where it is by no means rare.

3362. *The following umbrageous trees* occur in Crim Tartary: — Two Oaks, the common and the Cerris; the latter seldom growing high, as it is eaten down by goats; three kinds of Beech, which inhabit various situations, and attain different degrees of stature; the Dwarf Elm, which is very common, and whose far-spreading roots are highly injurious to vineyards and orchards; it is different from the tree of Siberia, and its trunks seldom exceed a foot in diameter: four kinds of Poplar, the white and black, the Aspen and the Lombardy Poplars; the latter was introduced from Italy, and has received from the Turks the appropriate name of Salvi, which is also applied to the cypress, that it greatly resembles. These trees thrive extremely, and, being cleared of the low shoots, form beautiful pyramidal heads, and attain an astonishing height. Notwithstanding their solitary and often exposed situations, they have never been known to be shivered by lightning, broken by stones, or torn from the soil; their long and vigorous roots running to great distances, and attaching them firmly to the ground. Their wood is extremely hard, but easily injured by moisture. The Linden tree, and the Maple, or Plane; also the common Maple (*Acer campestre*), called by the Tartars the Spoon tree, because its wood makes excellent spoons. Two kinds of Ash; the common species, inhabiting the cold, and the Manna Ash, the warmer, southern spots. Several Hawthorns, particularly the black-fruited one, and the varieties with brown and with large reddish berries; also the Oxyacantha, with small red fruit; and Cratægus Aria, torminalis, and orientalis.

3363. *Among the wild fruit trees* are the early and late Apples and Pears; three kinds of Cherry, a small sour-fruited species, a light red and sweet Cherry, and lastly, the Mahaleb Cherry, whose wood is veined, and diffuses, when the trunk is felled, an agreeable odour, resembling that of bitter almonds, which the wood also retains for a long period. The fruit, which is bitter, and called by the Tartars Dog cherry, is the principal ingredient employed for preparing ratafia and cherry brandy. Wild Plum trees are not very common; but the Sloe grows in the greatest luxuriance. The Turpentine tree occurs sometimes in the southern parts, near deserted valleys: it is, perhaps, an exotic; the trunk attains a thickness equal to a man's body, and the wood resembles Guaiacum, both in weight and colour. The Strawberry tree (*Arbutus*) thrives only on steep rocks, exposed to a meridian sun; it is more prized for its beauty and fine wood than for the fruit, which is deficient in juice.

3364. *In the mountains and forests* are the following low shrubs: — the round-leaved Alder; two species of Spindle-tree; the Water Elder; the Wayfaring tree, or Lantana, from the wood of which the Tartars manufacture the tubes of those tobacco-pipes which are in such great request in Russia and Germany, and known there by the name of Gordina, or Gordovina; two sorts of wild Rose; the Privet; the wild Cornel, and the wild Vine; the trunk of the latter being as thick as a man's arm, and its branches ten or fifteen fathoms long. The Virgin's Bower (*Clematis Vitalba*) twines around trees, and finally stifles them; its blossoms diffuse an agreeable smell; and Ivy, which, however, seldom produces a considerable stem.

3365. *The shrubs growing in open situations* are the Christ's Thorn (*Paliurus*); two species of Tamarisk (*T. germanica* and *tetrandra*), flourishing in the beds of rivers; a weak kind of Willow, not the Salix babylonica, which, however, though not indigenous, thrives uncommonly well: the Berberry and Brambles; the Elder and Ebulus; the Sumach, or Tanner's tree, of which the acid red berries are an important ingredient for the preparation of animal food, and the whole plant excellent for tanning; the Cotinus, or Jews' Leaf, so called because the Jews particularly employ it in tanning morocco; the Medlar Thorn, or Pyracantha, named also Devil's Thorn; the Mespilus Amelanchier; the Judas tree (both the latter are scarce); the grey Spiræa, yellow Jasmine, Spanish Lilac, and Italian Honeysuckle, Coronilla Emerus, Colutea arborea, Saltpetre Wort (*Nitraria*), Caperbush, Salsola ericoides, and, finally, the Astragalus Poterium, or Bastard Buckthorn, of the Crimea.

3366. *Of the plants useful to the Crim Tartars for economical purposes,* Pallas observes that no nation is better qualified to instruct us in the nature and properties of esculent vegetables than the Greeks, who are compelled, by the strict fasts of their church, especially in the spring, to search for every edible root and herb. Thus, they eat the thick roots of some abundant species of Scorzonera; of the very common Ornithogalum pilosum; of Lathyrus pilosus, Chærophyllum tuberosum, and Hordeum bulbosum, which last is called by the

Tartars Earth Nuts; further, the sprouts of the wild mountain Asparagus, of Sisymbrium Loeselii, and Crambe maritima, which last greatly resemble broccoli; and the stalks of a species of Heracleum; the young leaves of Rumex Patientia, and of the Goosefoot, or wild Orache; of the Vine, the Berberry, and even the acrid Arum maculatum, also the Corn Salad, or Valeriana Locusta, that sprouts early in the spring; Brooklime, thriving in running waters throughout the winter; wild Purslane; Dandelion, while it is germinating; wild Celery; common Garlic, or Allium descendens, and several others. Of the Caper-bush, they eat not only the young shoots, greatly resembling asparagus, but likewise the buds, fruit, and every other esculent part of that shrub. They have not been observed to use the Sea Cabbage, though they are well acquainted with the Crithmum, the genuine Rock Samphire of England.

3367. *There is an abundance of vegetables in the Crimea,* affording excellent food for cattle, and consisting not only of a great variety of grasses, but also of the best vegetables, recommended for artificial meadows: for instance, the white and yellow Melilot; the white Mountain and Bastard Trefoil; Hop Clover; the large red Trefoil; several kinds of Medick, such as the Swedish and common Lucerne; the Esparsette of the French; various fine species of Vetches; the Lotus and Coronilla; the common Goat's Rue, or Galega; the common Burnet Saxifrage, or Pimpinella Saxifraga; the Poterium Sanguisorba, &c. The mountains, as well as the champaign country, present good pasture for sheep; and, in ordinary winters, the flocks are suffered to remain in the fields. Camels find rich food in the Centaurea ovina, Kali, and other prickly plants; nor is there any scarcity of seeds for feeding poultry.

3368. *Of plants useful for dyeing,* Crim Tartary produces, in a wild state, Madder, some fine species of mountain Goose-grass, Woad, Dyer's Green weed in great abundance; and, on the southern coast, even the Litmus, or Croton tinctorium; the Safflower succeeds uncommonly well in gardens. The genuine oriental Saffron may also be cultivated with advantage: of the four indigenous species of Crocus, two produce their beautiful blossoms in the spring, and two in the autumn; but none yield the real Saffron. The seeds of the great Pæonies are surrounded with a red pulp, the juice of which affords a fine and durable purple dye.

3369. *For tanning,* the Tartars possess valuable plants in the Sumach and Cotinus. They might also make use of the Tamarisks; the dwarf grey Oak; the small Hornbeam tree, which covers whole mountains; the roots of the Statice coriaria; wild Sage; and the common Periwinkle (*Vinca*). In fact, no branch of manufacture promises to be more lucrative to the inhabitants of the Crimea (which supports very numerous herds of cattle), than tanning, and the Turkish harbours present a certain and profitable mart for all sorts of prepared leather.

3370. *Among the plants delighting in a saline soil,* there is an abundance of the different species of Saltwort: not only on the Crimean coast, and around the lakes, but also in every situation where the earth is in the slightest degree impregnated with salt or nitre, the Atriplex lacinata grows in profusion: from the latter plant, several Greeks have acquired the art of burning excellent Soda, or Kallia, which is exported to Constantinople, and even to the more distant maritime towns of the Mediterranean.

3371. *Numerous medicinal plants,* which are at present obtained from the Levant and Greece, might be cultivated in Crim Tartary; where many, indeed, are indigenous. Among other natural productions, genuine Turpentine might here be collected. The Convolvulus Scammonia, Pæonies, the roots of which are very aromatic; the Belladonna, together with those salutary herbs in fevers, Chamædrys, Chamæpithys, and Scordium; Rue and Sage, Balm, Pontian Wormwood, Dictamnus albus, Ruscus, and other officinal plants, grow in abundance on the mountains, and are very efficacious. Beside other marine vegetables, flourishing on the rocky and stony banks in the sea, there occurs the peculiar Worm herb employed by the Greek apothecaries, and which they also distinguish by the corresponding name of Helminthochorto.

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HEMP.

3372. *If such are the valuable vegetable products* with which nature has blessed the south of Russia, we shall find that many of those of the north are scarcely less important to mankind: there, Maize and the finest Wheats give place to Rye, Barley, and Oats; the culture of the Mulberry and Vine to that of Hemp (*fig.* 449.) and Flax, such vast quantities of which are annually exported, as to form a staple article of trade, and which thrive, as does the potato, so high north as Archangel. The stately Oak is replaced by the graceful Birch, and the Pinus maritima by the P. sylvestris, or

Scotch Fir. Indeed, the most common species of wood in the immense tracts of forests* extending over the northern parts of the Russian empire consist, for the most part, of the Pine tribe. In some places, the pine trees grow to a great height and size. The Scotch Fir (*Pinus sylvestris*) is by far the most abundant, and, retaining its foliage during winter, gives shelter to man and to the wild animals of the forest, and greatly enlivens the dreariness of these bleak regions. The greater the intensity of the cold, the firmer and more dense does its timber become. This tree furnishes the peasantry with materials for constructing their cottages, boats, fences for enclosure, and with fuel. It is from the ashes of this tree that the potashes of Russia are principally obtained; and from the roots an abundant supply of turpentine is collected by the peasantry, by a very rude method of distillation.

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LEAF AND FLOWER OF THE BIRCH.

3373. *Next to the Fir* ranks the Birch (*figs.* 450. and 451.) of which vast forests exist in various parts, particularly in Finland, and about Moscow and St. Petersburg. Besides supplying a large portion of the firewood, and many household utensils, the natives extract a kind of wine, by fermenting its juice, which is sold at Moscow at two rubles a bottle. The bark serves to make cordage, fishing-nets, and sails for the boats used on the lakes, as well as for dyeing the nets, and tanning. The peculiar odour and colour of *Russia leather*, which is so much esteemed by bookbinders, and is said never to be attacked by insects, are due to a kind of oil, extracted from the birch, which is called *dioget*, birch-oil, or birch-pickle. An extensive use is made of the leafy twigs in the vapour-baths.

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THE BIRCH.

3374. *The Lime* (*fig.* 452.) is nowhere, perhaps, rendered so subservient to the use of man as in the Russian dominions; and, on account of its great value, it is, by law, commanded

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* See Dr. William Howieson's "Account of the Forest Trees and Timber Trade of Russia," for an interesting account of this branch of the natural productions of the empire, and from which we would extract more largely, did the nature of the present work allow of our doing so.

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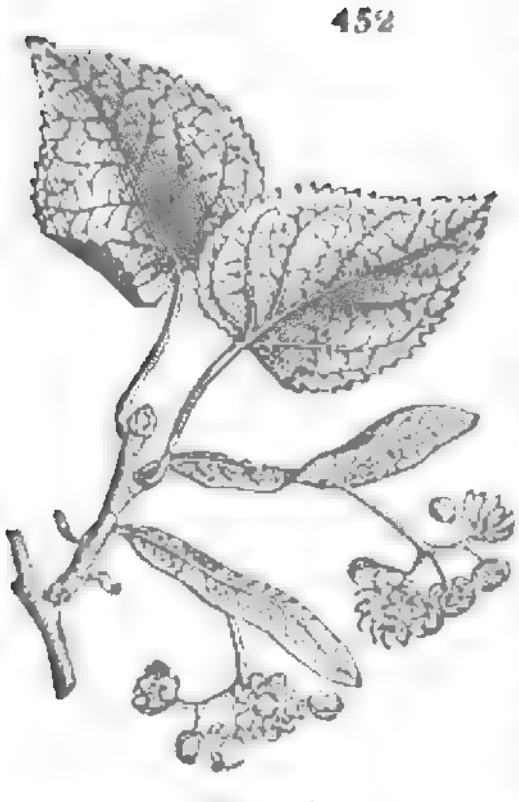

THE LIME.

to be planted on the borders of many of the great roads; and these trees furnish the bees with a large quantity of honey in their frequent flowers. Garden-mats, so extensively employed in our country, and called bast matting, are all imported from Russia, and are derived from the inner bark of the Tilia europæa. The same substance affords ropes, which, though wanting the solidity of hempen cordage, yet, being very cheap, and not liable to rot, are commonly used in many places for drawing water from the wells. To bark the limes for this purpose, it is customary to grow the trees in rows, and cut them every ten or fifteen years, generally in the month of May, at the time when they are full of sap, which renders the removal of their bark easy, so that it is pulled off in long stripes, measuring fifteen to twenty feet. As soon as the bark is dry, it is rolled up in bundles and kept in a cool place; and, when required for use, it is steeped for several days in water, by which the cortical layers, which constitute its thickness, become readily separable. The most internal part is the best, and is employed for making cordage: the exterior and coarser layers serve for strings to fasten corn-sheaves, and for hay-bands, &c. Mats were formerly manufactured in France from lime-bark; but the practice is now discontinued: a good paper may also be obtained from it. The trunks of lime trees, stripped of their bark, are employed according to their size; the larger ones by turners and the slenderer by vine-dressers and gardeners, for their ladders, and for the props of espaliers, &c.

3375. *The Beech, Maple, Elm, Alder, Willow, and Ash,* are the other forest trees of northern Russia, for the Oak is scarcely known there; and these form but a small proportion in comparison of the Pine. On the outskirts of the forest, the Mountain Ash abounds. Its fruit is preserved in spirits, and used by the native Russians at their ordinary meals, salted with other wild berries. The value of the forest trees to the Russians is admirably summed up by Dr. Howieson, in the memoir above quoted. " They furnish them with fir timber of the finest kind, possessing the most durable and dense texture, and in the most profuse abundance, with no trouble but that of cutting down. Of this timber, as already mentioned, with the addition of a little dried moss, stuffed into the interstices, they construct their *isbas* or cottages, vapour-baths, and other buildings. In the interior, they make little or no use of brick, stone, or lime, except in the construction of churches, *peatches* or stoves, and chimneys. Their wooden *isbas* are also warm and comfortable, and superior, in such a climate, to those built of brick and stone: they are soon heated, and when once this takes place, they retain heat long. Of this timber their furniture and utensils are also made. In large cities, and in the houses of the nobility in the country, of late years, they are gradually introducing mahogany, which they get from America, at a reasonable rate, by vessels coming for Russian produce, which would otherwise arrive in ballast; and this they prefer, from its beauty, to the timber of their own growth, for making furniture.

3376. " *The peasantry have little or no tallow or oil:* what they can procure is entirely consumed at the shrines in the churches, and before the images in the *isbas.* To supply the place of candles, they take long billets of that species of fir tree which abounds most in resinous matter; these they dry carefully near their *peatches,* during the tedious winter, and split, as occasion requires, into long pieces, resembling lath for a house. When a traveller arrives, or when a light is wanted, one of these is kindled at the *peatch,* and fixed in a wooden frame, which holds it in a horizontal position. It gives a bright flame, and burns for a short time, when another is substituted.

3377. " *The extensive forests furnish to the proprietor* a considerable addition to his revenue, from the potashes, charcoal, and turpentine which they afford. The potash, or vegetable alkali, is made from every species of wood indiscriminately. When a sufficient quantity of ashes is collected, they lixiviate them, and pack them up into casks. These are conveyed down from the interior, by means of inland navigation, to Petersburg, Riga, and other seaports, where they are kept in extensive warehouses belonging to government. There they are broken up, the ashes collected in heaps, the good carefully separated from the bad, and repacked in the presence of the foreign merchant who purchases them. In passing through the country during the night, great volumes of flame may repeatedly be seen issuing from the woods; and, during the day, while travelling through the forests, it may be observed that many of the finest trees have their internal part burnt completely into charcoal, from the fire ascending up the centre of the trunk, while the bark remains entire, and seemingly uninjured. To make charcoal, they cut down every species of wood indiscriminately, form it up into large cones or piles covered over with turf, set fire to them, and allow the combustion to advance in a slow progressive manner for some days. The cone is then pulled down or scattered, the charcoal collected and sent to Petersburg, Moscow, and other great towns, where it is consumed in the large works of government, as powder manufactories, founderies, and in kitchens, in great quantities. The mass of wood consumed in these various ways must be very great.

3378. "*The forests supply turpentine*, with little labour, and at almost no expense. It is the different species of Fir tree, or Pine, which yield this article: it is distilled from the bottom of the trunk, and the roots, which are left in the earth when the tree is cut down. These are dug up, and broken into chips by the hatchet, then put into the boiler, and the turpentine extracted by distillation, the refuse of the boiler furnishing fuel for the next fire. During the course of the day, with one of these boilers, a peasant will obtain, upon an average, four to five pounds of turpentine: and even this quantity might be considerably increased. If the number of stills, upon a larger and more economical principle, were increased, the quantity of turpentine which might be obtained in the course of a year upon the proprietor's estate might be very considerable, and would much enlarge his revenue.

3379. "*The forests also furnish materials for the roads.* The young fir trees having their branches lopped off, are laid longitudinally across the road, close to each other, and covered with a layer of earth or sand, to fill up the interstices. Roads of this description are formed by the peasantry over hundreds of versts, and through marshy ground, which could only be done in a country where wood is in such abundance. Upon one part of the great Moscow road, however, they have lately been collecting large masses of stone, which they break down by fire of peat or moss placed under them, when they are rendered brittle by the severe frosts. It is among these forests that the wild honey is got for which Russia is celebrated. Mead, made from it, is in great estimation among the peasantry, and is sold in the towns as a substitute for sugar, and various other purposes. Considerable quantities of this honey are annually exported to Great Britain and other countries. The wild bees make their hives in the hollow trunks of the aged or injured trees, where they are sought after by the straggling woodmen. The exportation of timber affords a considerable addition to the revenue of the government, as well as to the private fortune of the proprietors. It is a grand source of labour to the industrious peasantry settled upon the estates, and likewise to the shipping and inhabitants of other countries. These forests consist entirely of natural wood, which receives neither the care nor the industry of man during its growth. Labour, however, might be employed to much advantage in thinning and clearing away the superfluous trees when young, so as to allow the air to circulate freely among those which might be permitted to remain and grow up to a full size. In the forests, the trees are so thick that they destroy each other before they attain to any considerable size; and, in that way, it is only a few of the strongest which survive the general wreck. The wood of considerable girth, which was to be found in the vicinity of the roadsides, rivers, lakes, or canals, particularly in the neighbourhood of great towns, has been of late years cut down, and little or none but that of a stunted description remains in its place. The timber felled for the use of government, and for exportation, is now procured from a very great distance, hundreds and sometimes thousands of versts, into the interior; and that distance is gradually increasing. Even there, it becomes necessary to bring it a considerable way from amongst the forests, where it is cut down, to the lakes or rivers, by means of which it is floated to the seaport towns. Labour, however, in the interior of Russia, is of little value: it costs the nobleman next to nothing. The peasantry upon his estates, being a kind of slaves, receive no regular wages."

3380. *The brushwood*, covering a vast extent of forest country, consists almost entirely of the Hazel, the Dwarf Birch (*Betula nana*), the Alder, Willow, and Juniper: the last growing to a large size, and loaded with fruit. In other places, the surface of the earth is covered with various wild berries, especially the Cranberry and the Bruisnika, or wild Bilberry. These various fruits are produced in the greatest abundance, and supply the peasantry with an ample and constant addition to their other food: they use them when fresh during the summer, and salted for winter. The peasant and his family seldom sit down to a meal which is not one half composed of these preserved fruits. The Vaccinium Oxycoccos (*fig.* 453.), or common Cranberry, is by us so much esteemed, that our own country, though affording a large supply in the extensive wet moors of the north of England and south of Scotland, does not yield enough for our consumption; and its fruit is extensively imported from Russia for the sake of making tarts.

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THE CRANBERRY.

Subsect. 3. *Zoology.*

3381. *It is difficult to separate the Zoology of European Russia* with precision from the Asiatic portion of this vast empire; although enough is known to show that each possesses peculiar features. The immense extent of territory stretching from the icy regions to the shores of the Black Sea may naturally be supposed to contain by far the largest proportion of the European animals; while, to the eastward, the great Ural mountains seem to impart to this Fauna several of those more characteristic of Western Asia. To dwell upon these geographic distinctions would be unsuitable to this work; we shall, therefore, confine ourselves to a brief notice of those animals which appear more peculiar to European Russia.

3382. *The quadrupeds are numerous.* The dreary regions of Nova Zembla are frequented by the great white bear, which seldom passes beyond the limits of eternal snow: arctic foxes, and all the polar animals, are likewise met with. Towards the central provinces, wolves, brown bears, and the other European animals, abound in the forests; but the wild oxen, once known to inhabit Lithuania, are now extinct.

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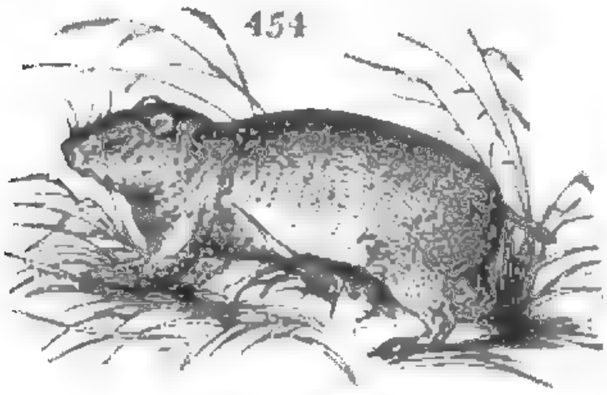

POLAND MARMOT.

3383. *Three of the most remarkable quadrupeds*, all of a smaller size, are, the Bobac, the Soulisk, and the Alpine or Calling Hare. The first is sometimes called the Poland Marmot (*Arctomys Bobac*) (*fig.* 454): it is rather larger than the hare. Its habitations are not so lofty as those of the common Marmot; it prefers a dry soil, in which it digs very deep burrows; and so careful are they to secure warmth, that they amass as much dry grass in a single burrow as will feed a horse for one night. The celebrated Pallas relates, that, when they have occasion to transport a quantity of provisions to their burrow, one of the party, lying on its back, is laden by the rest in the manner of a cart, and then all proceed in a party, drawing their companion by the tail to the common magazine. It must be confessed this story appears so incredible, that the illustrious name of Pallas alone induces us to repeat it.

3384. *The Soulisk*, or variegated Marmot (*Spermophilus Citellus*), is the most elegant of its genus; being spotted, or waved, with white on a brown ground. It is partially carnivorous; birds and small quadrupeds having been found in its hoards.

3385. *The Alpine Hare*, or Pika, inhabits only the highest mountains of northern Europe, in the thickest and most sequestered forests. The instinct for amassing provision against winter is highly developed in this defenceless little animal. About August, they cut and collect large parcels of grass, which they spread and dry, and, in effect, convert into hay: this they collect into stacks about seven feet high; they then excavate a subterraneous passage from their burrow, which opens under the stack, and this road is used to give them access to their provision, during those months that a Siberian winter buries every thing under the snow.

455

THE CROSS-BILL.

3386. *Several birds, common in Russia*, are but rarely seen in other parts of Europe. Among these may be mentioned the Cock of the Rock, the largest known species of grouse, nearly as big as a small turkey. The beautiful Rose-coloured Ouzel, or Starling, is not uncommon in the provinces bordering upon Asia; while the Pine Finch, the Cross-bill (*fig.* 455.), and a few others of less note, inhabit the dreary pine forests. In the plains has been found the Cream-coloured Plover, so rare a bird in Britain, that a specimen, shot in Devonshire, was once sold for nearly 30*l.* This is now in the British Museum. The European Bee-eater is said to breed in great numbers in the banks of the southern rivers.

3387. *Domesticated animals.* No recent information has reached us on the present breeds of the horse, ox, and sheep. The first are said to be large, strong, and even beautiful; but the ponies of Archangel are not larger than those of Zetland. The flocks of sheep appear to be numerous, and many of the breeds excellent. Whether the camel is really used in the southern provinces, as a common beast of burden, appears somewhat doubtful. The Russian greyhound has long and bushy hair, and the tail forms a spiral curl.

Sect. III. *Historical Geography.*

3388. *The southern part of Asiatic Russia* was known, under the name of Scythia, to the Greeks and Romans, who applied to it especially that appellation which was afterwards so widely extended. The expedition of Darius showed the Scythians to be exactly what the rudest Tartars now are, — a roving, nomadic race, constantly on horseback; who fought flying, and, by their rapid movements, baffled, usually in a disastrous manner, every attempt of regular armies to subdue them.

3389. *The monarchy* of Russia seems to have been first formed about the ninth and tenth centuries, under the reigns of Ruric and Vladimir the Great. At that time it held some intercourse with the court of Constantinople, and was converted to the Greek church, which has ever since been the established religion.

3390. *The invasion by the Tartars,* under the successors of Zingis, in the twelfth century, formed a fatal era in the Russian annals. The whole country was over-run, its capital reduced to ashes, and the people completely subjugated under the yoke of Oriental despotism. Despotic ideas, and eastern habits, derived from this source, have ever since continued to prevail in Russia.

3391. *The re-establishment of the monarchy,* under the name of Muscovy, began in the fifteenth century, under Ivan Vasiljewicz. The Tartars, however, made a desperate stand; and it was not until after a series of victorious reigns that they were driven beyond the limits of Europe. During this period, the great republic of Novogorod, which had held the chief sway over northern Russia, was absorbed in the monarchy. A handful of Cossacks penetrated into Siberia, subdued the whole extent of northern Asia, and made the czars masters of an empire equal in superficies to the Roman. But the monarchy, though aggrandised in every direction, continued immersed in ignorance and barbarism, and had as yet no place or influence in the general system of Europe.

3392. *The civilisation of Russia* began with the reign of Peter, one of the most remarkable eras in the history of the world. The wonderful steps by which that prince succeeded in giving to his kingdom so great an impulse, are familiar to almost every reader. His patriotic magnanimity, in quitting his throne, and labouring as a carpenter in the docks of Amsterdam and Portsmouth; the active spirit of improvement introduced on his return, in defiance of all the prejudices of a people wedded in the most superstitious manner to ancient habits, produced a change the most rapid and striking ever effected upon any nation. Before the death of Peter, Russia had taken her station among the civilised powers of Europe. Since that time, her improvement has proceeded steadily, and her influence has been continually increasing. Under Catherine and her generals, especially, the conquest of the Crimea, the defeat of the Turks, the victorious wars in Germany, and the violent dismemberment of Poland, progressively increased the power of Russia, and brought her more closely into contact with the other members of the European system. But the events of the last war produced this effect in a much more remarkable degree; when Napoleon, after having subdued all the other powers, found in Russia alone one that was able to cope with him. That power, at length triumphing, became the centre of the confederacy by which his empire was subverted, and the independence of Europe re-established; in reward for which services, she hesitated not to claim a considerable share of the booty. In short, Russia is now, by many politicians, acknowledged as the most powerful state on the European continent.

Sect. IV. *Political Geography.*

3393. *The government of Russia* is despotism, under which the knout is administered even to nobles of the highest rank who may have incurred the displeasure of the sovereign. The emperors have, indeed, endeavoured in some degree to mitigate this absolute power, and have even formed a directing senate of sixty-two members, divided into departments; but this body is entirely composed of individuals nominated by the monarch, and serves little other purpose than that of promulgating his *ukases* or decrees. It is believed, indeed, to have sanctioned the murders of unpopular or weak sovereigns, which have so frequently stained the Russian annals; and which have been conducted with a secrecy, and been followed by an exemption from punishment, which shows that they had been approved by the principal persons in the state. There are also hereditary nobles, who possess immense estates, estimated, not by the amount of lands or rents, but by the number of slaves; yet the titles conferred and recognised by the government are all military. The ranks of colonel and major-general are conferred, in a manner purely honorary, upon professors, and even ladies, as the only mode of raising them in the scale of society. Justice is administered with considerable care: conjointly with the judges are appointed assessors, who must be of the same rank as the person tried, and thus somewhat resemble our jury; but a general corruption, the inevitable fruit of despotism, and of the inadequate payment of the functionaries, is alleged to pervade this, and, indeed, all the official departments. It is not, however, to be denied that the views of the supreme government have, for the most part, been highly liberal, warmly devoted to the improvement of the empire, and to the moral exaltation of its people among the civilised nations of Europe.

3394. *Slavery* is general in Russia. All the lands, with the exception of a few corners, are cultivated by serfs; and, as already observed, the value of a nobleman's estate is reckoned by the number, not of acres, but of slaves. The sovereign power has been generally exerted in a beneficent manner, to ameliorate the condition of the slaves, and to promote their emancipation, but hitherto with very imperfect success. Their treatment, on the whole, is far milder than in the West Indies: still the most abject submission is required, and the lash is in pretty general use. They frequently agree with their masters to pay them an annual rent, or *obrok*, on condition of their being allowed to migrate to towns, and to carry on trades. Many of them have, in this way, acquired very great wealth.

3395. *The revenues* of Russia bear little proportion to the extent of her territory, her natural resources, or even her population. They arise from a capitation-tax of two rubles for each peasant, and five for each burgher; from which the nobles are nominally exempted, but they really pay it in the person of their slaves; a tax from merchants of 1¼ per cent. on their capital; custom-house duties on imported goods; stamps, coinage, postage: government assumes also the monopoly of distillation; and, in Siberia, the mines are wrought on its account, and the tribute of the subject races is paid in furs: but these last sources, subject to the usual mismanagement and corruption of the agents of an absolute government, produce probably very little. The total amount is supposed to be about 13,000,000*l.* sterling, burdened with a very large amount of debt; the greater part of which, being depreciated paper-money, fetters greatly the operations both of finance and commerce.

3396. *The military force* of Russia is the subject of anxiety and terror to Europe; and has, indeed, if official statements may be credited, attained to a most enormous amount. According to them, it rose, in 1820, to no less than 989,000 men, independent of the national guard. One simple fact may, perhaps, serve to refute this ridiculous statement, and tend to prevent Russia from overawing Europe by the immensity of her paper armies. When Bonaparte penetrated to Moscow, with 130,000 men, he outnumbered all the forces which Russia, in that utmost extremity, was able to bring against him. These were not estimated at much more than 90,000 men; some part of which was only half-armed militia. There might be 40,000 on the Turkish, and a few on the Persian, frontier; but, certainly, the utmost which Russia could summon, in that greatest need, was not more than 150,000; which the troops employed in garrison, in police service, and in guarding the Asiatic frontier, did not probably more than double. The real strength of the Russian army has always consisted, not in its numbers, but in the passive and iron valour of its infantry, and the rapid and skilful movements of its irregular cavalry; the Cossacks, the Baschkirs, and other Asiatic nomades. Its field artillery also has commanded the admiration of the best tacticians. It has been boasted, indeed, that the new military colonies, when brought into full operation, will afford a regular supply of three millions of recruits. They consist of the crown peasantry, in all about six millions, who are formed into villages, and subjected to strict military discipline. The head colonist, or farmer, receives fifty acres, and a neat house, burdened with the support of a soldier and his horse: these, when not at exercise, or called out into actual service, assist in his agricultural labours. By this means, in 1820, there were organised 48,000 troops in three hundred and eighty-four villages; and it was proposed gradually to extend the system. But, besides that these could never be more than an ill-disciplined militia, their increase is opposed by various obstacles. The crown peasants, whose servitude before was little more than nominal, grievously complain of the present rigorous coercion, and of the burden of supporting a soldier-servant, whose aid is very doubtful, and who is more likely to act as a master. It would be very difficult to ensure the submission of these armed colonists; and, at all events, the number who could be marched out of the empire would be limited by the narrow amount of the funds out of which they could be supported.

3397. *To render Russia a naval European power*, in which character she had no existence at the commencement of the last century, was the object of strenuous effort both to Peter and Catherine. A navy was accordingly created on the Baltic and Black Sea, which enabled Russia to become predominant in both. The great priority of importance, however, which late events have obliged her to attach to her army, has caused the sea service to fall into comparative neglect. In 1820, she possessed thirty-two ships of the line, eighteen frigates, and a quantity of small craft, but not in very perfect repair; and the number of men employed was between thirty and forty thousand.

Sect. V. *Productive Industry.*

3398. *The industry* of Russia is in a very unimproved state, owing to her long barbarism, the prevalence of slavery, and the thin population scattered over immense tracts of territory. These tracts, however, being in many parts of great natural fertility, yield a large amount of bulky and useful commodities, which can be exchanged for the delicate productions and fine manufactures of the south and the west.

3399. *The agriculture of Russia* is extremely rude, and can never make much progress while all the husbandmen are enslaved and depressed. In the interior the plough is a wretched instrument, which, dragged by one horse, merely scratches the surface; and the harrow is composed wholly of wood. In the south alone can the land be said to be really ploughed; and, even there, the rotation of crops is very little understood. Nevertheless, in every part of Russia there is a surplus of grain: in the north, chiefly of oats, with some rye and barley; in the south, of the very finest wheat, in such abundance as might render this the granary of the west. The plains of the interior, especially between Petersburg and Moscow, are covered with extensive forests; and all its villages, with the greater part of its cities, are built of wood. This, however, being chiefly pine, fir, and birch, is little adapted for ship-building or solid constructions; but numerous and large masts and deals are afforded for exportation. Cattle and sheep are reared in vast numbers, especially in the southern steppes; but little has yet been effected to improve the breeds: and the distance is such, that none of the animal products are exportable, except tallow, hides, horns, and bristles. Hemp and flax are cultivated very largely, and yield not only the material of the staple manufacture of the country, but a large surplus for exportation. Bees swarm throughout the empire, rendering honey and wax superabundant. Some wine is made in the provinces along the Black Sea, but it has not attained any high reputation. Since 1827, however, very great exertions have been made to extend its culture, by introducing plants both from Bordeaux and the Rhine; and the prospects of success are said to be promising. The minerals, which form so great a proportion of the wealth of Russia, are brought chiefly from Asia; for the European side of the Urals is by no means so rich as the other. The same is decidedly the case with regard to its furs, the finest of which come from the remotest east of Siberia.

3400. *The manufactures of Russia*, notwithstanding the efforts made by government, continue still in a rude state. The most national of them are coarse fabrics from hemp and flax, sailcloth, duck, sheeting, sackcloth; all of which are supplied by Russia, of better quality, and at a cheaper rate, than they can be had elsewhere. Government, also, by the high rewards with which they have allured foreign manufacturers, has succeeded in establishing extensive fabrics of iron and hardware, particularly of arms. The chief seat is at Tula, the manufactures of which are a subject of controversy. Mr. Tooke, and some foreign writers, represent their products as equalling the finest of Birmingham and Sheffield; while Dr. Clarke affirms that "the work is showy, but very bad, and the muskets are such only in name; missing fire five times out of six." This last assertion, however, carries absurdity on its face. Dr. Lyall seems, in this instance, to have fallen on the proper medium, in admitting that the articles cannot come into any sort of competition with English, but yet that many are showy and elegant, and that the muskets have done greatly too much execution to allow us to suppose them so extremely defective. Government has also been able to establish silk and cotton works in the two capitals, but not sufficient for internal supply. Coarse woollens, in great quantity, are articles of domestic manufacture for family use.

3401. *The commerce of Russia* is very considerable, in consequence of her large surplus of rude produce, and of the extensive wants which luxury has created, and which can only be supplied from abroad. The interior communications, from one end of the empire to the other, are of vast extent. The rivers which intersect its wide level plains are almost all navigable; and those which flow into the Baltic approach closely to others which direct their course to the Euxine and the Caspian; the Dwina to the Dnieper, and the Neva to the Volga. By a channel, also, which will be afterwards delineated, there is an almost continuous navigation, with short portages, across Siberia. Furs, gold, silver, iron, copper, of great amount and value, are brought from that part of the empire: in its extreme point, at Kiachta, the Chinese merchants meet the Russian; and from its border numerous caravans proceed into the interior of Tartary; while Persia is visited across the Caspian. The grand rendezvous of all these products is at the fair of Nizni Novogorod, in the south of Russia; which, both for the amount and variety of the articles produced in it, seems to be the very first in Europe. Here the sugar and coffee of the Indies, the wines of France, the cottons of Britain, meet the silks and teas of China, the furs of Yakutsk, and the gems of Bucharia. The quantity of goods sold at this fair amount, according to Klaproth, to ninety-four millions of rubles (about 15,000,000*l.* sterling); a sum which we cannot but think greatly exaggerated; and still less can we listen to Dr. Lyall and Captain Cochrane, who raise it to double the amount. The following quotations from Klaproth may give at least an idea of the proportion between the different articles. Furs, 5,000,000 rubles; teas, 12,000,000; silks, velvets, damask, &c., 23,500,000; woollen cloths, kerseymeres, &c., 7,300,000; muslins, and other cotton stuffs, 5,000,000; mixed silk and cotton, 2,500,000; raw cotton from Bucharia, 2,900,000; raw silk, 400,000; pearls, precious stones, shawls, &c., 1,280,000; arms and iron utensils from Tula, 540,000; the same from Siberia, 10,360,000; alum, vitriol, and other colouring substances, 3,600,000; porcelain, 525,000; crystals, 515,000. The foreign commerce of Russia is limited, by its holding only interior corners, as it were, of inland seas, the openings of which belong to powers independent, and liable to become hostile. Thus, the entrance of the Black Sea is possessed by its natural enemy the Turk; that of the Baltic may be shut by Britain, a precarious ally. When, however, the ports are not closed by war, the amount of the rude produce exported, and of the manufactures and luxuries of Western Europe imported, is very large. The amount stated for 1830 is 274,312,128 rubles exported, and 198,132,812 imported; but these are paper rubles, worth only about eleven pence. Exclusive of the above, the gold, silver, and bank-notes exported in 1830 were estimated at 5,033,452 rubles; while those imported were estimated at 71,097,160. Tallow is by far the most valuable article of export: the quantity exported in 1830 amounted to 4,091,544 poods (36 lbs. each); of which 3,223,434 poods were for England. The next great articles are flax and hemp, wheat, iron, timber, bristles, tar, &c. Colonial produce, particularly sugar, cotton twist, wine, dyewoods, silks, &c., form the principal articles of import. During the year 1830, 5690 ships entered the different ports of the Russian empire, exclusive of those on the Caspian Sea: of these, 1681 ships were from Great Britain, 1623 from Turkey, 513 from Holland, 384 from the Hanse Towns, &c. During the same year, 5907 ships cleared out from the different Russian ports: of these, 1637 were bound for Great Britain, 312 for Turkey, 501 for Holland, 415 for the Hanse Towns, &c.

3402. *The canal navigation of Russia*, so far as it has hitherto been carried, has been exclusively the work of government. The grand object was to connect the Baltic with the Volga, and thus make it communicate with the Caspian, and form a continuous navigation across the whole empire. This was effected by joining the Twertza, a tributary of the Volga, to the Mtsa, which falls into the Lake Ilmen, whence, by the Volkof, the Lake Ladoga, and the Neva, there is a navigable line to Petersburg. The steep descent of the river Mtsa, however, presented a difficulty which even Peter could overcome only by a peculiar process. Water sufficient can be collected only once in eight or ten days, and all the vessels assembled in the course of that time are summoned, by beat of drum, and shoot down, one after the other. In proceeding along the Mtsa, for 33 versts, they have successive difficulties to encounter; and, as they cannot reascend these steeps, they are broken up for firewood. At Petersburg the canal navigation of Russia had fallen into considerable neglect, till 1817, when Alexander provided funds, amounting to 5,000,000 rubles, to be applied to its improvement. He created an office of "director-general of the ways of communication," including canals, roads, and bridges. The Duke of Wirtemberg, who was appointed to this situation, made a general survey, and found extensive repairs and improvements necessary, particularly in the above-mentioned grand line of communication. Great exertions were requisite to supply with water the scanty streams by which it was maintained. One of the principal improvements was the union of the lake Schlino to that of Velio; an undertaking begun in 1778, and carried on with much fruitless expense, but completed in 1825. By this supply, and those drawn from other quarters, the navigation was so much improved, that, in 1826, a caravan, as it is called, of 1000 barks ascended without meeting with a single accident. Great improvements were also made in the canal of Ladoga, though it is still liable to want of water in dry seasons; but, in 1826, when this deficiency was felt, the Duke, by powerful steam-engines, poured into it the waters of the Volkof and of Lake Ladoga, and thus enabled the barks to proceed.

3403. *The canal of Lias*, commenced in 1802, and finished in 1814, joins the Tikhvine, which falls into Lake Ladoga, to the Lias, a tributary of the Mologa, which falls into the Volga. This line is navigable only for boats of about 20 tons; but it has the advantage over the other of being passable in both directions, and hence is extensively employed in the conveyance of goods from Petersburg to the interior.

3404. *The line of Maria* is formed by the union of the Konja with the Vitegra, by which the Volga is connected with the Bieloe, or White Lake: hence by the Chicksna, the lake Onega, and the Suir, barks reach the Ladoga. This affords a good navigable channel, but it forms a circuitous route for Moscow and the interior provinces, and serves chiefly for conveying to the capital the products of Siberia.

3405. *The following is a view of the navigation* on these three great lines, and its value in rubles in the year 1828: —

			Crown Property.	Private Property.	Total.
To Petersburg.					
By the Vichnei Volotchok,	barks	8,916	22,148,000	81,386,000	103,534,000
	rafts	1,378			
Tikhvine	barks	2,091	651,000	14,849,000	15,500,000
	rafts	1,448			
Line of Maria	barks	2,431	3,015,000	9,857,000	12,872,000
	rafts	5,562			
From Petersburg.					
By the Vichnei Volotchok	barks	2,411		1,160,000	1,160,000
Tikhvine		1,520		18,179,000	18,179,000
Maria		1,358		784,000	784,000

Other important undertakings. — the junction of the Markta and the Volga, the Oka and the Don, the Priepicz, the Niemen, and the Bog, the improvement of the navigation of the Dnieper, — have been projected, and some of them are in an advanced state.

3406. *The roads of Russia* are not in general good; yet the level nature of the country, the abundance of timber and cattle, enable the numerous caravans to move at a very cheap rate. The high road from Petersburg to Moscow is a very remarkable work. It is an elevated causeway of timber, carried in one long, level, unvarying, straight line over marsh and bog, and through thick forests of birch and fir. Being composed, however, only of round trunks of trees, often ill joined together, it is in many places exceedingly rough.

Sect. VI. *Civil and Social State.*

3407. *The population of Russia*, which, in 1722, was rated, probably too low, at 14,000,000, had risen, in 1762, to 20,000,000; in 1795, to 36,000,000; in 1818, to 45,500,000; and, in 1824, to 50,000,000. But this increase, independent of probable omissions in taking the census, arises in a great measure from the extensive conquests effected during the lapse of this century; the Crimea, the Caucasus, more than half of Poland, and the whole of Finland, have augmented by nearly one half the mass of the empire as it existed in 1722. The last increase of 4,500,000, between 1818 and 1824, may be considered as exhibiting the natural progress of population, somewhat aided by emigration from the poorer districts of Germany. It gives a rate of one tenth in six years; and a duplication in sixty years; which, however, affords little support to the anticipation of M. Stchekaloff, that Russia, in 1892, will contain 230,000,000. There is no doubt that she has natural capacities enabling her to reach that number; but heavy chains weigh on her productive industry, which may not be broken for several ages.

3408. *Of these* 50,000,000, *European Russia* contains only 34,000,000: about 11,000,000 belong to the acquisitions in Poland, and the remainder to Asiatic Russia. The basis of this great population is entirely Sclavonic; a race distinguished by a peculiar language; by a patient, hardy, obstinate, and enduring character; by a very limited extent of intellectual culture, and of the characteristics which raise man above the brute. This last deficiency, however, we should be very little disposed to regard as the fixed doom of any particular race of men. It appears the consequence of long ages of bondage and oppression, and of the insulated position of this people in the heart of these immense steppes and deserts; removed from all the impulses which have rendered the western nations so enlightened and energetic. There are about 3,000,000 of the Finnish race, occupying the acquired provinces of Livonia, Esthonia, and Finland, the shores of the Northern Ocean, and some tracts along the borders of Asia. Tartars also inhabit the Crimea, and have penetrated into some of the southern steppes. The great body of the nation is divided, without medium or gradation, into the distant classes of nobles and slaves. The few who struggle between these opposite extremes are insulated and unprotected individuals, who can scarcely attain a place or character in society.

3409. *The nobles* are the body chiefly acted upon by that forced and imported civilisation, by which Peter sought to convert the nation at once from the depth of barbarism to the highest pitch of refinement. In fact, as to outward aspect and manners, this body, especially that great proportion who have travelled, are scarcely to be distinguished from the most brilliant society of the western courts; and among the number are included many well-informed, intelligent, and liberal individuals. Their cultivation, both as to manners and intellect, is principally derived from France, whose language is almost exclusively spoken at court, and whose writers alone are generally read; but the gay polish of French manners harmonises ill with the remnants of Muscovite rudeness. Many of the nobles boast a high descent, tracing their origin even to Ruric; a claim not admitted by the court, which studies to merge all distinction in military rank, real or fictitious. Their fortunes are in some cases truly enormous, especially when compared with the cheapness of provisions. The head of the Scheremetov family, reckoned the richest, is said to have 125,000 slaves, estimated at 150 rubles each. The nobles generally spend these estates in profuse and ostentatious hospitality; combining, though not very tastefully, the open house of the feudal baron with the elegance and splendour of Parisian luxury. Dr. Clarke and Dr. Lyall remark a feature which belongs to the dark ages of our own civilisation. The gradations of rank are observed not only in the places assigned at these long tables, but in the viands placed before them; so that, while the guests near the master of the house are regaled on sturgeon and champagne, those towards the lower end partake of *sauer kraut* and black cabbage broth; nor can a guest, without the violation of all propriety, solicit food that does not belong to his station. An immense household of servants, amounting in country residences not unfrequently to 500 or 600, and an extraordinary profusion of silver plate, are the two reigning points of magnificence; but, unluckily, these luxuries are often alloyed by some failure as to cleanliness, both of person, furniture, and dishes. What is worse, an absence is in many instances observable of that nice sense of honour which forms the pride of our aristocracy. It was under Peter I. that Prince Menzikoff and the governor of Ingria were whipped for peculation; but it is said that the difficulties in which the profuse expenditure of the Russian nobles often involves them, are still sometimes met by expedients which we should consider as quite incompatible with the character of a gentleman. However, they have entirely renounced the national habits of intoxication, originally so strong, that Peter the Great deemed it necessary to prohibit ladies from getting drunk at a ball, but durst only fix for gentlemen a limitation as to time. We wish it could be added that ladies of rank were equally distinguished for their domestic and conjugal virtues; of which, indeed, some bright examples may be found; but the French modes of life, and the dreadful examples set by Elizabeth, Catherine, and other empresses, have found but too many imitators, and have rendered manners, in this respect, looser than in any other European court.

3410. *The slaves*, the other dire extreme of Russian society, form still the great mass of the people. In 1816, the peasants of the crown amounted to 6,353,000; those of private individuals to 9,757,000; in all, 16,110,000. This ill-fated class is divested of every right, political and personal, scarcely excepting that of life. The master has the full power of the scourge, which is liberally exercised, and of every other corporal punishment which does not produce death in twenty-four hours. There is, indeed, a law by which the master may, in that case, be brought to justice; and there are marshal's courts, to which, in certain cases, the slave may appeal; but these means of redress are practically very precarious. The crown has done every thing in its power to forward emancipation; but as it never has ventured upon compulsory statutes, and as the nobility remain rootedly attached to the *good old* system, little impression has been made on the great mass of bondage. The slaves, however, are not so severely oppressed as in the West Indies. They are not under the daily whip of a taskmaster. The cultivating peasant has a spot of land, for which he pays *obrok* or rent, which is apt, indeed, to be unreasonably screwed up by a necessitous landlord; but otherwise he labours and earns for himself. Some villages have even raised large sums to relieve an esteemed master from the pressure of necessities which would have obliged him to sell his estate, and transfer them to another proprietor. Those who, on payment of personal obrok, practise trades in cities, often attain to opulence; a slave of Count Scheremetov is mentioned as carrying on a manufactory that employed 4000 persons; and a slave of Count Strogonov constructed the Kasan church, the finest in the capital. Still all the profits earned by the slave belong by law to the master; but public opinion has established such a bar against his taking more than a proportion, that it happens only in a very few instances. A certain moral degradation is almost inevitably entailed on their unfortunate destiny. A profound craft, a sulky obstinacy, a studious concealment of every quality and possession of which their master could avail himself, are habits natural to the slave. He shows, however, a stubborn acquiescence, which somewhat resembles contentment; an untameable passive courage, and a constant thoughtless cheerfulness and good-humour. The Russian slaves have a surprising talent at imitation, common among enslaved and uncultivated minds. The master distributes household employments among numerous slaves, without any consideration of natural talent, or almost any instruction, except the cudgel; yet the functions of each are executed with a surprising degree of correctness. From the period of their subjection by the Tartars, they have retained some oriental habits; of these the most remarkable is the use of the vapour bath, which, under some form, is a necessary appendage to every village, even under the frozen climate of Archangel. It is considered as equally conducive to pleasure and to health; and even in the farthest north, the delight of the bathers is to come out reeking hot, and roll themselves in the snow; which process, instead of killing them, as might be expected, is said materially to invigorate the frame.

3411. *The religion of Russia*, so far as relates to establishment, is that of the Greek church, which is professed with many superstitious observances. The worship of images is carried to a great extent, though the letter of the scriptural prohibition is sought to be evaded by having only the drapery in relief, and the face flat and painted. With these representations, not only the churches are filled, but every serf has one in his cottage, to which he pays sundry and uncouth acts of obeisance. Fasts are frequent, long, and rigidly observed; but at the festivals they indemnify themselves by an excess of eating, which not unfrequently proves fatal. In no cities, perhaps, are religious ceremonies and processions celebrated with such pomp as at Petersburg and Moscow. The long trains and gorgeous robes of the priests, the glittering insignia waved over them, the blaze of thousands of tapers, and the innumerable crowds of assembled devotees, are said to eclipse every scene of similar splendour in Spain and Italy. The festival of the Resurrection is the most splendid; and next to it those on the two, certainly natural, occasions, the breaking of the ice on the Neva, and the first springing up of verdure from the long-frozen earth. Russia had once a patriarch (*fig.* 456.), almost equal in power to the Catholic pope: but Peter, jealous of his functions, assumed them to himself; and his successors have ever since exercised them. The parish priests have slender incomes, eked out by fees: they are ignorant, vulgar, and belong almost to the lowest class of society. They amuse the people with shows and observances, but seem scarcely capable of communicating to them any moral or spiritual ideas. Instead, however, of being bound to celibacy, they are laid under an obligation to marry; in the hope, it is said, of rendering their conduct more regular, but without always securing that result. The higher orders of clergy are all monks, well endowed, living usually retired and regular lives, and often possessed of considerable learning; but they come little in contact with the body of the nation. Of these there are thirty-three bishops and archbishops. The secular clergy have been estimated at 160,000, and their places of worship at 70,000. There are 480 monasteries, and 156 nunneries. The Lutherans, estimated at about 2,500,000, are nearly confined to Finland and Livonia. The Crimea, and some other southern districts, are Mahometan. The Catholics and Unitarian Greeks are nearly confined to the Polish provinces. The Russian government professes, and generally administers, an absolute toleration, and even equality of rights among the different religious professions: yet the caprice of despotism sometimes issues very tyrannical mandates. Such was the recent one, prohibiting the Jews from exercising any of the trades by which they have hitherto gained a subsistence, and enjoining them to apply solely to agriculture, which they had always shunned; and another, by which they were banished from both the capitals.

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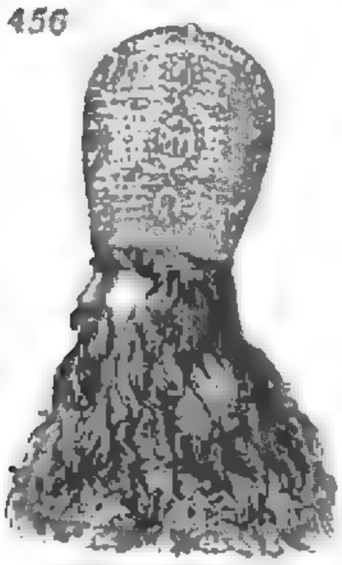

RUSSIAN PATRIARCH.

3412. *The introduction of literature* has been an object of anxious concern to the Russian monarchs, who have yet been able to illuminate only partially the night of ignorance in which their vast empire is plunged. The chief scientific glory of Russia arises from the names of Pallas, Gmelin, Euler, Bernoulli, and other German savans, whom the bounty of Catherine induced to form either a permanent, or at least a temporary, residence at Petersburg. French literature, however, has always been the most fashionable in the higher Russian circles; though, with the two exceptions of Grimm and La Harpe, the French savans have in vain been invited to exchange the delights of Paris for the frozen splendour of the northern capital. The Russian is beginning to be a written language: there are said to be now 8000 works printed in it, which, however, is not very much more than the number annually published in Germany. Lomonosoff and Sumorokoff rank as the greatest Russian poets; and Karamsin, by his writings in different branches of the belles lettres, has of late drawn attention even beyond Russia.

3413. *The public establishments for science* in Russia are highly endowed and patronised. The Academy of Sciences, planned by Peter the Great, was founded by Catherine I., who assigned to it a revenue of 5000*l.* The society was regulated by the advice of Wolf and Leibnitz; and several of the greatest modern names have adorned its annals. Gmelin, Pallas, and others of its members, have been employed, at great expense, in exploring the most distant provinces. The Academy of Arts was founded by Elizabeth, but enlarged by Catherine II., who allowed it 12,000*l.* of annual revenue, to be employed in supporting 300 pupils, and in procuring the best models of every kind. The library has never become very extensive, but is rendered curious by the ancient manuscript chronicles; and by a collection of Chinese works, amounting to 2800. The museum has many interesting and peculiar features derived from the mineral products of the empire, particularly a vast mass of native iron found in Siberia, fossil remains of the mammoth and other gigantic animals; the dresses, arms, and implements of the rude nations of Siberia and Tartary; the ornaments found in the tombs of the Altaï. The imperial library is also extensive; and a fine cabinet of paintings has been formed by the purchase of the Crozat collection, the Houghton, formed by Sir Robert Walpole, and others of inferior magnitude. The university of Petersburg was founded in 1804, by the emperor Alexander, and endowed with an income of 130,000 rubles.

3414. *The Russian habitations*, so far as relates to the palaces of the nobility, and to the public buildings, which are all erected by the crown, are formed on the model of the rest of Europe, and display a magnificence elsewhere unrivalled. All the others (*fig.* 457.) are miserable in the extreme, calling to mind the first rude efforts of man after he came out from the hollow of the oak. They consist merely of the trunks of trees, not even formed into logs, the interstices filled with moss and clay, and the light usually admitted by square open crannies: thus they resemble casual piles of timber rather than human dwellings. Hence the chronicles use the expression "cutting a town," because the felling of the timber is the only arduous part of the process.

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RUSSIAN VILLAGE.

3415. *The national amusements* are chiefly those afforded by the ice; for here, as all over the North, the gayest season is when its impenetrable surface covers all the earth and the waters. The Neva is entirely occupied by parties skaiting, running sledge-races, and enjoying other sports of the season. A favourite diversion is afforded by the ice-hills, on whose sides are formed steep inclined planes, down which the adventurer throws himself, seated on a machine which he guides with surprising skill. Swinging is another Russian diversion; to which may be added the common ones of dancing, and of a national music, which, with the songs and ballads to which it is sung, is very plaintive and pleasing.

3416. *The national dress* of Russia consists of a long coat reaching to the calves of the legs, with numerous tucks at the bottom of the waist; a vest of coloured linen, leaving the neck bare; thin boots, or shoes, of the bark of the linden. In winter, a sheepskin pelisse is substituted for the coat. The dress of the higher ranks is now formed studiously on the European model, though no other part of Europe can rival the gorgeous robes worn by the nobles and bishops on public occasions, or the profusion of diamonds which covers their persons, making them appear all in a blaze.

3417. *The staple food of the Russian peasants* consists of black rye bread and cabbage broth, thickened with oatmeal, which Dr. Clarke mentions with horror, but which, according to Dr. Lyall, may be made far from unpalatable; sometimes salted or frozen fish. The standing drink is their favourite *quass*, made by pouring warm water on rye or barley-meal. The rich cover their tables profusely with French wines and the most delicate dishes, among which sterlet from the Volga, and veal from Archangel, are highly valued. The preliminary use of salt fish, cheese, and brandy, as a whet, is as general here as in Scandinavia.

Sect. VI. *Local Geography.*

Divisions.	Square Miles.	Population.	Principal Towns.			
East Sea Province.						
Petersburg	18,090	808,512	Petersburg	425,000	Cronstadt	40,000
Finland	134,444	1,346,139	Abo Wiborg	11,300 3,200	Helsingfors	8,000
Esthonia	6,890	396,032	Revel	15,000	Narva	3,800
Livonia	20,110	737,734	Riga	30,000	Dorpat	6,000
Courland	9,544	568,690	Mittau	12,000		
Great Russia.						
Moscow	10,500	1,289,828	Moscow Mojaisk	240,000 3,944	Kolomna	5,809
Smolensko	22,088	1,297,055	Smolensko	12,000		
Psko or Plescof	22,293	783,945	Plescof	12,000		
Olonetz	80,789	352,904	Olonetz	3,000		
Novogorod	56,551	915,500	Novogorod	10,000		
Archangel	346,133	162,666	Archangel	16,000		
Vologda	163,712	802,178	Vologda	14,000		
Kostroma	38,570	1,482,700	Kostroma	9,000		
Nishegorod	20,501	1,349,508	Nishegorod	12,000		
Vladimir	18,669	1,306,046	Vladimir	3,000		
Tula	11,904	1,093,721	Tula	35,000		
Kaluga	12,736	1,159,600	Kaluga	25,000		
Tver	24,213	1,233,358	Tver	24,000		
Jaroslaw	14,528	1,022,991	Jaroslow	28,000		
Kursk	14,954	1,611,109	Kursk	25,000		
Orel	16,779	1,270,085	Orel	22,000		
Riasan	14,553	1,270,291	Riasan	5,000		
Tambof	22,869	1,391,400	Tambof	15,000		
Voronetz	32,487	1,436,357	Voronetz	15,000		
Little Russia.						
Kiev	17,557	1,353,800	Kiev	40,000		
Slobodsk Ukraine	21,717	1,471,000	Tcharkof	18,000		
Tschernigoff	22,988	1,378,500	Tschernigoff	10,000		
Pultowa	16,810	1,933,000	Pultowa	10,000		
South Russia.						
Catherinoslav	29,757	944,994	Odessa	30,000		
Cherson	25,728	523,600	Cherson	10,000		
Taurida	43,562	437,428	Sympheropol	20,000	Bakitchiseral	8,000
Bessarabia	18,711	310,000	Bender	10,000		
Don Cossacks	77,034	398,103	Tcherkask.			
Kingdom of Kasan.						
Kasan	22,272	1,138,804	Kasan	40,000		
Viatka	47,381	1,265,900	Viatka	12,000		
Perm	127,017	1,232,474	Perm	15,000		
Simbirsk	29,910	1,095,145	Simbirsk	15,000		
Penza	16,597	1,044,894	Penza	11,000		

3418. *The grand local division of Russia* is into provinces, and these into governments. The provinces, equal in extent to great kingdoms, are, the East Sea Provinces, Great Russia, Little Russia, South Russia, and the kingdom of Kasan. This last has of late been often considered as Asiatic; yet the character of the country, and the natural boundaries, lead us to agree with Arrowsmith, who, in his last Atlas, has made it European. West Russia, and the kingdom of Poland, belong to Poland.

3419. *The East Sea Province* forms no part of the original domain of Moscovy. It consists of provinces conquered chiefly from Sweden. Ingria (now Petersburg), Livonia, and Esthonia were wrested by Peter from Charles XII., at the unfortunate conclusion of his adventurous career; Finland, by Alexander, during his unjust invasion, in the last war; Courland from Poland, previous to the partition. These provinces form a flat dreary country, buried in snow during half the year, covered with gloomy forests of birch and pine, and yielding only in favourable spots the coarser kinds of grain, oats and rye. Yet, from the moment of their acquisition, they were considered the brightest jewel in the Russian crown. They opened to Russia, for the first time, a direct maritime communication with the civilised world. To this quarter, therefore, the seat of government was immediately transferred: it became the centre of commerce; and within its precincts Peter erected his new capital.

3420. *Petersburg* (*fig.* 458.), the entire creation of its great founder, is built altogether upon a plain; and is the most regular, and, in appearance, the most splendid capital in the world. It has no old, dirty, irregular quarter, abandoned to traffic, and shunned by all the opulent and refined; no straggling suburbs. It is "a city of new palaces;" wanting thus, however, the solemn and venerable effect produced by structures that belong to a former age. Except, too, a few of the palaces and public edifices, which are of marble and granite, it is built of brick, covered with a plaster resembling stone, but which can never have its rich and substantial effect. Petersburg is built entirely amid the waters; it occupies the south and north banks of the Neva, comprising several large islands enclosed by its channel. The ground on which it stands being almost on a level with the river, it is exposed to a dreadful danger, — that of inundation. When a strong and continued west wind blows in the waters of the Gulf of Finland, the Neva rises sometimes eight feet, and overflows the whole city. It was supposed that the raising of the ground, and various precautions, had diminished the hazard of this calamity; but it took place, in 1824, on a more awful scale than ever. For two days Petersburg and its neighbourhood were covered as with a sea, in which waggons, furniture, boats, provisions, even wooden houses and coffins, floated in confused masses. Eight thousand people were supposed to have perished, and the destruction of property was immense.

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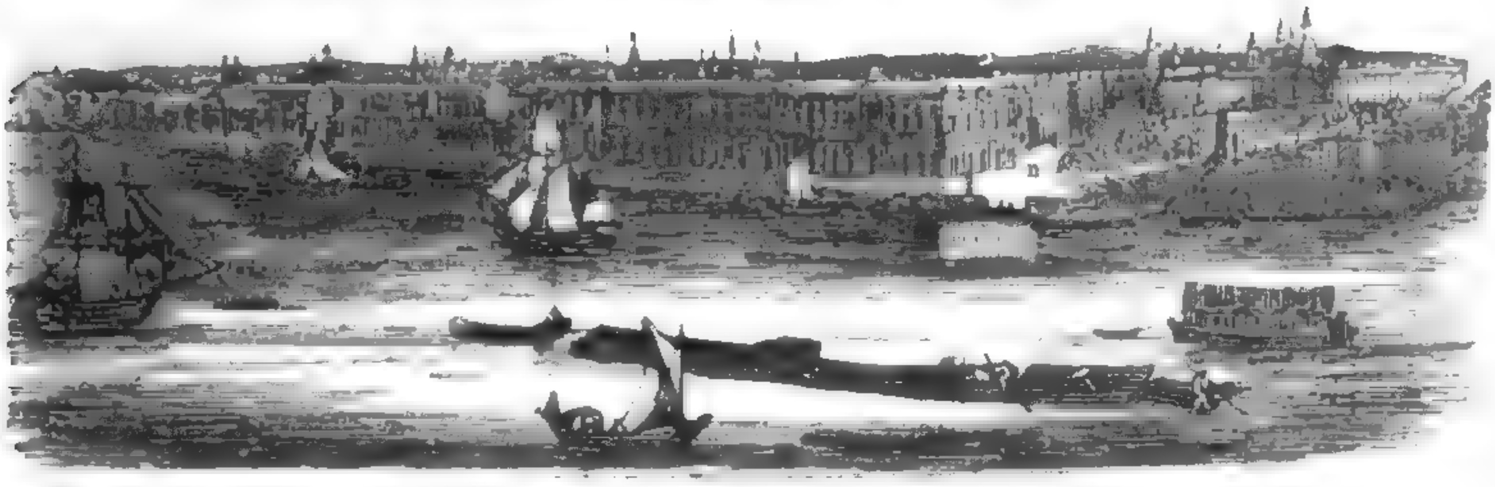

PETERSBURG.

3421. *The streets and edifices* are divided into several compartments, separated from each other by the interposed channels of the Neva. The principal is what is called the Admiralty quarter. It is situated along the south bank of the Neva, which, here forming a species of elbow, converts the quarter, as it were, into a large triangle. It is faced towards the river by a most magnificent granite quay, extending three miles in length. Here are grouped all the most magnificent structures of Petersburg, which resemble a vast range of palaces; and, to those who enter from the desert country around, produce the effect of enchantment. The Admiralty itself, a quarter of a mile in length, presents, perhaps, the longest façade in Europe, richly ornamented, though not, throughout, in the purest taste. Three broad and fine streets, about two miles long, branch from this central edifice, which terminates the vista of each. The grandest structure, however, is the imperial winter palace, 450 feet long, 380 broad, and which, with an adjoining wing called the Hermitage, contains the most valuable of the imperial collections. On a smaller scale, but of still richer materials, is the marble palace, resting on a basement of granite, and roofed with copper. The new bank is also considered one of the chief ornaments of Petersburg. But the greatest of all is the cathedral church of Kasan (*fig.* 459.), in the second Admiralty quarter, one of the most splendid structures that modern art has produced. It was begun in 1800, and finished in fifteen years, at an expense of 15,000,000 rubles. The design, though good, was not the very best that was presented; but being the production of a Russian slave, feelings of patriotism caused it to be preferred. It was executed entirely by Russian workmen, and of materials which, though of the richest description, were all furnished within the empire. The cupola is criticised as too small, and some other defects are pointed out; but the forest of 150 columns in front combines, with its splendour, a purity of taste, which could scarcely have been expected from a semi-barbarian artist. All the materials and ornaments are of the richest description. In the same quarter is the colossal equestrian statue of Peter the Great, chiefly remarkable for the mass of black marble on which it is placed, weighing 1500 tons, and in this respect incomparable. The Vasili Ostrov (Basil's Island) is the chief insular compartment, containing the customhouse, exchange, and other establishments for commerce; and, by a singular combination, the academies of science and art. The island which bears the name of St. Petersburg, and the quarter of Wiborg, on the northern bank, include the remains of what was the original city, or rather village, with large additions, but still retaining more of a rural character than the rest. The Foundery quarter is distinguished by the large establishments bearing its name, but still more by a very superb structure of Catherine, called the Taurida palace. At the end of a vestibule and hall, both of immense extent, and adorned with vast ranges of columns, statues, and vases, appear gardens which, in winter, while all the world without

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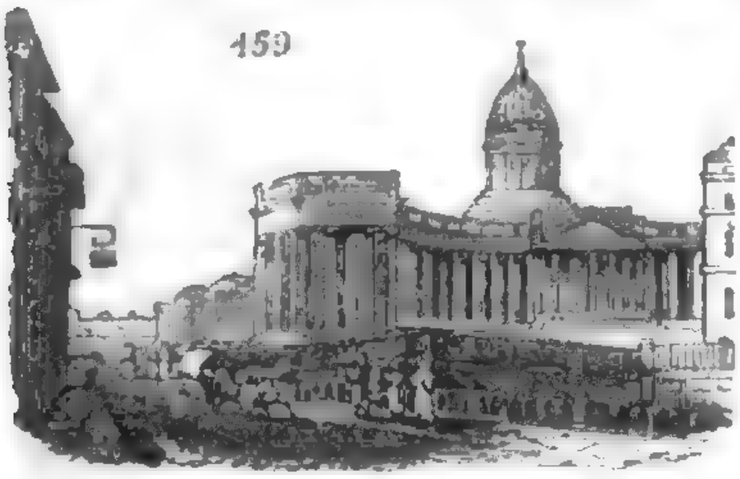

CATHEDRAL CHURCH, PETERSBURG.

is buried in ice and snow, present the most brilliant hues of summer. Being enclosed in a spacious saloon, they may be considered as a vast conservatory. The islands and opposite banks of the Neva are connected only by pontoons, or bridges of boats, which, on the approach of ice, are removed in two or three hours; and the ice then supersedes every other bridge. Mr. Coxe saw a magnificent design, by a Russian, of a wooden bridge with a single arch, to span the breadth of 1000 feet; but it has never been executed. The population of Petersburg amounted, according to the Gazette, in May, 1829, to 425,000, including military. In 1764 it was only 164,000. Of these, only about 340,000 are stationary; as 55,000 belong to the naval and military services, and 25,000 are foreigners. The original Finnish inhabitants do not now exceed 40,000. The ground in the vicinity being barren, the city is supplied from a great distance; with cattle from the Ukraine; grain, and even timber fuel, from the provinces on the Volga; yet the sure demand produces a steady supply. Petersburg is a place of very great trade. The value of the imports, in 1830, amounted to 145,000,000 rubles, and of the exports to 111,000,000 ditto. During the same year, 1483 ships cleared out from Petersburg, of which 753 were British. Most part of the foreign trade of Russia is in the hands of foreign merchants, of whom the English are the principal. For details as to the commerce of Petersburg, see M'Culloch's *Dictionary of Commerce*.

3422. *Among the environs of Petersburg* we may mention the palaces of Oranienbaum, Peterhoff, and Czarskoje-Selo; which are merely spacious country-houses, with agreeable gardens in the English style attached to them. A much more important object is Cronstadt, at the mouth of the Neva, the grand naval arsenal of the empire. The fortifications on the sea-side are very strong; and form, indeed, the only defence of the capital, which, towards the land, is almost quite open. The docks are extensive and commodious; and the largest, alone, of the three harbours, will contain 600 sail. Although Russia be considered so great a magazine of naval stores, the construction of ships of war is by no means very cheap, as the northern provinces produce only fir, and oak must be brought from Kasan, on the borders of Asia. The population of Cronstadt is about 40,000.

3423. *The provinces on the southern coast of the Gulf of Finland* are flat, interspersed with lakes and marshes; but they contain many fertile tracts, which, if better cultivated, might yield plentifully the hardy kinds of grain, rye, barley, and oats. They were acquired in the thirteenth and fourteenth centuries by the Teutonic knights; and the higher and ruling population thenceforth became German; while the Fins, the natives, were reduced to the state of vassalage, in which they still remain. They were then successively conquered by Sweden, Poland, and Russia. The nobility still enjoy some privileges, and meet in provincial states; but the peasantry are oppressed, notwithstanding efforts made by the Russian government for their relief. Riga, the capital of Courland, is one of the greatest emporia of the North. The imports, in 1828, are said to have amounted to 15,599,000 rubles; the exports, to 38,826,000 rubles; the number of ships which entered was 1162; those which went out, 1180. More than two thirds of its trade is with England, the rest chiefly with Holland and Denmark. Riga is very much a German town, neat and well built, without any remarkable features. There are some scientific establishments. Dorpat is an agreeable town, situated in the best part of Livonia, having a pretty brisk inland trade, and being, since 1802, the seat of a well-endowed university. Revel, the capital of Esthonia, is an old irregular town, tolerably fortified, and with an excellent harbour, where there is some trade in the usual Russian staples. Narva, a neat German-looking place, formerly belonging to the Hanse Confederacy, and still retaining some trade, is chiefly distinguished for the signal, though ultimately fruitless, victory here gained by Charles XII. over his great rival.

3424. *Finland*, a recent ill-acquired possession, seems now finally united to the Russian empire. The Fins are still attached to Sweden; but, being well treated, their trade protected, and their national customs respected, they acquiesce with tolerable patience. The country is almost a counterpart of Sweden; "a succession of hill and dale, abounding in forests of fir and beech, interspersed with numerous lakes, and thickly overspread with shattered fragments of granite." During the winter it is covered with a hard uniform surface of snow and ice, in which the roads are marked by boughs of fir laid along them. The Gulf of Bothnia, between Finland and Sweden, is then entirely frozen over, and sledges drive across it, beating for themselves a smooth and hard road, which is only a little dangerous at the commencement and close of the season. The Fins are a race by themselves, and speak a language which is quite distinct from that of any of their neighbours, and seems to be in its origin Asiatic. They are on the whole a patient, laborious, well-disposed people.

3425. *Abo*, the capital, is situated on the promontory which connects the Gulfs of Bothnia and Finland; a fortunate position, which enables it to carry on all the trade of the country. The university is also considerable, having been greatly improved by Alexander. The professors, eighteen in number, have each a salary of 4000 rubles, besides fees from the students, who are numerous; as a certain attendance is required to qualify for any office under government. This city, however, has been laid waste by a recent fire, which has consumed the university, its museum, and library, and many other public edifices. Helsingfors contains a naval arsenal of some magnitude, but is chiefly important from the vicinity of Sweaborg, the northern Gibraltar. This fortress is composed of three islands, united to each other by bridges; the works are partly blasted from the rock, and partly built of the granite which composes it. They mount upwards of 800 pieces of cannon, and can accommodate 12,000 men; while a well, sunk in the rock, secures it against any danger from the want of water. All these advantages of nature and art have been fruitless; and Sweaborg, on each occasion, when it ought to have been the bulwark of Finland, was surrendered by treachery. Wiborg, the capital of all that part of Finland which Peter the Great rendered Russian, and of all that region before Petersburg existed, presents some marks of former splendour. Tavasthus is a rude wooden town, forming a sort of capital of the wide marshy plains of interior Finland.

3426. *Great Russia* is the most extensive of all the divisions of the empire. It forms the great interior mass of what was the original Muscovy, and presents the native race and habits in their utmost purity. The northern part corresponds to Sweden and Lapland; it is hilly, and wooded; and though covered during more than half the year with snow, yet in its better tracts it produces oats, even beyond its own consumption. The middle region forms an expansive well-watered plain, abounding, though in a somewhat rough shape, with corn, cattle, timber, and all the necessaries of life.

3427. *Moscow* (*fig.* 460.), the ancient and interior capital, is, perhaps, the most extraordinary city that exists, either in Europe or Asia. It presents a singular combination of whatever is most striking in both continents. It surpasses in splendour the greatest capitals of Europe, and in poverty its poorest villages. According to the happy image of the Prince de Ligne, "it looks exactly as if some 400 old castles of the nobles had been transported thither, each bringing its little attendant village of wooden cottages. Wretched hovels are blended with large palaces; cottages of one story stand next to the most superb and stately mansions; many brick structures are covered with wooden tops; some of the wooden houses are painted; others have iron doors and roofs." — "One might imagine," says Dr. Clarke, "that all the states of Europe and Asia had sent a building by way of representative to Moscow: timber huts from regions beyond the Arctic; plastered palaces from Sweden and Denmark; painted walls from the Tyrol; mosques from Constantinople; Tartar temples from Bucharia; pagodas, pavilions, and verandas from China; cabarets from Spain; dungeons, prisons, and public offices from France; architectural ruins from Rome; terraces and trellises from Naples; and warehouses from Wapping. Some parts have the appearance of a sequestered desert, and the traveller is tempted to ask, Where is Moscow? till he is told, This is Moscow." "Here are seen," according to Dr. Clarke, "wide and scattered suburbs, huts, gardens, pigsties, brick walls, churches, dunghills, palaces, timber-yards, warehouses; and a refuse, as it were, of materials sufficient to stock an empire. In other quarters the throng is so immense, that the traveller asks, What cause has convened such a multitude? and learns that it is the same every day. At some points, and particularly from the Kremlin, where all its deformed features are hidden, and the eye roves over the towers, domes, and spires of its gorgeous temples and palaces, Moscow presents an aspect of rude and varied magnificence, which scarcely any other capital can equal."

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MOSCOW.

3428. *The sumptuous edifices of Moscow are very numerous*, as, notwithstanding the transference of the government to Petersburg, the greater number of the nobles still make it their residence. Many of their palaces are, or were, truly magnificent; that of the Pascof family, perhaps, the most strikingly so. The Kremlin (*fig.* 461.), however, is the most extraordinary of all the edifices of this extraordinary city. It is a sort of enclosed town, which, besides the ancient palace of the czars, contains the two magnificent churches of St. Nicholas and the Assumption, numerous chapels, government offices, houses of the priests and other public functionaries. Its original style and pavilion-like aspect are decidedly Asiatic; yet there are extensive portions constructed in the Grecian style. "Here a pagoda, there an arcade. In some parts richness, and even elegance; in others barbarism and decay. It is a jumble of magnificence and ruin; old buildings repaired, and modern structures not completed; half-open vaults, and mouldering walls, and empty caves, amid whitewashed brick buildings, and towers and churches with glittering, gilded, or painted domes." A Russian artist presented to Catherine a most superb model, which, at the expense of 7,000,000*l.* or 8,000,000*l.* sterling, would have harmonised the whole into one palace, the most magnificent in the world; but very small progress was made in the execution. Among the wonders of Moscow is the greatest bell (*fig.* 462.) in the world; 67 feet in circumference, weighing more than 22,000 tons, and worth about 70,000*l.*; but no intention of ever suspending it seems to be entertained. Another wonder is, the great gun, in which a man may sit upright; but from which not a shot was ever fired. The Church of St. Basil (*fig.* 463.) is, perhaps, the most curious of all the structures, from the completely Tartar style of its numerous and heavy cupolas, surmounted with gilded crucifixes. It is a work of piety for individuals to bestow large sums to gild or paint one of the numberless domes

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THE KREMLIN.

of the churches, each according to his peculiar taste; whence arises a brilliant and fantastic variety.

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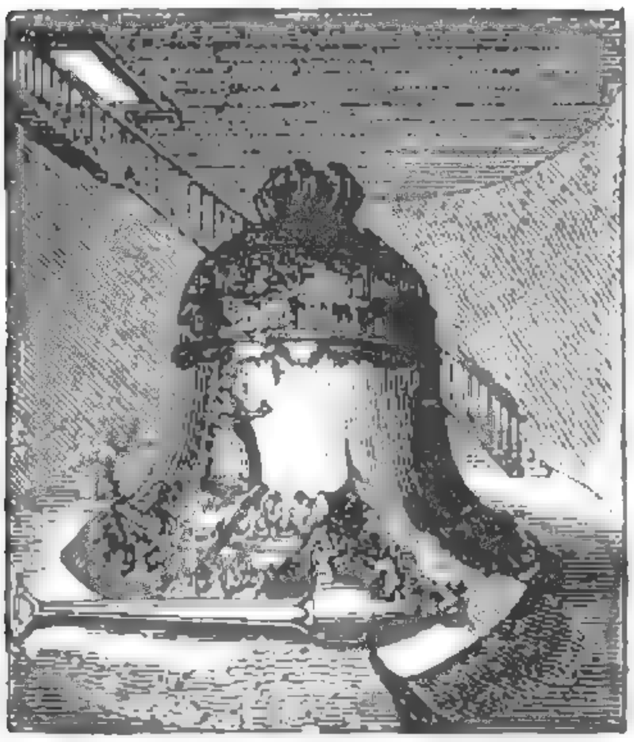

GREAT BELL OF MOSCOW.

3429. *The story of Moscow has been singularly eventful.* She has passed through almost unparalleled vicissitudes of war and devastation; but her recent scenes of glory and calamity have surpassed all those which preceded. The burning of Moscow is well remembered as the marking event, which turned against the all-grasping usurper the tide of fortune. Napoleon, when he entered Moscow, did not find it burning. The Russians, in retiring, left merely the combustible materials deep lodged, and sure to break forth. The flames soon appeared, and, aided by strong winds from opposite quarters, gained hourly new strength, till they wrapped that vast capital in one blaze of fire. Its proud and gilded domes either fell to the ground, or stood solitary amid surrounding ruin. The city thus rendered untenable, Napoleon was forced to commence that retreat, in which a great part of his army perished. It is remarkable that the Russian government still renounce the glory of this sublime sacrifice, and represent Moscow as burned by the French. When Mr. James visited the city, in 1814, the whole space of 25 miles' circumference presented the most gloomy aspect of desolation. "A few shops and inns had been built, and looked like spots in the wide waste; but to repair the mansions of the grandees was too gigantic a work to be then even begun; and they stood in the most neglected and forlorn condition. Street after street appeared in utter ruin: disjointed columns, mutilated porticoes, broken cupolas, walls of rugged stucco, black, discoloured with the scorchings of fire, and open on every side to the weather, formed a hideous contrast with the glowing pictures which travellers had drawn of the grand and sumptuous palaces of Moscow." (*fig.* 464.) In 1823, however, Dr. Lyall and Captain Cochrane found the work of reparation far advanced; and the new streets and edifices were constructed in a more regular style, though Moscow appeared still to Captain Cochrane, as in Clarke's time, "beautiful and rich, magnificent and mean." According to a work published in 1824, at Moscow, by M. Lecointe, 6341 houses had been burned, and 8027 had been rebuilt; so that it was larger than before; and Captain Frankland, in his recent journey, confirms this observation. On the Sparrowhill, Alexander, in 1817, laid the foundation of "a Temple of our Saviour," which, if completed, will be the most gigantic structure in the universe. It is to be 770 feet high (the Great Pyramid is only 630), having three successive churches rising above each other, the lowest of which was to be fronted by a colonnade 2100 feet long Twenty-four thousand peasants were provided, of whom 6000 were to work at the building, and the rest to till the ground for their support. The work, however, had not been seriously begun till 1824. According to Lecointe, Moscow contains 14,724 nobles, 3101 crown servants, 4383 ecclesiastics, 12,104 merchants, 28,029 citizens, 10,384 artisans, 22,194 military, 1854 manufacturers, 1882 coachmen, 53,541 domestic servants, 72,758 peasants, 19,204 persons of various denominations, 2385 foreigners; in all, 240,000.

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CHURCH OF ST. BASIL.

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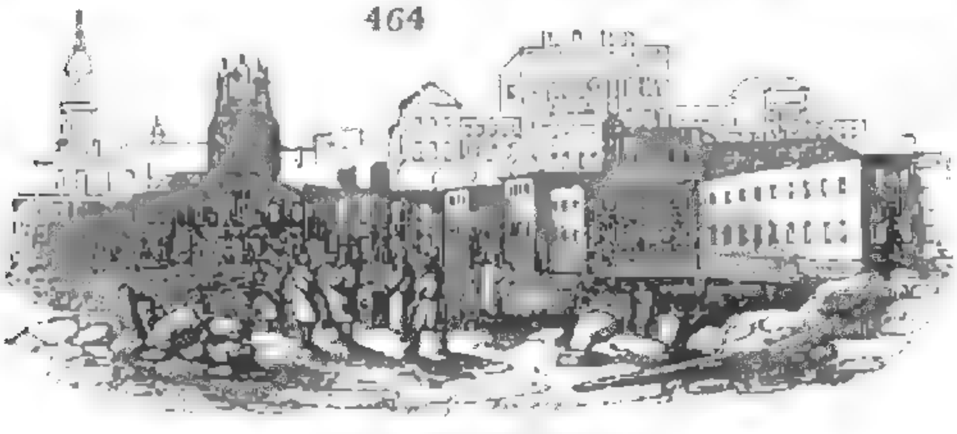

RUINED PALACES IN MOSCOW.

3430. *Among the other cities*, the first place, on account of its mighty name, must be given to the Great Novogorod (*fig.* 465.). Few objects convey more melancholy impressions of fallen grandeur than the view of this once proud capital of the North. First the metropolis of Rurick, it became afterwards an independent republic, which, repelling Tartar invasion, held wide sway over the regions round the Baltic, and, uniting itself to the great Hanse confederacy, gave rise to the northern proverb, "Who can resist God and the great Novogorod?" Even after Ivan had subdued it, carried off its great bell, and established his tribunal of blood, it was still the greatest town, though not the capital, of all Russia. The foundation of Petersburg gave it a more deadly blow than all its former calamities; and it is reduced to a third-rate place of 8000 or 10,000 people. Yet the crowd of domes and spires rising from its numerous churches and convents give it still a very magnificent appearance in the approach; but these, on arrival, are found standing solitary on a vast plain, while the inhabited circuit is only about a mile and a half, a great part of which is unoccupied. It is now much surpassed by Nizni (or Little) Novogorod, whose fair, already mentioned, makes it the commercial link between Europe and Asia. Its population varies, according to the season, from 15,000 to 150,000. The situation, at the junction of the Oka and the Volga (the latter here navigable for vessels of 1000 tons), is most happy for trade, but exposes it to the danger of inundation. Vladimir, once the capital of Vladimir the Great, is still a handsome little city, finely situated, and with the remains of a very magnificent cathedral. Murom, in its vicinity, is now a larger town; and in the forest which surrounds it are the extensive ironworks of Vixa. Tver is a well built, industrious city, grandly situated on the lofty banks of the Volga. In its district is Vichney Voloshok, near which is the remarkable canal connecting that river with the Baltic. In the south is Tula, already mentioned as the main seat of the iron manufacture, which has raised it rapidly to be a large, thriving, and busy place. Kalouga is also important, from its manufacture of canvass and coarse woollens, and from the fertility of the district. Orel is the capital of a very productive government, and sends great quantities of corn and other necessaries by the Oka to Petersburg. Voronets or Voroneje, almost founded by Peter the Great, has become one of the largest and most populous towns in the empire. Situated at the junction of the river of its name with the Don, under the mild influence of a southern climate, and in a plain very fertile in corn, it carries on a very extensive trade with the Black Sea. It borders immediately on the vast southern steppes. Smolensko, on the western border of the empire, and which gained such a fatal celebrity in the late war, suffered almost as much as Moscow. Its venerable cathedral, however, presenting one of the finest specimens of Russian ecclesiastical architecture, stands on a height uninjured, though amid heaps of ruin.

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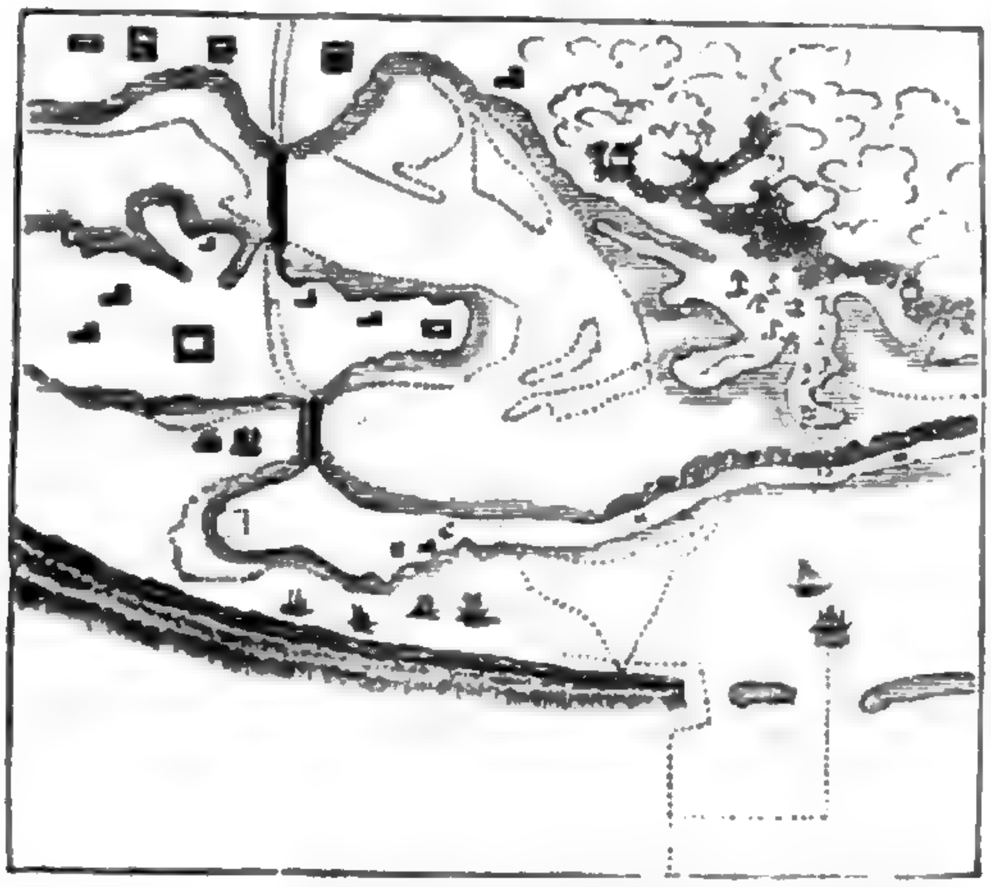

GROUND PLAN OF NOVOGOROD.

3431. *The arctic provinces of Great Russia, — Vologda, Olonetz, and Archangel,* — are in the same latitude with Scandinavia, to which they present almost an exact parallel. They are overspread with vast forests of pine and fir, which, in approaching the shores of the Northern Ocean, become stunted and disappear. The southern tracts produce considerable crops of oats, which are sent down the Dwina to Archangel, in large covered boats that never return, but are broken up for firewood. Archangel, the only Russian port before the acquisition of Petersburg and the shores of the Euxine, was then a flourishing emporium, with 30,000 inhabitants. Its merchants still provision the whole coast of the Northern Ocean, and carry on the fishery with considerable activity: about one hundred vessels, from England, Holland, and Germany, enter the port. There are several churches and public buildings, on a scale rather suited to its former greatness than to its present decline. Vologda, near the head of the Dwina, is an industrious manufacturing place, and maintains a considerable intercourse between Petersburg and Archangel.

3432. *White or Malo-Russia,* called also the Ukraine, has undergone various revolutions. It was the centre of Russia as first known to the Greeks, when Kiev, its capital, was boasted as a rival to Constantinople. It passed then through the hands of the Tartars and the Poles, till the conquering arms of Russia again reunited it, but as an appendant province. The Malo-Russians are a distinct race, decidedly superior to the Red Russians. They excel them, according to Dr. Clarke, in every thing that can exalt one class of men above another: industry, honesty, courtesy, cleanliness, neatness. Their houses are carefully whitewashed, the interior well furnished, and nicely clean. Malo-Russia is one extensive and fertile plain, not so ill cultivated as the rest of the empire, and therefore more populous. The ancient and venerable city of Kiev is majestically situated on an amphitheatre of hills overlooking the broad expanse of the Dnieper. In this situation, the numerous churches and convents of the sacred city, with their gilded domes, make even more than the usually splendid appearance of Russian cities; but when the traveller has toiled up the steep wooden paved road which leads to it, he meets with the same disappointment. Old Kiev is in a great measure deserted; though still interesting to the antiquary, as it contains the church of St. Sophia, the oldest in Russia; and, if not an exact model of the church of the same name at Constantinople, at least of Byzantine design. The new town is carefully fortified, though only with earth; but its walls and its spacious arsenal are both kept in good repair. The population is usually said to be 40,000; but neither Mr. James nor Dr. Lyall allow more than 20,000. Tchernigof and Charcof are considerable and well-built towns; the latter has an university. Pultowa is situated in one of the most productive parts of the Ukraine, and carries on a pretty good trade; but it is chiefly celebrated for the great battle in which all the brilliant fortunes of Charles XII. were wrecked, and the star of Russia became finally ascendant in the north.

3433. *Southern Russia* consists of a vast expanse of level plains or steppes, extending to the south of the Black Sea, and watered by the great and broad rivers of the Dnieper, the Dniester, and the Don. These plains are chiefly covered with luxuriant pastures, and have only recently and partially felt the plough; which, however, has produced immense crops of the finest wheat, capable of rendering this region the granary of the Mediterranean. "Savage from remotest time," it was the Scythia of Darius; and all its habits and population continued to be Scythian, till Peter and Catherine infused into it the principles of civilisation, which are now making rapid progress. It is even apprehended by some that this region is advancing towards a period when it will shake off the Russian yoke, and form itself into a separate kingdom. Ekaterinoslav, in the interior, is the nominal capital, but is only a large country town. Odessa (*fig.* 466.), on the Black Sea, is the real capital and centre of commerce for all southern Russia. This city, which has sprung up as if by magic, in the midst of a desert, was founded by Catherine, in 1796, on the site of a Tartar village of a few huts. Notwithstanding the efforts of Catherine and of Paul, it did not attain any great importance till the Turks were obliged to open the navigation of the Bosphorus, and Alexander placed it under the able administration of the Duke de Richelieu. From that time it rose rapidly, till it has become the second commercial city of Russia. It was once supposed to contain about 40,000 inhabitants, but of late it has rather declined; and Dr. Lyall believes that it does not now contain more than 30,000. It is a sort of southern Petersburg, regularly built, with handsome edifices, though on a smaller scale. It labours under the disadvantage of a want of water. In 1827, the value of the imports into Odessa was estimated at 12,500,000 rubles, and that of the exports at 18,500,000. Wheat is the great article of export; and Odessa is as famous in southern Europe for the exportation of this grain as Dantzic is in the north. During the war with Turkey, the commerce of Odessa was confined within comparatively narrow limits; but it has since become of more importance than ever. Cherson was built, in 1778, as the destined port of the Black Sea; but its unhealthy situation, and the obstructed navigation of the Dnieper, have enabled Odessa to supplant it. It is distinguished by the death of Howard the philanthropist, and a simple monument erected to his memory. Nicolaief is a neat pleasant town, and has become a considerable naval arsenal. The commerce of the Don and the eastern branch of the Black Sea is carried on by Taganrog, boldly situated on a promontory overlooking the Sea of Azof. It has the disadvantage of water so shallow that ships cannot approach nearer than ten miles; while the sea is frozen for nine months in the year. Here the Emperor Alexander died suddenly, in 1825. During the short season of commerce, the throng at Taganrog is immense; and 6000 waggons may sometimes be seen assembled in the plains behind. Azof, notwithstanding its importance during the wars of the Crimea, is only a poor village, with a small garrison.

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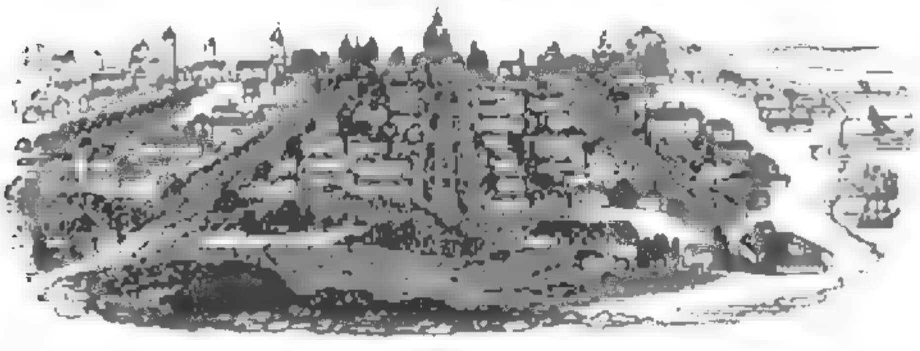

ODESSA.

3434. *The country of the Don Cossacks* is the chief settlement of that remarkable people, who seem to have nothing Russian in their origin and nature, but to be a mixed Caucasian and Tartar race. They are well known in Europe as the most harassing light troops that ever exercised a predatory warfare in the train of any army. At home, they have excited the admiration of travellers by the arts and virtues of peace. They are handsomer and taller than the Russians, whom they surpass also in honesty and dignity. "Polished in their manners," says Dr. Clarke, "instructed in their minds, hospitable, generous, disinterested, humane, and tender to the poor; such are the natives of Tcherkaskoy. They form a sort of independent republic, paying no taxes to Russia, but cheerfully bringing forward their numerous and valuable contingent of troops. They drive a pretty brisk trade, and many of them acquire considerable wealth. A matron of Tcherkask, who walks barefooted, will, perhaps, have a casket of pearls worth some thousand rubles." The original Tcherkask (*fig.* 467.) lies on the Don, and is a sort of city floating on the water; but the unhealthiness and frequent inundation hence arising has caused the erection of New Tcherkask, in a high situation on the Alsai, a tributary of the Don; which, though less favourable for trade, has drained the old city of the bulk of its inhabitants.

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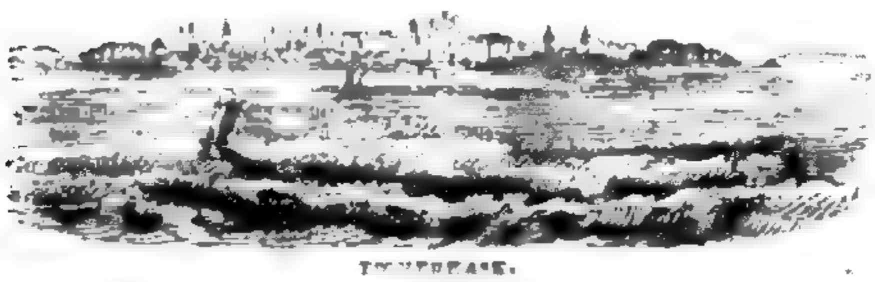

TCHERKASK.

3435. *The Crimea*, the most southern peninsular portion of the empire, was long celebrated as the solitary link which connected the civilised world with the boundless domain of Scythian barbarism. Even prior to the time of Herodotus, the Milesians had formed trading settlements in this quarter. Under the name of the Cimmerian Bosphorus, it became attached, in a somewhat precarious manner, to the empire of Rome, which built there the important city of Theodosia. During the middle ages, the Genoese formed the flourishing settlement of Caffa, through which they obtained even the commodities of India, which were forced, by the disturbed state of Western Asia, to take the circuitous route of the Oxus and the Caspian. More recently, under the Crim Tartars, it became the seat of a monarchy of some power, ruled by a khan, though with a certain dependence upon the Porte. The overwhelming power of Russia, after a most desolating and destructive war, made a complete conquest of the Crimea. The government has since made considerable efforts to repair the ravages committed by its armies; but it has yet been unable to restore this fine country to its former prosperity. The Crimea is traversed by a range of mountains, not very lofty, but bold and picturesque, and which shelter most beautiful valleys, enjoying a mild and luxuriant climate (*fig.* 468.). It was until a recent period rich in monuments and antiquities belonging to the different nations by whom it has been occupied; but of these it is now in a great measure rifled. Sympheropol, which the Russians have made the capital, is pleasantly situated on the western coast; and, though not well built, has a very handsome cathedral. In the interior from this place is the Tartar capital of Bakitchiserai, finely situated among romantic hills, on the terraces of which the houses are built; and the palace of the khans (*fig.* 469.), even in ruin, makes a magnificent object. At the opposite extremity, Caffa, once called the Crimean Constantinople, has been reduced by the Russians almost to a heap of ruins; but it is beginning to revive. One of the most remarkable features is that of the excavated rocks in the valley of Inkerman; where they appear hewn into chapels, cells, and other apartments, which astonish by their variety and intricacy. They are supposed to have been the work of fugitive Christians during the ages of persecution. The strong fortress of Perekof, commanding the narrow mouth of the peninsula, has lost its importance since the Crimea became Russian.

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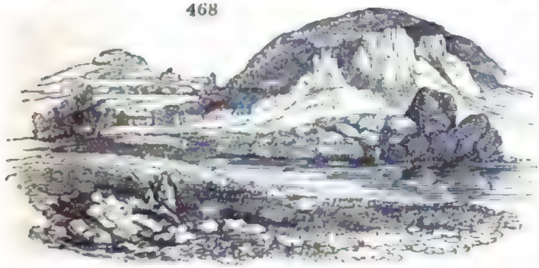

MOUNTAIN OF ADEN DAGH, IN THE CRIMEA.

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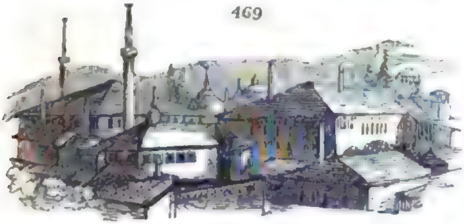

PALACE OF THE KHANS OF THE CRIMEA.

3436. *The kingdom of Kasan* forms a semi-Asiatic member of the empire. Down to the sixteenth century it was a Tartar kingdom, held by a branch of the posterity of Zingis; but in 1550 it yielded to the arms of Ivan. The people are still chiefly Tartars, and more civilised than the bulk of that race; cultivating the ground with diligence, exporting corn, and bestowing still greater attention on their flocks and herds. They also tan, and even embroider leather, and make much soap. There are extensive forests of fine oak, and other trees of a superior description to those found in the north and centre of Russia. The eastern part contains great quantities of iron, copper, and other valuable minerals. The city of Kasan is reckoned the third in the empire; having 40,000 inhabitants, of whom 12,000, and the most industrious, are Tartars. The city being built and its streets paved with wood, was reduced to ashes, in 1815, by a great conflagration, which consumed the cathedral and palace, leaving only the handsome church of St. Peter and St. Paul. In the rebuilding of it, this exclusive use of wood has been discouraged. Viatka is connected with northern Russia, and sends its corn down the Dwina to Archangel. Perm is a rude wooden town; but, bordering immediately on the Urals and on Asia, it thrives by transmitting westward the rich mineral produce of that chain of mountains. Simbirsk and Samara, on the Volga, and Penza, on its tributary the Sura, are similar wooden towns; which have considerable employment in the fisheries of that river, and in conveying by it to the capitals the plentiful produce of the surrounding countries.

Chap. XVII.

GREECE.

3437. *Greece,* though bearing so great a name, and occupying so high a place in our recollections, had ceased, until of late, to be considered as having any actual existence. The torrent of Ottoman conquest, overwhelming all the institutions and monuments of the classic ages, seemed to have obliterated its place as a separate state, and to have sunk it into the subordinate province of a huge barbarian empire. But memorable events just elapsed have again produced the Greeks to the world, with claims to be considered as a great and independent people. Even under their deep humiliation, materials were not wanting, out of which their independence might be re-established. Amid the gloom of Turkish domination, the Greeks still existed as a people every way separate; not, indeed, manifesting their former high displays of genius and heroism, yet still remaining distinct in language, manners, and religion, and exhibiting even revived symptoms of intellectual and general activity. After witnessing the glorious though chequered efforts made by the nation itself, and though with various success; considering the part now publicly taken by the states of Europe, we can no longer hesitate to sever Greece from the Turkish empire, and give to it a place among European nations.

3438. *What is, or is not, Greece,* is a question of no little difficulty. As it consisted, even anciently, not of any single state, but of a class or confederation of states, the name was applied always under various gradations. Peloponnesus, now the Morea, with Attica, Bœotia, and the islands of the Ægean, might be regarded as the central and integral parts. Thessaly, Ætolia, and Crete formed a sort of outer and ruder Greece, not thoroughly incorporated, yet still not belonging to the domain of the barbarian. Macedon was held as within that outer domain, till, becoming mistress of the whole country, it was at length received as one of the leading states of Greece. In modern times, the name of Greece has

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References to the Map of Greece.

NORTH PART.
1. Dulcigno
2. Scutari
3. Dagnio
4. Alessio
5. Merediti
6. Asteia
7. Mamesi
8. Gouraenda
9. Beba
10. Oristrend
11. Kalkandere
12. Katchlanik
13. Uskup, or Scopia
14. Comanova
15. Caratova
16. Guistendil
17. Djoumaka
18. Raslouk
19. Negrokor
20. Vrondou
21. Menlik
22. Petrovitch
23. Libanovo
24. Stroumnitza
25. Radovits
26. Istip
27. Tickvech
28. Keupril
29. Bagni
30. Critchovo
31. Istirga
32. Dibre Post
33. Dibre Sipre
34. Papigo
35. Isbas
36. Oros
37. Croja
38. Tyranna
39. Sciak
40. Cavaya
41. Durazzo
42. Pekini
43. El-Bassan
44. Petrondi
45. Berat
46. Doubrin
47. Molekha
48. Sedjim
49. Stronga
50. Bograsleni
51. Koridje
52. Ochrida
53. Presba
54. Monastir
55. Perlepe
56. Stobi
57. Demircapou
58. Gradiska
59. Meglena
60. Dotran
61. Velitsa
62. Likovun
63. Neglitsa
64. Seres
65. Demirhissar
66. Drama
67. Ruins of Philippi
68. Tzagisak
69. Jenidje
70. Cavalla
71. Prahousta
72. Contessa, or Orfano
73. Orsova
74. Betchik
75. Langaza
76. Avrethissar
77. Jenidje
78. Vodena
79. Ostrovo
80. Florina
81. Castoria
82. Bichlista
83. Staria
84. Ossouni
85. Dezniтsa
86. Plentza
87. Fieri
88. Carbonara
89. Clisura
90. Costretzi
91. Pourca
92. Barmachi
93. Lezovico
94. Khioniades
95. Bogutzico
96. Lepeni
97. Grevno
98. Statista
99. Callari, or Sari-gecul
100. Niagostos
101. Carapheria, or Veria
102. Colakia
103. Salonica
104. Sedes
105. Barzaria
106. Sidero Kapsi
107. Tchiftlik
108. Furco
109. Cassandria Gates
110. Portario
111. Panomi
112. Kitros
113. Cateria
114. Delvendos
115. Egriboudjiak
116. Cojani
117. Servia
118. Perivoli
119. Konitsa
120. Mount Mertchika
121. Premiti
122. Liboovo
123. Argyrocastro
124. Tepelem
125. Coudessi Grecoes
126. Vallona
127. Mavrova
128. Doucates
129. Drimades
130. Port Panormo
131. Kokames
132. Dogana.

SOUTH PART.
1. Platamona
2. Mt. Olympus
3. Vale of Tempe
4. Mt. Ossa
5. Hagia
6. Hadjibacha
7. Larissa
8. Tournovo
9. Alassona
10. Velenitcha
11. Choutzocaero
12. Mt. Ardam
13. Stagous-Kalabaki
14. Mocassi
15. Metsovo
16. Joannina
17. Calarites
18. Sarachovitza
19. Delvinaki
20. Delvino
21. Pheniki
22. Butrinto
23. Conispolis
24. Philates
25. Paramythia
26. Parga
27. Souli, or Suli
28. Letovo
29. Valentico
30. Cardiki
31. Mt. Pindus
32. Tricala
33. Spathades
34. Gardiki
35. Serai
36. Pharre, or Pharsalia
37. Valestina
38. Volo
39. Argalasti
40. Armyros
41. Pteleo
42. Echinos
43. Zeitouni
44. Thaumaco
45. Asmacovo
46. Partouri
47. Arta
48. Loroux
49. Prevesa
50. Vonitza
51. Dragomestre
52. Catochi
53. Missolonghi
54. Vrachori
55. Zilichovo
56. Carpenitza
57. Petradjik
58. Lidoriki
59. Lepanto
60. Amoursani
61. Galaxidi
62. Salona
63. Delphi Castel
64. Thermopylæ
65. Boudounitza
66. Talanta
67. Caprena
68. Livadia
69. Asprospitia
70. Xeromale
71. Lefka
72. Thebes
73. Kokla (Platæa)
74. Groimada
75. Marathon
76. Mt. Pentelicus
77. Marcopoula
78. Port Mandri
79. Agyra
80. Athens
81. Lepsina
82. Mt. Parnes
83. Megara
84. Cenchreæ
85. Corinth
86. Zaraca
87. Acrata
88. Vostitza
89. Patras
90. Avla
91. Manolada
92. Gastouni
93. Coumani
94. Pyrgos
95. Fort Clidi
96. Mt. Palatia
97. Lala
98. Langadia
99. Kalpaki
100. Tripolizza
101. Argos
102. Nemea
103. Sophico
104. Potamia
105. Castri
106. Napoli di Romania
107. Astros
108. St. Pierre
109. Coraki
110. Gradiтza
111. Argaliana
112. Klisoura
113. Arcadia
114. Mt. Condevouno
115. Old Navarin
116. Neocastron, or Navarin
117. Modon
118. Coron
119. Petalidi
120. Androusa
121. Calamata
122. Leondari
123. Arapaulo
124. Prastos
125. Mistra
126. Sparta
127. Port Botta, or Stilo
128. Port Karl
129. Napoli di Malvasia
130. Hagio Lindi
131. Rupina
132. Kolokyna
133. Trinisa
134. Marathonisi
135. Cardamoula
136. Chimova
137. Maina
138. Quaglia.

ISLE OF NEGROPONT.
1. Hagios
2. Talanta
3. Achmet Aga
4. Castelli
5. Negropont
6. Koumi
7. Stoura
8. Carysto.

Rivers.
a Bojana
b Drin
c Mattia
d Elsina
e Scambi, or Stobi
f Beretino, or Ergent
g Voyussa, or Aous
h Dernitzo
i Argiro
j Calmas
k Mavro-potamos
l Lourcha
m Arta
n Aspro-potamos
o Fidaris
p Asopo
q Mavro-potamos (Copais Lake)
r Hellada
s Sataldga
t Salembria
u Nazlitza
v Inidje
w Vardar
x Strymon
y Anghista
z Mesto.

Rivers in the Morea.
a Camenitza
b Gastouni
c Orphea
d Paulitza
e Cartola
f Zoumena
g Vasilico
h Landona
i Xera.

IONIAN ISLANDS
Corfu.
1. Magalades
2. Corfu
3. Santo Mattia
4. Clomo.

St. Maura.
1. St. Maura
2. Eviero.

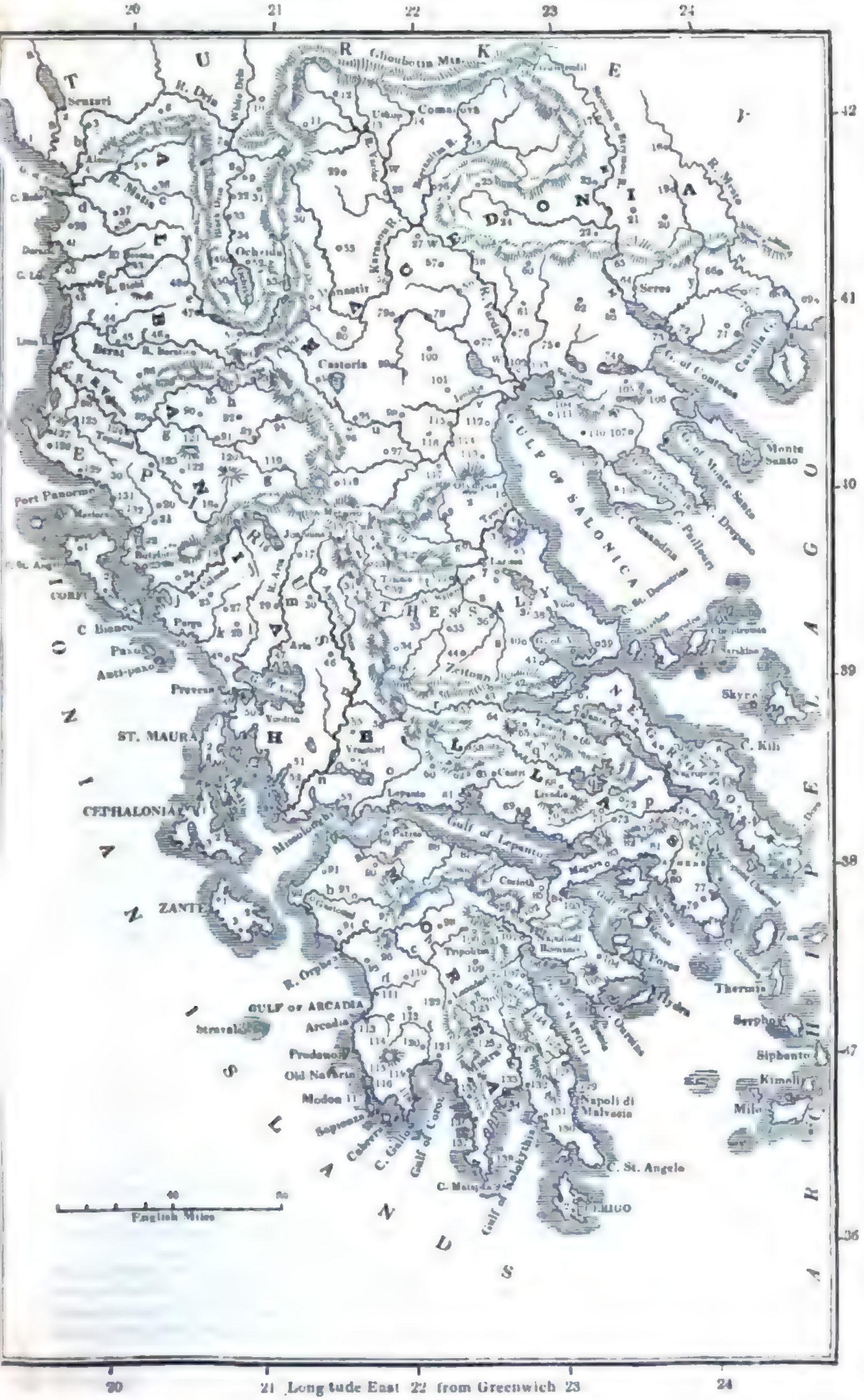
Thiaki.
1. Vathy.

Cephalonia.
1. Villatorio
2. Samo
3. Argostoli.

Zante.
1. Anafonitri
2. Zante
3. Chieri.

Cerigo.
1. St. Nicolo
2. Capsali
3. Modari.

Fig. 470. MAP OF GREECE.



been given to the widest of these ranges; and as the chief local interest of its scenes consists in the comparison of what they were with what they now are, we shall, with a view more effectually to accomplish that object, adhere to this more extended view of the subject.

Sect. I. *General Outline and Aspect.*

3439. *Continental Greece* consists chiefly of a long and somewhat narrow peninsula, lying between the Adriatic and the head of the Gulf of Salonica. It shoots out, however, beyond this peninsular space, as far as the great range of the Despoto Dag, the ancient Rhodope, which bounds it on the north. Greece thus forms a space of nearly 400 miles in length, and little more than 100 in general breadth. The area, including the contiguous group of the Cyclades, has been calculated at 58,750 square miles, which is nearly the size of England. It includes on the south a smaller territory, of a form more decidedly peninsular, the Peloponnesus, now the Morea, connected with the continent only by the narrow isthmus of Corinth. In this peninsula, or immediately adjoining, were all those states which rose anciently to the greatest height of glory; and within it too those recent efforts have principally been made that have ended in its emancipation from Turkish sway.

3440. *The mountains of Greece* are both lofty and very extended. On the north, it is enclosed by the snowy summits of Arbelus and Rhodope, which the early Greeks considered as the boundaries of the earth. Their height is great, though not yet fully ascertained. From this central nucleus successive chains descend southward to the Ægean, bearing the celebrated and classic names of Pindus, Olympus, Parnassus, Helicon, and Cithæron. These mountains are lofty, and present many bold features; but they are not of the first magnitude, nor do any of their peaks appear to rise higher than 6000 or 7000 feet. They are so disposed as to enclose large circular basins, which slope to a level plain of rich alluvial soil. So completely are many of these fertile tracts shut in, that they communicate with the rest of the country only by the narrow strait through which the waters force their way. They thus suggest the idea of having once formed inland lakes, whose waters, having found an outlet, are now converted into rivers. This formation singularly favoured that original division into a number of small separate states, which formed so long the principle of the Greek political system, producing such varied features and such grand effects of activity and rivalry. Peloponnesus consists of a great central table-land, the ancient Arcadia, now the seat of the Mainotes, and which on all sides slopes down to a plain on the sea-coast. The Cyclades are high and rocky. Greece, even independently of its classic monuments, displays scenery perhaps as fine as that of any other country. Though it wants the majestic mountains of Switzerland, and the luxuriant plains and brilliant skies of Italy, it combines sublimity and beauty in a happier manner, perhaps, than either. As an additional feature, the crowded Cyclades diversify its seas, combining with the opposite continent to form every variety of apparent lakes, gulfs, and bays, and exhibiting bold and striking rocks and headlands. All this is vastly heightened by the noble monuments, in the most picturesque state of ruin, which are to be found in this region.

3441. *The rivers of Greece,* in consequence of its broken and insulated aspect, and of its universal proximity to the sea, seldom reach any important magnitude. The Vardar, the ancient Axius, descends from the chain of Rhodope into the Gulf of Salonica; and the Drino, from the same source, flows into the Adriatic; both having a course of 150 or 200 miles. But the streams which the poets have immortalised, the Cephisus, the Ilissus, and the Eurotas, even the Alpheus and the Achelous, are little more than brooks almost dry, unless when swollen by the rains.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3442. The *Geology* of this country is similar to that of Hungary.

Subsect. 2. *Botany.*

3443. The *Botany* of Greece is described with that of Turkey.

Subsect. 3. *Zoology.*

3444. *The native Zoology of Greece* is no better understood than that of the tyrannic nation under which it so long groaned; nothing satisfactory can, therefore, be stated of its zoological features. Some cursory notes on the birds common to Britain and Greece, by Mr. Hawkins, will be found in the last edition of Pennant's *British Zoology.*

3445. *The entomology,* judging from that of the Peloponnesus, must be highly interesting, as presenting many forms more strictly belonging to Africa. In the island of Zante, and on the plains of Elis, we found, in the spring, no less than three species of beautiful hairy beetles, of the genus *Amphicoma.* One of these (*fig.* 471.), from its general resemblance, when flying, to a wasp, we at first mistook for an hymenopterous insect: it feeds on flowers, and at that time was in such prodigious numbers, that we might have captured hundreds, nay, thousands. That elegant and uncommon insect, the Panorpa Coa of Linnæus, at the same season, may be met with in plenty on all the open plains, together with several species of *Myrmelion;* one of a very large size, and not hitherto described.

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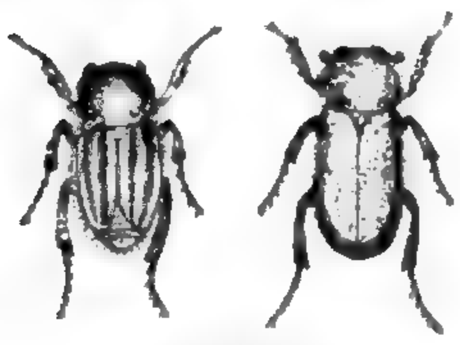

HAIRY BEETLES.

3446. *One of the most singular domesticated animals* is the Turkish pig, more common, however, in Greece: the head of this race is short and narrow, the ears erect and pointed, the legs and body very short; the hairs are frizzled, and the colour is usually dark grey. The islands of Candia and Crete are both remarkable for two peculiar breeds of sheep.

3447. *The Cretan sheep*, from the unusual character of their horns, have been, by some, considered a distinct species from the domesticated race. Their form is handsome; the horns are long, and furnished with a strong frontal ridge; those of the ram generally form a complete circle at the base, and then turn in three additional spiral twists, ascending vertically; the tail is long, and the whole body covered with coarse undulating wool. In the female the horns are divergent, straight, and twisted into four turns on their own axis. From this breed has descended the Wallachian.

3448. *The wild Musmon sheep* (*fig.* 472.) is still said to be found in Candia, as well as in the highest mountains of Sardinia and Corsica. Major Smith considers that this species makes the nearest approach to the various domestic races now dispersed over Europe. The horns are rather short, and curved backwards, the points being turned inwards; the usual colour is brownish or liver-coloured grey; the throat has a tuft of long hair, and the back and flanks are marked by a dark streak; the chaffron is much arched. These animals never quit the highest ridges, where they live in small herds, headed by an old male; but occasionally unite in flocks of near 100. It is doubtful whether this species be specifically the same with the wild sheep, formerly abundant in Spain, and probably in all the high primitive mountains of temperate Europe.

472

WILD MUSMON SHEEP.

3449. *The Albanian dog* has been celebrated from remote antiquity. It is still a very fine and pure breed, as big as a mastiff, with very long, thick, silky fur, generally of different shades of brown; the tail is long and bushy; the legs seem more calculated for strength than excessive speed, being stouter and shorter than those of the greyhound; the head and jaws are lengthened, and the nose pointed. We suspect that the famous large black spaniels of Mount Etna and Calabria must have originated from this classic race.

Sect. III. *Historical Geography.*

3450. *The historical ages of Greece* include one of the most splendid portions of the annals of mankind, and, if treated in any detail, would far exceed our limits. We can but rapidly indicate the leading epochs. These are, —

3451. *The early or heroic ages,* when the different valleys of Greece were ruled by petty princes, afterwards called tyrants. To this age belong the exploits of Hercules, Theseus, and other chiefs exalted into demigods, for the zeal with which they redressed and punished oppressions, of which many of these petty chieftains were guilty. The Trojan war collected together the scattered portions of the Grecian people, made them known to each other, and gave a great impulse to the national mind.

3452. *The era of the freedom and glory of Greece* began when the different little states threw off the yoke of their tyrants, as they now called them, and erected themselves into independent republics. The enthusiasm produced by this event was wonderfully heightened when all the armies of the East, united under the standard of the Great King, were vanquished in a series of battles the most glorious which history has ever recorded. Greece now took the lead among all the nations of the world; and in the succeeding period, though her strength was unfortunately wasted by intestine dissensions, she added to her military glory that of carrying eloquence and the arts to a perfection which has served as a model to all succeeding ages.

3453. *The conquest by Macedon* subverted the liberty of Athens and Sparta, and with it all their greatness and glory. Yet Greece, as identified with Macedon, saw her conquests carried to the most distant regions; and Greek kingdoms, Greek laws, and the Greek language prevailed from Egypt to the borders of India. Even Greece itself, especially at the period of the Achæan league, threw out some brilliant sparks of her ancient flame; and letters and arts continued to be cultivated, though not with the same ardour.

3454. *The conquest by Rome* terminated the political existence of Greece; yet in some respects she subdued even her conquerors. Her fame in arts and eloquence remained undiminished; and the greatest of the Romans, and all who aspired to eminence in learning, came to study in her schools. Athens continued still to be the intellectual capital of Greece, and even of the civilised world.

3455. *The conquest by the Ottomans* finally extinguished in Greece every thing that remained of her ancient greatness. The Greeks were made "the slaves of slaves," and even their character became deeply tinctured with the degradation which, in such circumstances, can scarcely be avoided. The mountains, however, still afforded shelter to numerous bands, who, under brave and hardy chiefs, not only maintained a practical independence, but carried devastation into the neighbouring plains.

3456. *Attempts at emancipation* were not wanting, even in the periods of the greatest depression of Greece. Supported by Venice, the Mainotes rose, in the end of the seventeenth century, and maintained the contest for several years. Another insurrection was raised in 1770, in consequence of the landing of 2000 Russians; but this was soon suppressed. In 1790, the Suliotes, roused by the same instigation, performed prodigies of valour; but being encountered by the energies of Ali Pacha, they were nearly exterminated. Lastly, in 1820 came the grand insurrection, with its strange vicissitudes, which must be fresh in the recollection of the reader. Internal dissension, worse than the foreign sword, has repeatedly brought the cause to the brink of destruction; but the treaty concluded at London between Britain, France, and Russia; with its consequences, the battle of Navarin, and the expulsion of Ibrahim Pacha, have obliged the Porte to consent to the independence of at least those portions of Greece which were most decidedly Grecian. The rejection of the crown by Prince Leopold threatened to leave it a prey to internal dissension; but the recent nomination of Otho of Bavaria, supported by the great powers with money and troops, affords the hope that it may soon subside into a more tranquil and settled condition.

Sect. IV. *Political Geography.*

3457. *Constitutional monarchy* is the form of government destined for Greece by the great powers, and in which she appears to have acquiesced; and a monarch, after many difficulties, has at length been chosen. The political elements are by no means duly organised. The two parties are that of the people, composed generally of the inhabitants of the towns, and having at its head the commercial state of Hydra; and that of the *capitani*, or chieftains, who, in the interior of the country, have established a species of feudal military sway.

3458. *Greece*, considered as a free state, has been contracted in extent, in consequence of the reverses sustained by the national arms, and the treaty concluded by the European powers; and includes only a small portion of what we have been accustomed to consider as Greece. Bounded on the south by a line nearly from the Gulf of Volo to that of Arta, it excludes the extensive and populous territories of Thessaly, Macedonia, and Albania. The Morea and the islands appear to be all that have been yet fully and regularly organised: they have been divided into thirteen departments; of which seven are in the Morea, and six in the islands.

3459. *The seven continental departments* are, — 1. *Argolis*, containing the towns of Napoli, Argos, and Corinth; 2. Achaia, in which are Patras, Vostetza, and Calaurita; 3. *Elis*, containing Gastouni and Pyrgos; 4. Upper Messenia, with the towns of Navarin, Modon, and Coron; 5. *Lower Messenia*, in which are Calamata and Leondari; 6. Laconia, containing Misitra and Maina; and 7. Arcadia, comprising Tripolizza and Caritene. These seven departments are supposed to contain 6439 square miles, and to have a population of 300,000.

3460. *The six insular departments* consist of, — 1. *The Northern Sporades*, Skiro, Ipsara, Skiato, &c., 72 square miles, and 60,000 people; 2. *The Western Sporades*, Hydra, Spezzia, Poro, Egina, and Salamis, 126 square miles, and 40,000 people; 3. *The Northern Cyclades*, Andros, Tino, Mycone, Syra, Thermiæ, Zea, Serfo, 308 square miles, and 46,400 inhabitants; 4. *Central Cyclades*, Naxos, Paros, Ios, Sikina, Policandro, Milo, Kimoli, Siphnos, 376 square miles, and 25,200 inhabitants; 5. *Southern Cyclades*, Amorgo, Stampali, Anaphia, Santorin, Scarpanto, 212 square miles, and 19,900 people. The whole population of the isles is thus reckoned at 144,000; which, added to the Morea, makes 444,000. The territory without the Morea is provisionally divided into Western Greece, having for its capital Missolonghi; and Eastern Greece, of which the chief place is Athens.

3461. *Hydra*, a little rock, never heard of during the ancient greatness of Greece, has raised itself, by its commerce, and the boldness and courage of its mariners, to be the life of the Grecian confederacy. Even in 1765, Chandler found the Hydriotes in possession of 120 vessels, having compounded with the grand signior for two purses yearly as *haratsh*, or tribute, and being allowed the rare and valued privilege of using bells in their churches. "They soon," says he, "discovered their native rock, which they beheld, though bare, and producing nothing, with the same partiality of affection as if it were adorned with the golden fruits, and perfumed with the aromatic gales of Scio; pointing it out, and expatiating on the liberty they possessed there." The naval exploits of the Hydriotes have been the chief bulwark and glory of Greece, in its daring contest with the Ottoman power. The government is chiefly conducted by several families; the Conduriotti, Miaulis, and

Tonibage, who have amassed great wealth by commerce. They have always supported an united government, and the authority of the general congress, against the lawless sway of the capitani; but, being destitute of land forces, they have but small means of compelling the rest to accede to their views.

3462. *The capitani* hold nearly all the mountainous tracts and upper valleys of Greece. Aided by their fastnesses, they either maintained an original independence, or attained a new one on the decline of the Turkish power. Many of them were at first shepherds, whence they rose to be robbers, and at last to be chiefs, somewhat similar to the heads of the Highland clans. Their adherents are not held, however, by the same deep hereditary attachment, but chiefly by hopes of pay; and when these diminish they readily enlist into a more profitable service. Colonel Stanhope has given Stonaro as a specimen of a capitano. He held sway over 120 villages, each containing about seventy families. He himself owned in the mountains 7000 or 8000 head of cattle, and his family nearly 500,000. These were let out to herdsmen, who paid for each a certain amount in butter, cheese, and wool. In the plain, the cultivators, who are tolerably industrious, pay their rent in three parts; one to the capitano, one to the Turks, and one to the maintenance of the troops. Stonaro can command 400 regular fighting men; and, when he summons all his peasants, can produce about 3000. These chiefs have usually a fastness in the most inaccessible part of the mountains, to which they can retreat, in cases of urgent necessity; such as the cave in Mount Parnassus, where Odysseus kept his family and treasure, and held at defiance both the Turks and the hostile party among the Greeks.

3463. *The military force* consists almost entirely of the bands of these capitani, called and held together through personal influence. They are altogether of the description of light troops, and form excellent mountain warriors. They make light desultory attacks; they entrench themselves in the passes and on the mountain tops behind stone walls, through which they make loopholes, and fire with great dexterity; but they studiously avoid either a pitched battle, or the storming of a fortified post. All the Greeks, according to Mr. Humphreys, love to get as much, and to fight as little, as possible. They can bear, however, astonishing hardships and privations; and all this did very well, while they had only the tumultuary assault of the Turks to contend against; but when the Pacha of Egypt brought against them troops trained somewhat according to the European model, they proved unequal to the contest, and might probably have fallen, had it not been for foreign interference. The attempts to raise a regular force, to which they have been stimulated by their European friends, have failed, partly through want of means and management, and partly from the disdain which the free soldiers who fought under the capitani entertained for the mechanical tactics to which their leaders proposed to subject them. The Morea, it is said, can muster 15,000 fighting men; but it is seldom that more than 6000 can be assembled in one army. The Greeks of the country without the Morea are reckoned braver, particularly those of the mountains of Olympus, who could collect 12,000 men, if they had the means of equipment.

3464. *The navy of Greece* has attained the highest glory; yet it is of very small force and equipment. She has not a vessel which can aspire to the rank of a frigate; and her little armed brigs do not exceed 80 tons; some have even rated them at 40. Their bold and skilful manœuvres have, in Count Pecchio's apprehension, rather frightened than beaten the enemy, and have at no period made them masters of the sea. They never were able to prevent the Turks from disembarking troops at any point, nor have they formed a regular blockade of any sea-ports in their possession.

3465. *The other parts of administration* do not as yet exist in any organised state. There are scarcely any revenues except those arbitrarily levied by the capitani; and with respect to the English loans, neither principal nor interest has yet been paid. Justice, in any regular form, there is said to be none, though a tolerable police is maintained by the chiefs.

Sect. V. *Productive Industry.*

3466. *Industry, in Greece,* is only in a very secondary state, yet its products are not inconsiderable.

3467. *Agriculture* is carried on with rude implements and bad cattle, and only in some quarters is irrigation practised with diligence; yet so genial are the climate and soil, that the harvests are generally more plentiful than in England. Wheat, barley, and maize are chiefly cultivated, and of each there is some surplus for exportation. Cotton, for which the demand is now so extensive, is raised to a very great extent, especially in the plains of Macedonia, and forms the chief basis of its export trade. The olive in Greece, and especially in Attica, retains its ancient celebrity; "nor has the honey of Mount Hymettus lost any part of its exquisite flavour." That species of grape called the Corinthian, which produces the finest currants, is peculiar to the Morea and the Ionian Islands, especially Zante, from which it is largely exported. Greece, however, is altogether a pastoral country; the people are skilled in the management of cattle, but much more in that of sheep and goats, which are fed in vast numbers on the sides of the hills, and on the high plains of the interior. Of these animals, however, the breed is not of any eminence, and has even degenerated.

3468. *Manufactures* are in a still ruder state than agriculture; and the country is indebted to foreigners for every thing, except a few coarse and common fabrics. There are, however, some respectable manufactures of carpets, silk, network, and Turkey leather at Salonica; of the last article, with fine pottery, at Larissa; and with embroidery at Joannina. The spinning and dyeing of cotton yarn is carried on in Thessaly and Macedonia to a considerable extent.

3469. *Commerce* is carried on with much greater activity than any of the other branches of industry, and has been one of the main instruments in raising this renowned country from its extreme depression. The great circuit of its coasts, its numerous bays, and its position in the vicinity of some of the richest and most productive countries in the world, clearly destined Greece to be a maritime and commercial region. The proud ignorance of the Turks, leading them to despise trade, left this career open to the vassal people. A prodigious impulse was given by the general war consequent on the French revolution, which left the Greek for a long time the only neutral flag in Europe. The islands, and particularly the little harbours of Hydra, Ipsara, and Spezzia, not only exported the produce of Greece itself, but maintained the carrying trade from port to port all round the Mediterranean. There was even an extensive transmission of articles to the head of the Gulf of Salonica, and thence by land into the heart of Austria. A Greek mercantile and shipping interest of great wealth and importance was thus created. Mr. Hobhouse, in 1809, estimated the number of her mariners at 50,000. Mr. Maclaren, in his elaborate and interesting view of Greek industry, thus reckons the exports: — Cotton, 1,200,000*l.*; tobacco, 56,000*l.*; corn, 809,700*l.*; wool, 67,000*l.*; olive oil, 100,000*l.*; currants, 40,000*l.*; silk, cheese, cattle, dye-stuffs, honey, fruits, 377,000*l.*: in all, 2,649,700*l.* In speaking of the commerce of Greece, we would be understood to speak of what has been, and of what may be, but scarcely at all of what is. During the late dreadful contest it was trodden under foot; and the Hydriots, in whom it centred, had all their resources occupied by war; nor has it probably revived at all to its ancient extent.

SECT. VI. *Civil and Social State.*

3470. *The population of Greece*, an interesting question, has been calculated as yet only by the rudest estimates. The most generally followed has been that of Beaujour, who assigned to Macedonia, 700,000; Epirus, 400,000; Thessaly, 300,000; Ætolia, Phocis, and Bœotia, 200,000; the Morea, 300,000; Attica, 20,000: making in all, 1,920,000. Pouqueville, upon careful enquiry, stated the Morea at 420,000; Mr. Waddington, more recently, at 500,000; and Mr. Humphreys, who had official means of information, and does not show any great disposition to over-rate Greece, at about 600,000. Pouqueville makes the dominions of the late Ali Pacha, including Albania, Thessaly, and part of Macedonia, to contain 1,500,000. There seems little doubt that every part of Beaujour's estimate is under-rated. Mr. Maclaren, in the *Encyclopædia Britannica*, assumes 2,700,000. We should rather be inclined to 3,000,000 for continental Greece, and nearly 500,000 for the European islands, exclusive of those belonging to Asia. Mr. Humphreys reckons Hydra, Ipsara, and Spezzia at 60,000. It is an interesting question, what part of this population is Greek? Colonel Leake conceives that, in continental Greece, this part does not exceed 1,000,000; but we should rather adopt Mr. Maclaren's idea, that it averages one half of the whole population. The number, however, which has ever been actually organised or arrayed against the Turkish power probably does not exceed 1,000,000.

3471. *The character of the modern Greeks*, both before and since the revolution, has been painted in somewhat unfavourable colours. They are represented as addicted to the vices incident to every despised and oppressed people; avarice, intrigue, cunning, servility, and as being almost entirely governed by motives of self-interest. The reproach, however, seems to be mainly due to the inhabitants of the towns, and the chiefs, particularly the Fanariots, or rich Greeks of Constantinople. The peasantry are allowed to be a very fine race; and, indeed, the great actions performed in the course of the late contest must silence those who pretend that the nation has lost all its ancient energies. "With all their faults," says Mr. Humphreys, "they are highly gifted; they possess a fine genius, and an acuteness in intellect, a tact, and a natural grace in manner, unequalled by any other nation." Even the capitani in their country-seats maintain a dignified and courteous hospitality, and a paternal kindness towards their retainers, resembling what is occasionally seen among the old *lairds* of Scotland. The female sex enjoy greater liberty, and are treated with much more respect, than among the Turks. They are distinguished by beauty, and by a remarkable delicacy of features and complexion. The Greeks of the cities, on the contrary, when they get rich, study to imitate the manners, and even the costumes, of the Turkish pachas, the only models of grandeur that exist within their observation. "The Greeks," says Count Pecchio, "sit *à la Turque*, and will continue to do so for a great length of time; they eat pilau *à la Turque*; they smoke with long pipes; they write with their left hand; they walk out accompanied with a long troop of armed people; they salute, they sleep, they loiter about, all *à la Turque*. Initiated into that mingled servility and insolence which despotism tends to introduce, they exhibit many examples of that moral degradation which has been hastily imputed to the Greek nation in general."

3472. *The religion of the Greeks* is that which was designated by their name, to distinguish it from the Roman catholic, after the great schism of the eastern and western churches. This, however, may be considered on a lower level as to any enlightened views of Christianity. According to a late writer, the lower ranks in Greece have a religion of mere forms, while the upper ranks have no religion at all. The most respectable of the clergy are the monks or *caloyers*, out of whom are chosen the bishops, and even the patriarch or general head of the religion, who, before the late convulsions, resided at Constantinople. Some of them are men of theological knowledge, who lead regular lives; but a violent spirit of intrigue prevails in pursuit of the dignities of the church, which are bestowed by election. The secular clergy consist of the *papas* or village priests, who, as is usual among an unenlightened people, exercise the most unbounded influence over the minds of the lower ranks. This influence, though often abused, is, perhaps, on the whole beneficial; but these papas seem to exert themselves as little as any class in infusing just views and sentiments into their parishioners. Some of them even scruple not to take the field along with the robbers, and receive a portion of the booty.

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3473. *Learning,* in Greece, where it once flourished with such unrivalled splendour, had fallen into a state of total extinction. With wealth and the spirit of independence, however, had arisen a strong desire to revive the ancient intellectual glory of their country, and some progress had been made. Several schools and colleges were founded, and in a flourishing state; among which that of Scio was above all conspicuous. The most distinguished young men were sent to be educated in the French and German seminaries. Greece could boast several writers of some eminence, and many of the best works of the western writers had been translated. The Turks viewed this career with jealous eyes. Two literary men, (one, the translator of Anacharsis, and the other an eminent poet, who had endeavoured to arouse in his countrymen their ancient spirit,) having been basely delivered up by Austria, were put to death. Yet the public libraries continued in a state of progressive advance, down to the period of the revolution, when they were almost all destroyed; and Greece seemed to be thrown back many steps in the career of letters. As soon, however, as the government had acquired a degree of consistence, they turned their immediate attention to this object; and, really, considering the pressure of so dreadful a war, effected wonders. They established schools of mutual instruction at Athens, Argos, Tripolizza, Missolonghi, and most of the islands. They decreed the formation at Argos of an academy on a great scale, where every requisite of intellectual culture might be united; also of central schools and libraries. All these institutions are yet only in their infancy; but there cannot be a doubt that, the independence of the Greeks being once established, one of the first results would be an extraordinary effort to raise their intellectual character as a nation.

3474. *Among the amusements* of the modern Greeks, the dance seems to stand foremost. They scarcely meet without dancing; and frequently, according to ancient custom, in the open air, or the areas of their churches. Many of their dances have a classic character, and are probably of antique origin. They have a grand circular dance, one of a very intricate figure, in celebration of the vintages, and one called the *creene*, supposed to have been invented by Theseus. Their dances are often choral, accompanied with songs; and the taste for music is very general. Foot races, wrestling, throwing the disc, undoubtedly handed down from antiquity, still maintain their place among the youth. The athletæ pursue the exercise of wrestling in a manner which appeared to Pouqueville entirely similar to that which, according to ancient writers, was practised at the Olympic games. They present themselves undressed from the waist upwards, music plays, they advance with measured steps, beating time, and animating themselves by humming certain airs. At the close of the contest a prize is bestowed on the victor.

3475. *The dress* of the Greeks is formed on the model of the Turkish, either from imitation, or from adoption of the same oriental pattern. Since the commencement of their independence, they have even made it a kind of triumph to display the green turban and other symbols which Moslem bigotry had prohibited to be worn by any infidel. In general the attire of all who can afford it is gaudy and glittering, covered with gold and silver embroidery, and with the most brilliant colours. Above all, the arms of the chiefs are profusely adorned, mounted with silver and even jewels. The simplicity which a more refined taste has introduced into the costume of the western Europeans is held by them in contempt. The Greek female walks abroad in a robe of red or blue cloth, over which is spread a thin flowing veil of muslin. At home she is, as it were, uncased; and when the traveller is admitted into the gynecæum, he finds the girl, like Thetis, treading on a soft carpet, her white and delicate feet naked; her nails tinged with red. Her trousers of fine calico hang down loosely, the lower portion embroidered with flowers. Her veil is of silk, exactly suited to the form of the body, which it covers rather than conceals. A rich zone encompasses her waist, fastened before by clasps of silver gilded. She wears bracelets of gold, and a necklace of the gold coin called zechins. Much time is spent in combing and braiding the hair.

3476. *The food* of the Greeks, through the combined influence of poverty, and the long fasts enjoined by their religion, is composed in a great measure of fish, vegetables, and fruit. Caviare is the national ragout, and, like other fish dishes, is eaten seasoned with aromatic herbs. Snails dressed in garlic are also a favourite dish. Their most valued fruits are olives, melons, water-melons, and especially gourds, which Pouqueville says they prize almost like manna from heaven; but their extravagant use is suspected to be injurious to the health. The Greek pastry, combined of honey and oil, is indigestible to any stomach but that of a Greek.

Sect. VII. *Local Geography.*

3477. *In making a local survey of Greece,* we shall begin with the central districts, these being most decidedly and essentially Greece; thence proceeding to the outer region, till it passes gradually into Mahometan Turkey; and conclude with the islands.

3478. *Athens, with its territory,* forms the point to which all the highest associations connected with the name of Greece are peculiarly attached. This territory, a little rocky and hilly peninsula, which has eclipsed the glory of the greatest kingdoms, is bounded by two gulfs; viz. that of Egina, which separates it from the Morea, and that of Negropont, the ancient Eubœa, separating it from the long island so designated. On the land side it is closed by the ancient Bœotia, now included by the Turks under the sweeping appellation of Roumelia. Its dimensions, about forty miles long, and twenty broad, are those of an English county of moderate size.

3479. *The city of Athens* still holds its place among the principal towns of modern Greece. It no longer sways the destinies of surrounding states, nor pours forth the crowd of philosophers, poets, and heroes who illustrated its ancient state. Athens is extinct, both as a seat of dominion and a school of learning. It presents still, however, objects of the most lofty interest: for here are maintained, in wonderful preservation, the grandest existing monuments of sculpture and architecture; the works of a Phidias and an Ictinus, which raised those who planned them to the pinnacle of renown. The edifices of Rome, indeed, are more extended, more varied, the result of ampler wealth and resources; but those of Athens are in a style of purer and severer grandeur, and bear the stamp of loftier genius. So durable, as well as beautiful, are the materials of which they are composed, that they have survived all the ravages of time and barbarism; and their partial decay, in many instances, has only given to them a more solemn and affecting character. They have suffered, indeed, certain dilapidations from British virtuosi, against which recent travellers have entered a very vehement protest. Perhaps the benefit accruing to ourselves from the present position of these superb sculptures may sway our judgment; but we cannot help observing, that, at the era of their removal, they were almost beyond the reach of all civilised spectators; and that now they will be seen by comparatively thousands to one, and much more leisurely and commodiously than in their original site; and there is still enough at Athens to gratify the most eager research of the student of arts and antiquity.

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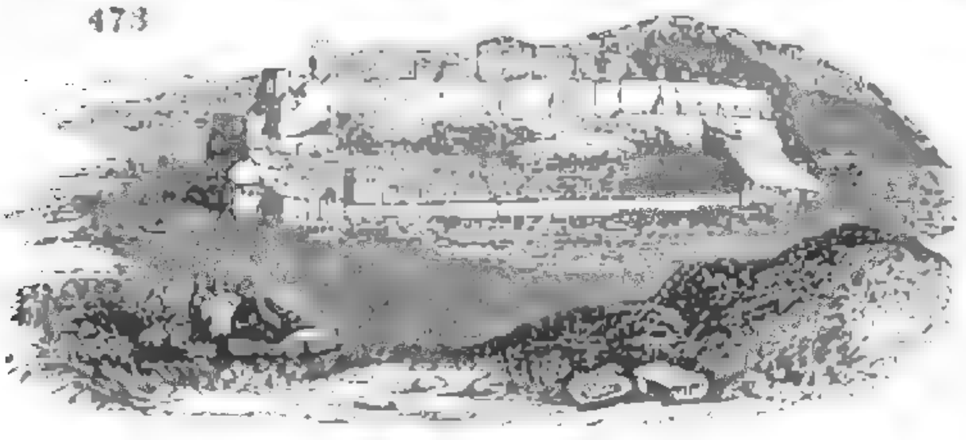

ACROPOLIS AT ATHENS.

3480. *The Acropolis, crowned with the Parthenon* (*fig.* 473.), forms the most conspicuous object with which Athens, and almost any city, is adorned. It is seated on an almost precipitous hill, commanding all the surrounding country. The Parthenon, or Temple of Minerva (*fig.* 474.), was erected by Pericles during the most classic age of Athens. It was of the finest white marble, encompassed with eight fluted columns of the Doric order, and adorned with the sculpture of Phidias. It did not sustain any deadly injury till 1687, when the Venetians under Königsmark threw a bomb into it, demolished the roof, and much injured the whole fabric; after which, the Turks began to hew materials out of it, and to convert the interior into a mosque. It is now mouldering in all the solemnity of ruin. To Dr. Clarke the edifice appeared an eminently satisfactory proof of the decided superiority of Athenian design over any thing that Rome can boast; a masterpiece of architecture, uniting the greatness and majesty of the Egyptian or ancient Etruscan style, with all the elegant proportions, the rich ornaments, and the discriminating taste of the most splendid era of the arts. In graceful proportion, in magnificence, in costliness of materials, in splendid decoration, and in every thing that may denote the highest degree of improvement to which the Doric style ever attained, it has no equal. In all that relates to grandeur, harmony, elegance, and beauty, the Parthenon is universally acknowledged a model; even the minute details of the sculpture by which it is so highly decorated have the delicacy of a cameo. These sculptures, of which such fine specimens are now exhibited in the British Museum, rank perhaps as the very noblest examples of that art. Dr. Clarke notices, in particular, the immense frieze, on which the whole Panathenaic festival was represented in one continued basso-rilievo design, originally 600 feet in length.

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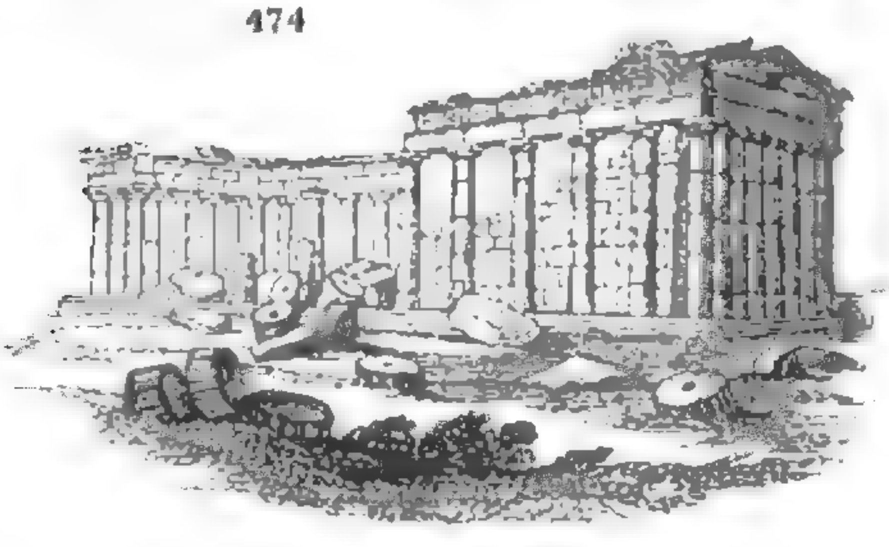

PARTHENON.

3481. *The multitude of grand objects in Athens* is too great for our limits to allow us to enter into more than a very general enumeration. Among the foremost may be named a range of sixteen superb columns, believed to be the remains of one hundred and sixteen which belonged to the temple of Jupiter Olympius. In 1676 there were seventeen; but a few years before Chandler's visit, the pacha had, with incredible labour, levelled one to the ground, for the purpose of raising a mosque out of the materials. The others are still standing, sixty feet high, and about six feet in diameter, a splendid example of the Corinthian order, and built of the very finest marble. The Erechtheum (*fig.* 475.), though it consists of the two temples of Minerva Polias and of Pandrosus, is less extensive than the two just mentioned; but perhaps surpasses them in the extreme delicacy of its sculpture and ornaments, and is considered the finest existing specimen of the Ionic. The caryatides which support the Pandroseum are of particularly exquisite workmanship. The

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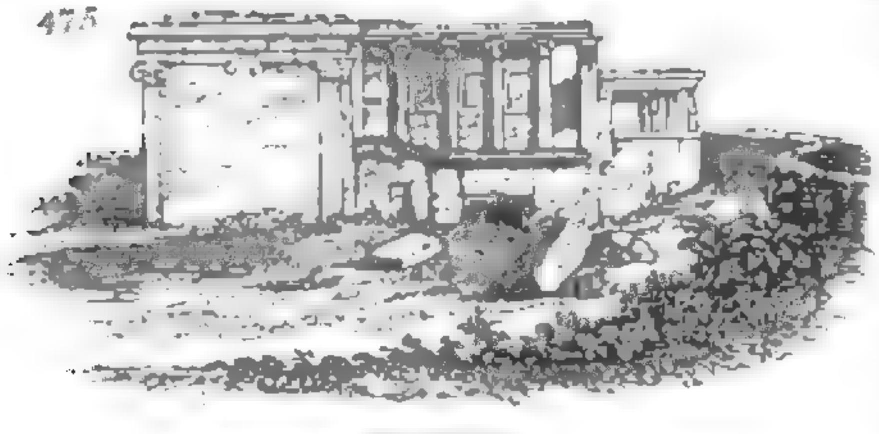

ERECHTHEUM.

treatment of this beautiful edifice has been severe. The Turks made its portico a powder magazine; and though the Greeks had passed a vote to rescue it from this dishonour, their funds have been hitherto insufficient. A dwelling-house of rough brick has been profanely erected between the caryatides, and the smoke from it has blackened some of the most delicate ornaments; but, on the whole, this beautiful monument has suffered less than could be expected from such unworthy usage. The Temple of Theseus (*fig.* 476.), a fine Doric structure, somewhat resembles the Parthenon, and is, perhaps, as to its general outline, the most entire of all the Grecian edifices. Though the sculptures are greatly injured, enough remains to attest their original excellence. They represent the exploits of Hercules and Theseus. This edifice seems to present a striking example of that freshness "which continued to bloom upon the erections of Pericles, which preserved their faces uninjured, as if they possessed a never-fading spirit, and a soul insensible to age."

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TEMPLE OF THESEUS.

3482. *There are other structures of less magnitude:* the Propylæa, or columnar entrance of the Acropolis; the Lantern of Demosthenes; the Choragic monument of Thrasyllus; the marble Tower of the Winds; the monument of Philopappus; which excite the admiration of the traveller. There are others of which only the site and outline can now be traced: such is the Stadium, "the most wonderful of all the marvellous works of Herodes Atticus." It is formed by an excavated mountain, the ranges of seats occupying its lofty sides. This structure, on which quarries were exhausted, has now been stripped of its marble covering, and the area, 650 feet long, has been subjected to the plough; yet in Dr. Clarke's opinion every thing which is necessary to impress the mind with an idea of the grandeur and prodigious nature of the work survives, as if it existed in its most perfect state. The merely ornamental parts are not missed in a structure necessarily simple as to its form, but inexpressibly great and striking in its aspect; not merely from its artificial character, but from the grandeur of its appearance as a work of nature. The Odeum, built by the same opulent Athenian, roofed with cedar, and unrivalled in Greece for extent and magnificence, presents now only the inner front of the proscenium, and three rows of circular arches. Besides the edifices of Athens, there are some spots, which the visiter imbued with classic lore cannot contemplate without peculiar emotion. Among these is the Areopagus, the highest seat of judgment, the great resort of the Athenians, and where the apostle Paul made his lofty and interesting appeal to the minds of his intelligent auditors. The site is described by Clarke as peculiarly commanding, with a noble prospect of mountains, islands, seas, and skies; while behind rises the lofty Acropolis, crowned with all its marble temples. The visitant seeks also, but does not find, the grove of the Academy, where ancient wisdom delivered its noblest precepts. The site even can scarcely be conjectured; yet, according to Chandler, that man would still be subject to the anger of the Muses who should omit the search.

3483. *The Athens of modern times* has been a city of some distinction; even before the revolution, its inhabitants, in number about 12,000 or 13,000, displayed a superior polish and intelligence; and a society called Philomusæ had been instituted for the cultivation of the arts and sciences. The Turks themselves had laid aside somewhat of their pompous barbarism. It is remarkable that, after having been formerly so distinguished as a maritime city, it had not a single ship belonging to it. It became, however, an important military position, the Greeks having found a spring of water in the Acropolis: after this discovery it was considered nearly impregnable, yet it again fell into the power of the Turks. While the ancient edifices nearly defied the ravages of war, about a third of the modern houses have been destroyed during the contest.

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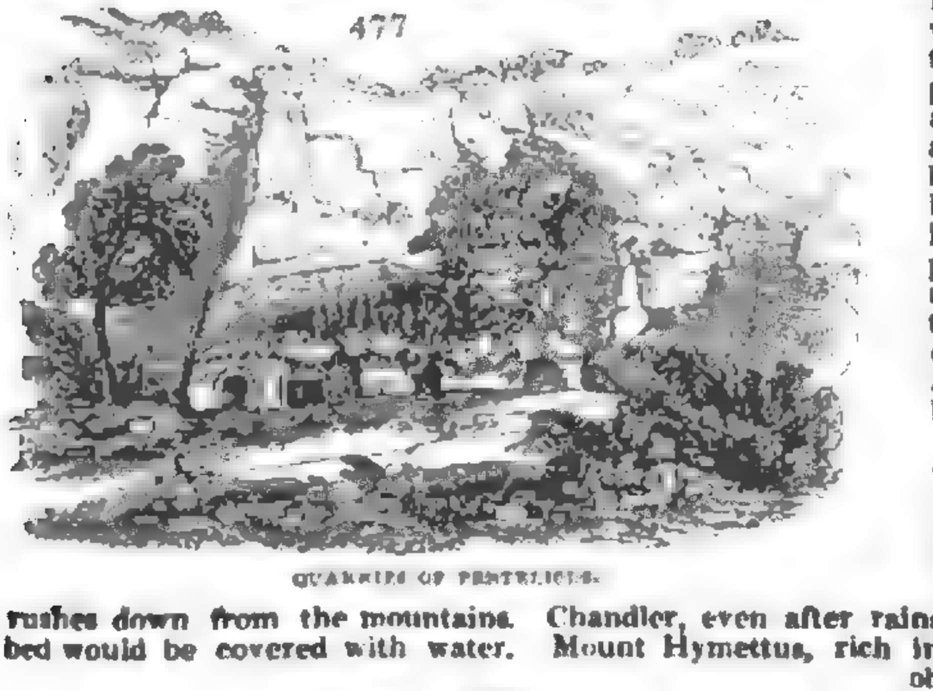

QUARRIES OF PENTELICUS.

3484 *The territory of Attica* is still interesting to the traveller, from the many scenes of classic celebrity which it presents. The stream of the Ilissus does not answer the expectation raised by its fame; it is only a torrent, which in the depth of winter rushes down from the mountains. Chandler, even after rains, watched in vain for a moment when its bed would be covered with water. Mount Hymettus, rich in aromatic herbs, still produces, as already observed, the honey for which it was always celebrated. The quarries of Pentelicus (*fig.* 477.) affording the materials of so many magnificent structures, exhibit vast humid caverns, over which the wide roof awfully extends, adorned with hollow tubes like icicles, while a small transparent petrifying stream trickles down the rock. On the southern frontier extends the plain of Marathon (*fig.* 478.), long and narrow, covered with rich crops of grain; but the traveller looks in vain for the columns, on which were recorded the immortal names of its heroes. The great tumulus or barrow, however, with a bush or two growing on it, still towers above

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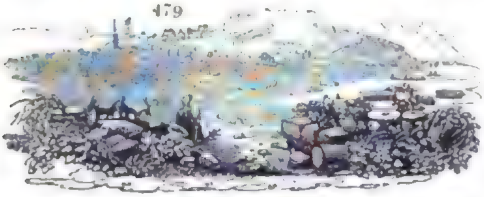
TUMULUS AT MARATHON.

the level of the plain. On the north-west extremity of Attica is Eleusis, the seat of those thrice-sacred mysteries in which almost every nation, Greek or barbarian, came in such crowds to be initiated. The mystic temple planned by Ictinus, the architect of the Parthenon, offers only broken fragments to attest its ancient place as one of the grandest edifices of Greece. Opposite to it is the island of Salamis (*fig.* 479.), separated from the continent by those narrow straits, the scene of that grand naval battle so glorious to Athens, which completely broke the tide of Persian invasion. Its port had been filled up, and the island was occupied merely by a handful of Albanian husbandmen, till the late convulsions, when its situation enabled it to afford shelter to crowds of fugitives from the continent, especially from Bœotia. Mr. Waddington found its population thus raised to 11,500, of whom only 192 were natives; and since that time the calamities of Athens and Ipsara have added to the number. At the opposite or northern extremity of Attica appears the temple of Minerva Sunias, a fabric of white marble, and exquisitely beautiful. It is of the Doric order, of the same style, and seemingly belonging to the same age, as the Parthenon. There are twelve columns still standing, the effect of which is greatly heightened by their position on a steep and lofty cape, whence they look down on the wide expanse of the subject deep, and are visible from afar.



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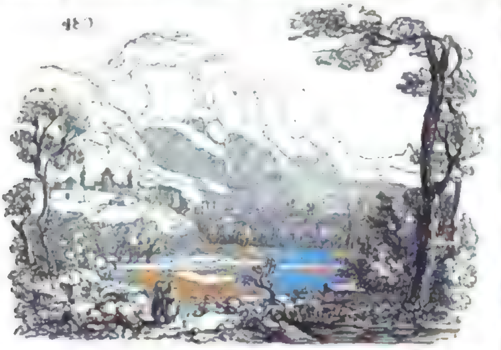
ELEUSIS AND SALAMIS.

3485. *Megara, the former capital* of the little territory of Megaris, stands on the main route leading from Athens to the Peloponnesus. It is now a collection of mean huts, in which are found only some fragments and inscriptions on the site of its ancient edifices, overgrown with corn.

3486. *The isthmus of Corinth*, four or five miles in width, unites the Morea with the continent. The ancients had built a wall across, of which some vestiges still remain. Corinth itself (*fig.* 480.) was the most conspicuous object in this part of Greece. It derived great wealth from the fertile surrounding plain, and from the large quantity of merchandise conveyed across the isthmus, to avoid the circumnavigation of the Morea, which the ancients dreaded. Preserving its ancient name, it occupies a wide area but thinly filled with houses; and, with the exception of a group of fine Doric columns, few only of those monuments remain which must have adorned it during the days of its splendour. It presents, however, a most distinguished natural object — the citadel or Acrocorinthus, which towers to the height of upwards of 1000 feet, and commands an almost matchless view over the sea and the finest regions of Greece. It is a position of great military strength, "the Gibraltar of the Peloponnesus," and was well fortified by the Venetians. But the works are considered by Mr. Blaquière as too extended, and they have not maintained that impregnable character to which their aspect seems to entitle them. The villages round Corinth, and even the port, were entirely laid waste during the late severe contest.



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CORINTH.

3487. *Sicyon*, with its fine plain covered with villages, presents itself as we turn to the right into the Peloponnesus. This ancient seat of Grecian power is now dwindled from its high pre-eminence to become one of the most wretched villages in the Morea. Few traces also remain of the arts, of which this opulent and voluptuous city was considered as the school. The chief is the theatre, which remains almost entire, and appeared to Dr. Clarke to surpass every other in Greece, in the harmony of its proportions, the costliness of its workmanship, the grandeur of the Koilon, and the stupendous prospect presented.

3488. *Argolis*, a more extended plain, to the right of the isthmus, forms a long peninsula parallel to that of Attica. It consists chiefly of a plain, bordered by very high mountains, and of very peculiar beauty. It is divided into delicious valleys covered by cultivated fields, or filled with myrtles, flowering shrubs, and trees, and each of which appears to be secluded from the rest of the world. The shepherds from the mountains are heard playing on their reed pipes, as in the ages of poetic fiction. The cities of Argolis are the most ancient in Greece, and their monuments bear the stamp of the Egyptian and Doric style, marked rather by stupendous magnitude than by the refinement of art. It was even believed in Greece that they were the work of a Cyclopean race of gigantic stature; a notion, as Dr. Clarke observes, which every nation has entertained respecting its ancestors.

3489. *Mycenæ*, Argos, and Tiryns rank as the most memorable of these antique cities. Mycenæ, the early capital of Greece, and "the proud seat of the king of kings," still presents specimens, wonderfully entire, of the architecture and sculpture of the heroic ages. Its Acropolis, perhaps the most ancient in the world, has admirably withstood the ravages of time; and its walls, composed of huge unhewn masses of stone fitted to each other, follow the sinuosities of the rock on which it stands. The entrance is by the Gate of the Lions, the same by which "the king of men" issued forth to the conquest of Troy. It is supposed that the two sculptured lions, or rather panthers, which surmount it, were mythological figures, and that the whole edifice possessed the same sacred character which was ascribed to the Acropolis of Athens, and the temples of Egypt. Another monument consists of a tumulus of vast dimensions, which Dr. Clarke has given much reason to think was the actual tomb of Agamemnon. The entrance, built with all the colossal grandeur of Phœnician architecture, is surmounted by a mass of breccia, twenty-seven feet long, said to be the largest slab of hewn stone in the world. All the monuments of Argolis bear an Egyptian character, and Dr. Clarke almost fancied himself again among the ruins of Memphis. Argos itself succeeded Messene as capital of the plain, which place it continued to hold till the late revolution, when Napoli rivalled it. The antiquities of Argos are few, and consist only of terra-cottas and architectural fragments. Dr. Clarke discovered here one of those secret hollow passages from which the oracular responses were delivered by the unseen priest in the name of the god, the sound being heightened by the rocks so as to produce a striking effect. Argos has been, in modern times, a large straggling place, the houses rather commodious, though not well built. The new government had formed there at one time a sort of capital, particularly marked by establishments for education, but according to the most recent accounts, the war had reduced it to a state of almost total desolation; from which, however, it is beginning to revive. The ruins of Tiryns form a still more striking mass than those of Mycenæ, and carry back the mind into a still more solemn antiquity. The only structures remaining are the walls of the Acropolis, enclosing a space of 244 yards by 54. Their strength is gigantic, however, like that of Hercules, from whom they are named; being twenty-one feet to twenty-five feet thick, and forty-three feet high. As an example of human power, they have been placed in competition with the pyramids of Egypt. These walls existed before Homer, by whom they are celebrated; they have remained entire since his age, and they are likely to brave the attacks of time through a much longer period.

3490. *Nauplia*, which the Venetians have modernised into Napoli, is situated at the head of the Gulf of Argos, and possesses every requisite of a great naval capital. It stands on a long narrow promontory, surrounded by impregnable heights, which would render it, like Corinth, another Gibraltar, were it held by sure defenders. The port, though its depth has diminished, is still the best and most secure in the Morea. It has carried on in modern times a very considerable trade in the export of wine, oil, and sponges; the staples of Argolis, and of the interior Morea. Since the revolution, the Greeks, destitute of any other secure hold, have made it their capital and seat of government. Clarke reckoned it to contain only 2000 inhabitants, but 6000 had just before been carried off by the plague. The number by which it was crowded when Mr. Emerson was there, appeared to be 15,000. The interior is ugly, the streets being, as described by Pausanias, narrow, dark, and dirty; nor is it distinguished by any striking ancient monuments.

3491. *Argolis contains other spots that awaken interesting recollections.* Epidaurus, now Pithauri, is at present only a village, situated in a narrow, but fertile and beautiful vale. Near it, however, the Greeks held their first constituent assembly, to which they gave this classic name. A few miles from it is the grove, held sacred by the ancients as the birthplace of Æsculapius; adorned also by the temples of Diana and Venus, and some other edifices. These are now level with the ground, which is strewed with elegant fragments of the Doric and Ionic orders. The theatre is in tolerable preservation; and, though tenanted by hares, partridges, and tortoises, justifies the description of Pausanias, who remarked it as one of the most beautiful in Greece. Darnala, a small but rather thriving village, now covers the site of Trœzene, of the ancient ruins of which few fragments remain; but there are numerous churches, which, though mostly dilapidated, mark its importance during the lower ages.

3492. *The high plain of the ancient Arcadia* occupies the centre of the Morea to the west of that of Argolis. This celebrated seat of the pastoral muses presents some rugged and gloomy features. It is traversed and bordered by the steep chains of Mænalus and Lycæus; it is in many parts bleak and marshy; and the cold of winter is somewhat severe. In spring and summer, however, while the lower plains are scorched by the rays of the sun, it enjoys a delicious and salutary coolness; gentle clouds collect among the mountains, and descend in fertilising showers; springs and rivulets without number, descending to form the Alpheus, irrigate the fields; the vine yields abundantly its delicious fruit, and numberless flocks still feed in its valleys and mountain sides. This country was once the chosen seat of poetry and fable. Every forest, every cavern, had its gods and its altars. The woods were inhabited by fauns, and every oak had its dryad. Diana wandered among the groves; the nymphs sported among flowers; the god of the shepherds animated every spot with his presence. Here lingered long, very long, it was said, the innocence and simple manners of the first ages, when they were banished from every other part of the globe. These fond remembrances are still not altogether belied in the more sequestered districts, which continue the abode of peace, where the shepherd enjoys in tranquillity the delights of a pastoral life. The population consists here chiefly of Albanians.

3493. *Tripolizza*, the Turkish capital of the Morea, is situated in the eastern part of this plain, at the foot of Mount Mænalus, and in a region which even the ancients characterised as the abode of winter. Sir W. Gell is surprised that the pacha should have fixed his seat in the only ugly spot of his dominions; a large, dirty, gloomy city, in the most uninviting country, and under the worst possible climate. The Albanians, when they over-ran the Peloponnesus, and cut off here 3000 heads in two hours, raised round it a high and strong wall, which rendered it an important military post, and exposed it to many vicissitudes during the late contest. First, after a long siege it was stormed by the Greeks, who incurred a deep and lasting reproach for the massacre of which they were guilty on this occasion. Afterwards it yielded to the arms of Ibrahim Pacha, and the fortifications suffered so much, that it could no longer stand half an hour's regular siege. The palace of the pacha, a vast wooden building, capable of containing 1200 men, and forming a sort of suburb to the town, has been demolished; and the same fate has been shared by most of the principal houses, which were spacious, but devoid of taste. The four large mosques contain many precious fragments and bas-reliefs, profaned by the barbarous manner in which they are inserted. The Turks have either placed them inside, or covered them over, that their eyes may not be wounded by such profane representations.

3494. *The other cities of the Arcadian plain* present few monuments of their ancient fame; these, indeed, have been demolished by the people of Tripolizza, which, though not itself ancient, has been built out of them. Linano, a miserable collection of clay huts, covers the site of the once proud Megalopolis, which the Theban hero raised into the military capital of Peloponnesus. Only its theatre, the largest in Greece, can still be traced, its seats covered with earth and overgrown with bushes, and a few fragments of its walls facing the Helisson. Pouqueville sought in vain for Mantinæa, its eight temples, and the site of the great battle, in which Epaminondas conquered and fell; but Sir W. Gell could trace, in its flat marshy site, the regular circuit of its walls, washed by the Ophis, and the line of some of its streets. Tegea is, as of old, strewn with fragments, and it is conjectured that a rich treasure of ancient sculpture might be found under ground, if it were duly sought. Orchomenos occupied a commanding situation on the flat summit of a steep hill, at the foot of which the modern village is built. There are no remarkable ruins, but some indications of them might tempt the antiquary to undertake an excavation. Cantena, a town of the lower ages, and Dimizance, where the Greeks had founded a school of some eminence, are the chief existing towns in the interior of the Morea. On the coast is Arcadia, a flourishing little port, with 4000 inhabitants; but, notwithstanding the name it bears, it is not an ancient city, nor does it present ancient monuments. Ascending the river of Arcadia, and passing the agreeable village of Sidero Castro, the traveller comes to the remains of Phigalia, once a large city, of which only the circuit of the walls is in any preservation. Near it, however, stands the temple of Apollo Epicurios (*fig.* 481.), by much the best preserved ancient edifice in the Morea, and which was even esteemed second in beauty only to that of Tegea. It is placed in one of the most romantic situations that poetry could imagine, on the ridge of a hill surrounded by old trees, and in complete solitude. The frieze representing the combats of the fabulous ages has been removed, and deposited in the British Museum. It is curious as a relique of art, but is much eclipsed by the sculptures of the Parthenon, with which it is there confronted.

3495. *The south of the Morea* consists of three peninsulas, formed by the nearly parallel gulfs of Messenia or Coron, and of Kolokythia; the peninsulas of Messenia, of Maina, and of Zaccunia or Laconia. Messenia, oppressed under the iron sway of Sparta, did not possess any important monuments till the time of Epaminondas, who emancipated it from those proud masters. It still displays a noble circuit of walls and gates, the most magnificent in all Greece. On the coast of the peninsula have risen several modern ports of consequence; Navarino, one of the best harbours in the Peloponnesus, in a fine plain, and of considerable strength, though it could not withstand the Egyptian arms; Modon, the ancient Methone; and Coron, on or near the Corone of Epaminondas; neither of which places are now of much consequence.

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TEMPLE OF APOLLO EPICURIUS.

3496. *The peninsula of Maina* is almost entirely filled with the branches of the rugged Taygetus, which rises from the sea as it were by steps, and shoots up into lofty and snowy pinnacles. Though not so elevated as those of the Alps, they are seen under a bright sky, and display, it is said, especially when viewed from the coast of Laconia, tints more beautiful than on any other European mountains. The rocks are naked, hard, and sharp; and fragments of them are often employed as hones. This rugged region is inhabited by the Mainotes; a Greek race, who, if not genuine descendants of the Spartans, have inherited at least all their hardy spirit. They have ever been the defence of the Greek nation in war, and its scourge in peace. The Mainotes, quite unlike other Greeks, have a bold and manly air, which awes even a Turk. The population is distributed through upwards of 100 villages, ruled by seven or eight capitani, who somewhat resemble the Highland *lairds* during their fullest period of clannish independence. The Mainotes have all the barbarous virtues; the stranger who trusts to their hospitality finds it boundless, and may pass in safety from one end of Maina to the other. The women, who are uncommonly handsome, and of fair complexion, are much better treated than females are in the rest of Greece or Turkey. They are neither confined nor degraded; and, in return, they distinguish themselves by their conjugal fidelity and active household management; and, not content with the virtues of their own sex, they emulate those of the other; sallying forth at the head of warlike bands, and setting examples of masculine prowess. The weapon of the Mainotes is the rifle, to which they are trained from their infancy, and which they use with matchless dexterity. They are the very best of light mountain troops, in which capacity they have repeatedly cleared the Morea from enemies, and oppressed it themselves. The rocky southern extremity, towards Cape Tænarus or Matapan, is held by the Caconvionotes, a race who seem a sort of caricature of the Mainotes, having all their fierceness, without any of their redeeming qualities. The towns of Maina are little more than villages; of which Dolus, in the interior, containing 500 houses, is said to be the largest. Marathenissi and Kibrees are small sea-ports, the occasional residence of the beys. To the north-west opens the beautiful plain of Calamata, with the large flourishing village of that name, which, though recently destroyed, must in due time revive.

3497. *The third peninsula* contains the country of Isakonia, which seems evidently a corruption of Laconia. Its north-eastern head receives the Eurotas, on whose banks the traveller has to seek for the remains of Lacedæmon. In approaching them his eye is struck by Misitra, a more modern capital, which seems to have arisen under the Greek empire. Misitra, extending by successive stages up the sides of an extensive hill, has a magnificent appearance, and might be taken for the metropolis of a large empire, rather than that of the deserted vales of Laconia. The entrance into it produces disappointment; the streets being narrow, winding, and dirty, and presenting no important edifice ancient or modern. At a few miles' distance, however, is traced the site of Sparta, covered with extensive ruins; but these, to our disappointment, are found to be not those of the austere votaries of Lycurgus; they are the "theatre (*fig.* 482.) and other gay structures erected by Rome after Sparta was reduced to subjection. Only one small building, partly of brick, might be a tomb of one of the ancient kings." Laconia is a long level woodland, from which rise, in romantic and fantastic forms, the summits of Taygetus. It has, however, one important port, Napoli di Malvasia, whence a much esteemed wine is exported, and some other trade is carried on.

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THEATRE AT SPARTA.

3498. *The northern coast*, extending along the Gulf of Lepanto, and comprehending the ancient Elis and Achaia, alone remains to complete the picture of the Morea. It is a very fertile plain, producing the best wine in Greece, and the finest currants in the world. In the classic antiquary it excites the deepest interest, as containing the sites of Elis and Olympia, or rather Pisa, the scenes of those games to which Greece thronged from her remotest valleys, and those sacred precincts, on entering which the most hostile bands deposited their arms. This region was under the protection of Jupiter Olympius, whose statue, 60 feet in height, presented the utmost perfection of painting and statuary, with every display of wealth which gifts could accumulate. What barbarian hands destroyed Olympia has not been fully ascertained, but the wreck is so complete, that travellers have passed over it, and believed that not a trace existed. Mr. Dodwell, however, was able to identify the grand temple of the Olympian Jupiter, and dug up some fragments of columns, exceeding in dimension those of the Parthenon at Athens. Elis presents only a confused wreck of scattered blocks; but near it is the modern Gastouni, a small town, one of the richest in Peloponnesus, though at this moment also lying in ruin. The modern capital, however, of all this district, is Patras; a large commercial, dirty, ill-built place, with but little of a classic character. It is fortified, and has been held by the Turks during nearly the whole of the present contest.

3499. *The territory beyond the Morea*, along the Gulf of Lepanto, is usually divided at present into Eastern and Western Greece, or Hellas; the former of which represents the ancient Bœotia and Phocis, the latter Ætolia and Acarnania.

3500. *Eastern Hellas* consists of several plains enclosed by very lofty mountains, and above all by those which are most sacred in the annals of poetry, the heights of Helicon, Cithæron, and Parnassus, accounted ever the chosen haunt of the Muses. Dr. Clarke considers their grand aspect and romantic valleys as having had a powerful influence in prompting the high flights of the Grecian muse, and even doubts whether any great poet could spring up on a flat and unvaried champaign. Thebes, in a plain surrounded by these snow-clad summits, makes still a noble appearance; but only some coins and fragments are now to be discovered within the circuit of its walls. It suffered severely in the late contest; prior to which it was a considerable place, of from three to five hundred houses, and has been celebrated for the beauty of its females. Westward is the plain of Platæa, in which the traveller searches for monuments of the splendid victory which finally baffled the power of Xerxes. Dr. Clarke seems, in fact, to have discovered the site of the city, and near it some ancient sepulchres (*fig.* 483.), which may be supposed to have been erected immediately after that great event. On the opposite side of a ridge of hills is the plain of Leuctra, the scene of that other battle which finally subverted the dominion of Sparta over Greece. The site is still covered with huge masses of marble and stone, which the inhabitants have long laboured to demolish, with the view of introducing the plough; but the attempt has hitherto proved fruitless. Above this plain rises Helicon, the solitudes of which are in the highest degree beautiful: every declivity of the mountain is covered with luxuriant shrubs, or tenanted by browsing flocks; while the pipe of the shepherd, mingling its sound with that of the bells upon the goats and the sheep, is heard at intervals among the rocks. Dr. Clarke conceived that he could here ascertain the fountains of Aganippe and Helicon, and the Grove of the Muses. Beyond Helicon lies the plain and city of Livadia, the latter of which has been the capital of this part of Greece, and the seat of an extensive jurisdiction. It contained 1500 houses, and carried on a considerable trade in the productions of this part of Greece. Lebadia was said to be as richly adorned with sculptures as any Greek city; but every trace of them has vanished, and it is now only distinguished by the mystic spot of the cave and shrine of Trophonius, and the two streams Mnemosyne and Lethe, Memory and Oblivion, flowing through the former. A few miles westward is the plain of Cheronæa (*fig.* 484.), shut in by Parnassus, with its bleak and rugged masses of grey limestone rock, covered with shrubs and coppice. This was a great battle-plain, on which was repeatedly decided the fate of Greece; first through the defeat of the Athenians by the Bœotians, afterwards through that of the combined Greek forces by Philip, and lastly of Mithridates by Sylla. A most conspicuous tumulus still exists, a monument of the ensanguined field.

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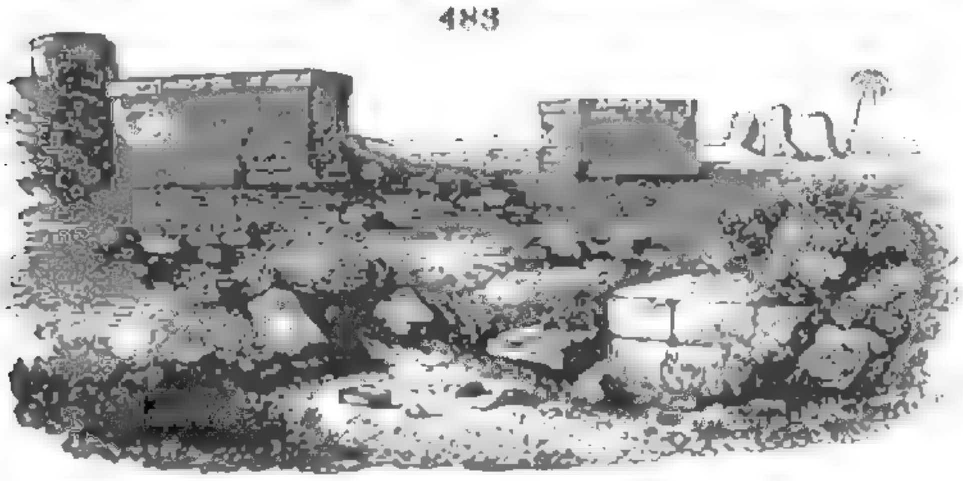

ANCIENT SARCOPHAGI AT PLATÆA.

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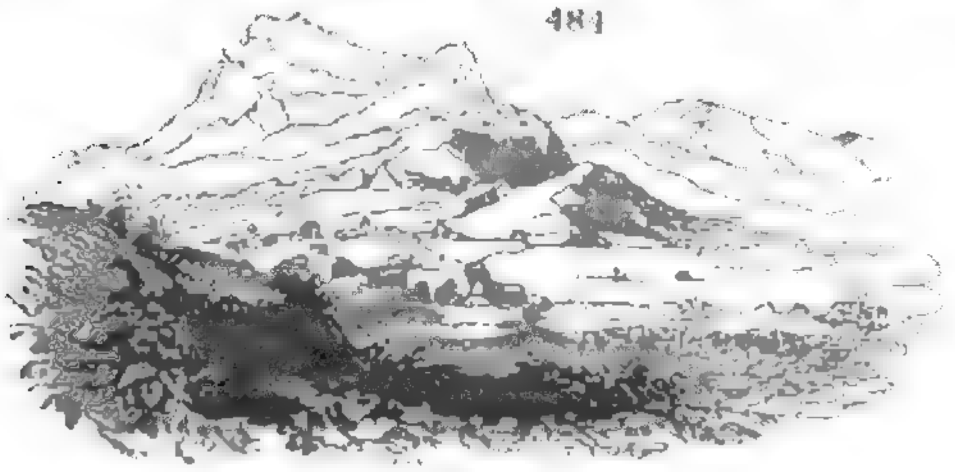

CHERONÆA.

3501. *Delphi* (*fig.* 485.), at the foot of Parnassus (*fig.* 486.), is separated by a branch of that mountain from the plain of Cheronæa. This was the most celebrated of the ancient shrines to which mankind went in crowds to be deluded. The temple has disappeared, and its exact site cannot be even conjectured. Its position, however, in a deep circular vale, built along the sides of Parnassus, whose vast precipices rise behind in towering majesty, cannot, independent of all recollection, be viewed without the deepest emotion. The Cyclopean masonry may still be traced, in which the streets, rising in terraces behind each other, were made to form a part of the awful features of the mountain. At the foot of a precipice, above which the rock shoots up into two pointed crags, the visiter sees the fountain of Castalia, that grand source of ancient inspiration; and the scene itself combines great picturesque beauty with all the circumstances of local interest. A square shallow basin at its foot was doubtless the Castalian fount in which the priestess was accustomed to plunge before she mounted the tripod, to pronounce the thrice-sacred oracle. Dr. Clarke ascended the summit of Parnassus, which he judged to be one of the highest in Europe, and the prospect from it more striking than from any one of the numerous eminences he had ascended. It overlooked all the mountain tops, except Olympus, which appeared with its many summits clad in shining snow.

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DELPHI.

3502. *Western Hellas*, the ancient Locris and Ætolia, displays neither the same grand features of nature nor the same ancient magnificence; but it has been distinguished in modern military history. Naupactus, its ancient port, has been modernised into Lepanto, and has given its name to a gulf, which was the grand theatre of naval conflict between the Turks and the Venetians, and of that in which the Spaniards, by a signal victory, finally broke the Turkish maritime power. Salona, on the site of the ancient Amphissa, still retains considerable importance, being considered as the capital and military rendezvous of Western Greece. It communicates with the gulf by its port of Scala. Galaxidi, farther up the gulf, was rising into some importance before the late struggle. But Missolonghi, though of recent origin, has now eclipsed the fame of all the western cities. Its position at the mouth of the gulf had enabled it to rise into some commercial importance. During the late contest, its peninsular site in a shallow sea which admitted only boats, though its only defences on the land side were a low wall and a paltry ditch, inspired the Greeks with the design of converting it into a strong-hold. Missolonghi accordingly made a long and glorious resistance, and became the rallying point for all Greece without the Morea.

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MOUNT PARNASSUS.

3503. *Thessaly* forms an exterior portion of Greece, severed from the rest by the lofty and rugged barrier of Mount Œta, which runs across the entire breadth, till it locks in with the chain of Pindus. The interior consists of almost boundless plains, formerly celebrated for the manœuvres of the Thessalian cavalry. It is girdled by mountains still loftier than any yet surveyed: Olympus, the proudest of all the Grecian summits, on which fable and mythology placed the celestial mansion and the throne of Jupiter; Ossa and Pelion, next in magnitude, piled up by the giants who hoped to have scaled heaven. Thessaly is called by Dr. Clarke the Yorkshire of Greece: its rich plains are tolerably cultivated, and it is not even destitute of manufacturing industry. A late observer reckons the population at 700,000. The towns are much more Turkish than in Hellas or the Morea; but the mountains are held by Greek plunderers (*klephtes*), a bold and warlike race, who have made considerable efforts to establish their independence. The entrance into Thessaly from Greece is by one of the most celebrated and sacred spots consecrated by antiquity, the pass of Thermopylæ, which the patriotic devotion of "the three hundred" has stamped with the most sublime recollections. The narrow passage lies between the eastern extremity of Œta and a marsh reaching to the sea. A tumulus is here discovered, on which appear the broken remains of a massive pedestal, originally formed for supporting, as Dr. Clarke believes, the simple but affecting monument erected to their memory. A filthy quagmire, breathing mephitic exhalations, would render the scene disgusting but for these associations. After passing the considerable town of Zeitouni, the eye opens on the immense plain of Pharsalia, the scene of that mighty contest in which fate gave to Cæsar the empire of the world. Pharsa, or Farsala, is entirely Turkish, and nothing but the name remains to tell what it was. It is, however, a large town, with 2000 houses. This plain is separated only by some low hills from the immense champaign of Larissa, presenting a smooth and flat surface of the finest soil that can be imagined. Larissa is a large city, of 20,000 inhabitants, and presents a magnificent view, from the crowd of its mosques and minarets, which amount to no less than twenty-four. It is thoroughly Turkish, and the populace are imbued with extreme bigotry. Only broken fragments of Corinthian columns are now to be traced, many of the ancient marbles having been barbarously cut down into the forms of Turkish head-dresses, and stuck over the tombs. The shops are numerous and good; and in them may be found ancient silver medals, and also specimens of the Thessalian pottery which almost equal the ancient terracottas. Southward from Larissa tower Olympus, Pelion, and Ossa; the former disposed in vast masses, and with prodigious grandeur. The passage through this formidable chain is by the Vale of Tempe (*fig.* 487.), so celebrated among the ancients for its sequestered and picturesque character. Placed between Olympus on the left and Ossa on the right, it is compared by Dr. Clarke to Dovedale, or to the pass of Killicrankie, but on a much larger scale. The rocks rise to the most awful perpendicular height, and are tinted with a great variety of hues. At its entrance is the large village of Ampelaka, almost purely Greek, and in which flourishes a manufacture of cotton thread dyed of so beautiful a red, as to have hitherto baffled all competition.

3504. *Macedonia*, beyond Tempe, opens its still vaster plain, the ancient Pieria and Emathia, having on the south Olympus with its lofty attendant summits, and on the north Scomrus, a branch of the still longer and more awful chains of Hæmus and Rhodope. This plain resembles a crater, characteristic of the limestone formation, and has the form of a horseshoe; being bounded on the west by Mount Pangæus, and opening on the east to the sea. The finest part is the eastern, particularly round Seres, where three hundred villages are employed in the cultivation of cotton, the staple of the country. Tobacco, distinguished by a peculiar balsamic odour, ranks second in importance. Salonica, the ancient Thessalonica, is now the greatest and most commercial city of Greece, possessing a population of 60,000 or 70,000 inhabitants. It is one of the few remaining cities that have preserved the form of the ancient fortifications, the mural turrets yet standing, and the walls that support them being entire. The city is reckoned by Mr. Walpole to contain 20,000 Jews and 12,000 Greeks. The lower part of the town, which the former inhabit, and in which business is chiefly carried on, is exposed to frequent ravages of the plague. This city has one very magnificent relic of antiquity in a propylæum, consisting of five magnificent Corinthian columns supporting an entablature. The church of St. Sophia resembles that of Constantinople upon a smaller scale, but is rendered particularly interesting by its fine columns of *verde antico*. Seres is a flourishing inland town, surrounded by the plain most productive in cotton, and supposed to contain 30,000 inhabitants. The ancient capitals of Pella and *Ægæ*, or Edessa, have not yet been successfully explored.

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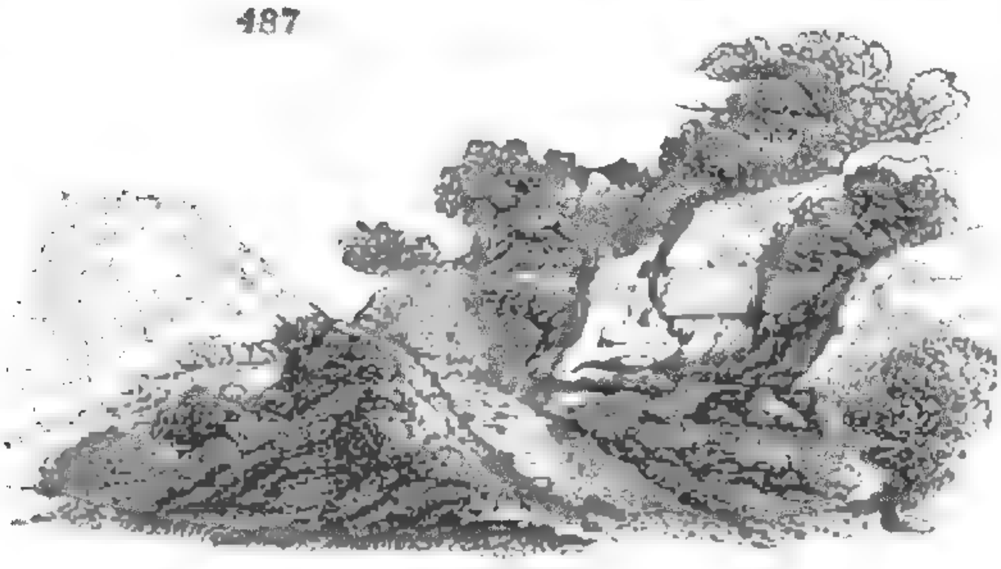

VALE OF TEMPE.

3505. *The islands* form a prominent and interesting appendage to Greece. Cyprus, Rhodes, and a considerable number of smaller isles ranged along the coast of Asia Minor, have been always considered as Asiatic. The Greek European islands are Candia, the Cyclades, and those termed the Ionian Islands.

3506. *Candia* is one of the largest islands in the Mediterranean, being reckoned about 500 miles in circumference: it is of much greater dimension east and west than north and south; and forms, as it were, a base upon which the whole Archipelago rests. It is perhaps more favoured by nature than any other part of Europe. The interior is covered with mountains, of which Mount Ida towers to a very lofty height. The plains and valleys along the sea-coast are covered with myrtle groves, spacious plane trees, and other beautiful woods; and the soil, though merely scratched by a wretched plough drawn by two sorry oxen, yields luxuriant crops of wheat and barley. The olive grows in high perfection; though the oil, for want of care and skill in preparing it, is unfit for the table, and only used for soap and other manufactures. Crete was rendered famous in early antiquity by the laws of Minos, and by institutions of a very peculiar nature founded upon them. During the classic ages it seems to have been far surpassed by the rest of Greece, and the Cretans became even proverbial for slowness of intellect. In the lower ages, it derived great lustre from the noble stand there made by Venice against the Ottoman power, at a moment when it threatened to overwhelm the whole civilised world. The siege of Candia, protracted for twenty-three years, forms one of the most memorable eras in modern history. At length the whole island fell under the Ottoman dominion, and the Turks have occupied it more completely than the Cyclades and the Asiatic islands. The inhabitants are a fine race, and more independent of the Porte than the vassals of most other parts of the empire. The mountains and mountain plains, however, have continued to be occupied by a Greek race called the Sfacciotes, who in these high tracts carry on the trade of shepherd, not altogether uncombined with that of robber. It was by this body that the chief stand was made in the late insurrection, and they had nearly driven the Turks out of the island, when they were forced themselves to yield to the Pacha of Egypt. Candia remains with the Turks.

3507. *Of the towns*, Candia, the capital, has had its harbours choked up with sand, against which the Turks never take any precautions; and the greater part of its trade has passed to Canea. It still bears the trace of a handsome Venetian town, with substantial houses formed into regular streets and squares; but the havoc of its long siege and subsequent desertion give it a very gloomy aspect. Canea, without the name of capital, is populous and flourishing, having 15,000 inhabitants; but with nothing in its aspect to distinguish it from other Turkish towns. Between Canea and Candia is Retimo, a well-built town, situated in a delightful country abounding with olive trees; but its harbour having likewise suffered, Canea has profited in this as in the former instance. Near Candia are heaps of dust and rubbish, which, with the name Cnosson, given to a small village, indicate the ancient Cnossus, the capital of Minos and of the most powerful of the Cretan nations. There are traces still more unequivocal of Gortyna; and near it a rock cut into a complex multiplicity of chambers, which has been supposed to be the famous labyrinth of Crete; but Sonnini is of opinion that it is only a huge quarry.

3508. *The Cyclades*, a numerous and celebrated group, are interposed between Candia and Asia Minor, but nearer to the continent, from which they recede in a south-east direction.

Their aspect, bold, rocky, yet richly verdant, presents to the vessels sailing through it scenes of varied beauty. The rocks are of different and sometimes singular composition, embedding the finest marble in the world; and there are many striking indications of that interior heat which breaks forth in earthquakes and volcanoes. Their wines were celebrated in antiquity, and have not altogether lost their reputation. Among the most remarkable of these isles is Paros, whose quarries of precious statuary marble lie now neglected, not a single block having been removed since the dominion of the Turks. It is still easy to see the extreme nicety, and the care to avoid waste, with which each portion was cut out; and from the cavity left, the very destination of the block may be conjectured. The Pentelican marble was of equally original beauty, but it had not that faculty of hardening by exposure to air, and resisting decomposition through a series of ages, which caused the marble of Paros to be at last exclusively adopted in sculpture. The small contiguous island of Antiparos presents a phenomenon the most singular in the world of its kind; a prodigious grotto (*fig.* 488.), or rather series of grottoes, the roof, the floor, and the sides of which are entirely covered with a dazzling incrustation as white as snow. Columns extend from the roof to the floor, with diameters equal to that of the mast of a first-rate; and others hang in fine cubic forms above the head. The substance here exhibited was ascertained by Dr. Clarke to be alabaster, the crystallisation of which has nowhere else been observed. Separated from Paros by a narrow channel is Naxos, celebrated for the worship of Bacchus, of whose statue fine sculptured fragments may still be discovered; and on a rock opposite there is a noble Doric portal of one of his temples. The wine of Naxos is still good, and is consumed in abundance; the emery stone is almost entirely obtained from this island. Delos, so celebrated in ancient mythology as the cradle of Apollo and Diana, and to whose shrines even the people of the East repaired in crowds, is now only a heap of ruins reduced to rubbish. The remains of its temples have unfortunately been resorted to as a quarry, the fragments being formed into those little turbaned pillars which serve as tombstones. Santorini (*fig.* 489.), the ancient Thera, not much noticed in antiquity, has attracted attention by some extraordinary effects of volcanic action. About a century ago, a new island was seen to arise out of the sea. It was first announced by the emission of a thick smoke, which, spreading over Santorini, destroyed vegetation, discoloured metals, and caused headach and nausea; a long succession of reports ensued, similar to those of cannon or the loudest thunder. Myriads of ignited substances rose like sky-rockets into the air, and fell down in showers of stars. Rocks and fragments were carried to the distance of two miles, and clouds of ashes to that of twenty-five miles. After this series of shocks had continued for a year, the darkness ceased, and there appeared an island five miles round, and about 200 feet at its highest point. There has since been no violent shock, though a subterraneous roaring is still heard, and smoke is seen rising from the rocks and from the sea. Milo (the ancient Melos, celebrated for its abundance) and Argentera, though not subject to such violent convulsions, exhale perpetual vapours, which were formerly employed for medicinal purposes, but have now rendered them so unhealthy, that they are almost deserted. Syra is a fertile island, the capital of which is singularly arranged along the sides of a conical hill, causing it to resemble a sugar-loaf covered with houses (*fig.* 490.). Skero, the ancient Scyros, Andro, and Tino, are considerable islands, susceptible of great improvement.

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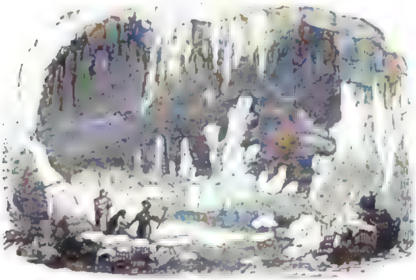
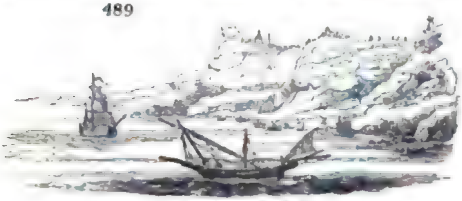


GROTTO OF ANTIPAROS.

489



COAST OF SANTORINI.

490

TOWN AND ISLAND OF SYRA.

3509. *Two islands, Hydra and Spezzia*, though little favoured by nature, and unknown to antiquity, have, in a singular manner, taken the lead of all the states and islands of Greece. Hydra (*fig.* 491.), a rugged mass of rock, with scarcely a spot of verdure, remained without an inhabitant till Turkish oppression, and the desolations of the Morea, drove a few fishermen to build their huts on its precipitous sides. The same causes in which the settlement originated were favourable to its increase; and as it appeared too insignificant to excite jealousy, it was allowed to compound with the Turks for a moderate tribute, and began that brilliant commercial career, which was opened to it by the influence and concurrence of circumstances already mentioned. It now contains about 40,000 inhabitants, many of whom have attained to considerable wealth, and rule the republic with a sort of aristocratic sway. The energies of Hydra have been for some time exclusively turned to war, and perhaps she will never regain her former extensive commerce. Spezzia is a sort of outwork of Hydra, with only 3000 inhabitants, yet with somewhat more of cultivation. Sir W. Gell and Mr. Waddington, whose dispositions are not very friendly, represent the population of both as Albanian; but the people themselves do not own the descent; nor does it appear very probable that this fierce race, who have all along been the oppressors of Greece, should have been the foremost in seeking redress for her wrongs.

491

TOWN OF HYDRA.

3510. *The Ionian Islands* is the name given to a range extending chiefly along the coast of Albania. The principal ones are Corfu (the ancient Corcyra), Santa Maura, (formerly Leucadia), Theaki (Ithaca), Cephalonia, Cerigo, celebrated under the ancient name of Cythera, but situated at a considerable distance from the others, off the southern coast of Laconia. These, as detached islands, occupied frequently a conspicuous place in ancient history; but their political union took place in modern times, in consequence of being held by the Venetians, and defended by their navy against the Turks, who had over-run the whole of the adjacent continent. When France, in 1797, seized the territory of Venice, she added these as an appendage to it; and, even after the cession of Venice to Austria, endeavoured still to retain them attached to her, under the title of the Ionian Republic. She was unable, however, to maintain them against the superior naval force of England, which, at the congress of Vienna, was nominated protector of the Ionian Islands. That power has since continued to hold them in full military occupation, and spends 50,000*l.* a year in fortifications and troops. The natives, however, are allowed a great share in the internal government, and even assemble in a regular parliament. These islands, like the opposite coast of Albania, are rocky, rugged, and picturesque, though none of the peaks rise to any great elevation. This surface renders them ill fitted for the cultivation of corn; but wine and fruits, especially the latter, are raised in great perfection. The species of small grapes which, when dried, are called currants, are largely imported into Britain from these islands. Zante produces annually about 60,000 cwt.; Cephalonia about 50,000. The population amounts to about 220,000. Corfu possesses the political pre-eminence; and the capital, containing 16,000 inhabitants, derives great importance from its strong fortifications; but Zante is the most flourishing and industrious: its metropolis, of the same name, containing 22,000 inhabitants, is the largest town in the islands.

Negropont may here be mentioned; a long island separated by a narrow channel from Attica. It is diversified by rugged mountains and fertile valleys. It is supposed to contain about 60,000 people; and its capital, 16,000. It is attached to the Greek state.

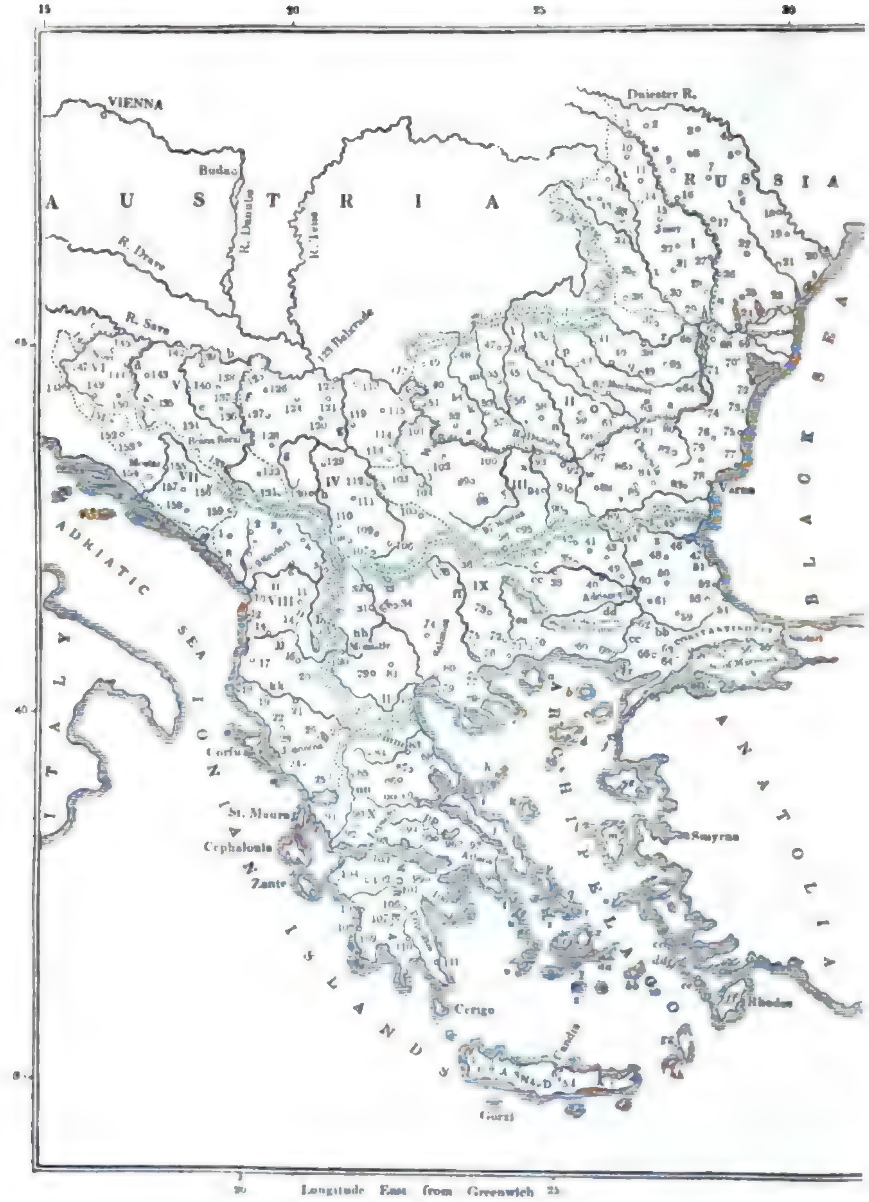
Chap. XVIII.

TURKEY IN EUROPE.

3511. *Turkey in Europe* forms the western and metropolitan part of that extensive and once mighty empire which subverted and superseded the eastern branch of the empire of Rome. The most extensive portion, in which perhaps its main strength is seated, belongs to Asia. In describing Greece, we have comprised much of what has hitherto been, and it is to be feared must still, to a great extent, be, Turkish territory. There remains under the head of European Turkey a comparatively small portion of the empire; but, as it contains the capital and the seat of government, it will afford the proper occasion for taking a general survey of the power, resources, and character of the whole.

Sect. I. *General Outline and Aspect.*

3512. *Turkey, as to site and boundaries*, forms the most eastern part of the territory of southern Europe, and the link which connects that continent with Asia. It also unites the Mediterranean with the Black Sea, being almost enclosed by their various bays and branches, and by that long range of straits, the Dardanelles, the Sea of Marmora, and the channel of Constantinople, by which these two great seas communicate. On the southern side it has an inland boundary bordering on Austria and on Russia. The Danube forms here the limit of the central Turkish provinces, and, with the fortresses on its banks, has been the main barrier of the empire; but beyond it are the fiercely disputed tributary provinces of Moldavia and Wallachia, which carry the frontier to the Pruth and the Carpathian mountains. The boundary on the side of Greece is still somewhat uncertain; and it may, on the whole, be difficult to estimate the general dimensions of this dominion.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20
25
30
45
40
35
VIENNA
Buda
A U S T R I A
R. Danube
R. Drave
R. Save
R. Teiss
Belgrade
Dniester R.
R U S S I A
Jassy
B L A C K S E A
Varna
Adrianople
Constantinople
Mostar
VII
VIII
IV
III
II
IX
X
V
I
Monastir
Salonica
Athens
ADRIATIC SEA
I T A L Y
Corfu
St. Maura
Cephalonia
Zante
I O N I A N I S L A N D S
Cerigo
Candia
Gozzi
A R C H I P E L A G O
Smyrna
A N A T O L I A
Rhodes
Longitude East from Greenwich

3513. *The mountains* of European Turkey consist chiefly of that extensive and formidable range called by the ancients Hæmus and Rhodope; by the Turks Balkan, Despoto Dag, Argentari; a continuous chain, stretching from the head of the Adriatic to the Black Sea. It separates Turkey into several very fine and fruitful plains; that of Roumelia in the south, and on the north those of Bulgaria, Bosnia, and Servia, ranging along the Danube. Beyond that river are the vast watery plains of Moldavia and Wallachia.

3514. *The greatest river of Europe,* swelled to its utmost magnitude, rolls along the whole border of European Turkey. From the barbarism of the government, however, and the hostile relations with the neighbouring powers, the Danube serves very little for the conveyance of merchandise; it is more famed in the dreadful annals of war than in the peaceful records of commerce.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3515. *The Geology* of this country is similar to that of Hungary.

Subsect. 2. *Botany.*

3516. *Turkey, inclusive of Greece.* The two countries now specified can scarcely be considered separately, when treating of their botanical productions. The northern parts, however, lying in the same latitude with a great portion of Italy, and the south of Germany and Russia, though comparatively but little known, may be expected to contain a vegetation very similar to that of those countries. Greece, and the isles of the Archipelago, in a more southern latitude, under a clear sky, tempered by the waters of the Mediterranean, present a different vegetation, approaching that of Syria and Asia Minor; and our attention will be principally confined to those which, so renowned in history, and so admirably illustrated in

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References to the Map of Turkey in Europe.

NORTH PART.

I. *Moldavia.*
1. Lipteschaia
2. Britschany
3. Izvar
4. Tokoto
5. Gorodiste
6. Kirbenas
7. Jouzira
8. Beltzi
9. Falesti
10. Migiechmi
11. Strojechte
12. Fultiezen
13. Nyamptz
14. Tirgu Formos
15. Jassy
16. Skouliania
17. Chiskane
18. Bender
19. Popovka
20. Ackerman
21. Kichlicki
22. Togoutchi
23. Kilia
24. Ismail
25. Tabakskala
26. Darmesti
27. Faltsi
28. Galbina
29. Galatz
30. Tekoutch
31. Birlat
32. Wasloui
33. Roman
34. Piatra
35. Kimpa
36. Mon Skit.

II. *Wallachia.*
37. Rimnik
38. Bouzeo
39. Ourzitseni
40. Ploiesti
41. Kimpina
42. Tergovist
43. Kimpolung
44. Pitesti
45. Flemunda
46. Rimnik
47. Ohna
48. Tirgeschil
49. Krivetnik
50. Tchernets
51. Gorgoach
52. Dretchen
53. Crajova
54. Urlat
55. Dobruch
56. Slatina
57. Karakal
58. Rusvede
59. Vadulat
60. Giurgevo
61. Kopotzeni
62. Bucharest
63. Obilijesti
64. Popesti
65. Kikintz
66. Brahilov
67. Matchin
68. Jassachi
69. Toultchi
70. Baba Dagh
71. Hirchova
72. Kara Kirman
73. Kustendjeh
74. Rassova
75. Mangali
76. Kara Aghadj
77. Gulgrad
78. Varna
79. Hadji Oglou Bazardjik
80. Silistria
81. Toutourkai
82. Tchenar
83. Pravadi
84. Choumla
85. Eski Djuma
86. Razgrad
87. Roustchuk
88. Slateritza
89. Slebanno
90. Kabrova
91. Ternova
92. Sistova
93. Nicopoli
94. Loftcha
95. Isladi
96. Ikliman
97. Sophia
98. Karsotz
99. Berkovatz
100. Rahova or Orehava
101. Widin
102. Pirnik
103. Mustapha
104. Tchardah.

IV. *Servia.*
105. Taren
106. Ivarina or Vrana
107. Ghilan
108. Pristina
109. Novo Berda
110. Voustrin
111. Krattovo
112. Orkup
113. Nissa
114. Gorguschevats
115. Maldanbek
116. Gladova
117. New Orsova
118. Passarovitz
119. Keupri
120. Kragogevacs
121. Hassan Pasha
122. Semendria
123. Belgrade
124. Tsestenovocz
125. Schabacz
126. Kucallievo
127. Vallievo
128. Uzitza
129. Kousnik
130. Movi Basar.

V. *Bosnia.*
131. Sienitza
132. Tachlidje
133. Fotcha
134. Bosna Serai
135. Traunik
136. Gratsanitza
137. Zwornik
138. Lower Tusla
139. Gradacsatch
140. Maglai
141. Prouantz
142. Brod
143. Kottor.

VI. *Croatia.*
144. Banjaluka
145. Koraratz
146. Novi
147. Bihatch
148. Ostrovicza
149. Kamenitza
150. Szokol.

VII. *Herzegovina.*
151. Glamosch
152. Livno
153. Douvno
154. Rusighi
155. Mostar
156. Gasko
157. Gliubigne
158. Trebigne
159. Nikaiki.

SOUTH PART.

VIII. *Albania.*
1. Cettigne
2. Pogoritza
3. Crouchieva
4. Ipeick or Pechia
5. Prisrend
6. Taplain
7. Tchiabak
8. Antivari
9. Scutari
10. Allessio
11. Cittanova
12. Durazzo
13. El Bassan
14. Isbat
15. Ochrida
16. Moichha
17. Berat
18. Vallona
19. Tepeleni
20. Haria
21. Preniti
22. Delvino
23. Bucintro
24. Souli
25. Arta
26. Joannina
27. Mezzovo.

IX. *Roumelia.*
28. Grevno
29. Chatista
30. Monastir
31. Koprili
32. Uskup
33. Comanova
34. Istip
35. Ghiustendil
36. Doubnitza
37. Tatar Bazardjik
38. Philippopolis
39. Tchirpan
40. Hirmenli
41. Eski Saghra
42. Kezanlik
43. Jeni Saghra
44. Lamboli
45. Carnabat
46. Bourgas
47. Sizeboli
48. Silistri Osmoul Fakba
49. Tchirmen
50. Kirk Killisa
51. Akteboli
52. Ainada
53. Visa
54. Midiah
55. Constantinople
56. Buiuk Tchekmedje
57. Erekli
58. Rodosto
59. Tchatal Bourgas
60. Adrianople
61. Khafsa
62. Dimoutka
63. Ainadjak
64. Avrache
65. Gallipoli
66. Migalgara
67. Enos
68. Feredjik
69. Kemouldjina
70. Tzugtaik
71. Prahousta
72. Drama
73. Negrokop
74. Ostroumja
75. Serres
76. Orphano
77. Betchik
78. Rouslep
79. Planomi
80. Salonica
81. Vodena
82. Khateri.

X. *Greece.*
83. Larissa
84. Tricala
85. Morcovo
86. Thomoko
87. Pharsa
88. Volo
89. Zeitoun
90. Vrachori
91. Loutraki
92. Missolonghi
93. Lepanto
94. Salona
95. Livadia
96. Thiva
97. Egripos
98. Athens
99. Corinth
100. Napoli di Romania
101. Argos
102. Antroni
103. Patras
104. Gastouni
105. Strobitza
106. Tripolitza
107. Leondari
108. Arcadia
109. Navarino
110. Misitra
111. Napoli di Malvasia.

ISLAND OF CANDIA.
1. Chimaso
2. Canea
3. Retimo
4. Trinidad
5. Temanos
6. Candia
7. Settia.

Rivers.
a Danube
b Save
c Unna
d Verbas
e Bosna
f Dwina
g Morava
h Ibar
i Bulgarian Morava
j Timok
k Schyl
l Aluta
m Oltez
n Teliorman
o Ardjich or Argis
p Dumbovitza
q Jalomnitza
r Bouzeo
s Bistritz
t Sereth
u Pruth
v Great Kamtchi
w Jantra
x Osma
y Iska
z Touz
aa Tonija
bb Erkene
cc Maritza
dd Hardeme or Arda
ee Mesto
ff Strouma
gg Vardar
hh Dzerna
ii Drin
jj Scambi
kk Voujutza
ll Andje Karasvo
mm Salembria
nn Aspropotamos
oo Hellada
pp Maveo.

Islands.
a Thasos
b Semendrek, or Samothrace
c Imbros
d Lemnos
e Hagios Strati
f Tenedos
g Metelin
h Seli Dromi
i Scopelo
j Negropont
k Steyros
l Psara
m Scio
n Samos
o Nicaria
p Andros
q Tino
r Miconis
s Syra
t Zea
u Thermia
v Milo
w Paros
x Naxia
y Nio
z Santorin
aa Amorgo
bb Stampalia
cc Calymnos
dd Stanco
ee Riscopi
ff Rhodes
gg Scarpanto
hh Coso, or Caso.

their topography, are yet but imperfectly known to naturalists. The learned Tournefort, indeed, visited the islands, and Dr. Sibthorpe both the islands and the peninsula; but many of the botanical acquisitions of the former are only known by his Herbarium, and his famous drawings, called *Vélins du Muséum*, which exist in the Jardin des Plantes at Paris; while the splendid *Flora Græca* of the latter traveller, edited by the late Sir J. E. Smith, is still far from being completed; and among that portion which is published, however valuable to the man of science and the scholar, there is but little which can interest the general reader. The illustration of the writings of Dioscorides was Dr. Sibthorpe's chief object. The names and reputed virtues of several plants recorded by that ancient author, and still traditionally retained by the Athenian shepherds, served occasionally to elucidate or to confirm his synonymy. The first sketch of the *Flora Græca* comprises about 850 species. This, however, the author observes, "may be considered as containing only the plants, observed by me, in the environs of Athens, on the snowy heights of that Grecian Alp, Mount Parnassus, on the steep precipices of Delphis, the empurpled mountains of Hymettus, the Pentele, the lower hills about the Piræus, the olive-grounds surrounding Athens, and the fertile plains of Bœotia." The author made a second tour in Greece; and in February, 1795, he visited the Morea. The Violet and the Primrose welcomed him in the vales of Arcadia, and the Narcissus Tazetta (*fig.* 493.), which Dr. Sibthorpe was inclined to think the true Narcissus of the poets, decorated in profusion the banks of the Alpheus. The barbarian hordes, under whose escort he was obliged to travel, had taste enough to collect nosegays of these flowers. The Oaks of the Arcadian mountains presented him with the true ancient misseltoe (*Loranthus europæus*) (*fig.* 494.), which still serves to make birdlime, whilst the misseltoe of our country is, in Greece, seen only on the Silver Fir. The Jay, still called by its classical name Κισσα, was screaming among these oaks, and the Water Ouzel (*Sturnus Cinclus*), flying along the rocky sides of the alpine rivulets of Arcadia, presented itself to Dr. Sibthorpe's recollection as probably the White Blackbird mentioned by Aristotle as peculiar to the neighbourhood of Mount Cyllene. But in vain did our classical traveller look for the beauty of the Arcadian shepherdesses, or listen for the pipe of the sylvan swain. Figures emaciated, and features furrowed with poverty, labour, and care, were all that he met with. Taygetus, the highest mountain in the Morea, and almost rivalling Parnassus, was ascended by Dr. Sibthorpe; but the quantity of snow, and the great distance, prevented him and his fellow-travellers from reaching the summit. Panagioti, nephew of the cheriff, and a popular character, accompanied him with fifty of his followers, and displayed his botanical knowledge by showing Dr. Sibthorpe the Darnel, still called *αιρα*, among the corn, which he said occasioned dizziness; and also a wonderful root, the top of which is used as an emetic, and the bottom as a purge. This proved to be the Euphorbia Apios, to which the very same properties were attributed by Dioscorides.*

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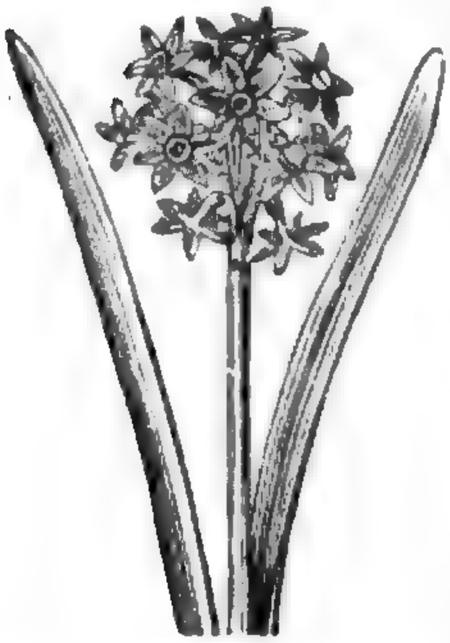

NARCISSUS TAZETTA.

494

LORANTHUS EUROPÆUS.

3517. *Greece is very mountainous.* The summits of the chain of Pindus are variously estimated at 8400 or 9000 feet. Be the height what it may, it is certain that snow remains the whole year on

> "Pindus' inland peak,
> Robed half in mist, bedew'd with snowy rills,
> Array'd in many a dun and purple streak."

The most southern plains are not protected from the frosts. In the Peloponnesus, near Tripolizza, the thermometer, in January, falls to 8° or 9° (Reaumur) below zero. Still, in the peninsula, snow is rare, and of short duration, except on the very elevated situations, where it lies unmelted till the return of spring. Undoubtedly there are peculiar causes that influence the climate of Tripolizza, since the Peloponnesus produces abundantly the Orange, Lemon, and even the Prickly Fig, which latter is as sensible to cold as the Date Palm. This thorny plant, which is so common in Palestine and on the Mediterranean shores of Africa, forms strong defensive hedges in the plains of Mecenia. The Date does not seem to inhabit Peloponnesus; a few trees of it which grow near Athens, are perhaps the only individuals in all continental Greece. On the eastern coast, Orange and Lemon trees grow as far inland as Bœotia, Potidæa, and Thessaly, and even to Mount Olympus, which divides Macedonia from Thessaly. This is probably the limit of those trees; at least there is nothing to attest their growth in Macedonia and Thrace, whose soil, intersected by mountains, and swept by violent north winds, is mostly covered with such forests as characterise the temperate zone. Hawkins, the celebrated traveller, who visited the lovely vale of "fair Tempe," situated to the south of Mount Olympus, and who has given a list of the trees that it produces, does not mention the Orange and Lemon. They assuredly grow in the island of Lemnos, in the same latitude; but Sibthorpe remarks that the climate is there too cool to ripen their fruit. The Olive succeeds on the coasts of Macedonia, 41° N.

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* See Smith's Life of Sibthorpe, in Rees's *Cyclopædia*.

3518. *To judge by vegetation*, the western shores are warmer than the eastern. Near Epirus, between 39° and 40°, precisely in the same latitude as the Vale of Tempe, Corfu, which is celebrated for its fertility, produces both the Prickly Fig and the Date.

3519. *The vegetables peculiar to the transition zone* pass from Epirus into the Illyrian provinces. The Olive and Myrtle, the Orange and Lemon, adorn the romantic rocks that skirt the mouth of the Cattaro and the coasts of the Gulf of Guarnero. The two latter do not go beyond: — the Olive, Myrtle, and Laurel, with Quercus coccifera, Ilex, and Ægilops, the Oriental Hornbeam (*Carpinus orientalis*), the Manna Ash (*Fraxinus Ornus*), the Stone Pine (*Pinus Pinea*), the Osyris alba, the Terebinth tree and Caper bush, skirt the shores so far as the extremity of the Adriatic. But this vegetation wholly ceases at a short distance from the coast, to give place to the peculiar growth of the temperate zone.

3520. *Greece exhibits but few of the larger species of the transition zone:* these are found in the Mediterranean countries of Asia, Africa, and Europe. The most common and remarkable trees and shrubs, from Cape Matapan to Mount Olympus on the east, and as far as the southern frontiers of Dalmatia on the west, are, on the plains and hills, the Olive, the shrubby Jasmine (*Jasminum fruticans*), Phillyræa media and angustifolia, Styrax officinale, the Strawberry tree (*Arbutus Unedo*) and A. Andrachne, the Myrtle and Pomegranate, the Cherry Laurel and Locust tree (*Cercis Siliquastrum*), the Pistachio (*Pistacia Lentiscus*), and *P. Terebinthus*, Zizyphus vulgaris, and Christ's thorn, Paliurus australis, Rhamnus Alaternus, the Caper bush, Acer monspessulanum, the Sweet Bay (*Laurus nobilis*), Osyris alba, the Fig (*Ficus Carica*), Celtis australis, the White and Black Poplars, and the Aspen; Populus pyramidalis and atheniensis, the Cypress and Stone Pine, the Juniper and Savin, and Juniperus macrocarpa, several species of Cistus, &c. On the banks of running waters and in damp spots are the Oriental Plane, Salix monandra and triandra, viminalis and capræa, the White, the Weeping, and Crack Willows, the Alder, the Chaste tree (*Vitex Agnus castus*), and the Oleander. On the sea coast, the Pinaster and Stone Pine, Quercus Ægilops, &c. The mountains produce Abies taxifolia, the Beech and Salix retusa (these three grow in the highest regions), the Scotch Fir, the Yew, the common Oak, Ostrya vulgaris, the Ash and Chestnut (the latter species on the spots of moderate elevation), the Hazel and Corylus Colurna, the Ash, the flat-leaved Lime (*Tilia platyphyllos*), the Horsechestnut, the Service tree and Mountain Ash, the Wild Apple and Pear trees, Pyrus Aria and torminalis, the Ilex, Quercus Ballota and Q. coccifera, these three species preferring the low valleys and plains.

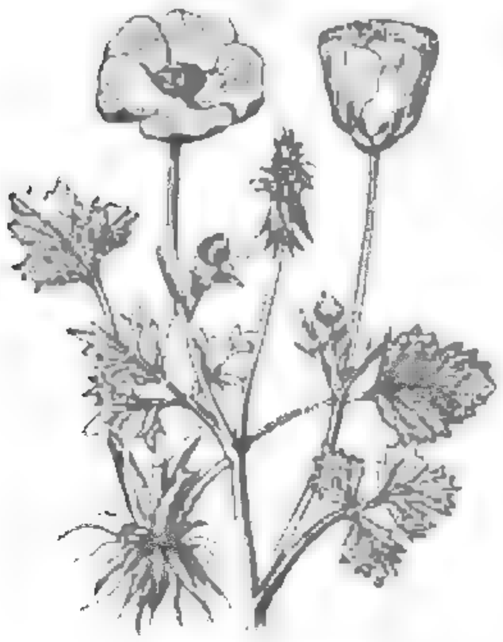
3521. *The Chaste tree* (*Vitex Agnus castus*), the Terebinth (*Pistacia Terebinthus*), the Shrubby Jasmine, Myrtle, Fig, Olive, Pomegranate, &c. overshadow the hills of Istria.

3522. *The Cypress*, Ilex, Quercus coccifera and Ægilops, Ostrya vulgaris, the Oriental Hornbeam, Flowering Ash, Stone Pine, and Caper bush, the Rhus Cotinus, Osyris alba, Juniperus Oxycedrus and Sweet Bay, with many of the plants, both annual and perennial, that belong to the flora of the Mediterranean, grow in the environs of Fiume and Trieste.

3523. *It is remarkable that Juniperus macrocarpa*, Quercus Ægilops, Corylus Colurna, Populus atheniensis, the Weeping Willow, Arbutus Andrachne, the Horsechestnut, the Wild Cherry and Cherry Laurel, the common Almond and Pomegranate, which are indigenous in Greece and Asia Minor, have never been found wild to the west of the Adriatic.

3524. *A few of the plants now enumerated*, with some others peculiar to the "Isles of Greece," deserve a more particular notice. Tournefort says, that, except Pinks and July-flowers, we have no fine flowers but what came originally from the Levant. Tuberoses, Hyacinths, Narcissuses, and Irises are derived from that country, and, above all, the Ranunculus and Tulip; and though these may have been natives of the Asiatic border, it is certain that most of them were introduced to our gardens through the medium of Constantinople. The latter formed so important an article of trade in northern Europe, that a single bulb has sold for a sum equal to 500 guineas. Holland now yields us our best Hyacinths and Ranunculuses, rectified, as Tournefort calls it, by the culture of the industrious Dutch. The Turks have long been attached to these flowers, and it was the Vizier Kara Mustapha, who "miscarried before Vienna in 1683, that is said to have brought the latter plant (*Ranunculus asiaticus*) (*fig.* 495.) into fashion. In order to amuse his master, Mahomet IV., who extremely loved hunting, privacy, and solitude, he insensibly inspired him with a fancy for flowers; and understanding that the Ranunculuses were what he most admired, he wrote to all the bashaws throughout the empire, to send him roots and seeds of the finest sorts they could lay hands upon. The chiefs of Candia, Cyprus, Rhodes Aleppo, Damascus, outdid all the others in thus paying their court to him.

495



RANUNCULUS ASIATICUS.

496

ANEMONE HORTENSIS.

Thence came those admirable species of Ranunculus, which are to be seen in the fine gardens of Constantinople and Paris. The seeds which were sent to the vizier, and those propagated by private men, produced vast varieties. The ambassadors prided themselves on sending them to their respective masters, and in Europe they were improved by culture. M. Malaval contributed not a little thereto at Marseilles: he furnished France with them, and all foreign countries." The Anemone of our gardens (*A. hortensis*) (*fig.* 496.) abounds in the islands. In the spring, Milo and the rest of the islands of the Archipelago are covered, says Tournefort, like a carpet, thick set, and as it were studded, with anemones of all colours: they are single, yet from their seeds come the most splendid varieties that are seen in our parterres.

497

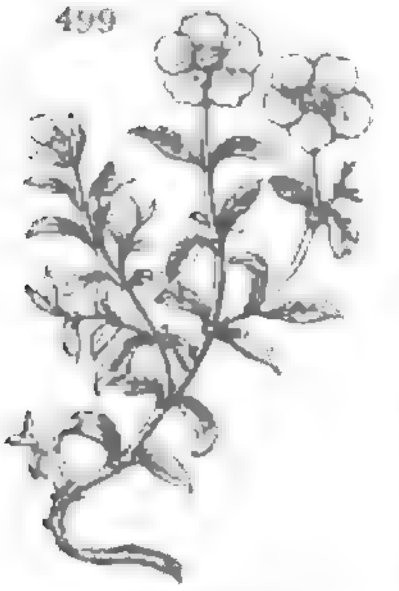
POTERIUM SPINOSUM.

498

DIANTHUS ARBOREUS.

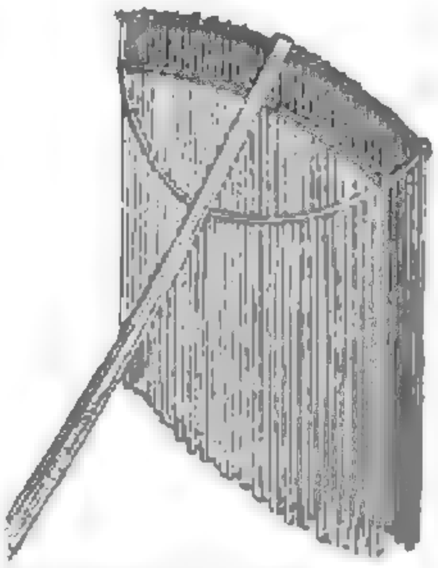
"But," continues the same author, "of all the rare plants growing in Milo, the prickly Pimpernel, or prickly shrubby Burnet (*Poterium spinosum*) (*fig.* 497.), was that which pleased us most: we had met with it before in Candia; but I could not persuade myself that this plant, which requires great care to raise in our gardens, could be so common in the Archipelago. It is an under-shrub, called in vulgar Greek *Stæbida*: besides the resemblance of its name, it answers in its virtues to the *Stæbe* of Dioscorides. The prickly Pimpernel is of marvellous use in these islands, towards multiplying the pasturages, and transforming, as it were, the heaths into meadows. In August, when it blows north, and the plant is dried up, they set fire to the foot of it; in an instant the wind carries the flames far and wide, even to the very mountains. The first autumn rains that fall fetch out an excellent herbage from these burnt lands, and this much sooner than in France, because it never freezes in this island, and very rarely snows." The Isle of Serphis, and a few other islands, alone produce the beautiful arborescent Pink (*Dianthus arboreus*) (*fig.* 498.), the discovery of which seems to have delighted Tournefort more than almost any other circumstance in the whole course of his travels. He introduced it to the Royal Gardens at Paris, where it maintained its honour, he tells us, amidst an infinite number of scarce plants from the same country.

499



CISTUS CRETICUS.

500



INSTRUMENT FOR COLLECTING THE GUM LADANUM.

3525. *Gum Ladanum* is the produce of a very handsome species of Cistus, well known in our gardens, the C. creticus (*fig.* 499.), the Ledon of Dioscorides, in whose time the gum that exuded from the glands of the leaves was obtained by driving goats in among the shrubs, or by these animals naturally browsing upon them, when the substance adheres to their hair and beards. Now that this substance is collected to supply a more extended commerce, a peculiar instrument (*fig.* 500.) is employed for the purpose, which is figured and described by Tournefort, and the accuracy of which is attested by Sieber, in his *Voyage to Crete*.

"It is a kind of rake, with a double row of long leathern straps. It was in the heat of the day, and not a breath of wind stirring; circumstances necessary to the gathering of Ladanum. Seven or eight country fellows, in their shirts and drawers, were brushing the plants with their whips; the straps whereof, by rubbing against the leaves of this shrub, licked up a sort of odoriferous glue, sticking on the leaves: this is part of the nutritious juice of the plant, which sweats through the texture of those leaves like a fatty dew, in shining drops, as clear as turpentine. When the whips are sufficiently laden with this grease, they take a knife and scrape it clean off the straps, and make it up into a mass or cakes of different size: this is what comes to us, under the name of *Ladanum* or *Labdanum*. A man who is diligent will gather 3 lbs. per day or more, which they sell for a crown on the spot: this sort of work is rather unpleasant than laborious, because it must be done in the sultry time of the day, and in the deadest calm; and yet the purest Ladanum cannot be obtained free from filth, because the winds of the preceding day have blown dust upon the shrubs." About 50 cwt. of it is annually collected in Crete, and sent exclusively to Constantinople.

3526. *Gum Tragacanth* is a no less important article of trade than Gum Ladanum, and appears to be the produce, not only of the Astragalus Tragacantha (*fig.* 501.) and A. creticus (*fig.* 502.), but of others of the same genus, which form a group, distinguished by their permanent leaf-stalks, which eventually become spinescent. Tournefort describes the Cretan plant, and figures a specimen, in his *Voyage to the Levant*. "We had the pleasure," says he, "of leisurely examining the Gum Tragacanth upon Mount Ida. It appears naturally in the close of June and in the following months. During that time, the nourishing juice of this plant, thickened by the heat, bursts the greater part of the vessels that contain it. It not only accumulates in the heart of the stems and branches, but in the interstices of the fibres, which are disposed in rays. This sap coagulates in filaments, as in the pores of the bark; and these filaments, striking through the bark, gradually work their way out, as they are pushed forward by the new moisture that the roots afford. On exposure to the air, the substance becomes hardened, and forms either lumps or twisted laminæ, similar to worms of various lengths, according to the quantity of sap; it even seems that the contraction of the fibres of this plant contributes to the expression of the Gum Tragacanth. These fibres, disentangled like hemp, being pulled and trodden by the feet of shepherds and of horses, shrink up with heat, and facilitate the issuing of the extravasated juice." Sieber, however, in his Cretan voyage, tells us he could not learn that the Cretan Astragal (*Astragalus creticus*) produced any Gum Tragacanth. On Mount Lebanon, Tragacanth, we know, is yielded by the Astragalus gummifera of La Billardière, who, however, observes, contrary to the remarks of Tournefort, that it is not during the great heats of the day that this substance flows, but during the night, and a little after sunrise; and he even thinks that a cloudy atmosphere, or a heavy dew, is necessary for its production; and states that the shepherds of Lebanon only go in search of this substance when the mountain has been covered during the night with thick clouds.

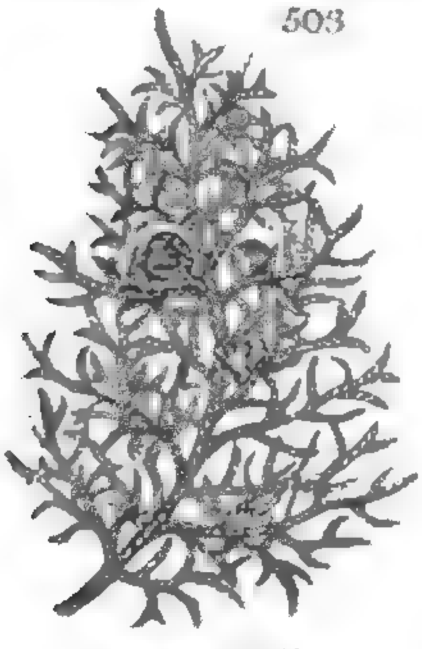
501

ASTRAGALUS TRAGACANTHA.

502

ASTRAGALUS CRETICUS.

503



JUNIPERUS LYCIA.

3527. *Those kinds of wood which we consider among the most precious* are burnt by the Greeks for fuel. In Amorgos they consume nothing but Mastich and the Cypress-leaved Cedar (*Juniperus lycia*) (*fig.* 503.) which produces Olibanum. The Greeks make use of this latter in their fishing excursions. At the stern of the galley they have a sort of grating into which the wood is put, broken into small pieces. In the night it is set fire to; and while the fish are following the boat, attracted by the light, they strike at them with a trident or three-forked javelin. This

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wood is not, however, the produce of Amorgos, which is destitute of trees, but is brought from the adjoining island. In the town of Crete, you may see bundles of wood for firing of the most fragrant description. “Nothing is used,” says Sieber, “but Sage, Thyme, Cistus, Cypress wood (*fig.* 504.), Marjoram, and Lavender; and it is, indeed, a delightful country, where not only the air is scented with the balsamic odour of the numerous aromatic plants, especially after a shower of rain, but where the very smoke is perfumed with the fragrance of the wood of which their fires are made.”

504

CUPRESSUS SEMPERVIRENS.

3528. *The Mastich and Terebinth* are gum-resins, for which the island of Scio is especially celebrated. The former is the product of the Pistacia Lentiscus (*fig.* 505.). Olivier says that “Mastich must be considered as one of the most important and valuable productions of the island, since the inhabitants of Scio owe to it a part of their privileges, and the cultivators much of their independence and comfort. The Lentiscus which yields it no way differs from that which grows in the south of Europe and all the islands of the Archipelago, but from which no Mastich can be procured. Some slight varieties may be seen at Scio, with leaves of a greater or less size, which are owing to culture, and perpetuated by grafts and layers.

505

PISTACIA LENTISCUS.

3529. “*In order to obtain the Mastich,* it is customary to make slight and numerous incisions in the trunk and principal branches, from the 15th to the 20th of July, according to the Greek calendar. From these clefts a liquid juice insensibly trickles, which hardens by degrees, and remains attached to the tree in drops of greater or less size, and sometimes even falls on the ground. The first is the most esteemed, and is removed with a sharp iron instrument, half an inch broad at the extremity. Frequently a cloth is spread beneath the tree, that the Mastich may not be impregnated with dust and dirt. According to regulations made on the subject, the first gathering cannot take place before the 27th of August. It lasts eight consecutive days, and fresh incisions are made up to the 25th of September, when a new harvest takes place, which again occupies eight days. After that period the trees are not cut again; but until the 19th of November, the Mastich that continues to flow is collected on the Monday and Tuesday of every week; and it is forbidden after that period to gather any.

3530. “*A curious experiment,* which deserves to be generally known, came to my hearing. As it is forbidden to cultivate the Lentiscus beyond the limits prescribed by government, a Turk, hoping to evade the law, and still obtain the Mastich, grafted some Lentisk plants on young Terebinths. They took perfectly well, but the man was surprised, some years after, to find that from the incisions he had made, a substance exuded, which combined the odour and qualities of Mastich with the fluidity of Terebinth. Mastich is collected in twenty-one villages, situated to the south of the town; and the quantity amounts, on an average, to rather more than 125,000 lbs. 45,000 lbs. belong to the Aga, who farms the article; and they are paid to him by the cultivators as a tax for the permission of growing it. The surplus brings them in about 50 paras for 2½ lbs. (rather less than a shilling), and they are forbidden, under very heavy penalties, to sell it to any one but the contractor. The best and finest quality is sent to Constantinople, for the use of the grand signior's palace. The second sort goes to Cairo, and passes into the harams of the Mamelukes; while merchants only obtain a mixture of the second and third qualities.”

3531. *It is hardly possible that the quantity of Mastich* afforded by the island of Scio can supply the great consumption of this article in Turkey and in Europe. A traveller, indeed, assured Olivier that the Lentiscus is cultivated in the interior of Natolia. Throughout the Ottoman empire, it is an universal practice for all the women, even the Franks, to chew Mastich almost incessantly. It softens in the mouth, to which it imparts an agreeable fragrance, while it strengthens the gums and whitens the teeth. It is also used for fumigation and perfumes; as a remedy for various diseases, and to give a pleasant flavour to bread.

3532. *The Terebinth* flows naturally in summer from clefts in the bark of another species

506

PISTACIA TEREBINTHUS.

of Pistacia, the P. Terebinthus (*fig.* 506.). It is at first liquid, and of a bluish, greenish, or yellowish white; but soon becomes hard and dry on exposure to the air. It is commonly called Scian Terebinth, being principally grown in that island. But its flow is facilitated by the incisions which the natives make, every spring, in the trunk and branches of the tree. Every morning, after the coolness of night has condensed it, this substance is collected with a spatula, from the trunks of the trees, and the flat stones that are laid expressly to receive it. As the gum, thus obtained, is always mixed with some extraneous matter, it is purified by being run through small baskets, after having been liquefied by exposure to the sun.

3533. *The Terebinth trees* afford but little gum in proportion to their size; for an individual 60 years old, and with a trunk four or five feet in circumference, yields but ten or eleven ounces annually. As a natural consequence, the Terebinth is very expensive, even in the country where it is produced. Part is consumed in the Levant, and the rest carried to Venice, where it is generally adulterated with turpentine, called Venetian Terebinth. Thus the true terebinth of Scio is hardly ever to be obtained pure: that which is really so may be known by its thickness, and by possessing a more agreeable odour than the turpentine of the spruce and other fir trees; it is also destitute of bitterness and acridity.

3534. *A species of Cynips*, which deposits its eggs on the branches of the terebinth, occasions galls and large excrescences, containing a small portion of a very limpid and odoriferous resin.

3535. *The Ferula of the ancients*, the *ναρθηξ* of Dioscorides, is an umbelliferous plant, allied to the Assafœtida, which is equally one of the Fennels, and referred by most authors to the F. communis; while Tournefort, who describes it in the island of Skinosa, where it is still called Nartheca, says:—"It bears a stalk five feet high, three inches thick: at every ten inches there is a knot, branched at each knot, covered with a hard bark two lines thick: the hollow of this stalk is full of white marrow, which, being well dried, takes fire like a match: this fire holds a good while, and consumes the marrow very gently, without damaging the bark, which makes them use this plant in carrying from one place to another: our sailors laid in a good store of it. This custom is of the greatest antiquity, and may help to explain a passage in Hesiod, who, speaking of the fire that Prometheus stole from heaven, says that he brought it in a ferula. The foundation of this fable doubtless proceeds from Prometheus being the inventor of the steel that strikes fire from the flint. In all probability Prometheus made use of the pith of the ferula instead of a match, and taught men how to preserve fire in the stalks of this plant. The stem is strong enough to be leaned upon, but too light to hurt in striking; and, therefore, Bacchus, one of the greatest legislators of antiquity, wisely ordained the first men that drank wine to make use of this plant, because, being heated with excessive drinking, they would often break one another's heads with the ordinary canes. The priests of the same deity supported themselves on these stalks when they walked; and Pliny observes that this plant is greedily eaten by asses, though to other beasts of burthen it is rank poison. We could not try the truth of this observation, there being nothing but sheep and goats on the island. The plant is now used for making low stools: they take the dried stalks, and by placing them alternately in length and breadth, they form them into cubes, fastened at the four corners with pegs of wood. These cubes are the visiting-stools of the ladies of Amorgos. What a different use is this from that the ancients put the ferula to! Plutarch and Strabo take notice that Alexander kept Homer's works enclosed in a casket of ferula, on account of its lightness: the body of the casket was made of this plant, and then covered with some rich stuff or skin, set off with ribs of gold, and adorned with pearls and precious stones."

3536. *Many of the islands* are celebrated for their wine—

> "Fill high the cup with Samian wine,
> Leave battles to the Turkish hordes,
> And shed the blood of Scio's vine."

The former isle was chiefly famed for its Muscadine, notwithstanding that Strabo was ravished with every individual thing in it, *except the wine;* but "belike," says Tournefort, "he never tasted the Muscadine wine; or, perhaps, they never bethought themselves then of making any." Naxos had two fables related of it, that the women are brought to bed at the end of eight months, and that there flows a spring of wine in the island. The wines of Greece are in common use throughout Italy. They have been celebrated, indeed, from the remotest antiquity. The ancient medals represented garlands of ivy, interwoven with bunches of grapes. The wines, according to Tournefort, have just tartness enough to qualify their lusciousness; and the lusciousness, far from being fulsome, is attended with that delicious balm, which, in those who have tasted the Candian wines, begets a contempt f all other wines whatever. Jupiter never drank any other nectar when he reigned king c this island. The Turks cannot forbear this tempting juice, at least in the night-time, an then they make clear work. The Greeks drink it night and day, without water, and in sma draughts, happy that they can thus bury the remembrance of their misery. When water i poured on these wines, the glass looks as if it were full of clouds, shot through with fluctu ating curling threads, occasioned by the great quantity of ethereal oil which predominat in this delicious liquid.

3537. *Malmsey, or Malvoisie,* so called from the village of Malwisi in that island, was for long time the produce of Crete; and it was such a favourite with the Italians, that they hav a proverb, signifying that it is "manna to the mouth, and balsam to the brain." Sieb witnessed the process of making it in Crete, and describes the annual benediction of the win when it is lodged in the spacious cellars of the monastery of Arcadi*:—"Lord God! tho who lovest mankind, direct thine eyes to this wine, and on those who shall drink it: bless ou vessels, thrice blessed, as the wells of Jacob and the pool of Siloam, and as thou ha blessed this drink of the Apostles. O Lord, thou who wast present at the wedding of Can and, by changing the water into wine, revealed thy glory to thy disciples, send now th Holy Spirit on this wine, and bless it in thy name!"

3538. *The botanist* need not be told that the *currants* of commerce are the produce c a species of vine; though among the unskilled in natural history an opinion prevails th they are garden currants in a dried state. They are, in fact, small grapes, the berries of vine; but it is to be lamented that of what species authors are not agreed. They deriv their name from having been first brought from Corinth; and as they are seedless, Linnæ considered them a variety of the common Vine (*Vitis vinifera*), and called it β *Corinthiac apyrena*. Dr. Sibthorpe brought a living plant, supposed to be of this kind, from the ruir of Corinth, with no small trouble and care; but his ignorant gardener threw it away. S James E. Smith doubts whether the "*Zante Currant*," which is cultivated at Kew and in som other curious gardens, and is a native of that island, pre-eminently styled, for its beauty,—

"*Zante*, fior di Levante,"—

be the same plant as yields the currants of commerce.

Subsect. 3. *Zoology.*

3539. *The native zoology of Turkey* is unquestionably less known than that of many f distant regions, inhabited by savages or barbarians. The baneful spirit of Mahometanism shown in the besotted ignorance of its followers, who even pride themselves on their contem for knowledge, is the curse of every nation which h been condemned to bend beneath its galling yoke. N part of Europe is more calculated to interest th philosophic zoologist than the provinces of Europe Turkey, and no part has been so completely une plored. Our ideas, therefore, of its native zoology m only be formed from analogy. Situated in the mo genial climate, abounding in lofty chains of mou tains, rich and majestic forests, fruitful plains, a noble rivers, with its shores bathed by the Medite ranean Sea, we may conjecture that many animals nc rarely seen in more populous and civilised countries here enjoy their native range; and othe may probably exist, still unknown to science. The proximity, also, of Western and Min Asia, and the lofty chain of Caucasus, that cradle of t human race, renders it highly probable that Europe Turkey is that "border country" where the two gre zoological provinces of Europe and Asia meet, and ble into each other. That the semi-barbaric despots who ha so long held this fair portion of Europe in the fett of ignorance, and paralysed the minds of millions, m soon be driven to the deserts of their ancestors, must the unanimous wish of every friend to the human race

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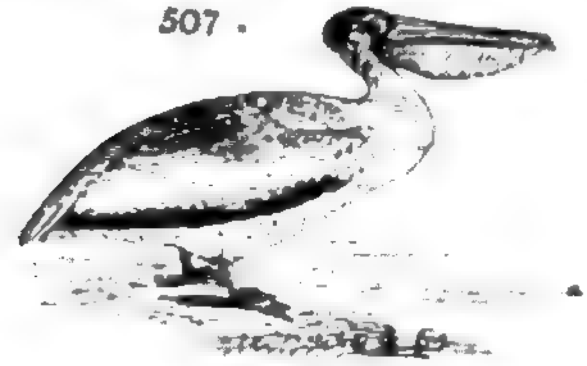

PELICAN.

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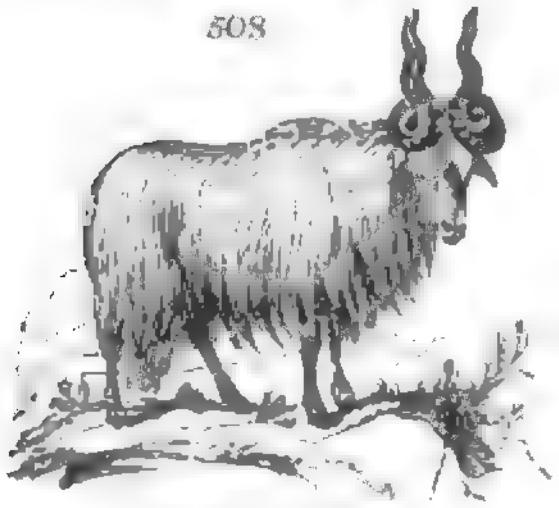

WALLACHIAN SHEEP.

3540. *Among the birds* are found several of the wading species, more common to the warm shores Africa. That singular bird the European or Pink-c loured Flamingo is a frequent visiter to the salt-wat pools and marshes, accompanied by the Pelican (*fi* 507.) and many other waterfowl; and the stork buil unmolested on the magnificent ruins of the ancient temples.

3541. *The domesticated animals are better known.* The horses, originally brought from t neighbouring shores of Egypt and Arabia, and still replenished by constant intercourse with those countries, are naturally fine. The cattle are very large, furnished with ample horns, and are apparently of the same breed as those of southern Italy. The Wallachian sheep (*fig.* 508.) have long been celebrated for the singularity of their horns: they diverge almost at right angles from the head, are very long, and are spirally twisted: this breed, which is white, is derived from the Cretan, and in form resembles the old unimproved breed of England; but the wool, though curling, is rather coarse, and it is straight on the thighs and tail. The superstition of the Turks leads them to abhor pigs. The Turkish greyhound, though well formed, is a disgusting little animal, from the skin being almost destitute of hair.

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* Built on the site of the ruins of Arcadia.

Sect. III. *Historical Geography.*

3542. *The Turks, or Toorks*, are a numerous race, whose original seat was in the high central regions of Tartary, to the north and east of the Jaxartes, and along the border of the Altaï. Their large and handsome persons, and their fair and ruddy complexions, distinguish them from the meagre, diminutive, and almost deformed aspect of the Mongols, the other ruling Tartar race. In the tenth century, having subdued all their neighbours, they were attracted by the rich and beautiful regions of the south, and poured down through Khorassan into Persia.

3543. *The princes of the Seljuk dynasty* had, at the above period, established full sway over Persia. Thence they crossed the Euphrates, to attack the weakened power of the Greek empire and the Saracen princes. They were triumphant; and established in Asia Minor what was called the kingdom of Roum, while other chiefs over-ran Syria and the Holy Land. At this time the whole of Western Asia was subject to Turkish dynasties. But their fall was preparing. The outrages, of which their rude bands were guilty, formed one of the chief motives which impelled the European powers to the great enterprise of the crusades. The Latin nations poured in with a force which the Turks were unable to withstand; and the thrones of Jerusalem and Iconium were speedily subverted. At the same time, the Mongols, under Zingis, having achieved the subjugation of Tartary, followed the traces of the Turks, wrested from them Persia, and subverted the caliphate. At the end of the thirteenth century, the once proud dynasties of Seljuk were reduced to a number of scattered chieftains, occupying the mountainous districts and high plains of Asia Minor, and obliged to own the supremacy of the Mongol khans of Persia.

3544. *Othman, or Ottoman*, one of their chiefs, was the man who, in 1299, erecting an independent standard, founded the mighty Ottoman empire. He appeared first under the aspect of a Scythian chief, a leader of shepherds and bandits; but first conquering and then uniting under his standard a number of neighbouring tribes, he assembled a formidable military force. His successor, Orchan, having taken Prusa, erected it into a capital, which almost defied the imperial metropolis Constantinople. His successors continually augmented their force by the peculiar institutions under which they trained to arms the captive youth of the conquered countries. They continued to make acquisitions from the decrepid Greek empire, until the walls of Constantinople enclosed all that remained of the dominion of the Cæsars.

3545. *The Turkish empire was raised to its greatest height* by the capture of Constantinople, in 1453, by Mahomet II. The power of the Turks now struck terror into all Europe. In the succeeding century they subdued Egypt, the Barbary States, and all the Arabian coast on the Red Sea. In Europe they rendered tributary the Crimea and the countries along the Danube; they over-ran Hungary and Transylvania, and repeatedly laid siege to Vienna. When affairs came to that crisis, however, the European states took the alarm, and all the princes of Poland and Germany united against the invader, who was repeatedly driven back with prodigious loss. At sea, notwithstanding the gallant resistance of the Venetians and the knights of St. John, the Turks long carried all before them: they subdued Rhodes, Cyprus, and all the Greek islands; and it was only at the little rock of Malta that their progress received a check.

3546: *The decline of the Ottoman power* was perceptible in the course of the seventeenth century, and proceeded rapidly in the eighteenth. The rigour of that discipline, by which they had rendered themselves so formidable, was insensibly relaxed; the grand signior resigned himself to the luxuries and indulgences of the seraglio; and the revolts of the pachas in every quarter distracted the empire. When the European powers began to make war with regular armies, they easily repelled those tumultuary bands which followed the Turkish standard. Above all, when Russia began to develope her gigantic energies, the star of Ottoman ascendency rapidly declined. Defeated in every battle, losing several of their finest provinces, and holding the rest by a precarious tenure, the Turks ceased to be formidable. In the last war, indeed, General Diebitsch entered Adrianople, and saw the road to the capital open; though peace was then granted on moderate terms. But Turkey has since undergone a still deeper humiliation, having seen her empire almost subverted by Ibrahim, son to the pacha of Egypt, when she was saved only by the interposition of Russia, her mortal enemy, and obliged to sacrifice Syria and Palestine, two of the finest portions of her territory.

Sect. IV. *Political Geography.*

3547. *The Turkish political system* has no analogy with that of any other European power, but is formed upon a purely Asiatic model. Its principle is the subjection of the whole administration, civil, military, and religious, to the absolute disposal of one man. The *grand signior* (*fig.* 509.), the "shadow of God," and "refuge of the world," is considered as reigning by divine commission, and uniting in himself all the powers, legislative, executive, judicial, and ecclesiastical. Selim I., by the conquest of Egypt, acquired a right to the title of *caliph;* but *sultan,* or *grand signior,* is that by which the ruler of Turkey is best known. So deeply rooted is the veneration for the Othman family, that, amid so many bloody and violent revolutions, the idea has never been entertained of a subject seating himself on the imperial throne; and after cutting off the head of one sultan, nothing has ever been dreamt of but raising the next heir to the throne. Under the Mussulman system, the spiritual and temporal powers being considered as essentially one, a peculiarly sacred character is communicated to him in whom they centre. According to profound Mahometan doctors, nothing that the sultan does can be morally wrong. It is at least generally understood that he is entitled to kill, wantonly, fourteen persons in the day, without incurring blame; nor is it, according to Rycaut, till he begins to kill at the rate of a thousand a day that the people acquire the right of deposing him. He is considered also the proprietor of all the lands in his dominions, excepting those dedicated to pious uses.

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GRAND SIGNIOR.

3548. *The vizier* (*fig.* 510.), *assisted by the divan,* is the person upon whom devolves entire the exclusive power of the state. The grand signior does not even, like some other Oriental despots, make a show of sitting in judgment, but delegates that function also to his minister; who, thus invested with the authority of supreme magistrate, appoints to all civil and military offices, puts to death all who oppose his measures, and commands the army in person, leaving at court in his absence a pacha, under the title of *caimacan.* He is also accustomed to go disguised through the city, to examine the weights, measures, and qualities of the goods; and, on discovering any deficiency, to apply the bastinado, nail the offender by the ear to the door of his shop, or even strike off his head. The divan consisted formerly of six pachas of three tails; but of late it has been formed of the principal state officers: the two *cadi askers,* or judges of the army; the *kiaia bey,* who forms a sort of *reis effendi* (*fig.* 511.), an officer combining the functions of chancellor with those of secretary of state both for the home and foreign departments; the *tefterdar effendi,* or general treasurer of the empire; the *tchelebi effendi,* a sort of naval secretary; the *capitan pacha* (*fig.* 512.), or lord high admiral. In general, there is no exact correspondence between the functions in this and in a European court or ministry; a circumstance from which confusion is often apt to arise.

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GRAND VIZIER.

3549. *The muftis, and ulema,* or body of *mollahs,* form the depository of the laws of the empire, and the only class who approach to the character of a national council. They are not, as has sometimes been supposed, ministers of religion; though, since the Koran and its commentaries form the only law of the empire, and the mollahs receive their education in the *madresses,* or colleges attached to the mosques, they bear quite a sacred character. The *mufti*

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REIS EFFENDI.

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CAPITAN PACHA.

513

MUFTI.

(*fig.* 513.) is the second person of the empire in dignity; he girds the sabre on the sultan, an act equivalent to coronation; and the sovereign advances seven steps to meet him, while he advances only three towards the grand vizier. No great measure of state can be regularly taken, or command the respect of the empire, without a fetwa from the mufti. The sultan cannot behead him; and though Murad IV. sought to evade this statute by pounding him in a mortar, the interpretation was scarcely considered sound, and has not been followed. The sultan, however, in case of high cause of wrath, possesses, or at least exercises, the power of deposing the mufti, and thus secures in general his strict subserviency; though at other times that officer, by placing himself at the head of popular discontents, has been the means of bringing the sovereign to an untimely end. The members of the ulema ought to be elected by the mufti, after strict examination, and with some regard to hereditary claim; but the grand signior is in the habit of nominating upon his own authority, and from pure favour.

3550. *Justice is administered by members of the ulema:* those in the large towns are termed *mollahs,* and in the smaller towns *cadis;* the nominations being made by the sultan from a list presented by the mufti. The proceedings are conducted with the greatest simplicity. At the *divan hanneh,* or vizier's tribunal, there is a written statement of the case, which must however be comprised in a page, leaving room for the sentence at the bottom. The parties then plead; two or three witnesses are examined on each side; and the decision is given on the spot. Justice is thus neither costly nor tedious, but it is venal. Few judges are inaccessible to a bribe; and false witnesses are more numerous, and more shameless, than in almost any other country. After all, Turk against Turk has a tolerable chance; but those beyond the pale of the faith afford a mine of wealth to true believers, who, in opening a process against them, are almost certain to gain something.

3551. *The court and seraglio* form not only the most brilliant appendage to the Ottoman Porte, but one of the great moving springs of its political action. In this palace, or prison, are immured 500 or 600 females, the most beautiful that can be found in the neighbouring realms of Europe, Asia, and Africa; wherever Turks can rule or Tartars ravage. The pachas and tributary princes vie with each other in gifts of this nature, which form the most effective mode of gaining imperial favour. Into these recesses only short and stolen glances have been cast by Europeans; but their reports attest a splendour like that which is celebrated in the Arabian tales: the walls and ceilings are of olive or walnut wood, curiously carved, richly gilded, and often inlaid with mother-of-pearl, ivory, and porcelain; the floors spread with the richest Persian carpets. The sultan, however, does not marry, judging his place too high to admit any one to such an equality. From the multitude of beauties, however, he selects seven, who are called *kadunis* or favourites, while the remaining crowd are confounded under the appellation of *odalisques,* or slaves. The number seven cannot be exceeded; but when a vacancy is wanted, it can be effected by removing one of them to the old seraglio, a dignified retirement, which receives also the favourites of the prince immediately on his death. These imprisoned beauties are guarded by numerous bands of unfortunate slaves reduced to the state of eunuchs. The gates and outer apartments are guarded by white eunuchs; but black eunuchs, rendered safe by their deformity, are stationed in all the interior recesses. Many of these personages rise to great distinction, and the *kislar aga* (*fig.* 514.), their chief, is one of the leading characters in the empire, and even a sort of head of the church. In another palace are reared a great body of *ichoglans,* or pages, trained in all graceful exercises, for the purpose of personal attendance on the sultan. They are often raised to high offices of state, though in that capacity they are viewed with utter contempt by the hardy chiefs who have forced their way by merit and services. Another class of eminent characters in this court consists of the mutes. A Turkish grandee, lolling on his sofa, requires incessant attendance: his pipe, sherbet, and slippers must be at any moment handed to him or to his guests; he must therefore have some one before whom he can speak without reserve, and without fear of his secrets being made public; but many, to reach such high employments, feign themselves to be labouring under these infirmities. Dwarfs, by a taste which seems common to uncultivated minds, are also favourites; and when any individual unites the perfections of being deaf and dumb, and a dwarf, he becomes one to whom the highest value is attached.

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KISLAR AGA.

3552. *The finances of the empire* are shrouded in very deep mystery; indeed, their amount cannot be in any degree measured by that of the sums paid into the treasury. The lands held as the sole property of the sultan are let out on the tenure of military service; and thus is defrayed the whole expense of the troops, with the exception of the janissaries. By a similar assignment of land the mosques and all other public establishments are supported; and the sultana mother is, by the same arrangement, enabled to maintain the state belonging to her rank. The numerous princesses are bestowed in marriage on the pachas and other opulent individuals, who find this honour dearly purchased by the mortifications which they are domed to endure from the haughtiness of these imperial spouses. Of the direct contribution the principal is the *haratsh*, or capitation tax, imposed on all subjects of the empire who are not Mahometan. It has varied extremely; the present statutory amount is ten, six, or three piastres, according to the different gradations of supposed wealth in the contributors; but there is much that is arbitrary and oppressive in the actual levy of this impost. In the subject provinces of Moldavia and Wallachia, the haratsh is paid in one sum by the princes or vaivodes; but both from them and from the pachas his imperial majesty is pleased to accept of numerous presents on various occasions, to say nothing of those which it is at least highly prudent to make to the officers of state and the occupants of the haram. Hence it was calculated that where the tribute was only 65,000 piastres, the presents exceeded 500,000. In short, all the offices of the empire are regularly put up to sale. Forfeiture and confiscation form also an extensive source of revenue, independently of the principle by which the sovereign is held the legal heir of all who die in his service. The customs are considerable, being levied by farm, without much rigour; but the attempts to establish an excise have been met by violent discontents, and even insurrection. One most pernicious resource is that of the monopoly of grain. It is very difficult to say what sums of money actually enter the *miri*, or imperial treasury. De Tott and Cantemir make an estimate of 3,900,000*l.*, which is probably nearer the truth than that of Olivier, who makes it upwards of 6,000,000*l.*

3553. *The military system of the Turks,* formerly the terror of the greatest powers in Europe, and now despised by almost the meanest, has undergone no formal change. It is supported on a basis somewhat resembling the feudal militia, though without any thing of an hereditary character. All the lands are distributed, in portions of 300 acres and upwards, among the *zaims* and *timariots,* on condition that they bring into the field, and support at their own cost, a number of horsemen proportioned to the extent of their lots. The number of *timars* and *zaimets* are stated at 50,160; and the collective force which they ought to bring into the field at 150,000. The troops are, however, bound to keep to their standards only between the days of St. George and St. Demetrius; that is, between the middle of April and the middle of October. The above are termed the *toprakli,* or feudatory troops; the rest are the *capiculi,* or paid troops, who alone approximate to the character of a regular force. Of these last, the chief have hitherto been the *janissaries* (*fig.* 515.), who for a long period might be said to hold at their disposal the Ottoman empire; and their *aga* was one of its greatest officers (*fig.* 516.). They originated in a peculiar policy of the first sultans, who, selecting the most vigorous of the young captives, trained them up in the Mahometan religion, and in all the exercises fitting them for war. They were afterwards, however, recruited out of the Mussulman population, many of whom even solicited a nominal admission, with a view to the privileges and exemptions attached to the order. The number on the list was thus very great; but according to Mr. Thornton, the actual issue of pay, at the daily rate of threepence, implies only a force of 40,000. Recently, however, this powerful body has been annihilated by the vigorous and bloody measures of Mahmoud, the reigning sultan, who is using the utmost exertion to organise a new force similar to that maintained by the other European powers. There is also a paid force of *spahis,* or cavalry, amounting to 15,000. Of this limited amount, a great proportion is required for the body-guard of the sultan and pachas, and for the police; so that the field-armies of the Turks consist almost entirely of the *toprakli,* or feudatories, a huge tumultuary mass, resembling the armies of Europe during the feudal ages. Their order of encampment has been compared to a number of coins taken in the hand and scattered over a table; and their march resembles the career of the volcano, desolating every spot over which they pass: as they advance, the inhabitants flee to the mountains, and secrete all their most valuable effects. The Turkish soldiery make merely one vigorous push against the enemy, and if this fails they are discouraged, disperse, and return to their homes. Upon such a system, they cannot, in modern times, at all match in the field regular armies. It would be rash, however, to infer, from the poor figure they have made in all the late wars, that the Turkish empire would fall an easy prey to an invader. It has many defensive resources. The Turks have an excellent light cavalry; they skirmish well, and defend fortresses with great obstinacy; and in extremity the grand signior can summon to arms the whole mass of the population, who

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JANISSARY.

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JANISSARY AGHA.

are not slow to obey the call whenever impelled by any national motive, such as would be the invasion of the empire by an infidel army.

3554. *The rayahs, or tributary subjects of the empire,* form a class subjected to a peculiar system of policy. The propagation of the Koran by the sword is a fundamental principle of the Mahometan faith, and death inflicted on the infidel is esteemed the surest passport into paradise. To justify this slaughter, however, it is necessary that there should be resistance; and not to strike off the heads that bend, has become an established maxim. But the utmost boon which the vanquished *giaour* can hope is, that his life may be spared: his person, his property, his all, belong to the votaries of the true faith. An indiscriminate spoil was at first made; but policy afterwards dictated to the sovereign the plan of commuting these indefinite claims for the fixed tribute or capitation called *haratsh*, which, with exclusion from all offices of trust and power, formed the only legal penalties. Of course, however, in such a government, various detached acts of oppression and extortion would be committed, against which the despised and abhorred Christian would in vain protest. The Greeks had three high offices to which they might aspire; that of princes of Moldavia and Wallachia, and of *dragoman* or interpreter; but these were all in the gift of the Porte; and the intrigues by which they were to be sought served still more to degrade the Greek character. Yet, even under this imperfect protection, the nation, being left in the exclusive possession of many industrious and lucrative occupations, insensibly accumulated a degree of wealth which raised them to importance, and excited that desire of independence which has produced such striking effects.

Sect. V. *Productive Industry.*

3555. *Agriculture, in European Turkey,* is depressed at once by arbitrary exactions, and by the devastation consequent on frequent wars in many of the finest provinces; yet its productions are valuable. The grain, which grows in the plains of Roumelia, Bulgaria, and on the banks of the Danube, is considered the finest in the empire. From the same plains a great quantity of excellent butter and bad cheese is obtained, the latter being made of skimmed milk. The steep sides and deep valleys of Hæmus and Rhodope are covered with vast flocks of sheep, affording the most delicate mutton, but a coarse kind of wool, which, however, from its plenty, forms a large article of export. Buffaloes are chiefly employed in agriculture; and, though their flesh is unpalatable, their skins, being thick and strong, are of considerable value. Hare skins, also, are so abundant as to form an article of importance in commerce. Bees innumerable are reared, and yield a profusion of honey and wax. A fine white silk is produced in Bulgaria and the plain of Adrianople, but not equal to that of Bursa. Cotton flourishes in the plains south of Hæmus, though nowhere so copiously as in Macedonia and Thessaly.

3556. *Manufactures* are still in a less flourishing state; yet the very fine one of Turkey leather has been carried to the highest perfection at Gallipoli, and some other places along the Dardanelles, as well as in several cities of Asia Minor. Olivier vainly enquired into the secret of its preparation, which is still hid from Europeans; he could not even ascertain whether it lay in the excellence of the leather, or in the mode of dressing and dyeing. Adrianople fabricates a fine cotton thread, similar to that of Larissa, by which it is now surpassed. Mr. Thornton praises the printed muslins of Constantinople. Turkey carpets belong to Asia Minor, where manufacturing industry is generally more advanced than in European Turkey.

3557. *The commerce* of this part of the empire, excluding Greece, is almost confined to Constantinople. Perhaps no city was ever better situated for trade, either by land or sea; but the proud indolence of the Turks, altogether averse from such occupation, reduced it to a secondary rank; it is therefore confined to the tributary races, and to Frank merchants at Constantinople, acting under great difficulty and restraint. From Constantinople would be exported a good deal of grain, were it not for the impolitic prohibition, which does not however prevent a considerable contraband trade. Other productions of European and Asiatic Turkey, wool, buffalo hides, skins, goats' hair, Turkey leather, wax, drugs, silk, cotton, and copper, find their chief vent through the capital. The pride of the Orientals, and their peculiar habits, render them little dependent on imports from the West. Nevertheless, the European merchants contrive to introduce some cottons and sugar, also coffee from the West Indies, under the disguise of Mocha, together with glass, porcelain, and other brilliant fabrics for the ornament of the haram. From the Black Sea and the Caspian are brought slaves in great numbers, also a vast quantity of salt-fish and caviare, which are required for the Greek fasts. Before the revolutionary war, the intercourse with the West was chiefly maintained by Marseilles and Leghorn; but when their flags could not appear on the Mediterranean, the mercantile marine of the Greeks carried on all the traffic of the Levant. In the present state of confusion, it is difficult to say either what are, or what are likely to be, the channels of this commerce.

3558. *The roads,* as usual in absolute monarchies, are supported by the government, the pachas having assignments upon the national domains for that purpose. The grand military routes are thus maintained in tolerable order; but the by-paths are greatly neglected. We are not aware that canals have ever entered into the plans of Turkish improvement.

Sect. VI. *Civil and Social State.*

3559. *The national character and aspect* of the Turk is thoroughly Oriental, and in every point contrary to that of the Western European nations. All the external forms of life are dissimilar, and even opposite. The men, instead of our dresses fitted tight to the body, wear long flowing robes, which conceal the limbs. Instead of standing or sitting on chairs, they remain stretched on sofas in luxurious indolence; considering it madness to stir or walk, unless for special purposes or business. They sit cross-legged, especially at meals. On entering a house, they take off, not their hat, but their shoes; in eating, they use the fingers only, without knife or fork; they sleep not on beds, but on couches on the ground. The females, excluded from all society, remain shut up in the haram, and must not be seen or named by any person of the opposite sex. The grave, secluded, and serious cast, impressed by a despotic government and by the Mahometan law, is more decided in the Turk than in the Arab or Persian: he is "a solemn solitary being." The abject submission to a master, which is esteemed a religious duty, is combined with the pride of a conquering people, and with the consciousness of being surrounded by subject races on whom he has set his foot. The deportment of the Turk to the rayah is that of the Teutonic baron towards his humblest domestic vassal. Yet, though this fancied superiority prompts to acts of tyranny and injustice to this numerous class, it seems to inspire a sense of personal dignity, which raises him above the system of falsehood and deceit which is, as it were, rooted elsewhere throughout the East. Compared with other Orientals, the Turk is honest, and his word may be trusted. From this combination of the slave and the aristocrat in circumstances of a political nature, of austerity and licentiousness in religion, the character of the Turks exhibits many striking contrasts. "We find them," says Thornton, "brave and pusillanimous; good and ferocious; firm and weak; active and indolent; passing from austere devotion to disgusting obscenity; from moral severity to gross sensuality; fastidiously delicate and coarsely voluptuous; seated on a celestial bed and preying on garbage. The great are alternately haughty and humble; arrogant and cringing; liberal and sordid. Though the Turk be naturally sedate and placid, his rage, when once roused, is furious and ungovernable, like that of a brute." Hospitality and giving of alms are Oriental virtues. Every grandee keeps a sort of open table; and the fragments of the feast are distributed to the poor at the door. It is rare to hinder any one from plucking herbs or fruit in a garden or orchard. This humanity is even injudiciously extended to the lower creation, which enjoy at Constantinople a sort of paradise. The dogs, though excluded as unclean from the houses and mosques, are allowed to multiply in the streets till they become a perfect nuisance; the doves feed at liberty on the grain in the harbour, which echoes with the crowded clang of unmolested sea-birds.

3560. *The religion of Mahomet* is considered to be preserved throughout this empire in a state of peculiar and exclusive purity. The Turk is imbued from his earliest infancy with the loftiest conceptions of his own spiritual state, and with a mingled hatred and contempt of every other. This feeling is entertained, not only towards the "infidel," but still more deeply towards the Persian *Schiite*, whose tenets respecting the person of Ali are so detested, that, according to the soundest doctors, it as meritorious to kill one Schiite as twenty Christians. The chief observances of their religion consists in the *namaz*, or prayer, repeated five times a day, preceded by ablution, and accompanied by prostrations; and in the observance of the fast of *Ramadan*, when during a whole month neither solid food nor liquid is tasted before sunset. The mosques have certain officers attached to them; as the *muezzin*, who, from the top of the highest minaret, calls the neighbourhood to prayers; the *sheiks* and *kialibs*, who preach and read; the *imam*, who has the general care of the mosque, and, in the villages, performs alone all the other sacred duties. These functionaries are not distinguished from the rest of the citizens either by habits or deportment; and it is remarkable that there is not an office of religion which may not be regularly performed without a priest, either by the magistrate or by private individuals. The sultan, as grand imam, or head of the church, devolves the duties of this character on inferior officers; and most especially on the *kislar aga*, or chief of the black ennuchs, who, by a singular arrangement, is entrusted with the superintendence of all the mosques. It has been said, that sound belief and the strict observance of the above ceremonies are considered as securing paradise, without the necessity of repentance or of good works. Busbequius even counts it as the peculiar felicity of a Mussulman to believe "that nothing can be wrong which he wishes to do, and nothing right which he does not wish." But this seems to be going too far. We find the disuse of wine, the giving of alms, and the founding of caravanseras, practised on a great scale, from religious motives. The first of these is a good deal evaded; yet religion has certainly effected the general substitution of coffee, opium, and tobacco, though even the last is not considered rigidly orthodox. Predestination is celebrated as a Mahometan tenet, and is indeed ever in their mouth. "It is written," is the resigned comment with which they meet the most severe calamities, and even death itself. Yet, as they take the same anxious and even inordinate care to avoid these evils as others, the dogma perhaps is rather in their mouths than in their hearts; and the formidable valour which, in the career of their victories, was attributed to it, no longer stands in need of such a solution. There are institutions which, though not ordained by Mahomet, have become essential branches of the present system. Such are the *dervishes*, a body who seek, by fantastic displays of self-denial, and contempt of the outward decencies of life, to acquire the reputation of superior sanctity. The most eminent are the howling dervishes, who scream out the name of God till they foam at the mouth and fall to the ground quite exhausted. In one sect the zealots founded their fame upon getting all their teeth drawn out; but it has not made much progress. The belief in charms, sorcery, magic, and the evil eye, was condemned by the precepts of Mahomet; but as this censure was contrary to the spirit of an ignorant and superstitious people, it has not taken effect, and these particulars continue to form an essential part of the popular creed in Mahometan countries.

3561. *The learning of the Turks* may be comprised within a very limited compass. The torrent of their barbarous invasion buried under it not only the splendid though corrupted remains of Greek science, but that of a secondary description which was attained by the Arabs under the caliphate. Yet some of the early sultans were patrons of learning; as, indeed, most conquerors have been. Among these was Orchan, who founded at Bursa a highly celebrated academy; and Mahomet II., whom Western Europe regards as a ferocious tyrant, but who in the East is almost as celebrated for his learning and love of learning as for his victories. It cannot be said that even now learning is left absolutely without encouragement. *Madresses* richly endowed are attached to every mosque, and in them a long and laborious course of study is provided for those who aspire to form part of the ulema. Ten degrees are conferred by these madresses, and the student is often forty years old before he can attain the highest, that of Suleymanieh. The misfortune is, that the studies there pursued have no tendency to enlarge the mind, or to adapt it for the duties of active life. They consist of the rhetoric and logic of the dark ages; of discussions respecting the comparative merits of Abubekir and Omar; and of knotty theological questions, such as, whether the feet, at rising, should be washed with water, or only be rubbed with the bare hand. The Turks are ignorant of the most common instruments in natural philosophy, the telescope, the microscope, the electrical machine, which, if presented to them, are merely shown as objects of childish curiosity. Persons of the highest rank scarcely know any thing of countries beyond the boundaries of the empire. Astrology, so long exploded from the list of European sciences, continues in Turkey to influence and direct the public councils. No expedition sails from Constantinople, no foundation of a building is laid, nor public officer installed, until the *munedjem bachi*, or chief of the astrologers, has named the fortunate day. With all their pride, they are obliged to have recourse to Christian physicians, whose skill they ascribe to necromancy, and who they therefore expect will predict at once, in the most precise manner, the issue of their complaints. All the arts have degenerated into mechanical trades. Neither architecture, painting, nor music is practised with any degree of taste or genius.

3562. *The condition of the female sex* in Turkey is particularly foreign to our manners and ideas. From the moment of marriage they are immured in the haram, excluded from the view of the public and of all of the opposite sex, their nearest relations being alone admitted on occasions of peculiar ceremony. This circumscribed existence, and the necessity of sharing with a multitude of rivals the favour of a husband, or rather master, appear intolerable to European ideas. It is not, however, without compensations, though it seems a great extravagance in Lady M. W. Montagu to allege, respecting Turkish females, that they are the only free women on earth. They are allowed to visit and receive visits, and to frequent the baths; ablution being even obligatory in a religious view; and there they meet with numbers of their own sex. Europeans have not failed to surmise that opportunities are thus taken to elude the vigilance of their guardians, and that the bars of the haram are of little avail. Other well-informed writers doubt if intrigues, which can be carried on only at the hazard of life, and with numerous accomplices, can be very frequent. The advances, in such cases, are always made by the lady, who likewise arranges the mode of meeting, provided the gentleman be willing to risk his head in the adventure. It can admit of less doubt that, by the channels already named, all the news of the city finds its way into the haram, and that gossip is carried on there as busily as in any European coterie. Here also favours are solicited through the channel of female relations, and the haram becomes often the centre of intrigues by which the empire is shaken. Peculiar veneration is attached in Turkey to the parental character, and particularly to that of mother. Even in the fall of a great man, his haram is always respected, and the property belonging to his wives is left untouched, so that they sometimes become his support. Marriage in Turkey has nothing sacred; it is merely a civil contract, fixing the amount of the dower, and perhaps limiting the husband as to the number of his other wives. If the iman be present along with the cadi, he is only a legal witness. Those, with respect to whom there is no such contract, rank as concubines, who are chiefly purchased slaves. In Constantinople there is a bazaar; a vast square building, with an interior court, " where man does not blush to expose to sale the most lovely and interesting part of the creation." Infidels are excluded, on account of the dreaded influence of their evil eye; yet French travellers, who have caught some stolen glances, report that the captives were seen seated upon mats, with their legs crossed, in groupes of fifteen. Pouqueville did not observe in these fair sufferers any sense of their dismal situation; they were chatting with the utmost volubility, laughing and singing: but Olivier, in the group which he saw, observed one who was overwhelmed with the deepest affliction. The children of concubines are considered as legitimate. Polygamy is permitted by law, and carried sometimes to a vast extent, but only by the rich. The poor, and even others who study domestic quiet, find one wife quite sufficient. Divorce is permitted, but is not common. Disagreement of temper does not bear so hard on the husband, from the separate state in which he lives; adultery is avenged by the poniard; so that sterility, reckoned so deadly a curse throughout the East, is the prevailing motive for divorce.

3563. *The rayahs, or subject infidels*, who form so large a part of the population of Turkey, are chiefly Greeks, Jews, and Armenians. The Greeks have been largely noticed, in treating of their native district. The Jews, exposed to every insult, are more degraded, both as to character and state, than in Europe. They carry on banking; usury, at enormous rates; and various small trades, despised by others, by which a penny can be turned; and are alleged to have few scruples on any thing by which their gains may be augmented. The Armenians carry on almost all the inland trade of the empire, particularly in Asia; and are an industrious, frugal, sober, and not very dishonest race. According to Pouqueville, the Turk, when he deigns to trade, sells with the air of conferring a favour; the Greek, artful and active, is eloquent in setting forth his commodities, appealing to heaven for their value and his own probity; the Armenian establishes his speculations with coolness and reflection, his eye always fixed on the future; while the Jew buys, sells, offers his agency in business, and is all activity, all attention; nor can the uniform contempt and aversion with which he is treated ever repel his assiduities.

3564. *The amusements of the Turk* are chiefly domestic. His delight is to give himself up to continued and unvaried reverie; to glide down the stream of time without thought or anxiety; to retire under the shade of trees, there to muse without any fixed object, and to inhale through the pipe a gently inebriating vapour. Stretched in luxurious ease, he takes pleasure, however, in listening to the narrative of the professed story-teller, or in viewing the dances of Greek youths or Turkish *balladières*, at which, though by no means remarkable for decorum, he even allows the presence of his wives. The ball, the theatre, the crowded party, all that in Europe can be accounted gaiety, are utterly foreign to Turkish manners.

3565. *The dress* of the Turks consists of long, loose robes, which do not encumber their stately walk, though they would be incompatible with running or rapid motion. The absence of all those bandages and ligatures by which Europeans are shackled must be highly favourable to the developement of form, and even to health. The turban is the most characteristic feature of Eastern dress; and its varied form and ornaments not only discriminate the rich from the poor, but afford a badge to the various professions, to each of which a costume is appointed by government, and strictly enforced.

3566. *The food of the Turks* is not very luxurious. It consists chiefly of stews and hashes, particularly that favourite one called *pilau*, with salads, olives, and sweetmeats. In wine, though prohibited by their religion, some sultans and great men have deeply indulged; but in general its use is confined to the lowest ranks. Coffee and sherbet are handed about on all occasions. Opium, as a substitute for wine, is taken to excess, and often fatally; those addicted to it usually fall victims before the age of forty.

Sect. VII. *Local Geography.*

3567. *Turkey in Europe*, when we have excluded Greece, may be divided into Roumelia, or that great plain, south of Hæmus and Rhodope, known to the ancients as Thrace; and into Bulgaria, the northern plain between that chain and the Danube. The rest of the territory consists of tributary Christian states, which are ruled by Christian princes nominated by the Porte, and vacillate between independence, devastation, and subjection.

3568. *Roumelia* has been made to include all continental Greece to the frontier of Albania; but, in the present restricted sense it forms a large plain, fertile in grain, fruits, silk, and cotton; while numerous flocks and herds cover the hanging sides of the mountains. It forms the central and metropolitan province of the empire, almost exclusively held by a Turkish population, and including the two great capitals Constantinople and Adrianople.

3569. *Constantinople* (*fig.* 517.) occupies perhaps the most commanding and important site of any city in the world. Mistress of the long chain of straits connecting the two great seas which separate Europe from Asia, it forms the link between those continents. Hence, even while Thrace was steeped in barbarism, Byzantium flourished as a great commercial republic, until the period when Constantine raised it to higher importance by giving to it his name, and making it the capital of his empire. Even after the separation of the West, it continued the metropolis of the East, and rose in importance during the encroachments on its territory by the invading tribes. As the world was overwhelmed with the prodigious inundation of the barbarians, Constantinople became the refuge of all that remained of ancient science and civilisation. Reduced by Mahomet II., it became the capital of Moslem ignorance and superstition; yet it still continues one of the greatest cities in Europe, ranking next to London and Paris. The population, in the absence of any kind of census, can be little more than conjectured. Mr. Eton gives the lowest estimate, which is 300,000. It is argued that Constantinople stands on somewhat less ground than Paris, that the houses are not so high, and there are larger gardens; but it must be remembered that the lower classes in the East pack together in a manner of which Europeans have scarcely an idea. Olivier, from the quantity of corn consumed, infers that the inhabitants exceed half a million; and we should not be surprised if strict investigation gave even a greater number; though it seems wonderful that Mr. Thornton should have mentioned a million of rayahs as a possible amount. Constantinople, unlike other European capitals, derives little support from the residence of any great landed proprietors or capitalists, for whom indeed it has few attractions. It rests almost entirely upon the support of those employed by the government, or soliciting from it favours and offices; and Olivier calculates that 8,000,000*l.* sterling are poured in from the provinces, which affords certainly a very ample income. We must add, however, the commercial class, and the remains of the Greek aristocracy, who are established in a quarter called the Fanar, and thence denominated Fanariots.

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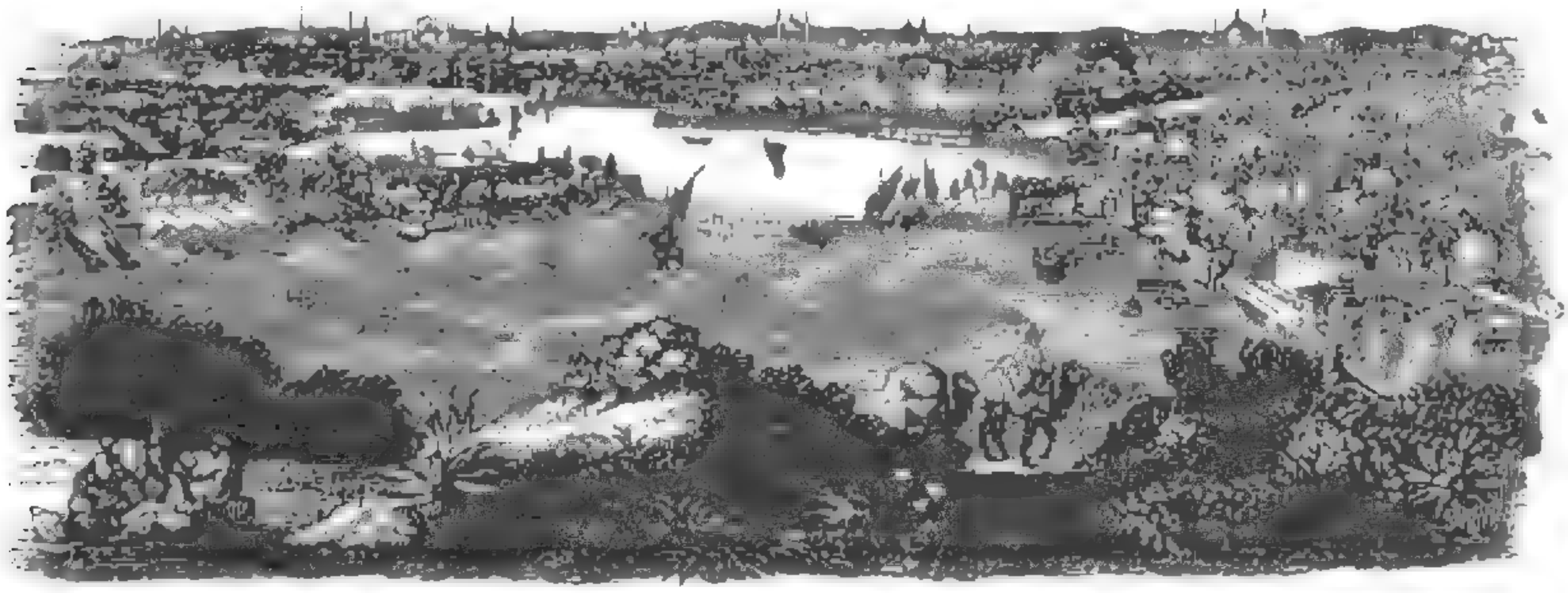

CONSTANTINOPLE.

3570. *The situation of Constantinople* is as beautiful and superb as it is commodious. Seated on the Bosphorus, at the point where it communicates with the Propontis or Sea of Marmora, it is connected both with the Mediterranean and the Black Sea by a succession of straits, easily defensible, yet navigable for the largest vessels. The port is spacious and admirable. On the side of Europe and on that of Asia rich plains spread before the eye, bounded by the snowy tops of Hæmus and Olympus. The city itself, rising on seven hills, along the shore of the Bosphorus, embosomed in groves, from amid which numerous gilded domes ascend to a lofty height, presents a most magnificent spectacle. But the moment the interior is entered, all the magic scene disappears. The streets are narrow, winding, ill paved, and crowded; the houses low and gloomy; and the hills, which appeared majestic in the view, causing steep ascents and descents, prove excessively inconvenient. But the most fatal circumstance in the structure of Constantinople is, that the houses of rich and poor are alike entirely composed of wood, while chimneys are not generally used, but their place supplied by vessels of brass or earth put under the feet. These circumstances, joined to the usual improvidence of the Mahometans, cause most tremendous conflagrations. It is even believed, with or without reason, that the Turkish public employ the setting fire to the city as a mode of communicating their opinion on the conduct of their rulers. The scene is terrible, from the extent of the blaze, the deep rolling of the drum from the top of the minarets, and the crowds that assemble, among whom even the grand signior himself is expected to be present. It is reckoned that Constantinople rises entire from its ashes in the course of every fifteen years; but no advantage is ever taken of the circumstance to improve its aspect. The fallen streets are immediately reconstructed with all their imperfections, and the houses rebuilt of the same fragile materials. This city contains, however, some structures that are very magnificent. Among them stands foremost the mosque of St. Sophia, accounted the finest in the world, first built as a church by Justinian, and converted by the conquering Turks to its present use. The mosques of Sultan Achmet and of Suleyman (*fig.* 518.) are equally vast and splendid, but not marked by the same classic taste. The numerous minarets are in general airy and elegant, and add greatly to the beauty of the city.

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MOSQUES OF SULTANS ACHMET AND SULEYMAN.

3571. *Pera and Scutari*, two appendages to Constantinople, in any other vicinity would rank as cities. Pera is the Frank quarter, where reside the ambassadors and agents of all the European courts, and under their protection all Christians whose trade does not fix them at the port. It has thus become very populous, and even crowded; so that houses are obtained with difficulty. Scutari stands on the Asiatic side, in a beautiful and cultivated plain, and presents a picturesque aspect, from the mixture of trees and minarets. It carries on a very considerable caravan trade with the interior of Asia. A great forest near it contains the most splendid cemetery of the empire, as all the grandees of Constantinople seek to deposit their remains in Asia, which they consider as a Holy Land, in the possession of true believers, while Europe is almost entirely the prey of the "infidel." In this vicinity is situated the castle of the Seven Towers (*fig.* 519.) used by government as a state prison.

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CASTLE OF THE SEVEN TOWERS.

3572. *Romania, or Roumelia*, is sometimes used in a very extensive sense, as comprehending all European Turkey except the provinces on the Danube; but more strictly it is applied to the plain on the site of ancient Thrace, comprehended between the chains of Hæmus, Rhodope, and the sea. In this fruitful but ill-cultivated plain, Adrianople, the city of Adrian, rears its lofty walls and towers. It was the European capital of the Turkish empire before the fall of Constantinople, and it is still a large city, five miles in circumference, and containing about 100,000 inhabitants. There are several ancient palaces, and a splendid mosque erected by Sultan Selim out of the ruins of Famagosta in Cyprus; but the streets, according to Dr. Walsh, are narrow and crooked, the houses ill built of brick and mud. The ancient strength of its fortifications has gone into decay; so that General Diebitsch, in the campaign of 1829, entered it without resistance. Kirklissa is a large old dirty town, of 4000 houses, whose Turkish inhabitants are imbued with all the pride and prejudice of their nation; but there are a considerable number of Jewish and Greek families, who practise some industry, and send large quantities of butter and cheese to the markets of Constantinople. Bourgas, on a bay of the Black Sea, near the foot of the Balkan, has a manufactory of pottery, and carries on a considerable trade. Gallipoli, on the Strait of the Dardanelles, is also a large and commercial place, with 17,000 inhabitants.

3573. *Bulgaria* forms a long plain, between Hæmus on the south and the Danube on the north. Some portions are rugged, others marshy; but upon the whole it possesses a large share of beauty and fertility. The Bulgarians, a race originally Tartar, now profess the Greek religion; and are quiet, industrious, and hospitable. Sophia, the capital, at the foot of the mountains, is a large town, with 50,000 inhabitants, and carries on a great inland trade between Salonica and the interior countries of eastern Europe. It is also the usual rendezvous of the Turkish armies taking the field against the Russians or Austrians. Schumla, near the entrance of another of the great passes of the Balkan, forms rather a chain of rudely entrenched positions than a regular fortress; yet such is the obstinacy with which the Turks defend such situations, that this city has repeatedly baffled the utmost efforts of the Russian army, which in 1828 was obliged to retreat with signal disaster. Even in Diebitsch's victorious campaign of 1829, he was unable to reduce the place, but passed it, and, crossing the Balkan to Adrianople, intimidated the Porte into a peace. Schumla is a large city, with numerous mosques and minarets glittering with burnished tin plates. It is distinguished by numerous workmen in tin and brass. Ternovo, the ancient capital of the Bulgarian kings, commands another of the Balkan passes. Varna, a port on the Black Sea, is also a leading military station, and was the theatre of a signal victory gained by Amurath the Great over the Hungarian troops.

3574. *A chain of fortresses on the Danube*, large, and strongly fortified, formed long the main bulwarks of the Turkish empire. The chief are, Widin, the residence of a pacha; Giurgevo, Nicopoli, Rutshuk, Silistria. They are all of nearly similar character, extensive and populous, uniting with their importance as military stations that derived from an extensive trade along the Danube. Rutshuk is the largest, containing 7000 houses, inhabited by Greeks, Jews, and Armenians, who carry on an active trade. The country round is a dead flat as far as the eye can reach. Giurgevo is considered by Mr. Walsh the most complete fortress in the empire. It is situated amid dismal swamps; but in the vicinity are mines of rock salt, purer than that of Cheshire, and white as snow. Silistria, in the last war, distinguished itself by a long and obstinate defence.

3575. *The principalities of Moldavia and Wallachia*, on the south of the Danube, form an extensive region, about 360 miles in length and 150 in breadth, presenting a very nearly similar aspect and character. They compose a vast plain, reaching from the river to the southern and eastern boundaries of the Carpathian mountains. The districts adjoining to these eminences are varied and picturesque, but towards the Danube become flat and marshy. The plains, particularly in Moldavia, are covered with almost innumerable stagnant pools, which communicate to the air pestilential qualities. The climate is subject to singular variations: in summer extremely hot; while in winter, under the latitude of the south of France, the Danube is for six weeks of the year so completely frozen as to bear the heaviest carriages. The soil, where not actually inundated, is exceedingly productive. Wheat is raised of excellent quality; but the Turks have imposed restrictions on the disposal of it, and the occupation of pasturage is preferred. The peasantry (*fig.* 520.) are a laborious, oppressed race, of simple habits, and living in rude abodes. They are of low stature, weak, with light silky hair, and mostly dressed in sheepskins. The Wallachians form a considerable part of the population of Transylvania and of all the neighbouring countries. These two countries were once governed by native princes, and have not finally renounced all pretensions to liberty; yet the mixture of rude independence with debasing despotism does not cause the yoke to press at all lighter on the body of the people. The boyars exercise over them the same rude tyranny as the European nobles during the feudal ages; while the prince of Moldavia and the hospodar of Wallachia, though they must belong to the Greek nation, do not, on that account, exercise any milder yoke over their countrymen. Appointed by the Porte from favour or purchase, they employ their arbitrary sway solely to practise the most enormous exactions, and amass immense wealth during their short and precarious rule. The body of the people are of the Greek nation and faith; and in these countries the Greeks first raised the standard of independence: they experienced for some time a gleam of success; but their efforts were speedily and completely crushed. The cities in this region are large and rude. Jassy, the capital of Moldavia, is situated in the interior of the country, amid a marshy district, which renders it unhealthy. Galacz, at the junction of the Danube and the Sigeth, carries on most of the trade, and might attain considerable importance if the navigation of the former river were made free. Bucharest, the capital of Wallachia, is a much larger city, containing about 80,000 souls. It is built upon a dismal swamp, to render the streets passable over which, they are covered with boards; but, in the intervals, water springs up from dirty kennels beneath. Here, according to Mr. Walsh, European and Oriental costumes and manners unite in nearly equal proportions. The people are clothed half in hats and shoes, half in *calpacs* and pelisses; the carriages are driven as often by buffaloes as by horses. The nobles live in extravagance and dissipation, while the people are plunged in poverty.

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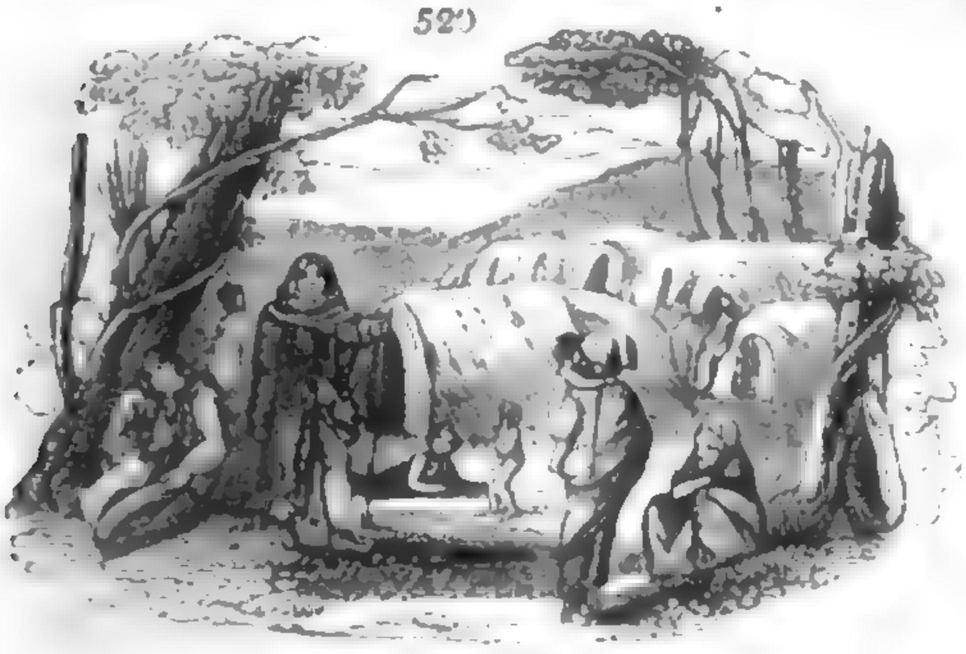


WALLACHIAN PEASANTRY.

3576. *Servia and Bosnia* are two countries, of smaller extent, reaching westward from Bulgaria, and, like it, situated between the mountains and the Danube. They do not, however, present any similarly vast plain, but are penetrated by lofty ranges, through which flow numerous rivers, of which the most important are, in Servia, the Morava, in Bosnia the Drino and Bosna. The territories consist thus in a great measure of a succession of fertile valleys, in which wheat, maize, and other valuable grains are reared; and though the people are reproached with want of agricultural industry, Bosnia at least produces grain somewhat more than enough for its own supply. Cattle, however, is the chief product in both; and they possess some valuable breeds. The hills are covered with extensive forests, and abound in fruit trees, and in valuable aromatic herbs and plants. Neither the Servians nor Bosnians are under entire subjection to the Porte. The former are chiefly of the Greek church, and under Czerni Georges made a most gallant resistance to the Turkish power, and extorted extensive privileges. The Servians, though without much literature, have a native poetry, which has attracted admiration. The Bosnians, also, though Mahometans, possess many feudal rights, having thirty-six hereditary captains, and even deputies from the towns. Their language is a dialect of the Servian. Polygamy is seldom practised, and their females appear in public unveiled.

3577. *Several large cities* are found in these provinces. The capital of Servia is Belgrade, a fortress of extraordinary strength, long considered the key of Hungary, and disputed with the utmost obstinacy between the Austrians and Turks. It is now equally distinguished as a seat of inland commerce, being the great entrepôt between Turkey and Germany, and is supposed to contain about 30,000 inhabitants. Bosna Serai, capital of Bosnia, is still larger, having been estimated to contain 60,000 inhabitants. It trafficks in arms and jewellery, and receives numerous caravans from Constantinople. Such is the spirit of independence here, that the Turkish governor is allowed to reside in the city only three days of the year. His fixed residence is at Traunick. Jaicza, the ancient capital of Bosnia, is now in decay.

3578. *The interior of Dalmatia*, called commonly *Herzgovinia*, belongs to the Turks, though the Austrians have succeeded Venice in the possession of the maritime districts. This territory is very rugged, and difficult of access; yet some parts are productive in wine and olives. Mostar, the capital, with 12,000 inhabitants, is celebrated for the manufacture of swords. Montenegro, a district to the south, is covered by a still bolder range of mountains, within which the inhabitants, a peculiar race, have maintained their independence against their most powerful neighbours. The Montenegrins, about 60,000 in number, are governed by a national council; and, as is usual with the inhabitants of mountainous districts, they are brave, hospitable, vindictive, and superstitious.

3579. *Albania* is a more remarkable and important country. It extends about 200 miles along the Gulf of Venice and the Mediterranean, and has an interior breadth varying from 30 to 100 miles. It is entirely rugged and mountainous, diversified by numerous streams and lakes, and of an aspect extremely picturesque. The inhabitants, a race of bold mountaineers, have distinguished themselves by their valour from the earliest ages. This was the domain of Pyrrhus, whose victories in Italy made him so formidable to Rome. In the decline of the Greek empire, Albania rose, under its present name, to the character of an independent kingdom. When attacked by the Turks, it made a most gallant resistance; and the exploits of Scanderbeg, its hero, might adorn the pages of romance. Even at the beginning of the present century, Ali Pacha, a native of the country, erected a power almost completely independent of the Porte, extending over several of the surrounding countries. At length he was overpowered, betrayed, his head cut off, and suspended from the gate of the seraglio at Constantinople. The Turks thus re-established their dominion, and renewed the division into the four pachalics; those of Scutari, Ochrida, Vallona, and Butrinto.

3580. *The inhabitants of Albania* are estimated at 1,200,000; and though these include a considerable number of Turks and Greeks, the basis consists of a peculiar native race, differing completely from all others in the empire. Their conversion to the Mahometan creed has been very imperfect: the males of a family go usually to the mosque, while the females attend church, and no discord arises out of this difference; so that the Turks regard them as little better than infidels. The Albanian is of middle stature, with an oval visage, and high cheekbones; bearing an erect and majestic air. He piques himself on a frank and open demeanour, holding in contempt the art and dissimulation of the Greek. He has nothing, too, of the inert solemnity of the Turk; is gay and active, yet a stranger to the habits of regular industry. He walks constantly armed; his delight is in combat, and even in rapine. The mountainous tracts are infested with numerous bands of robbers, which most of the Albanians join, for at least some part of their lives, without the least shame: it is common for one to speak of the time when he was a robber. They seek military employment also in the service of the sultan, and of the different pachas, particularly that of Egypt. Although they form only a tumultuary assemblage of men, with scarcely any subordination or regular distribution into corps, yet they are so individually active and intrepid, that they have rendered themselves formidable even to highly disciplined troops: they compose the only infantry in the Turkish armies that is at all effective.

3581. *Joannina*, which Ali made the capital, has a very picturesque situation on a lake, surrounded by lofty mountains, and is supposed to contain a population of 35,000. The houses are irregularly built, intermingled with gardens and trees. A great proportion of the inhabitants are Greek. Arta, on a gulf of the same name, is the chief theatre of trade. Scutari, or Scodra, the capital of Upper Albania, is situated in a rich plain; has a population of about 16,000; and carries on some considerable manufactures of cloth. Its pacha is now the most considerable potentate in Albania.

BOOK II.

ASIA.

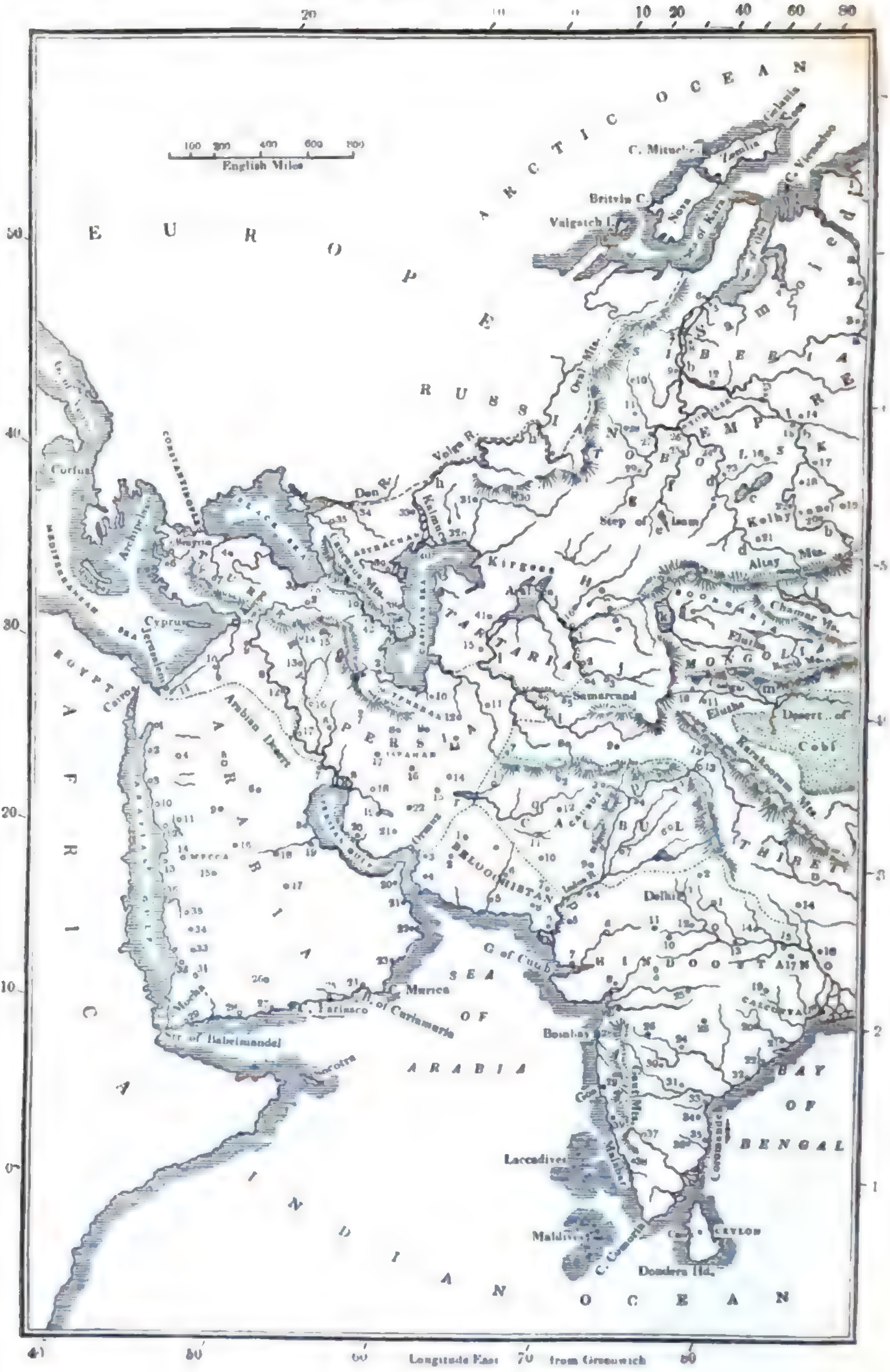
Chap. I.

GENERAL SURVEY OF ASIA.

3582. *Asia is an immense continent*, the largest in the ancient world; and, perhaps, nearly equal to Europe and Africa united. It is surrounded by sea through much the greater part of its outline, which, though broken by large gulfs and peninsulas, presents generally a huge unbroken mass, formed into a kind of irregular square. Its most northerly point is Cape Ceverovostochnoi, on the frozen confines of Siberia, in latitude about 77° N.; its most southerly is the terminating point of the Malayan peninsula, in about 2° N. To the east it terminates in East Cape, about longitude 170° W. from London; to the west in Cape Baba, the most westerly point of Asia Minor, in 26° E. long. On a general estimate, and omitting the most prominent points, we may state Asia at 6000 miles in length, and 4000 in breadth; which, supposing a regular figure, would give 24,000,000 square miles; but, in consideration of the many irregularities, a considerable deduction must be made.

Sect. I. *General Outline and Aspect.*

3583. *The boundaries of Asia* are chiefly formed by the great oceans. On the north it has the Arctic or Frozen Ocean, which, for a great portion of the year, presents an unvaried expanse of ice and snow. To the east and south it faces the great Pacific, which separates it from America by almost half the breadth of the globe. On the south, however, this ocean is enclosed by the Oriental Islands, so as to form a gulf of vast dimensions, called the Indian Ocean. The western limit alone touches on the other continents, and constitutes a very varied line of land and sea. From the north, opposite to Nova Zembla, a chain of mountains, called the Urals, breaks the uniformity of the great northern steppes. From the termination of that chain to the river Don the line is somewhat vague; but thence, that river, the Black Sea, the straits connecting it with the Mediterranean, and the Mediterranean itself, form a distinct boundary. Asia is joineo to Africa by the isthmus of Suez, and separated from it by the long canal of the Red Sea. The immense expanse of its territory presents every possible variety of site and climate, from the dreary confines of the polar world to the heart of the tropical regions. Every thing in Asia is on a vast scale; its mountains, its table-lands, its plains, its deserts. The grandest feature, and one which makes a complete section of the continent, is a chain of mountains, which, at various heights, and under various names, but with very little, if any, interruption, crosses Asia from the Mediterranean to the Eastern Sea. Taurus, Caucasus, and the Himalayah are the best known portions of this chain. On one side it has southern Asia, the finest and most extensive plain in the world, covered with the richest tropical products, and watered by magnificent rivers proceeding from this great storehouse, and filled with populous nations and great empires. On the other side, this chain serves as a bulwark to the wide table-land of Thibet, which, though under the latitude of the south of Europe, has many of the chracteristics of a northern region. To the north, the recent observations of Humboldt exhibit three parallel chains; the Kienlun or Mooz Tagh, the Thianchan or Celestial Mountains, and the Altaïan. These also support table-lands; but not, it appears, so very elevated as has hitherto been supposed. They are not believed by that traveller generally to exceed 4000 or 5000 feet high, and in many places enjoy a mild and temperate climate, yielding not only grain, but wine and silk. Elsewhere they are covered with rich pastures, and tenanted by numerous wandering races, at once pastoral and warlike, whose victorious bands have often over-run and subjugated the empires of the south. The Altaïan chain separates Middle Asia from Siberia; a long range of the bleakest land on the face of the earth. Some of the southern districts have been found by the Russians capable of supporting numerous herds of cattle; but the rest is abandoned to wild animals, not generally of a ferocious description, but by the beneficence of nature covered with rich and precious furs, which afford a grand object for hunting and trade.


ARCTIC OCEAN
100 200 400 600 800
English Miles
C. Mitusch
Nova Zemlia
Britvin C.
Vaigatch I.
Sea of Kara
C. Vermelno
EUROPE
RUSSIA
SIBERIA
EMPIRE
Samoied
Oural Mts.
Volga R.
Don R.
Corfu
Archipelago
CONSTANTINOPLE
BLACK SEA
Caucasus Mts.
ASTRACHAN
Kalmucs
CASPIAN SEA
MEDITERRANEAN SEA
Cyprus
Jerusalem
EGYPT
Cairo
TURKEY
Kirguse
TARTARIA
Step of Ishim
Kolhy
Altay Mts.
SOONGARIA
Chamar Mts.
MONGOLIA
Eluths
Desert of Cobi
Karakorum Mts.
Samarcand
PERSIA
ISPAHAN
Arabian Desert
ARABIA
MECCA
ARABIAN GULF
PERSIAN GULF
Ormus
BELOOCHISTAN
CABUL
THIBET
Delhi
HINDOOSTAN
CALCUTTA
G. of Cutch
C. Murica
Fartasco
G. of Curiamuria
Mocha
St. of Babelmandel
Socotra
SEA OF ARABIA
Bombay
Goa
Gaut Mts.
Malabar
Coromandel
BAY OF BENGAL
Laccadives
Maldives
C. Comorin
CEYLON
Dondera Hd.
AFRICA
INDIAN OCEAN
Longitude East from Greenwich
40 50 60 70 80
50 40 30 20 10 0

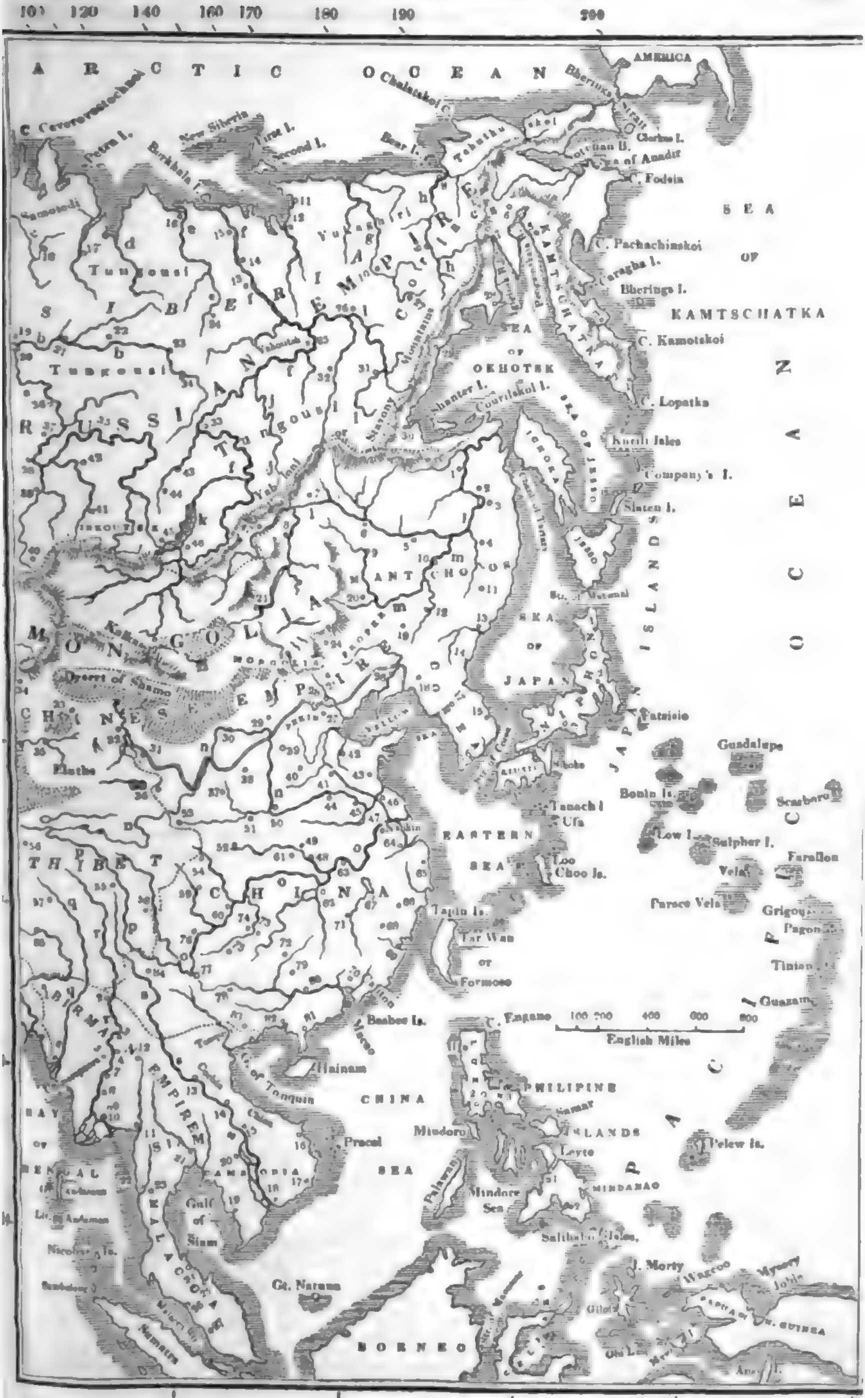


Fig. 522. MAP OF ASIA — EAST PART.

3584. *One grand feature of Middle Asia consists in large lakes or inland seas*, salt like the ocean, receiving considerable rivers, and having no outlet. These are, the Caspian, the Aral, the Baikal, and several others of lesser magnitude. They are chiefly situated on the depressed and almost concave surface of Western Tartary, which, according to Humboldt, is 200 or 300 feet beneath the level of the sea; a sinking which he considers connected with the prodigious elevation of the regions to the eastward.

3585. *No continent has so many rivers* of the first magnitude, some of which yield in length of course only to the amazing waters of the New World. We may distinguish in Asia three systems of rivers; one, comprising the most distinguished and important streams, descends from the principal chain of mountains, fertilises the great southern empires, and falls into the Indian Ocean. The most remarkable streams of this class are the Euphrates, the Indus, the Ganges, and the Menam, or river of Siam. Again, from the parallel chain which separates Tartary from Siberia is another series of rivers, which direct their course to the Northern Ocean; the Obi, the Irtish, the Yeniseï, the Lena, — gloomy streams, of vast length; but flowing in this inhospitable region, and bound by almost perpetual frost, they afford little aid either to agriculture or to the intercourse of nations. A third system consists of the rivers which, rising in the high mountain centre of Asia, flow across the empire of China, to whose prosperity they mainly contribute, and fall into the Eastern Pacific. The Amour runs in the same direction through Northern Tartary, but without any profit to that barren district. Lastly, the Jaxartes, the Oxus, and others of great magnitude, though secondary to the above, flow along the great plains of Western Tartary; but, unable to reach the ocean, expand into the Aral, the Caspian, and other inland seas.

3586. *Asia, besides its vastness as a continent*, is distinguished by its archipelagoes of islands, of an extent sufficient to constitute kingdoms. Such are those of Java, Sumatra, Borneo, and the Philippines, which, with many smaller ones, comprise the Oriental Archipelago, distinguished by its brilliant metallic products and rich spices; and exhibiting a singular mixture of barbarism and civilisation. The two contiguous islands of Japan comprise a state dignified with the title of empire. Ceylon, bordering on the extremity of Hindostan, almost rivals the beauty and fertility of that celebrated region. We do not here include under Asia those huge insular masses, New Holland, New Zealand, &c., which have of late received the name of an Australian continent; nor the endless groups scattered over the Pacific, and which have also, with somewhat questionable precision, been made a separate quarter, under the title of Polynesia.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3587. *The Geology of Western Asia*, consisting of Asiatic Turkey, Arabia, and Persia, having never been examined in a systematic manner, or by scientific observers, does not admit of any delineation that could be creditable to this work, or satisfactory to the public.

References to the Map of Asia. — West Part.

RUSSIAN EMPIRE.
1. Popova
2. Khatanska
3. Touroukhansk
4. Tazovskoie
5. Obdorskoi
6. Sobski
7. Beresov
8. Tarugarski
9. Samarov
10. Peltinsk
11. Tourinsk
12. Surgutol
13. Pirtchina
14. Narym
15. Parabelsk
16. Caynsk
17. Tomsk
18. Kolhyvane
19. Kouznetsk
20. Biysk
21. Semipalatyni
22. Barnaoul
23. Omsk
24. Tara
25. Isim
26. Tobolsk
27. Jaloutorovsk
28. Irbit
29. Kurgan
30. Orenburg
31. Fralskoi
32. Gourief
33. Tchernoiar
34. Azov
35. Ekaterinodar
36. Poti
37. Baku
38. Derbend
39. Kizlier
40. Astrachan
41. Konrad
42. Teflis.

TARTARY.
1. Tunkat
2. Tashkand
3. Koukan
4. Khojund
5. Samarcand
6. Bokara
7. Herat
8. Balk
9. Fyzabad
10. Cashgar
11. Yarkand
12. Leh, or Ladauk
13. Dras
14. Gorcap
15. Khiva
16. Otrar.

CABUL.
1. Furrah
2. Bamian
3. Cabul
4. Attock
5. Cashmere
6. Lahore
7. Moultan
8. Khan
9. Dajel
10. Kulat
11. Siri Kila
12. Candahar.

HINDOSTAN.
1. Bisoly
2. Hardwara
3. Delhi
4. Bukka
5. Hydrabad
6. Putten
7. Mandavie
8. Cambay
9. Oojein
10. Kotah
11. Ajimere
12. Agra
13. Allahabad
14. Oude
15. Patna
16. Malda
17. Bahar
18. Calcutta
19. Burwa
20. Sohnpoor
21. Cuttack
22. Sicacole
23. Nagpoor
24. Mudera
25. Hindia
26. Aurungabad
27. Surat
28. Bombay
29. Goa
30. Beeder
31 Hydrabad
32. Vizagapatam
33. Ongole
34. Nellour
35. Madras
36. Arcot
37. Seringapatam
38. Calicut
39. Mangalore.

BELOOCHISTAN.
1. Kegan
2. Pureg
3. Minab
4. Serek
5. Kilij
6. Punjoor
7. Khozdar
8. Bayla
9. Talta.

PERSIA.
1. Ganja
2. Reshd
3. Teheran
4. Kermanshah
5. Kashan
6. Sumun
7. Bustam
8. Astrabad
9. Surukhs
10. Nishabore
11. Khanabody
12. Neh
13. Kubb
14. Yezd
15. Ispahan
16. Bubuhan
17. Shiraz
18. Nachelo
19. Forg
20. Kerman.

TURKEY
1. Gounieh
2. Erzeroum
3. Trebisond
4. Angora
5. Smyrna
6. Aiasaluk
7. Akshehr
8. Aleppo
9. Ul Der
10. Damascus
11. Jerusalem
12. Anna
13. Mosul
14. Diarbekir
15. Van
16. Bagdad
17. Hillah.

ARABIA.
1. Alkaba
2. Abou Zhee
3. Kalais
4. Hajar
5. Shoalabia
6. Shakra
7. Bussora
8. Katif
9. Khaibar
10. Yambo
11. Medina
12. Djar
13. Jedda
14. Mecca
15. Sherah
16. Kariatain
17. Temen
18. Temania
19. Lasha
20. Sohar
21. Muscat
22. Kalhat
23. Harmin
24. Hasec
25. Dofar
26. Shibam
27. Kesem
28. Sahart
29. Iden
30. Mocha
31. Sana
32. Loheia
33. Chamir
34. Saade
35. Tebaleh
36. Confodah.

Rivers and Lakes.
a Yenisei, R.
b Obi, R.
c Soumy, Lake
d Irtish, R.
e Chargalshan, Lake
f Isim, R.
g Tobol, R.
h Volga, R.
i Oxus, R.
j Sihon, R.
k Balkash
l Lake Nor Zaisan
m Koko Nor, Lake
n Sanpoo, R.
o Ganges, R.
p Indus, R.
q Helmund, R.
r Seestan, Lake
s Euphrates, R.

Subsect. 2. *Botany.*

3588. *The arrangement adopted for describing the Asiatic territories* gives us an excellent opportunity of noticing, in conjunction with the botany of the eastern provinces of Asia, a general sketch of that to which we before alluded (p. 290.) as the Temperate Transition Zone, and of which the quarter of the globe under consideration occupies so large and so important a portion. This we do the more readily, because our limited space obliges us to enter into but few particulars relative to the vegetation of the respective countries themselves; and because it is in this point of view that Mirbel has so admirably described the geographical distribution of the plants of the Old World

3589. *We come to treat, then,* of that western portion of the old continent which is separated from the eastern by the vast chain of mountains of Himalayah and Thibet.

3590. *An irregular line,* traced from west to east, commencing at Mogadore, and reaching to the Hydraotes of Alexander (the Rauvee of modern authors, one of the sources of the Indus), and which in this vast extent would pass along the crests of Atlas, near Cairo, by the summit of Mount Tabor, Bagdad, Shiraz, Kelat, and Moultan, might thus represent, pretty accurately, the southern or inferior limit of this zone. The Olive seems, of all trees belonging to the zone, to indicate most accurately its northern limit. As we proceed towards the north, the olive languishes, and at last ceases to grow. Its disappearance is an indication of a remarkable and general change in the vegetation; or, in other words, of the passage from the transition to the temperate zone.

3591. *The Olive,* which no longer exists between lat. 42° and 43° in Spain, between 44° and 45° in the southern departments of the east of France, between 45° and 46° in the east of Italy and Carniola, does not extend beyond 40° upon the eastern coast of Greece and the western shores of Asia Minor. It is said to grow on the coasts of Macedonia, but is not seen any where about the Sea of Marmora. Again it reappears at Sinope, and follows the shores of the Black Sea as far as Gourieh. It is seen in lat. 45°, in the southern part of the Crimea, and a degree lower down, on the west of the Caspian; the river Terek marking the limits of its progress. In Mazanderan the Olive abounds; but no traveller has noticed its existence in the immense countries of Persia and Tartary, between the Caspian Sea and the chain of the mountains of Beloot. Elphinstone has observed it in 34° and 35°, upon the hills which constitute the lower steps of the Caucasus: but it is unknown to the east of Cabul.

3592. *The mean annual temperature* of the plains in this zone, for the lower boundary, is estimated by M. Mirbel at + 22° to 23° of Reaumur; for the higher boundary at + 14°.

3593. *In the Mediterranean* portions of this district there are at least *six* herbaceous for *one* woody species of plants; and the proportion of herbaceous to woody plants proceeds in an increased ratio to the hyperborean regions, where *twenty-six* herbaceous plants (for the most part with perennial roots) are reckoned to *one* shrub. The number of trees in the Mediterranean flora is not much under 240: there are about seventy-five in the Temperate Zone, and but twenty-seven to thirty in the Transition Arctic Zone.

3594. *The greater part of the trees, shrubs, and under-shrubs* of the Equatorial Zone are never

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References to the Map of Asia, East Part.

RUSSIAN EMPIRE.
1. St. Peter's
2. Bolcheresk
3. Kamtschatka
4. Gavenki
5. Poustoretsk
6. Aklansk
7. Ijinsk
8. Letovi
9. Verne Kolimskoi
10. Zachiversk
11. Maloi
12. Chanagar
13. Gighansk
14. Sivitanskoi
15. Habitations of the Tongousians
16. Olensk
17. Kantaskoi
18. Avamskoe
19. Troitskoi
20. Inbatskoie
21. Nig Tchoumskaia
22. Tilmpeiskaia
23. Erema
24. Maximova
25. Yakoutsk
26. Aldanskoe
27. Omekon
28. Yamsk
29. Okhotsk
30. Oudskoi
31. Prist Maiskaia
32. Amginskaia Sloboda
33. Volunska'a
34. Nerka
35. Tchadobsko
36. Lebedeva
37. Tanca
38. Eniaisk
39. Krasnoiarsk
40. Savansk
41. N. Oudinsk
42. Illoiarskaia
43. Kirensk
44. Stanova
45. Irkoutsk
46. V. Oudinsk
47. Nertchinsk.

CHINESE EMPIRE.
1. Outcham
2. Eken
3. Tondon
4. Sothin
5. Edou
6. Sagalin
7. Yaksa
8. Agounskoi
9. Merguen
10. Quanlin
11. Lefou
12. Nunganta
13. Kimhim
14. Litchin
15. Pinghay
16. Yoping
17. Kinkitao
18. Slechan
19. Kirin Oula
20. Tchol
21. Bara Khotun
22. Karakum
23. Holin
24. Poro Hatun
25. Onlot
26. Chinyang
27. Peking
28. Cara
29. Concou
30. Piloutia
31. Campion
32. Onilo
33. Houpatar
34. Hami
35. Chatcheou
36. Silling
37. Kinyan
38. Yengan
39. Tayhuen
40. Shunte
41. Cay
42. Isinan
43. Lu
44. Cayfou
45. Fenutcheou
46. Homgan
47. Nankin
48. Ganlo
49. Nanyan
50. Kiaitcheou
51. Singanfou
52. Hantchou
53. Contchan
54. Longan
55. Contchoudsong
56. Suk
57. Choupatou
58. Tankerdsong
59. Tchinta
60. Tchonkin
61. Siantan
62. Yotchea
63. Outchangfou
64. Hangtcheo
65. Nimpo
66. Koangsin
67. Nantchong
68. Shahoon
69. Eutchea
70. Canton
71. Kigan
72. Kielei
73. Tongin
74. Senan
75. Koryan
76. Mahu
77. Yunnan
78. Cayhoa
79. Pinlo
80. Shiwkin
81. Outchuenhien
82. Lientcheoufou
83. Seminfou
84. Tali
85. Lama.

BIRMAN EMPIRE, &c.
1. Gergonge
2. Santafou
3. Kientona
4. Ummerapoora
5. Ava
6. Aracan
7. Pagahm *Mew*
8. Meeaday
9. Pegu
10. Rangoon
11. Martaban
12. Zemo
13. Laung
14. Sandepora
15. Boating
16. Longan
17. Nhiatrang
18. Sagon City
19. Cancao
20. Cambodia
21. Siam
22. Mergue
23. Tanasserim
24. Bondelon
25. Palani
26. Queda
27. Malacca.

PHILIPPINE ISLANDS.
Magindanao.
1. Cagayan
2. Mindanao.

Luzon.
1. Badoc
2. Manilla
3. Manbulao.

JAPAN ISLANDS.

Niphon.
1. Naho
2. Jedo
3. Osaki.

Rivers and Lakes.
a Yenisei, R.
b Tongouska, R.
c Piacina, R.
d Anabara, R.
e Olensk, R.
f Lena, R.
g Indigirka, R.
h Kolima, R.
i Aldan, R.
j Olekma, R.
k Lake Baikal
l Amour, R.
m Songari, R.
n Hoang Ho, R.
o Kiang Ho, R.
p Particho, R.
q Aracan, R.
r Irawaddy, R.
s Cambodia, R.

Digitized

entirely divested of their foliage. The same holds good with about 300 of those in the Mediterranean flora, or a quarter of the whole of its ligneous vegetation. The Temperate Zone, again, has but forty species with persistent leaves, the Arctic Transition Zone about twenty-four, and the southern limit of the Arctic Zone ten at the utmost.

3595. *In the Mediterranean district* of the Temperate Transition Zone, the Compositæ and the Leguminosæ are the most numerous families: indeed, they alone constitute one fourth of the whole vegetation. Then come the Cruciferæ, Gramineæ, Labiatæ, Caryophylleæ, and Umbelliferæ; afterwards the Scrophularinæ, Rosaceæ, Boragineæ, Rununculaceæ, and Cyperaceæ; finally, the Liliaceæ. It may be remarked, that the Compositæ, Cruciferæ, Labiatæ, Caryophylleæ, Umbelliferæ, Rosaceæ, Ranunculaceæ, and Cisteæ, with some other families, present, in the Temperate Transition Zone, a greater number of specific types than any where else. The chief part of the species of these families that are found in equatorial regions inhabit there the valleys and the mountains; thus proving that the violent and continued heats of the plains are uncongenial to their nature.

3596. *Those families of plants* which hold the most important rank among the productions of the Temperate Transition Zone, whether because they contribute the loftiest of those trees which clothe the mountain's side, or because they furnish those individuals of middling stature which delight to grow on the hills, with the branching shrubs which form the hedges, and the low woody plants whose rough and stunted growth overspreads the uncultured plains, are, in the first place, the Amentaceæ and the Coniferæ (which alone compose more than half of the arborescent vegetation), and next the Rosaceæ, Leguminosæ, Terebinthaceæ, Rhamneæ, Jasmineæ, Caprifoliaceæ, Cisteæ, Ericineæ, and Labiatæ.

3597. *But what gives the Transition Zone its peculiar character* is the combination of those species which may be considered as belonging to three different regions; that is, the vegetation of the equatorial districts, that of the northern, and the growth which is peculiar to the countries situated between the 30th or 32d, and the 44th and 45th parallels. The first is seen in its decline, the second in its commencement, and the third in its full perfection. The latter occupies the greater portion of the soil; the two others form, here and there, colonies more or less flourishing in proportion to their vicinity to the parent land. The Date tree, the Latanier (*Latania?*) and even the Doum[*] (*fig.* 523.) (if it be true that it grows in Galilee), the Sugar-cane, the Sorgho[†] (*fig.* 524.), the Agave, the Cactus Opuntia or prickly pear, the Orange and Lemon trees, the Asclepias gigantea and other arborescent Apocineæ, several African and Asiatic Mimosas and Acacias, confined to the favourably situated plains: these represent the vegetation of the equatorial plains. That of the southern countries may be observed on the mountains, and consists in the common Oak, the Ash, the Alder, the Hornbeam (*Carpinus orientalis* Lamarck), the Beech, the Birch, the Yew, the common Fir, the yew-leaved Fir, the Scotch Fir, &c. As to the vegeta-

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THE DOUM.

524

THE SORGHO.

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[*] The Cucifera thebaica. This tree is much prized in the countries where it abounds. "A native of the desert," says M. Delile, "its shelter renders many places, that would otherwise be totally waste, capable of cultivation. Many species of thorny sensitive plants, which rarely grow in the spots watered by the Nile, find an asylum under its shadow; they increase there: and, spreading in the direction of the desert, limit its extent by augmenting the productive districts. The trunk of the Doum is composed of longitudinal parallel fibres, similar to that of the Date, but much stronger and closer. It is cut into planks, which are used for doors in Upper Egypt: the fibres are black, and the intermediate pith is yellow. The leaves are used for making carpets, bags, and baskets of various kinds: the pulp of the fruit is pleasant to the taste, and would be much used for food, if it were not for the numerous fibres with which it is mixed; still the inhabitants of Said, or Upper Egypt, do frequently eat it. The fruit is sold in large quantities, and very cheap, at Cairo, where it is rather considered as a useful medicine than an article of food: it tastes like gingerbread, and is much relished by the children. An infusion, something like the drink made of steeped liquorice root, or the pods of the *Carob tree*, is prepared from the fruit, which, before maturity, contains a clear and tasteless fluid. When ripe the kernel becomes very hard, and fine beads for rosaries are made of it, as it takes a beautiful polish.

[†] This plant, the Holcus Sorghum of Linnæus, is one of the most valuable of all the Cerealia. It is extensively cultivated in Egypt, where three harvests are gathered of it every year. According to Vahl, it is identical with the Holcus Durra of Forskäl, which is commonly called Durra by the Arabs and Egyptians.

tion of the transition zone, it bears some features of similarity to the two others, without, however, being confounded with them. The Fig, the Mulberry, the Liquidambar, the Walnut, the Pistachio, the Lentisk, the Terebinth, the Rhus, the Olive, the Myrtle, the Pomegranate, the Syringa, the Storax, the Sweet Bay, the Tamarisk, the Diospyros, the Mimosa Julibrissin, the Carob tree, the Judas tree, the Oleander, the Evergreen Oaks, &c.; these create no disparity among the equatorial vegetation. The deciduous-leaved Oaks; the Junipers, which attain a height equal to that of some trees; the Aleppo Pine, the Stone Pine, the Corsican Pine, the Oriental Spruce (*Abies orientalis*), the Apricot, Peach, and Quince Trees, with other arborescent Rosaceæ which we cultivate in our orchards, and which form forests in Cabulistan and Asia Minor, bear a considerable analogy with the wild vegetation of our own countries.

Subsect. 3. *Zoology.*

3598. *The Zoology of this great division of the earth* is as vast as the climate of the regions it comprehends is diversified. Inhabited by nations jealous and superstitious, or lawless and barbaric, obstacles of no ordinary difficulty have long debarred the European from a full investigation of those productions of nature characteristic of the Asiatic continent. That intellectual developement which leads the Caucasian to discern his God and adore his Creator in the contemplation of his works, does not appear in the Mongolian, a race long sunk in gross idolatry and in a senseless superstition on the divinity of perishable beasts. Hence it is, that the interior of China and Thibet, those vast regions forming the centre of Asia, have never been trodden by the naturalist or the man of science. The few and very imperfect ideas, therefore, that can be formed of their zoology, have been merely gathered from partial gleanings made on the confines of European India, and of the neighbouring provinces. From such scanty materials we can frame no remarks, approaching to that precision with which we have noticed the zoology of Europe; although they are still sufficient to furnish a few interesting observations of a general nature.

3599. *The principal divisions of Asiatic zoology*, indicated both by the geographic features of the continent, and by the nature of their respective animals, are properly three. The *first* commences from the polar regions, and includes the whole of Asiatic Russia. The natural boundaries of this region, on the west, are the Ural mountains, while its southern extremity is marked, with equal precision, by the lofty Altaïan chain; the cradle, as it has been termed, of the Mongolian race. The *second* great division, as we have already intimated, comprehends the little-known empires of China, Japan, Thibet, the Tartaric provinces bordering on Persia, and the eastern shores of the Caspian Sea. The stupendous mountains constituting the Himalayan chain appear to form a natural boundary to this intermediate region. Under the *third* division we comprise the greater portion of Hindostan and Malacca, together with Java, Sumatra, and such islands as, by their situations, lie contiguous to the continent, and by their productions exhibit the characteristics of Indian zoology, blended in some degree with that of Australia. In this arrangement we have omitted the whole of Asia Minor, and the nations about the Caucasian mountains; because, so far as the productions of these regions are known, they assimilate closely to those of Europe; yet Persia appears to possess many animals of Asia, and this country may possibly present a union of the two faunas.

3600. *Of the first, or northern Asiatic division*, our zoological information has been almost entirely furnished by the researches of Pallas, one of the greatest naturalists of the age. The shores of the Icy Sea do not, however, appear to exhibit any existing animals essentially different, in genera or species, from those common to Arctic Europe. Neither are the frozen regions and arid *steppes* of Siberia congenial to the abundance or increase of more than a few species. Such, nevertheless, as appear adapted, by their structure or economy, to inhabit these wastes, are curious and interesting; and present to the naturalist many forms, either rare in European Russia, or unknown to the westward of the Ural mountains. As we approach the Caspian Sea and the confines of Persia, a mixed fauna becomes evident: for, while many of the species are unknown to Europe, they belong, for the most part, to the same natural groups, rather than to such as are more peculiarly Asiatic: on the other hand, the Caspian Tern (*fig.* 525.), and numerous other birds, identically the same with our own, are found in abundance on the shores of the Caspian Sea. Hence it appears not improbable that the western zoology of Asia and of the European regions meet together, and lose their distinguishing features, in the countries bordering upon these territories.

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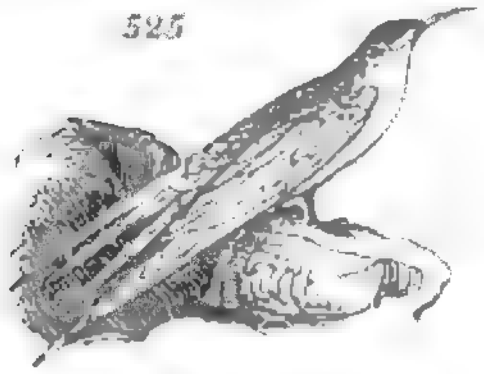

Caspian Tern.

3601. *In regard to Central Asia, forming the second zoological division*, we have already intimated how scanty has been the information supplied for its elucidation. It is, indeed, so meagre, that we may possibly be censured for intimating a marked difference, without being prepared fully to explain its nature. Yet, if we consider the great elevation of the central table-land, its sandy and barren soil, when compared with the rich vegetation of southern India; and its warm temperature, as opposed to that of Siberia, every principle of analogy leads to the supposition that its productions must be peculiar; and that these extensive regions must be inhabited by animals with habits and structures adapted for such situations. Nor is this belief unsupported by facts. Central Asia is remarkable for a peculiar and a very distinct species of horse, called the Dziggtai, or *Equus Hemionus* of Pallas; a most extraordinary animal, which we shall subsequently notice. The same countries are also named as the metropolis of a peculiar species of Argali, or sheep (*Ovis Ammon*) (*fig.* 526.), although its range appears extended both to Siberia and the Caucasus. It is also probable that the Arnee buffalo, and another gigantic animal of this genus mentioned by Major Smith as found only on the sides of the Himalayan mountains, may more correctly belong to the zoology of Central Asia. The mountains of Thibet and Boutan offer the principal asylum to another indigenous quadruped of large size, called the Tartaric or yak ox (*Bos Poëphagus*). If so many quadrupeds, of the first magnitude in their respective families, are inhabitants of these central regions, how many others, less calculated to excite the notice of travellers, must still remain in obscurity!

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ARGALI.

3602. *The birds of the central division* are scarcely known, except from the paintings of the Chinese. Many of the representations given by their best artists are sufficiently accurate to enable us immediately to recognise well-known species; so that much confidence may generally be reposed in the existence of such as have not yet been seen by Europeans. These drawings are numerous in this country, and frequently represent large and beautiful pheasants, totally distinct from such as occur in southern India. We have before observed, that Asia is chiefly remarkable for the variety and brilliancy of its gallinaceous birds; and that most of these, like the *Lophophorus refulgens* Tem. (*fig.* 527.), and other allied species, are only found in the mountainous and elevated provinces of the interior. Upon the whole, therefore, it seems highly probable that these inland regions may be the chief metropolis of many peculiar birds, unknown to the northern and southern extremities of the continent.

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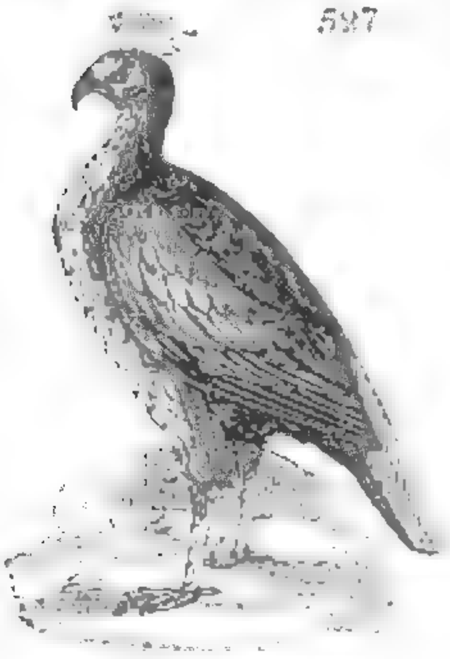

LOPHOPHORUS REFULGENS.

3603. *The third division, comprising southern India,* presents a zoology of great richness and peculiarity. The excessive heat of the climate, the lower and consequently more humid nature of the plains, are equally favourable to an exuberant luxuriance of vegetation, and to the increase of animal life. It is here, consequently, that we meet with numerous animals of a large size, and others of rapacious ferocity. Troops of the Asiatic elephant, with wild boars, buffaloes, and antelopes, among the herbaceous tribes, abound; while the woods and jungles give shelter to more ferocious animals, which, in spite of increasing population, still retain their ancient possessions. Among these the great tiger of Bengal stands foremost; while panthers, leopards, lynxes, hyænas, and jackals appear to swarm in the less cultivated districts. The one-horned rhinoceros is still a common inhabitant of the swampy banks of the great rivers. But this portion of Asia is chiefly characterised as being the native region of those large apes, which the credulity of early travellers metamorphosed into wild men, and which some modern naturalists would persuade us form part of the same order as that to which we ourselves belong. Various species of these disgusting caricatures of the human shape are scattered in the southern extremities of the two great peninsulas of Hindostan and Malacca; but their chief metropolis is in Java, Sumatra, Borneo, and such islands as lie on the southern confines of the Asiatic division, and towards the northern limits of Australia. The Gibbons, or long-armed apes (*fig.* 528.), are of a milder nature. The African apes, equally large with the orang utan, but marked by distinguishing characteristics, occur nearly in the same parallels of latitude. These species will be subsequently noticed in the details of those countries to which they more particularly belong.

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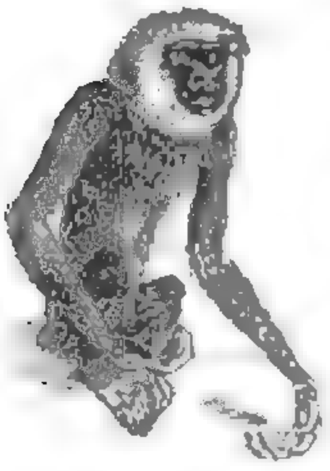

LONG-ARMED APE.

3604. *The birds of southern Asia,* but more particularly those of the Indian islands, have already claimed our attention: it will therefore be sufficient merely to notice such groups as appear most striking on the continent of India. The ring-necked Parrakeets (*fig.* 529.) are peculiar to these latitudes, and present a lovely group of birds, uniting a form of exquisite grace with the most delicate and chaste tone of colouring: nearly all the species are marked by a jet black collar round the neck. Towards the mountains of Nepal General Hardwicke discovered a bird of this family fully equal in size to a South American Maccaw, and apparently belonging to the same group. Many of the short-tailed Parrots are eminently beautiful; and one, the Vernal Parrot (Swains. *Zool. Illus.*, 2d series, No. 1.) is not larger than a sparrow. Various species of Hornbills congregate in large flocks, and are scattered throughout this part of India; the grotesque form of their large bills, generally furnished with a singular-shaped casque or horn, is very remarkable. The nectar of innumerable odoriferous plants affords nourishment to a variety of splendid little birds, of the richest and most dazzling plumage: these compose the genus *Cinnyris*, and represent, in the Old World, the humming-birds of the New. The Drongo Shrikes are more numerous in India than in Africa: living solely upon insects, which they catch upon the wing, somewhat in the manner of swallows: they contribute to check the increase of insects, probably as effectually as do the Tyrant Shrikes, peculiarly appropriated to the New World. The smaller birds of India, particularly among the insectivorous families, are very imperfectly known; several belong to groups scattered both in Europe and Africa; yet future research will no doubt bring to light many others, peculiarly Asiatic. The genus *Gryllivora* among the *Saxicolæ* or Stonechat Warblers, in its typical examples, may probably be of this description. The Scansorial Birds, both of the continent and islands, are numerous and beautiful. Among these, the Woodpeckers offer nothing to distinguish them, geographically or generally, from those of other regions. But the true Barbuts, connecting in some degree these latter with the Parrots, are exclusively Asiatic, and abound in such districts as border upon the equator. This singular race of birds, which climb trees with all the agility of the Woodpeckers, are represented in Africa by the genus *Pogonias*, or the Tooth-billed Barbuts; while in the American islands, beneath the equator, we find a third group, distinct in their structure from either. In proportion as we trace the Ornithology of Asia southward, we find it teem with increased interest. It is from the luxuriant islands of the Indian Archipelago that the large Cockatoos of a snowy whiteness have been brought to Europe; while another, perfectly black, *Microglossus aterrimus* Vieil. (*fig.* 530.), inhabits the same region. Yet far more beautiful than these are the graceful and brilliant-coloured Lories, of which numerous species have been detected in the southern extremity of Malacca, and on the neighbouring islands, particularly those of Molucca.

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RING-NECKED PARRAKEET.

530

BLACK COCKATOO.

3605. *The Rapacious Birds* appear to be much fewer in Southern Asia than in any region of equal extent, either of Africa or America. This inequality may possibly arise from the insufficiency of our knowledge, and the inattention of travellers to the subject; yet there are strong grounds for believing that the comparative paucity of this destructive order is one of the peculiarities of Asiatic zoology. Out of twenty-five sub-genera, under which some modern ornithologists arrange the numerous tribe of Falcons, there appears but one (*Hierax*), and that containing but a single species, (*Hierax cærulescens*) (*fig.* 531.), or Little Falcon, which is characteristic of Asia: it is so diminutive as scarcely to exceed the size of a sparrow. The whole of the remaining Falcons, hitherto discovered in these regions, belong to such groups as are common to Europe and Africa. On the other hand, when we consider the number and ferocity of the carnivorous quadrupeds, we may be led to conclude that Nature has assigned to them, as being more efficient agents, the office of keeping down the redundance of smaller animals, which in other countries is nearly the exclusive province of the birds of prey. A glance at the zoology of the New World strongly favours this supposition. The largest and most formidable rapacious birds in existence are all exclusive natives of the New World. Out of the twenty-five sub-genera already alluded to, more than one half are peculiar to the continent of America: and although the same numerical supe-

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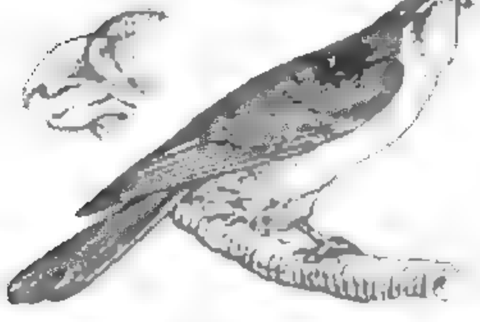

LITTLE FALCON.

riority is not apparent in the species of the vulture tribe, the deficiency appears made up by numerical quantity. We never met with more than two species of vulture during our travels in Brazil; yet these were in such numbers that a dead animal could not remain an hour without being discerned and surrounded by these scavengers of nature. The carnivorous quadrupeds of the New World, although not in species, yet in numerical amount, are remarkably few: while the absence of Antelopes, Buffaloes, Wild Hogs, and other large game, so necessary in Asia for the support of its ferocious animals, is a further argument to strengthen this belief; namely, that the distribution of rapacious animals, in the two hemispheres, is balanced by contrarieties.

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GIGANTIC CRANE.

3606. *The Rapacious Wading Birds of India* must not, however, be omitted. We apply this term to the numerous family of Herons; which certainly represent, among wading birds, the Vultures and Falcons properly so called. The Gigantic Crane (*fig.* 532.), Ardea Argala *Lath.* (under which name, more than two species have evidently been confounded), in its uncommon voracity, and in the nature of its food, is completely a bird of prey. It is sufficiently high to appear, when walking, like a naked Indian. As a proof of its amazing voracity, it has been mentioned, that in the craw of one was found a land tortoise ten inches long, and a large male black cat, entire, in the stomach! (Lath. *Hist.*, ix. 39.) The rainy season, in India, is always preceded by the arrival of these and other cranes and herons, in great numbers; and the destruction they must create, not only among fish, but land reptiles of every description, is so well known to and appreciated by the natives, that they hold these birds in great estimation.

3607. *Of the Reptiles of India* little need be said. In the rivers are found large crocodiles, of different species to those of Africa. The serpents are numerous, and many are of the most deadly nature: the Coluber Lebelinus *Lin.* is said to destroy the person bitten, by causing an unconquerable and deadly sleep; it is of a small size, hardly more than an inch and a half long. The serpents of British India have been ably illustrated by Dr. Russell. The islands are inhabited by others of a tremendous size; as the great Pithon, long considered the same with the *Boa constrictor* of the New World. The Chameleons are natives of India no less than of Africa, and are now known to comprise several species. One of the most remarkable reptiles yet discovered is probably the *Draco volans L.*, or Flying Dragon (*fig.* 533.); from which, perhaps, the fabulous writers of antiquity derived their notion of the formidable monster figured in old books. This, however, is a small and inoffensive little animal: distinguished from the lizard tribe by having on each side the body of a broad membrane, like a wing, strengthened by bony processes: it wanders about trees in search of insects, and is thus enabled to spring from bough to bough, and support itself a few minutes in the air. (Shaw, *Nat. Mis.*) Another lizard, of a large size, and, from its delicate flavour, much esteemed as food, is found in Amboyna (*Lacerta amboynensis* L.). The celebrated hooded snake, or Cobra de Capello (*Naia tripudians* Merr.), is peculiar to India, and with other species is well known to be tamed by the Indian jugglers. Such appear to be the most remarkable reptiles of the Asiatic region: many others might be enumerated; but so little has been done towards the elucidation of their geographic range, that nothing can be stated sufficient to interest the general reader.

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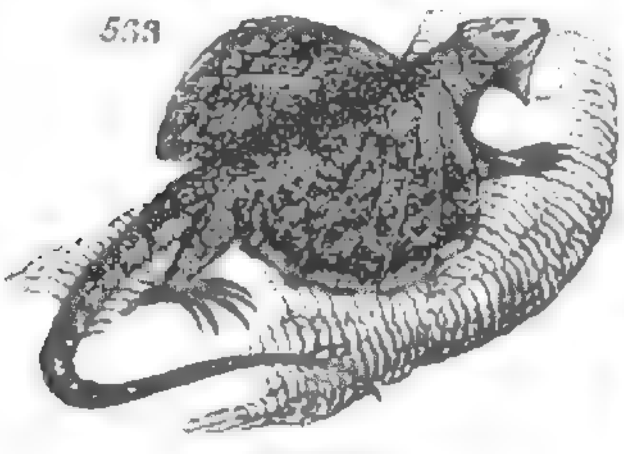

FLYING DRAGON.

3608. *The Native Ichthyology of Asia*, from the number, the variety, and the singularity of its groups, is perhaps richer than that of any other part of the world. Our limits will not, however, permit a long enumeration of names. Many of the Ray fish grow to an enormous size, and are so formidable to the pearl divers, as frequently to attack and injure them when under water. Nothing can surpass the elegant markings, or the beautiful colours, which adorn the tribe of Chætodons, and the numerous Labri, of these seas. The Ganges and the other great rivers are inhabited by many peculiar Siluri, or Cat-fish; and it is from China that we derive the beautiful gold and silver fish now so completely naturalised in Europe.

3609. *Among the Insects* are many which in magnitude and splendour vie with those of the New World, particularly the true Papilionidæ, or butterflies, among lepidopterous insects, and the family of Buprestis, in the coleopterous order. Yet, upon the whole, judging from such collections as have been brought to Europe, we have no hesitation in claiming for tropical America a decided superiority in the number, variety, and magnificence of her insect productions. The Scarabæus Atlas (*fig.* 534.), or Atlas beetle, of Fabricius, near five inches long, from its size and singularity of shape is among the most remarkable of the Asiatic beetles. The splendid green and gold *Buprestis vittata*, with many others of equal size and beauty, are so much admired by the Chinese, that they are kept in cages, when alive, in their rooms; and, when dead, are used as ornaments for dress. Among the numerous butterflies, the names alone of Papilio Priamus, Ulysses, Polymnestor, Panthous, and Octavius will remind the entomologists of Europe of insects they have long sighed to possess, as fit companions to the equally superb, though now more attainable, butterflies of Brazil. It is remarkable that Asia appears originally to have furnished us with the greatest proportion of those animals so eminently useful to man, either in a state of domestication, or as contributing, in other respects, to his comfort or luxury. The domestic fowl and the peacock, among birds, are natural inhabitants of this portion of the world: while all the varieties of the silkworm must be added to the list of the former: one species alone has been introduced into Europe, but the natives cultivate several others, from which are made garments less fine in texture, but much more durable, than those fabricated from the common silkworm. It appears, according to the observations of Dr. Horsfield, that in Java, and probably in most parts of India, the Ants are the universal destroyers and removers of all useless or decayed matter, whether vegetable or animal. This is precisely the case both in tropical Africa and America, and at once accounts for the scarcity of those families of Beetles which are appointed to perform such offices in more temperate regions.

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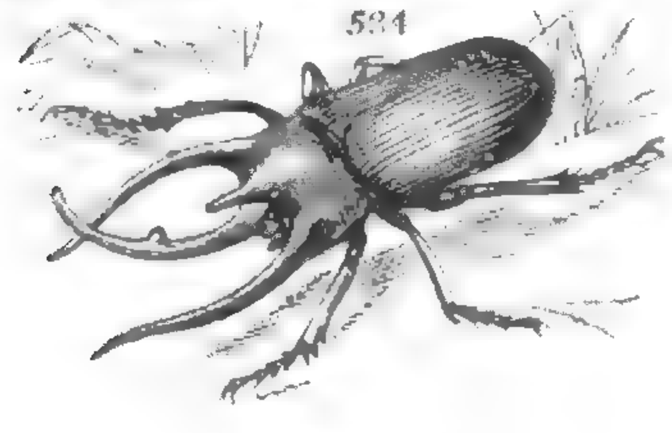

ATLAS BEETLE.

3610. *Of the radiated and other marine animals* we have no other accounts than mere names of species. The Cuttlefish of the Indian seas are said to be sometimes so large as to attack the pearl divers, and strangle them in the serpent folds of their arm-like feet. We by no means think this account is devoid of truth; for, even in the temperate regions of Europe, we have been frequently assured, by the Sicilian fishermen, that these animals instinctively cling to living bodies that come in their way, and that many instances have occurred, among the coral divers, where life has been thus endangered. We have ourselves seen an undescribed species, not uncommon on the coast of Messina, whose arms were much thicker than the wrist of an ordinary man: this species is equally dreaded by the Sicilian mariners, although, on account of its delicate taste, it is sought after, and much prized, as an article of food.

3611. *The Conchology of the Indian seas* is the most splendid, profuse, and varied of any division of the world; and forms a remarkable contrast to that of America. When we compare the marine shells of the West Indian seas with those inhabiting the same degrees of latitude in the Oriental Archipelago, the proportion of species in the former is probably not greater than one to six. This fact, which has never, we believe, been observed, furnishes a most interesting subject of enquiry to travellers who, like the illustrious Humboldt, contemplate those mighty causes which influence the grand operations of nature. On looking to the habits of these testaceous mollusca, we find that nearly three fourths are carnivorous; that is, of shell-fish which, like the rapacious quadrupeds on the continent, derive their sole nourishment from attacking and devouring other animals. The conchologist will immediately perceive we advert to the genera Conus, Oliva, Voluta, Mitra, Cypræa, Harpa, Turbinella, Dolium, Cassis, and several others; of which very few species have been found beyond the geographic limits of the great Indian Ocean. Of the numerous and highly prized Cones, a genus containing near 200 species, not more, perhaps, than 10 may be reckoned strangers to Asia. Lamarck enumerates 62 species of Olives, and of these only *two* have been discovered in other parts of the world. The extensive family of Mitranæ *Sw.* or Mitres, are distributed much in the same proportion; while that of the Volutes, containing near 60 species, exhibits but three as natives of Africa, and one only of America. The Acephala, or Bivalve shells, as in most other countries, appear to be fewer both in number and variety; yet in neither of these two great divisions are we acquainted with more than three or four species identically the same with those found in the European seas. Among such as are peculiar to Asia may be mentioned the Hammer-shaped Oysters (*Malleus* Lam.). These, as Dr. Horsfield informs us, are found in profusion, adhering to the submarine rocks, on certain parts of the Javanese coast. The Pearl Oysters are abundant in similar situations, and, when large, furnish that beautiful substance called mother-of-pearl. But the most remarkable bivalve in point of size, in the whole world, is the Tridacna gigas (*fig.*

535.), of which the valves sometimes exceed four feet in length, and, with the animal, is of the enormous weight of 500 lbs.: it adheres to rocks by such a strong byssus or ligament, that it can only be separated by a hatchet: the cartilage of the hinge, when cut and polished, is so beautifully iridescent as nearly to rival the opal.

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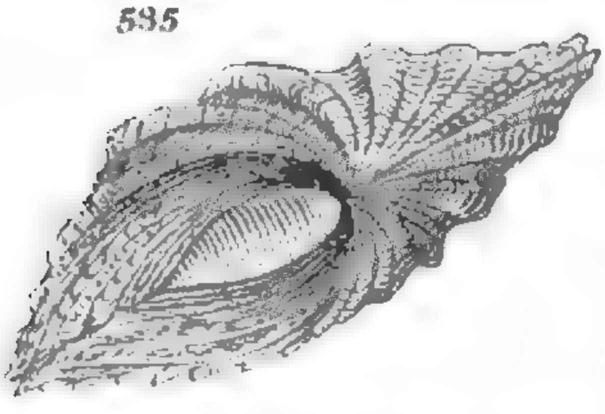

TRIDACNA GIGAS.

3612. *The paucity of the Fluviatile Bivalves*, apparently throughout Asia, is another singular feature in its conchology. The rivers, in number and magnitude, are scarcely inferior to those of the New World; yet, hitherto, they have not furnished more than six or seven species to our cabinets. We can scarcely believe that this deficiency originates in the neglect of collectors: for the shells of no one region have been more sought after than those of India; yet America alone produces near 100 species, or well marked varieties, of this family.

3613. *The herbaceous land shells*, likewise, appear very sparingly distributed in the Eastern world; yet several belong to natural genera not met with elsewhere. The genus *Scarabus* seems peculiar to New Guinea and some of the adjacent islands; and that of *Onchidium* (*fig.* 536.), among the slugs, or shelless Mollusca, is remarkable. The Oriental pearl-fisheries are well known to produce great wealth. Mr. Percival, in his account of Ceylon, has given much interesting information on this subject, which will be again adverted to when treating of that island.

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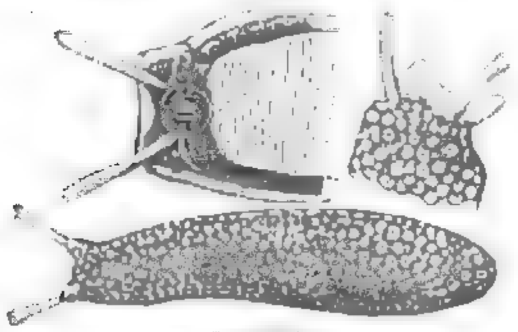


ONCHIDIUM.

3614. *The domestic animals* are more numerous than those of Europe. The universal use of the horse and the ox as beasts of burden is rendered unnecessary by the superior strength and sagacity of the elephant. In those provinces which adjoin Persia, the Camel and Dromedary are in common use, while the Buffalo is chiefly employed for agricultural purposes. The large Indian oxen are of a different race to those of Europe, having a hunch or lump upon the back, which sometimes weighs near fifty pounds: the horns are short, and bent backwards, and the colour of the hide is usually red or brown. These oxen are remarkable for other peculiarities: they have, in all their motions, a superior liveliness and activity to those of Europe. Their voice [illegible] also different, producing a groaning sound, somewhat weak, but shrill.

3615. *The genera of quadrupeds* belonging to this division of the world will illustrate the preceding remarks; and will better exhibit how much its zoology, in this department of natural history, differs from that of Europe.

Genera and Sub-genera.	No. of Species.
(*Apes, Baboons, and Monkeys.*)	
Simia	2
Hylobates	5
Presbitis	1
Lasiopyga	1
Nasalis	1
Semnopithecus	5
Cercopithecus	2
Cercocebus	4
Cynocephalus	1
Papio	
Stenops	1
Nycticebus	3
Tarsius	2
(*Bats.*)	
Megaderma	1
Rinolphus	8
Nycteris	1
Plecotus	1
Vespertilio	6
Nyctinomus	3
Cheiromeles	1
Pteropus	9
Cephalotes	2
Sorex	1
Tupaia	3
Ursus	3
Ratellus	1
Putorius	4
Martes	1
Mephites	1
Lutra	2
Vulpes	2
Viverra	1
Genetta	4
Mangusta	3
Paradoxurus	2
Prionodon	2
Felis	10
Lynx	3
Phalangista	3
Arvicola	7
Georychus	4
Mus	11
Cricetus	4
Dipus	4
Gerbillus	2
Aspalax	1
Sciurus	15
Pteromys	6
Hystrix	3
Lepus	2
Lagomys	1
Manis	1
Elephas	1
Sus	1
Equus	1
(*Ruminants.*)	
Camelus	2
Moschus	3
Elaphus	8
Axis	3
Capriolus	1
Styloceras	3
Aigoceras	2
Gazella	2
Raphiceras	2
Tetraceras	2
Noemorhedus	3
Capra	2
Ovis	1
Portax	1
Bubalus	2
Bison	3

3616. *Among the genera of birds* more particularly belonging to Asia, the following may be mentioned: yet, in the present unsettled state of specific ornithology, it is impossible to estimate the number of species they may respectively contain.

Birds of Prey.
Hierax *Vig.*

Fissirostres.
Nyctiornis *Sw.*
Macropteryx *Sw.*

Dentirostres.
Eurylaimus *Horsf.*
Analcipus *Sw.*
Oryypterus *Cuv.*
Irena *Horsf.*
Phœnicornis *Sw.*
Timalia *Horsf.*
Iora *Horsf.*
Brachypteryx *Horsf.*
Prinia *Horsf.*
Enicurus *Horsf.*
Gryllivora *Sw.*
Calyptomena *Raff.*
Mirafra *Horsf.*
Pyralauda *Sw.*
Vidua *Cuv.*
Amadina *Sw.*
Estrilda *Sw.*
Lamprotornis *Tem.*
Gracula *Lin.*
Crypsirina *Vieil.*
Paradisea *Lin.*
Epimachus *Cuv.*
Ptyctolophus *Vieil.*
Microglossum *Geoff.*
Palæornis *Vig.*
Lorius *Brisson.*
Picumnus *Tem.*
Orthotomus *Horsf.*
Phœnicophaus *Vieil.*
Cinnyris *Cuv.*
Pomatorhinus *Horsf.*

Gallinaceous Birds
Vinago *Cuv.*
Ptilonopus *Sw.*
Ptilophorus *Sw.*
Pavo *L.*
Polyplectron *Tem.*
Gallus
Lophophorus *Tem.*
Phasianus *L.*
Argus *Tem.*

SECT. III. *Historical View of Asia.*

3617. *Viewed in an historical light*, Asia, to the south of the great ridge of mountains, has been always a wealthy and populous region, the earliest seat of civilisation, and of those great monarchies which, absorbing into one a number of the small original communities, openly aimed at universal empire. The revolutions of Western Asia were alone known to the Greeks; and here the lead was successively taken by Assyria, Babylon, Persia. This last empire, extending far beyond the dimensions of the others, included Egypt and part of India, to which Xerxes in vain attempted to add Greece. On the contrary, the Greeks became, under Alexander, the conquerors of all the regions over which the Persian sway had extended. All the activity of this great prince, however, and of the learned men who accompanied him, obtained only very imperfect ideas of the extent of Asia, and of the nations which composed it. India was still deemed the most eastern country of the world. The ocean which terminated Asia to the north was imagined to run along the head of the Caspian, then regarded as one of its gulfs; and thence in nearly a direct line to the Ganges, which was represented as falling into the Eastern Ocean. This line cut off all Siberia, Eastern Tartary, and China, nearly two thirds of the entire continent. Thus Europe was at this time considered as larger than Asia. Ptolemy, by means of the caravan merchants, who supplied Rome with the luxuries of the East, obtained more correct and enlarged views. He learned the existence of China, and could estimate the extent of Asia eastward; but was unable to penetrate the Altaï, or gain any knowledge of the frozen regions of Siberia. The Roman empire, and the states of modern Europe, were soon involved in darkness by the irruption of the barbarous nations, and lost even the knowledge already acquired. New light was obtained by the learned men who sprung up under the caliphate, and who, by the conquests of their countrymen, and the wide diffusion of their faith, gained more extensive knowledge of the interior of Asia than the ancients ever possessed; and even than what, with regard to some districts, modern Europeans have since attained.

3618. *In modern times*, as soon as Europe breathed from the agitations which accompanied the downfall of the Roman empire, peculiar circumstances called her attention strongly towards the East. Such, especially, was the effect of the crusades, undertaken to recover the Holy Land, and to repress the progress of the infidel arms. These celebrated expeditions gave a deep interest to the accounts of Asia and the East; but there was no science to collect or arrange the intelligence which they afforded. The crusading geography regards little except Palestine, and the theatre of the wars for its recovery; it places Jerusalem in the centre of the world, and presents only vague notions of any remote countries. A more distant alarm was given by the rapid conquests of the Tartars under Zingis; and his posterity, after subduing Tartary, China, and Russia, over-ran Poland, and invaded Germany. To avert a danger so pressing, a series of embassies was sent, under Carpini, Rubruquis, and other monks of the Romish church, with commission from the pope and the Christian princes. These envoys were received at the frontiers, and carried far into the heart of Tartary, through regions hitherto untrodden by any European. In these vast plains they beheld the uncouth pomp and barbarous array of the Great Khan; and, besides the vast extent of hitherto unknown land which came under their view, they learned particulars respecting the most remote extremities of Asia. Again, the revival of commerce and industry in Europe was accompanied with an almost unbounded curiosity to explore the vast and opulent regions of the East. Under its influence, a single Venetian citizen, Marco Polo, stimulated, it would appear, almost solely by individual enterprise, penetrated across the whole of Asia, reaching even to the eastern coast of China. His narrative conveyed an idea of the vastness of the continent, and of the splendour of its distant regions, surpassing the most magnificent conceptions hitherto formed. Several adventurers followed in the same path, but with inferior success; and the celebrated narrative of our countryman, Sir John Mandeville, is, we fear, a mere tissue of imposture. The mixture, or at least the appearance, of fable in these narratives, caused the public to doubt; until the Portuguese, in the reigns of their great kings, John and Emanuel, under the conduct of Vasco de Gama, dispelled the mystery, by passing the southern cape of Africa. They soon arrived in India; and in the course of twenty years, in the pursuit either of commerce or conquest, explored all the shores of Asia from Arabia to Japan. A full view was thus acquired of the extent of the continent in the principal dimensions. Its northern expanse and limits, however, remained still hidden in obscurity. Even Tartar conquest had never penetrated beyond the Altaï, or discovered any objects worthy of its ambition in these frozen regions. This career was reserved for Russia. Notwithstanding its poverty, this region, by its wide extent, and the facility of such a conquest, tempted her ambition. Her first operations were made from the north and the province of Archangel. Anika Strogonoff, an enterprising merchant, penetrated by his own exertions to the northern Obi and the country of the Samoieds; and, by the valuable furs, and the specimens of a new and singular people which he brought thence, roused the curiosity of the court. But Siberia was chiefly made known by the romantic adventures of Yermak the Cossack, who, setting out with a small body of his countrymen, found it easy to drive before him the undisciplined forces of the Tartars, and was soon unexpectedly at the head of a great kingdom. The czars accepted him as a vassal, and after his death steadily went on in the career of discovery and conquest. In 1639, about 50 years after the first entrance into Siberia, Dimitri Kopilof reached the shores of the Eastern Ocean. Thus an empire, nearly 4000 miles in length, was added to Russia by a handful of Cossacks and hunters. The questions, however, whether Asia be every where bounded on the north by the Polar Ocean, how that ocean communicates with the Pacific, and whether the continents of Asia and America be conjoined or separated, have been anxiously enquired and disputed among geographers. The English and Dutch made it one of the first efforts of their infant navigation to seek by this course a route to the East Indies; but when they formed such a hope, they were ignorant of the vast extent and desolate character of these shores, and of the huge masses of ice with which they were almost perpetually obstructed. Accordingly, the boldest navigators who made the attempt, if they did not perish, were arrested at or near Nova Zembla, and thought themselves fortunate in being able again to reach home, leaving their object unfulfilled. The Russians, however, by land, or in small barks, gradually crept along these shores, and found their territories every where bounded by the Frozen Ocean. At length the united efforts of Behring, Shalaurof, and Cook discovered a strait separating the two continents, and beyond which, on each side, they rapidly diverged. There remained still, however, on the Asiatic coast a portion, not fully explored, which some alleged made a great circuit, and rejoined that of America. According to Captain Cochrane's account, the late expedition of Baron Wrangel has settled this question, and ascertained that there is a continuous ocean along the whole north of Asia.

Sect. IV. *Social and Political State of Asia.*

3619. *In regard to its social and political state,* Asia presents, of course, a most varied scene; and yet there are some features which at once strike us as generally characteristic of this continent. Among these is the transmission of institutions, usages, and manners unaltered from the earliest ages. The life of the patriarchs, as described in the earliest of existing historical records, is still found unchanged in the Arab tent. The courts of Nineveh and Babylon seem to have been marked by features of pomp nearly similar to those of Delhi and Ispahan. Asia, at a very early period, anterior even to the commencement of regular history, appears to have made a vast stride in civilisation; but then she stopped, and has suffered herself to be far outstripped by the originally less advanced nations of Europe.

3620. *The despotism* to which the people of Asia are generally subjected is connected, probably, with this stationary character. A republic, an hereditary aristocracy, a representative assembly, a regular control of any kind, are, except in some local and peculiar circumstances, ideas altogether foreign to the mind of an Asiatic. While, however, the general principles of government remain so fixed and immutable, the change of ruler and of dynasty is much more frequent than in Europe. As the ideas of hereditary right and of primogeniture, are much less deeply rooted, a younger son, or even uncle, of the reigning sovereign if more able and popular, finds it easy to dispute, and even to wrest the sceptre from his feebler hands. Oriental sovereigns, even the greatest, still maintain the primitive institution of sitting and administering justice in person. Though immutable in their forms of court and maxims of government, they are changeable as to their place of residence and seat of empire. Every successive prince usually selects some favourite city, which he either creates or raises from insignificance, and lavishes his wealth in adorning it. The abodes of his ancestors are neglected; and hence Asia is covered all over with decayed capitals and ruined palaces.

3621. *The number of communities, of chiefs, and even of princes, making a regular trade of robbery* is another feature that strongly characterises Asia. They carry it on in no clandestine manner, but avowedly, even boastfully, and as a calling which they consider as honest and respectable. If they have accepted a composition similar to the old English "black mail," or if they have pledged their faith to an individual, they inviolably maintain it. The numerous tracts of mountain and desert afford them holds in which to maintain themselves; and these are seldom far distant from some rich plain, or great commercial route, on which to exercise their depredations. Arabia, from the earliest times, has been a hive of such plunderers.

3622. *The aspect and manners of the Orientals* are different from those of Europeans, and in many respects exhibit a decided contrast. Instead of our tight short clothes, they wear long floating robes, wrapped loosely round the body. A light turban supplies the place of the hat, and sandals are worn instead of shoes. In entering the house, or wishing to show respect, when we would take off the hat, they take off the sandal. They make no use of chairs, tables, plates, knives, forks, or spoons. At meals they seat themselves cross-legged on the floor, and eat out of a large wooden bowl placed in the middle, and filled, not with our solid joints, but usually with stews or sweetmeats. This dish is common to the whole company, and each thrusts in his hand without ceremony, and carries the morsels direct to the mouth. In return, they are very scrupulous about the washing of the hands. They use no beds, or at least nothing that we would call a bed. An Oriental, going to sleep, merely spreads a mat, adjusts his clothes in a certain position, and lays himself down. Their household furniture is thus exceedingly simple, consisting of little more than carpets covering the room, and sofas set round it, both which are of peculiar beauty and fineness. Their attire is also simple, though composed, among the rich, of fine materials, and profusely ornamented with jewels and precious stones. Their arms and the trappings of their horses are also objects on which they make a studied display of magnificence. The beard, over all the East, is allowed to grow, and is regarded with reverence.

3623. *In their disposition and temper,* the people of the East show striking peculiarities. They are grave, serious, and recluse; they have no balls, no theatres, no numerous assemblages; and they regard that lively social intercourse in which Europeans delight, as silly and frivolous. Unless when roused by strong incitements to action, they remain stretched on their sofas, and view as little better than madmen those whom they see walking about for amusement and recreation. Their moral qualities cannot be very easily estimated, but may be generally ranked below those of Europeans. Their domestic attachments are strong, and their reverence for ancestry deep; their deportment is usually mild and courteous; and they show themselves capable of generous and benevolent actions. On the other hand, among the subjects of the great empires, the obligations of truth and honesty are habitually trampled under foot; the statesmen and chiefs are usually designing, treacherous, and inhuman; devoid of honour, and capable of the most enormous crimes. The smaller tribes, who display a greater manliness and energy of character, are rude, coarse, and addicted to predatory habits. The sentiments and conduct of the Asiatics towards the female sex are such as cannot exist without a general degradation of character. The practice of polygamy, with the jealous confinement to which it naturally leads, seems to be the radical source of this evil. The exclusion of the sex from society; the Mahometan doctrine that they have no souls; the Hindoo maxim which prohibits them from reading, writing, and being present at religious ceremonies; are evidently parts of a general system for reducing them to an inferior rank in the scale of creation. It is true there is one local example (in Thibet) of an opposite system, — female sway, and a plurality of husbands; but this is evidently no more than a capricious exception to the general rule.

3624. *A high and even ostentatious profession of religion* generally distinguishes the Asiatics, and the name of God is continually in their mouths. Their creeds, however, are all marked by that deep tincture of superstition which seems naturally connected with a crude and imperfect state of knowledge. In many parts of the continent, the most savage and degrading rites are practised; and in all, the favour of the Deity is supposed to be gained rather by splendid donations, costly structures, and elaborate outward observances, than by purity of heart and life. The pure and refined system of Christianity, though it was first communicated to Asia, has not maintained its ground against these superstitious propensities. Two systems of faith divide Asia between them: one is that of Mahomet, which, by the arms of his followers and of the conquering Tartars of central Asia, has been thoroughly established over all the western tracts as far as the Indus. It even became, for centuries, the ruling religion in India, though without ever being that of the body of the people. The other is the Hindoo religion, divided into its two great sects of Brahma and Boodh; the former occupying the whole of Indostan, the latter having its centre in Thibet, filling all the east of Asia and Tartary, and penetrating even north of the Altaï.

Sect. V. *Industry and Commerce in Asia.*

3625. *The useful arts are cultivated in the Asiatic empires* with somewhat peculiar diligence. Agriculture is carried on with great industry and care, though by less skilful processes, and with much ruder machinery, than in Europe. A much smaller amount of capital, particularly in live stock, is employed upon the land. The cultivators scarcely rise above the rank of peasantry. The chief expenditure is upon irrigation; for, in all these tropical regions, water alone is required to produce plentiful crops. Asia has also a number of manufactures which, though conducted with small capitals and simple machinery, are not equalled in richness and beauty by those of any other part of the world. All the efforts of European art and capital have been unequal fully to imitate the carpets of Persia, the muslins of India, the porcelain of China, and the lacquered ware of Japan. Commerce, though fettered by the jealousy of the great potentates, is very active throughout Asia. The commerce of Europe is principally maritime; that of Africa principally inland. Asia combines both. Her interior caravan trade is very considerable, though much diminished since Europe ceased to be supplied by this channel. The native maritime trade on her southern coasts is also considerable, but the foreign trade, particularly that carried on by the English nation with India and China, has now acquired a superior importance.

Sect. VI. *The Asiatic Languages.*

3626. *The Asiatic languages are classed in seven groups.* I. The family of the Shemitic languages. II. The languages of the Caucasian region. III. The family of the Persian languages. IV. The languages of India. V. The languages of the region beyond the Ganges. VI. The group of the Tartar languages; and, VII. The languages of the Siberian region.

Subsect. 1.

3627. *The family of the Shemitic languages* may be divided into five branches: — 1. The Hebrew; 2. The Syriac or Aramean; 3. The Median; 4. The Arabic; 5. The Abyssinian.

3628. (1.) *The Hebrew branch includes the Hebrew, the Phœnician, and the Punic.* This appears contrary to the opinion of the learned writer whom we have quoted in the introductory chapter, Part III.; and who shows that the Phœnicians descended from Ham. He might have added, that their city, *Sidon*, was named after the first-born son of Canaan.

3629. *The Hebrew*, considered in relation to three principal epochs, may be distinguished as forming three different dialects: the *ancient* or *pure Hebrew*, spoken and written from the earliest age of the nation until the Babylonish captivity, after which it ceased to be spoken, and became a learned language. The Jews have continued to use it as such, with more or less purity, until the present day. In this idiom are written the Scriptures of the Old Testament, ending with the prophecy of Malachi. The *Chaldee*, which is almost identical with the Syriac. This language was brought by the Jews from Babylon. They introduced into it some Hebraisms, and at a later period a few Greek words, and even Latinisms. It was spoken and written until the eleventh century. The oldest work in this language is Daniel; after which rank the Targum of Onkelos, the Targum of Jonathan, the Talmud of Jerusalem, and the New Testament. The *Rabbinical* dialect, formed by the numerous learned Jews of Spain, in the eleventh century, by a mixture of the Chaldee with the ancient Hebrew.

3630. *The Phœnician* was formerly spoken throughout the whole coast of Syria, from Egypt to Tripoli. It appears to have differed very little from Hebrew. The navigation, colonies, and commerce of the Phœnicians, as we have already observed, spread their language and writing over all the coasts of the Mediterranean, especially in Cyprus, Cilicia, Sicily, Spain, and Africa. The ancient medals of Tyre, Sidon, Acre, Berytus, Arad, and Marathus afford the means of ascertaining the ancient Phœnician alphabet; but no memorials respecting the literature of the nation have been discovered.

3631. *The Punic, Carchedonic, or Carthaginian*, appears to have been considered one of the dialects of the Phœnician. It was the language of the Carthaginians once masters of the whole north coast of Africa, part of Sicily and Spain, and the isles of Sardinia and Malta. It was spoken in Africa in the times of Jerome and Augustine, but has long been extinct. The voyage of Hanno, of which the Greek is an abridged translation, was originally written in this language.

3632. (2.) *The branch called Syriac or Aramean;* the latter name being derived from Aram, which in its scriptural acceptation includes Syria, Mesopotamia, Chaldea, and Assyria. This idiom formerly extended through Persia to Samarcand, and even into Tartary and central Asia, where it became known through the merchants and the religious sect of the Nestorians. Its principal dialects appear to have been the Palmyrene, the Nabathean, and the Sabian, used by those sectaries who are, strangely enough, called Christians of St. John the Baptist; and who are said not to believe in him whom their avowed leader proclaimed.

3633. *The Chaldee*, formerly current in Chaldea, and for many centuries extinct. It was spoken at the courts of Nineveh and Babylon; and in it were written the astronomical observations, the most ancient on historical record, which were found at Babylon by the philosopher Callisthenes. This language, learned by the Jews in their captivity, and by them mingled with the Hebrew, gave birth to the dialect called the *Chaldaic*.

3634. (3.) *The Median branch;* so named because the only language it comprises was spoken in ancient Media. This language is the Pehlvi or Phelvy, formerly in use throughout Western Persia, and on the banks of the Tigris. It was the written and current language of all the higher classes in the Persian empire, and was spoken at the court of its ancient kings. Its high antiquity cannot be questioned. Into it were translated the books of Zoroaster written in Zend, and these translations are perhaps as ancient as the originals themselves. The medals and inscriptions of the Sassanides are also in Pehlvi.

3635. (4.) *The Arabic branch* includes only one language, in which are to be distinguished the *ancient*, the *literal*, and the *vulgar* Arabic.

3636. i. *The ancient Arabic;* an idiom long extinct, was spoken throughout Arabia, in two principal dialects, the *Hamiar* and the *Koreish*. The Hamiar, spoken in the eastern part, is entirely unknown to us. It probably resembled the Axumite, and was written in an alphabet called Musnad, also extinct. The *Koreish* was spoken in Western Arabia, especially in the vicinity of Mecca. This dialect, improved by Mahomet and his successors in the seventh and following centuries, became —

3637. ii. *The literal Arabic*, common to the whole Arabian nation, and the written and literary language of most of the nations subject to the vast empire founded by the successors of Mahomet. In this language that code of imposture the Koran is written. Though it has long ceased to be spoken, it has continued to be the *liturgic* and learned language of all the numerous nations professing Islam, from the shores of the Indian Ocean to the westernmost corner of Morocco, and from the Wolga to Cape Delgado in Africa. From the ninth to the fourteenth century, while other nations were involved in darkness, the literature of the Arabs shone in its utmost splendour.

3638. iii. *The vulgar Arabic*, spoken in Arabia and in the greater part of Syria and Mesopotamia, in a part of Khusistaun or Fars; along the Persian Gulf; in the kingdom of Persia; in some parts of the Malabar and Coromandel coasts; in all parts of Egypt, in a part of Nubia, especially along the Nile; in all the towns of the Barbary states by the

Moors and Arabs, and in a part of their plains by the Bedoween Arabs; in a part of Beled-el-jereed; and in some of the oases of the African deserts. It is singular to remark that the name *Arab* is a mere geographical term; *Jesirat el Arab* meaning in this language the isle or peninsula of the *West*, which it is, when viewed in relation to the rest of Asia. By a more figurative appellation, the *Bedoweens* are designated "the sons of the desert." The simplicity of the worshippers at Mecca, long anterior to Mahomet, denominated according to their position the countries that lay on either hand, when the pilgrims took their way northward on their return. El *Yemen* was the country on the right, El *Xam*, or, as the French imitate the aspirate, El Sham, is the country on the left, which answers to Syria.

3639. *The nations that speak Arabic use every where the same words;* the dialects differ little from each other. They are, that of *Yemen*, considered the purest; that of *Mecca* and its neighbourhood, deemed to be one of the most corrupted; the *Bedoween*, spoken in a great number of subdialects and varieties by numerous wandering tribes; the *Syrian*, spoken in Syria and Mesopotamia; the *Maronite*, spoken in the country of the Maronites; the *Druse*, spoken in the country of the Druses; the *Mapul*, spoken by the Mapul tribes on the Malabar coast, and by the Chaliates on that of Coromandel; the *Egyptian*, spoken in Egypt and the neighbouring countries; the *Mogrebin*, or Moorish, spoken in the Barbary states; the *Mosarabic*, or Maranish, formerly spoken in Spain, during the dominion of the Arabs, but long extinct; and, lastly, the *Maltese*, a jargon composed of Arabic, Italian, and Provençal.

3640. The *Abyssinian* branch, so called because it comprehends the principal idioms of Abyssinia. All these may be subdivided into two classes, according to their greater or less affinity to the Axumite or to the Amharic. The Axumite comprises the ancient Gheez and the modern Gheez: the Amharic includes the Semian, the Arkiko, the Narea, and the Dembea.

Subsect. 2.

3641. *The languages of the Caucasian region* are thus classed: — 1. The *Georgian* family; consisting of the ancient and modern Georgian, the Mingrelian, the Suane, and the Lasian. 2. The Armenian family; including the *ancient* Armenian, now extinct, except in the literature and the public worship of the nation; and the *modern* or vulgar Armenian, spoken by the Haikans in Turkish and Persian Armenia, in part of Georgia and Shirwaun, and in the government of Istchil. 3. The *Lesghian* languages, including the Awar, the Kazikumuk, the Akusha, and the Kura. 4. The *Misdjedghi*, spoken by the people of that name in southern Circassia, and comprising four principal dialects. 5. The *Circassian*, spoken by the Circassians or Cherkasses, whose true name is *Adije*, probably the Zyges of Strabo and the Ziches of the Byzantine writers. 6. The *Abassi* or *Absne*, spoken by the Abassi, now subjects of the Russian empire.

3642. *All the languages of the Caucasian region* are excessively harsh, and are remarkable for an extraordinary assemblage of consonants and an accumulation of vague and diphthongal sounds, many of them guttural. The Armenian and the Georgian are the only written languages: those who speak the others use in writing either the Arabic, the Georgian, or the Turkish idiom.

Subsect. 3.

3643. *The family of the Persian languages* consists of — 1. The Zend, spoken formerly in Bactriana, where it ceased to be the vulgar tongue before the Christian era. This is the language in which is written the *Zend-avesta*, the sacred book of the fire-worshippers, by whose priests, the Magi, it was spoken. The Zend may be considered as the parent of all the Persian idioms, perhaps even of that called by excellence the *Sanscrit* or *perfect* language. It possesses its peculiar alphabet, consisting of *forty-two* letters. It is written from right to left. It also employed the cuneiform characters, as in the inscriptions found among the ruins of Persepolis, commonly denominated by the Persians the *Cheyl Minar*, "the forty columns" (i. e. the *many* columns), and *Takht-e-Jemsheed*, "the throne of Jemsheed."

3644. (2.) The *Parsi*, *Farsi*, or ancient *Persian*. It had surpassed the Zend in copiousness, accuracy, and elegance, long before it became, under the Sassanides, the language of the court and of public business throughout the empire. Among its dialects may be distinguished the Parsee, spoken, or at least understood, by most of the Parsees or fire-worshippers, called *Guebre* or *Giaour*, infidels; a term, observes Gibbon (ch. lxviii.), "transferred from the Persian to the Turkish language, from the worshippers of fire to those of the crucifix," and applied not only to the Roman catholics, but to Christians of every denomination.

3645. (3.) The *Modern Persian*, derived from the Parsee, and formed, during the long domination of the Arabs in Persia, by the mixture of Arabic with Parsee, and some Turkish. It is spoken not only in Persia, but in a great part of India, where it is very common among the Mahometans, especially those of Agra and Aurungabad. It is also the language employed in the public documents, in the courts of record, and the finance-registers of the provinces which formed the vast empire of the Great Mogul. A dialect of it is spoken by the people of Bukharia, and by those of the same nation scattered among the towns of Asiatic Russia, and in some provinces of China. It has very great analogy with the Sclavonic, and still more with the languages of the Germanic family, not only in radicals and simple words, but in inflexions and grammatical forms. It has many other dialects.

3646. (4.) The *Kurde*, or Coord spoken in Curdistaun and Luristaun. The Koords, retaining the habits, and it is said the very costume, of their ancestors, the Carduchi of Xenophon, are divided into a great number of tribes, there being seventy-two in the government of Diarbekir alone. That it is spoken by the different tribes in Luristaun appears certain from the investigations of the celebrated Mr. Rich when English resident at Bagdad. The Koordish language differs little from the Persian in words, but much in grammar: it is harsh, and much less polished.

3647. (5.) *The language of the Ossetes*, inhabiting the high valleys of Caucasus, between the Mizdjedghi on the east and the Basians or Emeriti on the west, and shown by Klaproth to be descended from a colony of ancient Medes. In this language are several words common to the *Wotieque* and some other idioms of the Arabian family.

3648. (6.) The *Pooshto*, or *Afghaun*, spoken in several dialects by the numerous tribes of the Pooshtaned, known in Persia by the name of Afghauns and in India by that of Patans. It has much analogy with the Persian, and very little with the Shemitic languages. Its literature is very poor, and of no earlier date than three centuries ago.

3649. (7.) The *Belooch*, spoken by the dominant nation in Beloochistaun and Sinde. It has great affinity with the Persian, and may be divided into three dialects: the *Belooch proper*; the *Babe*, spoken by the people so named, a great part of whom live in the kingdom of Caubul; and, the *Sindy Belooch*, spoken by the Belooches dwelling in Sinde. This language, which is very little known, is written in the Arabic character, with some additional letters.

Subsect. 4.

3650. *The languages of India* may be divided into two principal branches: — 1. Those forming the family of the *Sanskrit*; 2. Certain *particular languages* which do not belong to that family. In the first branch, a distinction must be made of the dead languages, or languages no longer spoken. These are, 1. The *Sanskrit*, meaning, in the Indian acceptation, *perfect* or *complete*. It was formerly spoken throughout the greater part of India; but it has been an extinct language for several centuries, and is now studied by the Bramins and Indians, as Greek and Latin are with us. Like the Greek and German, it has the property of forming compound words *ad libitum*, and has a great quantity of them. Its most ancient books are the *Vedas*, subdivided into eighteen *vidjas*, or parts, embracing all the branches of human knowledge, from theology to music; the laws of Menu, or the civil and religious code of the Indians; and the two epic poems called the *Mahabharata* and the *Ramayana*. The Sanscrit has a particular alphabet, called the Dewanagari, consisting of *fifty-two* letters. It is written from left to right, and is the model on which are formed several alphabets peculiar to the idioms of the Indian peninsula, that of the Thibetians, and those employed for writing several of the languages of Indo-China. 2. The *Bali* or Pali, also called the *Magada* or Misra. This language, which is regarded as a sister of the Sanskrit, was formerly spoken in Magadha, a part of Bahar south of the Ganges, by some considered as the native country of Buddha. It was widely spread in India before the Christian era, but became extinct when the sect which spoke it was expelled. Like the Sanskrit, it has long ceased to be spoken, though it has continued as the *liturgic, hieratic*, and literary language in the isles of Ceylon, Bali, and Madura, in a great part of Java, as well as throughout Indo-China, except the peninsula of Malacca. It is also the religious language of the numerous inhabitants of China and Japan who profess Lamaism and Buddhism. It has four principal dialects, the *Magadha* and the *Bali* proper, the *Fan* and the *Kawi*.

3651. *The living languages of India*, collectively called *Pracrit*, are many of them derived from the Sanskrit. In several, half the words are pure Sanskrit; the rest being composed of words partly belonging to foreign languages that are well known, especially the Persian, and partly to others imperfectly to be traced, with some Sanskrit words, altered by a regular system of permutation. The *Saraswata*, an Indian nation which has long disappeared, and which dwelt along the Saraswati in the Punjab, spoke a particular language, derived from the Sanskrit, and called Pracrit. The branch of the Pracrit languages appears at present to include, among numerous others, the Hindoostanee, the Punjaube, the Cashmeerian, the Caubul, the Sindee, the Zinganee (called in some parts of Europe the Bohemian or Gipsy), the Kutch, the Malayalam, the Maldivian, the Cingalese, the Tamul, the Carnatura, the Telinga, the Orissa, the Bengalee, the Assamese, the Mahratta, the Bundelkhund, and the Malwahr.

3652. (2.) *Of the particular languages forming the second* branch of the great Indian family as not belonging to the Sanskrit, the principal are the Touppah, the Garow, the Choomeas, the Cattywar, the Gond, the Coteesghur, and the Wadasse.

Subsect. 5.

3653. *The languages of the region beyond the Ganges* are divided into five branches:—1. The *Thibetan*, including the Thibetan proper, which is also the language of the Lamas or Mongol and Calmuck priests; the Uniyas; and the Bhutias. 2. The *Indo-Chinese* branch, comprising all the languages spoken in the peninsula beyond the Ganges called Indo-China or India Ulterior. In the still imperfect ethnography of this region, its languages may be divided into two classes; the polished and the written, and the rude and unwritten. Of the former class are the Aracan-Birman, the Moitaï, the Peguan, the Laos-Siamese, the Cambodian; and the Assamite, with its four dialects, the Tonquinese, the Cochin-Chinese, the Loyes, and the Lactho. Of the unwritten class are the Kolun, the Plaee, the Dhanu, the Samang, the Moi, the Andaman, and the Nicobar. 3. The *Chinese* branch, comprising the languages spoken in China and the neighbouring isles. This branch is divided into the languages of the *Chinese family*, and some particular languages. The Chinese family includes,—1. The *Kou Wen*, or ancient Chinese, supposed to have been formerly spoken throughout a great part of China. It is perhaps the most monosyllabic language in the world, and that which contains the greatest number of monophonous words. 2. The *Kouan Kou*, or modern Chinese, spoken in a multitude of dialects throughout all China Proper, and by the educated classes throughout the empire; also by the numerous Chinese established in Indo-China and Western Oceania, especially in Java, Borneo, Celebes, Timor, and Manilla. 3. The Ching Cheu, or Chang Cheu, spoken by the inhabitants of the province of Fo-kien. It differs from the Kouan Hou not only in the pronunciation, but in the etymology of words, and in grammatical construction. The *particular* languages of the Chinese branch are the Miaos, the Lolos, the Mien Ting, and the language of the interior of Hainan. 4. The branch called the *Sian-Pi*, or *Corean*. It includes one language, the Corean, spoken in the kingdom of Corea, and apparently in the neighbouring isles, by the Coreans; called by the Japanese *Sian Pi*. It has borrowed many words from the Chinese. 5. The *Japanese* branch is at present known to include only the languages spoken by the Japanese, and that which prevails among the people of the Loo Choo islands, distinguished as the only people on the globe unacquainted with the use of warlike weapons.

Subsect. 6.

3654. *The group of the Tartar languages* consists of three families:—1. The Tungusian; 2. The Tartar or Mongol; 3. The Turk.

3655. (1.) *The Tungusian family*, common to the ancient and modern people of Mandshuria, and to several tribes inhabiting eastern Siberia, is not known to include more than two languages: the *Mandshoo*, spoken in the Chinese empire by the Tunguses, who are and have been the dominant nation since 1644, when the ancestor of the reigning family was placed on the throne; and the *Tungus*, spoken by the Tunguses, who live in the Russian empire, scattered over more than a third of Siberia, from the Yeniseï to the Sea of Okhotsk.

3656. (2.) *The Tartar or Mongol family* comprises all the idioms spoken by the Tartars properly so called, subdivided into a great number of communities dispersed over Mongolia, Calmoukia, a part of Thibet in the Chinese empire, and several parts of the Russian empire. These idioms appear to form a family composed of at least three languages, the Mongol proper, the Calmuck, and the Bouriet.

3657. (3.) *The Turk* family, including the *Turkish*, the *Yakoute*, and the *Tchouwache*. The Turkish is spoken in a great number of dialects. The *Osmanli*, or Turkish proper, is spoken by the Osmanlis, Ottomans, or Turks: the *Kaptchak* by the pure Tartars as they call themselves, living in the Russian governments of Kasan, Simbirsk, Penza, and Saratov, and by the pretended Tartars, settled in those of Astrachan and Orenburg. The *Turcomaun*, spoken by the nomadic nation of Turcomauns, divided and subdivided into a prodigious number of branches: the *Caucaso-Danubian*, spoken in three principal sub-dialects by the Basians, the Koumouks, and the Nogais dependent on the Russian empire; the *Kirghis* and the *South Siberian*, spoken by various Turkish tribes inhabiting that region.

3658. *The Yakoutes*, who speak the language so named, are the most northern and most eastern of all the Turk tribes: the *Tchouwaches*, called by the Russians the *mountain-Tartars*, are most numerous in the governments of Kasan and Wiatka.

Subsect. 7.

3659. *The languages of the Siberian region* are thus classed:—1. The *Samoyede* family, which includes the different languages and dialects spoken by the nomadic nation of that name, part of which still inhabits the centre of Asia, and the others are scattered over its northern region from Olensk to the straits of Warjatz, and in Europe from these straits to the White Sea. 2. The *Yeniseï* family, so called from the river Yeniseï, by the philologer Klaproth, who classed the languages of which it is composed. The people who speak them, improperly called Ostiaks of the Yeniseï, live in the government of Tomsk, along that river and its tributaries, from Abakansk to Touroukhansk, separating the Samoyedes of the south from those of the north. 3. The *Youkhagire*, spoken by the Youkhagi, or Adon Dommi, a nation now reduced to some hundreds of families, who have almost all embraced Christianity. 4. The *Koryeke* family, which includes the idioms spoken in the north-east of the government of Irkutsk by several communities called Koryekes, and some others, comprised under the denomination of Tchuktches. These tribes dwell to the east of the Youkhagires, and are surrounded by the real Tchuktches, by the Kamtchadales, and the Tunguses. 5. The *Kamtchadale* family comprises the idioms spoken in the peninsula of Kamtschatka, by the Kamtchadales, who call themselves *Itulmen* or *Itelmen*. Those who escaped the ravages of the small-pox in 1768, 1784, 1800, and 1801, have embraced Christianity, and adopted the Cossack manner of living. 6. The *Kurilian* family includes the idioms spoken by the Ainos or Kurilians, the aborigines of the Kurilian archipelago, the isle Taraikai, and part of Mandshuria. The languages comprised in it are the Kurilian proper, the Jesso, and the Tarakas.

Sect. VII. *Divisions of Asia.*

3660. *In dividing Asia into parts*, we may view it as consisting of Southern Asia, Middle Asia, and Northern Asia.

3661. *Southern Asia* comprises Asia Minor, Syria, and the other Asiatic parts of the Turkish empire; Arabia; Persia; Hindostan; India beyond the Ganges; China. To this division are appended the great Oriental archipelago, and the archipelago which constitutes the empire of Japan.

3662. *Middle Asia* consists almost exclusively of the vast regions of Tartary, divided into Chinese and Independent Tartary. To this may be added the Caucasian territory, situated between the Black Sea and the Caspian.

3663. *Northern Asia* consists wholly of an immense uniform plain, subjected to the sway of Russia, and bearing the name of Siberia.

Chap. I.

TURKEY IN ASIA.

3664. *Asiatic Turkey* is a very extensive region. We have seen several of the finest portions of Europe, and some of the principal seats of ancient civilisation subject to the Turkish yoke. It is also extended over a number of the finest and fairest regions of Asia. No countries in the world are more favoured by nature, or more marked by grand historical features. Babylonia, Assyria, Armenia, Lydia, Syria, Judea; all these once renowned empires and kingdoms are now mostly included in Asiatic Turkey: which consists not so much of any one single country, as of several detached and dissimilar states, which the sword, wielded by fanaticism, has combined into one vast heterogeneous mass.

Sect. I. *General Outline and Aspect.*

3665. *The extensive territories thus united* are bounded on the west by the Mediterranean and the long succession of straits which connect it with the Euxine, and divide Asia from Europe. On the North they have the Black Sea and the Caucasian territory, where Turkey is conterminous with Russia. To the east is Persia, separated by a line varying with the fortune of war, but which at present nearly coincides with the course of the Tigris, beyond which the mountains of Kurdistan afford a doubtful and debatable ground. To the south a portion of the empire, nominally at least, touches the Persian Gulf, but is circumscribed by Arabia. Of that vast region, at the time when all Asia was yielding to the Ottoman power, the leading positions, particularly along the Red Sea, were occupied by Turkish garrisons; but it now defies them at every point, and pours its desolating bands over the fine plains of Syria and Bagdad. These vast precincts, taken in their greatest length from east to west, may comprehend about 12° of longitude, making in that parallel 1200 miles; from north to south, 11° of latitude, or nearly 900 miles in breadth; but it is so irregularly formed, and branches into so many angles, that the square of these dimensions could not be taken as an estimate of the superficial extent. In particular, a vast encroachment is made, and an almost complete separation of parts effected, by that vast expanse of Arabian desert which runs up between Syria and the Euphrates.

3666. *This wide region presents a peculiar variety of culture and aspect.* Its ranges of mountains are numerous, of great celebrity, and second in magnitude only to the gigantic chains of Andes and Himalayah. Above that chaos of mountains, valleys, and torrents, which constitutes the kingdom of Armenia, primeval Ararat rears its snowy peaks, reminding mankind of the most memorable event in the physical history of the globe. The peninsula of Asia Minor is entirely girded with chains of mountains, leaving between them and the sea sometimes only narrow passes, sometimes broad and fertile plains; and enclosing wide ranges of high table-land which form the interior. Lebanon, the pride of Syria, though no longer crowned with its majestic cedars, contains in its recesses villages, culture, and varied vegetation, while its summits are crowned with perpetual snow. Judea is entirely a country of mountains, some wooded and cultivated, as Bashan and Carmel, others naked and rocky, as those which encircle the Dead Sea; but none of them rivalling the lofty heights of Lebanon or Ararat.

3667. *These high and numerous chains* give birth to many large and celebrated streams; but none attain the character of rivers of the first magnitude, except the joint and boundary course of the Eurphrates and Tigris. Both spring from the depths of Ararat, and in their early course dash though its dark and rocky glens, till they swell by degrees into great rivers. The Euphrates takes a long course westward, till by a wide circuit it becomes parallel to the Tigris, which has proceeded direct from its origin with a rapidity which is expressed by its ancient name of *Teer*, the arrow. Thenceforth the two rivers pursue a parallel course southwards, enclosing that large and celebrated plain, the Mesopotamia of the Romans, within which were situated Babylon and Nineveh, the most ancient capitals of the world. At length, above Bassora, the two streams unite their mighty waters, and form a broad channel, called Shat-ul-Arab, which, after a course of about 150 miles, pours itself into the Persian Gulf. The numerous branches, however, into which it is represented as separating, are said to belong not to it, but to the Karoon and other rivers of Khusistan, connected with it only by an artificial channel. If we consider the whole course, from its source to its mouth, as the Euphrates, it will possess a length of 1400 miles, forming, indeed, a very great river, yet not equal to its renown, derived chiefly from the ancient fame and civilisation of the regions through which it flows, and of the cities that have been founded on its banks. The course of the Tigris is not more than about 800 miles.

3668. *All the other rivers of Asiatic Turkey* are of secondary magnitude, and only distinguished by the brilliant historical and poetical associations connected with their names. The mountains among which they rise extending in long ranges parallel to and near the sea, they have not sufficient space to expand. The Kizil Irmak and Sikaria, far better known under the classic names of Halys and Sangarius, cross nearly the whole of Asia Minor, in their course to the Black Sea. The most western tract is still adorned by the beautiful windings of the Meander. The Scamander and the Granicus, notwithstanding their high place in history and song, can scarcely be named as geographical features. Orontes and Jordan, the rivers of Syria and Judea, attain a considerable course by flowing north and south along the back of Lebanon: the former falls into the Mediterranean; but Jordan terminates in the Dead Sea.

3669. *Turkey in Asia cannot be said to be a country of lakes,* though in some provinces they are a characteristic feature. Asphaltites lays claim, with some plausibility, to the appellation of *sea*. Tiberias, or the Lake of Galilee, enclosed by cultivated lands and wooded mountains, forms a rich and picturesque object. The beautiful lakes of Antioch and Damascus attract little notice on the great scale. Chains of saline lakes, of considerable magnitude, extend through some parts of the interior table-land of Asia Minor.

Sect. II. *Natural Geography.*

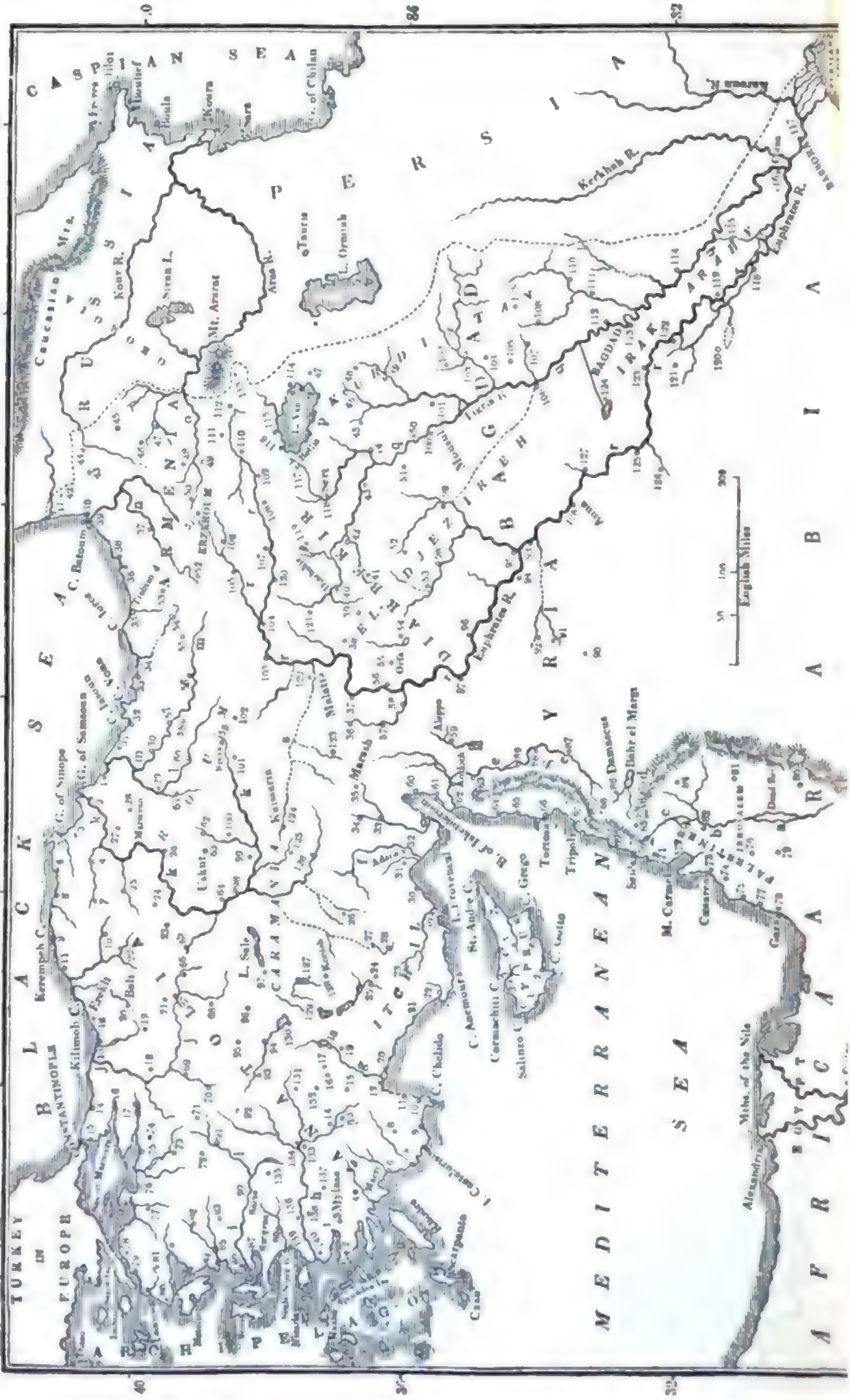
Subsect. 1. *Geology.*

3670. The reader is referred to the remarks under Chap. I. Sect. II. antè, p. 854.

Subsect. 2. *Botany.*

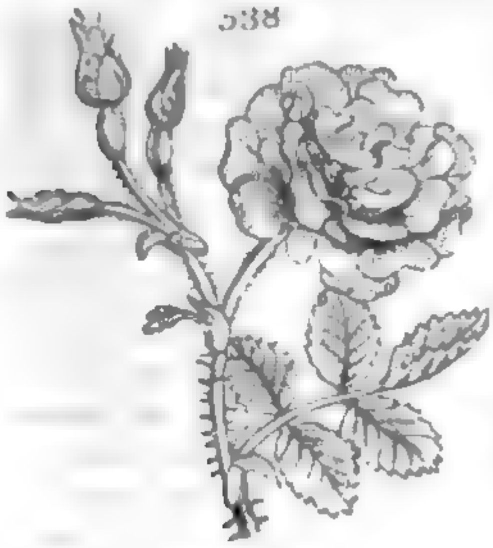
3671. This country, so interesting in an historical point of view, as being that portion of our globe where the transactions recorded in the earliest part of Scripture took place, is comparatively, owing to the jealous disposition of its inhabitants, but little known as to its individual vegetable productions: still, the labours of the learned enable us to give a tolerably satisfactory sketch of their distribution. As it is from hence that the arts and civilisation were carried to other regions of the earth, so are we indebted to this country, and the neighbouring one of Persia, for many of our most precious European fruits. The Walnut and Peach are from the last-mentioned kingdom; the Vine and Apricot from Armenia. The Cherry and the Sweet Chestnut from Lesser Asia, with the Fig, the Olive, and the Mulberry; our most ornamental garden plants, especially

"the garden's queen, the Rose,"


CASPIAN SEA
PERSIA
RUSSIA
Caucasian Mts.
Kour R.
Aras R.
Mt. Ararat
L. Van
L. Ourmiah
Tauris
ARMENIA
ERZEROUM
KURDISTAN
AL DJEZIRAH
IRAK ARABI
BAGDAD
Tigris R.
Euphrates R.
Kerkhah R.
BLACK SEA
C. Batoum
Trebizonde
C. Vona
G. of Samsoun
C. of Sinope
Kerempeh C.
Kilimoh C.
Kaisarieh
Malatia
Marash
Orfa
Aleppo
SYRIA
Damascus
Bahr el Marg
Tripoli
Sour
M. Carmel
Cesarea
Dead Sea
Gaza
CARAMANIA
L. Sale
Adana
CYPRUS
C. Grego
C. Anemour
C. Chelido
Rhodes
Scarpanto
Caso
ARCHIPELAGO
TURKEY IN EUROPE
MEDITERRANEAN SEA
Alexandria
Mouths of the Nile
EGYPT
AFRICA
ARABIA
English Miles
50
100
200
30
34
38
42
46
50
40
36
32
26

of which one of the most esteemed varieties, the Damask Rose (*fig.* 538.), is supposed to have been originally brought, at the time of the crusades, from Damascus; the Hyacinth, the Tulip, several kinds of Iris, and the Ranunculus; to which we may add the Horsechestnut, the Lilac, the Sweet Jasmine, the Melon, and the Cucumber.

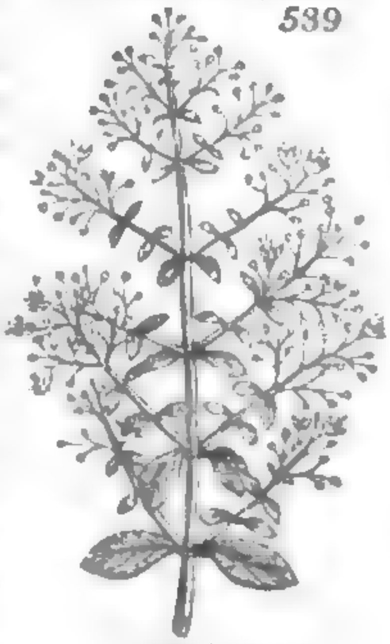
538



DAMASK ROSE.

3672. *The sands of Arabia* extend, between Irak-Arabi on the east and Palestine and Syria on the west, to lat. 34°, where the soil, divided by chains of mountains, presents numerous rivers and fertile valleys. The sands here are less a desert, and not so bare as those of Arabia. The Tigris, the Euphrates, the Orontes or Axius, and their tributary streams, maintain upon their banks a freshness highly favourable to vegetation. The Date winds along the course of the Euphrates and the Tigris. On the east it reaches the plains situated between Bagdad (lat. 33° 9′) and Kermanshah; on the north it advances to Tekrid (lat. 34° 40′); on the west it casts its shadow over the ruins of Palmyra, and penetrates Palestine and Syria as far as the plains of the Mediterranean.

539



HENNA.

3673. *Owing to a circumstance peculiar to the climate of Bagdad,* neither the Henna (or *Chenna* *), *Lawsonia inermis* (*fig.* 539.), the Banana, nor several other plants of the warmer zone, which grow

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* The use of henna is of very remote date; its ancient name was Cypros. Among the mummies have been found several whose nails preserved the yellow colour still customary among the Orientals; unless, as Olivier suggests, this hue may have been imparted by the action of the bitumen used for embalming the body. The Arabs and Moors cultivate henna to the present day, and use it to dye their hair, and especially the nails of the hands and feet; also the back, the mane, and hoofs of their horses, and even a part of their legs: the women, especially, employ it as an ornament, but abstain from it at the death of their husbands and parents. The leaves of henna are gathered at the beginning of spring, then dried in the air, and reduced to powder, and applied in the form of paste to the parts which they wish to tinge. It dries in the course of five or six hours, and imparts a durable colour. The foliage is also used to cure recent wounds and abscesses.

The henna, according to Olivier, is the Cypros of the Greeks, and the Hacopher of the Hebrews. Its flowers have a strong penetrating odour, like that of chestnut or berberry. By distillation an extract is

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References to the Map of Turkey in Asia.

NORTH PART.
1. Samsoun
2. Baffra
3. Gherzeh
4. Boiabad
5. Sinope
6. Istifan
7. Kastamouni
8. Kinia
9. Meseet
10. A bar
11. Amasserah
12. Erekli
13. Melin
14. Kili
15. Scutari
16. Isnid or Nicomedia
17. Isnik
18. Terekli
19. Modourli
20. Boli
21. Sever-Hissar
22. Tchirkis
23. Gladjuk
24. Kiangari
25. Tosia
26. Tchoureoum
27. Vizirkiupri
28. Marsivan
29. Amassiah
30. Sounsia
31. Thermeh
32. Fatsa
33. Keresoun
34. Tireboli
35. Trebisond
36. Rizeh
37. Ipsera
38. Mapavreh
39. Gounieh
40. Batoum
41. Poti
42. Tores
43. Koola
44. Akalzik
45. Achalkalak
46. Koombe
47. Kars
48. Meghingherl
49. Delibaba
50. Hassan Caleh
51. Erzeroum
52. Blabout
53. Estcury
54. Gemishkhana
55. Kara-Hissar
56. Coyla-Hissar
57. Niksar
58. Adras
59. Sivas
60. Tokat
61. Geder
62. Emir Pacha
63. Ulrut
64. Kir-Shehri
65. Angora
66. Aias
67. Bei Bazar
68. Yerma
69. Eski-Shehr
70. Kutaiah
71. Kedous
72. Seiman
73. Zendjan
74. Brusa
75. Moudania
76. Pederma
77. Bigah
78. Lampsaki
79. Sultanieh
80. Baba
81. Adramytl
82. Ghelembo
83. Ak-Hissar
84. Sandarli
85. Pergamo
86. Fokia
87. Smyrna
88. Vourla
89. Tireh
90. Sart
91. Selendi
92. Banaz
93. Kara-Hissar
94. Bulwudun
95. Bardaklu
96. Tshaktelu
97. Tuzla
98. Kirschehri
99. Kouanga
100. Saraky
101. Olash
102. Kodj-Hissar
103. Derin Deh
104. Kibban Madan
105. Arabkir
106. Terdjan
107. Jetsakshur
108. Mooch
109. Leese
110. Malar Ghird
111. Turba Caleh
112. Diadin
113. Bayazid
114. Van
115. Ardjich
116. Aklat
117. Betlis
118. Sert
119. Erzen
120. Paloo
121. Argana
122. Malatia
123. Bostan
124. Kaisaria
125. Kara-Hissar
126. Nigdeh
127. Jorgan Ladik
128. Konieh
129. Kishakli
130. Ak-Shehr
131. Sandakli
132. Bourdour
133. Pambouk Kalesi
134. Ouzlamlu
135. Allahshehr
136. Guzel-Hissar
137. Erbatz
138. Kapusli
139. Ayasaluk
140. Miletus.

SOUTH PART.
1. Asyn Kalesi
2. Budrum
3. Mylasa
4. Mogla
5. Daouas or Thavas
6. Macri
7. Patara
8. Almali
9. Mira
10. Yanar
11. Tekrova
12. Adalia
13. Buraz
14. Karadjouk
15. Estenaz
16. Sousou
17. Isbarta
18. Ekredi
19. Eushar
20. Stavros
21. Alanieh
22. Silind
23. Ermenek
24. Kasaba
25. Sougla
26. Erkle
27. Laranda
28. Karman
29. Selefkeh
30. Mezetlu
31. Tarsus (or Tersoos)
32. Adana
33. Anzarba
34. Kars
35. Marash
36. Jemnuck
37. Samisat
38. Soverek
39. Danakra
40. Diarbekir
41. Merdin
42. Safa
43. Jezireh
44. Zacu
45. Amadieh
46. Julamark
47. Koshab
48. Julamark
49. Rauha
50. Eski Mousu
51. Telmuk
52. Nisibin
53. Ras-el-ain
54. Harran
55. Orfa
56. Bir
57. Ain Tab
58. Sadjour
59. Aleppo
60. Bayas
61. Iskenderoon
62. Antakia (or Antioch)
63. Caskenot
64. Latakia
65. Alaria
66. Tortosa
67. Tripoli
68. Baalbec
69. Beirout
70. Seide (Sidon)
71. Soor (Tyrus)
72. Acre
73. Kaisarieh (Caesarea)
74. Raslaken (Antipatris)
75. Jaffa (Joppa)
76. Jerusalem
77. Asdood (Azotus)
78. Gaza
79. Hebron
80. Kerek
81. Amman
82. Bysan
83. Tabaria
84. Shemskein
85. Cesarea Philippi
86. Damascus
87. Homs (Emesa)
88. Hamah
89. Hedjam
90. Palmyra
91. Saiba
92. Ain el Coam
93. Rohaleh Meshed
94. El Der
95. Karkisia
96. Racca
97. Beles
98. Shalaban
99. Sinjar
100. Mousul
101. Uverdak
102. Erbel
103. Altoun Kupree
104. Kerkook
105. Tavak
106. Tecrit
107. Koolmaty
108. Eski Kifri
109. Suleymania
110. Khanuky
111. Shahraban
112. Dokhara
113. Bagdad
114. Mumilla
115. Ouasith
116. Corna
117. Bassora
118. Semeva
119. Divoanieh
120. Meshed Ali
121. Meshed Hosein
122. Hillah (Babylon)
123. Anbar
124. Labata
125. Hit
126. Cubessa
127. Eluce
128. Anna.

CYPRUS ISLE.
1. Baffa
2. Limesol
3. Lefka
4. Cerina
5. Nicosie
6. Larnica
7. Famagosta.

Rivers and Lakes.
a Dead Sea
b Jordan, R.
c Tabaria, Lake
d Bahr [illegible] Margi
e Aasy (Orontes), R.
f Sihoon, R.
g Duden Soul, R.
h Meander, R.
i Sarabat, R.
j Sakaria
k Kizil Irmak, R.
l Jekil Irmak, R.
m Shawrmawged, R.
n Teborah, R.
o Aras, R.
p Van, Lake.
q Tigris, R.
r Euphrates, R.
s Carasou, R.

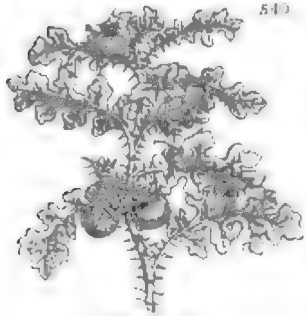
elsewhere in higher latitudes, can be cultivated there with success. It is not because the temperature of the summer is insufficient; for the heat is excessive and unremitted. It is even said that the thermometer rises to 50° of Reaumur during the period, happily a very short one, when the *samiel* occasions desolation and death; but in winter the temperature falls sometimes to $-2{\cdot}5°$, and perhaps even lower. Niebuhr saw at Bagdad, in February, 1765, ice two inches thick. These sudden colds, which the Orange tree is capable of bearing, destroy the Henna. Thus, Bagdad, in spite of its high medium temperature, which is estimated, perhaps incorrectly, at $+23{\cdot}2°$, presents only the vegetation of the northern limit of the Transition Zone.

3674. *From Bagdad to Moussoul* (lat. 36° 28′) the banks of the Tigris are fringed with Willows and Cucumbers. Beyond this narrow bend the soil is but a dry and burning sand.

3675. *Palestine and the south of Syria*, which spread like an amphitheatre along the shores of the Mediterranean, offer a most remarkable instance of the combination of the vegetation of hot and temperate countries. There may be seen together the Date, the Sugar-cane, the Banana, the Henna, the Orange and the Citron, the Pistachio, the Olive, the Carob tree, the Cordia Myxa, the Guilandina Morinda, the Indian Tamarind, the Melia Azedarach (commonly called Pride of India), the Acacia nilotica and farnesiana, with almost all the forest trees of Greece and Italy, and all the fruit trees of Europe. Each species fixes itself, according to its nature, on higher or lower plains, on the slope of the mountains, or on their summits.

3676. *The mountains in the interior of southern Palestine* form two chains, which run in a parallel line from south to north. In the low part of the intermediate valley lies the lake Asphaltites, which receives the waters of Jordan. The west bank of this lake is bordered by rugged and barren mountains. At their foot Hasselquist found the Solanum sodomæum (*fig.* 540.), the fruit of which, destroyed internally by insects, preserves its colour, but contains only dust. The opposite shore is very fertile, and partly covered with large forests. Burckhardt remarked there the Gum trees (*Acacia* or *Mimosa*) and a tree of the family of Apocineæ, which the Arabs call Ochejir, and which, according to Delile, is the Asclepias procera of the Equatorial Zone.

540



SOLANUM SODOMÆUM.

3677. *To the north of the lake, along the eastern shore of Jordan*, lies a hilly country, more than 130 toises above the level of the river, and full of delightful scenery and uncommonly rich vegetation. The hills produce abundantly the Oak, the Pine, and the Wild Olive, &c. The streams which pour their waters into Jordan, flow under the shade of Plane trees, Almonds, Olives, Oleanders, &c. The valley of Damascus and the shores of the Orontes are no less fertile.

3678. *In the absence of meteorological observations*, the vegetation of southern Syria suffices to assure us that its temperature can be little different from that of Cairo. It is not so with the northern districts, with Caramania and Anatolia. The annual variations in the temperature are increased by the influence of a more northerly latitude, to which may be added some peculiar and local causes of cold. This double action is evident at Aleppo, lat. 36° 11′. The Date tree does not grow spontaneously there, and the Lawsonia alba, with the varieties of Orange and Lemon, can only be cultivated by giving them shelter. The Myrtle and Oleander are only seen in a cultivated state. It is certainly possible that some cause may exist, independent of the winter's cold, which prevents the Myrtle and Oleander from growing wild at Aleppo, as these shrubs flourish without any such assistance in the Crimea, Istria, Italy, and Provence: and the former even stands abroad, without protection, in Cornwall, during the winter. The spring, summer, and autumn are very hot at Aleppo, especially in July and August; the thermometer varying from 25° to 26°. From the end of May to the middle of September, the power of the sun, aided by the dryness of the atmosphere, burns up all verdure; but these great heats are incapable of compensating for the inconveniences of a forty days' winter, during which it snows and freezes alternately. During Alexander Russell's residence of seventeen years in Aleppo, he thrice saw the frost so severe as to bear the weight of a man without the ice breaking.

3679. *It is no error to suppose* that local causes may affect the climate of Aleppo; since at Smyrna, 2° farther north, the Orange grows in profusion. Hasselquist even remarked some old stems of Date trees which had survived the winter: but he could not find any young

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obtained from them, which is used in the baths, and with which the people perfume themselves on a visit, or during religious ceremonies, as marriage and circumcision, as well as at the festivals of Bairam and Courban-bairam. It was, no doubt, on account of their odour that henna flowers were scattered by the Hebrews in the apartments of a bride, and for the same reason the Egyptians keep them in their rooms. A considerable trade is carried on in henna leaves, which yield a large revenue to Egypt. Experiments made by MM. Descourtils and Berthollet go to prove that they might be advantageously employed in dyeing woollen stuffs of a yellow colour. For a description of this plant, see, further on, an account of some of the more interesting vegetable productions of the Holy Land.

ones. The latitude of Smyrna probably marks the utmost northern boundary of this equatorial tree. Every traveller remarks the absence of the Olive on the coasts, from the Dardanelles to Sinope: it reappears in the vicinity of that town.

3680. *The central part of Turkey in Asia*, comprehended between lat. 35° and 40°, is rural, elevated, and intersected by numerous ridges of mountains, of which the most important is Taurus. Though the summer be very warm, and the thermometer often rises in the plains and valleys to 30°, 35°, and even 40°, in the month of July, yet many of the productions of the south do not succeed there, on account of the winter cold. The ground is hardly free from snow at Erzeroum (lat. 39° 59′) till the middle of April; sometimes it even falls in June: the high situation of this town, 1500 toises, may occasion this. A few clumps of trees are thinly scattered on the plains. These were formerly clothed with forests; but since agriculture has been pursued there, the country is bare and unsheltered, and at a distance, almost appears sterile.

3681. *Generally speaking*, it is to the valleys and the slopes of the hills and mountains that the forests of Asia Minor are confined. The Pine, Fir, and Juniper occupy the most elevated spots: the Larix Cedrus, of which M. de la Billardière fixed the boundary line on Lebanon at 991 toises, grows also on Mount Taurus. There are several species of Oaks; no country of the Old World produces so many: the greater number are of the evergreen kind. The Beech prevails in Caramania, Bithynia, Paphlagonia, Pontus, and Colchis, where many of our fruit trees, as the Plum, the Cherry, the Apricot, the Peach, the Almond, the Medlar, the Quince, the Apple and Pear, the Service tree, the Chestnut, the Walnut tree, and the Fig and the Vine, grow wild in the heart of the forests. It is doubtless from this favoured soil that most of these valuable trees have been derived that now adorn Greece, Italy, and the rest of the world. Vast tracts are covered with Olive, Myrtle, Arbutus Unedo, (or Strawberry tree), Terebinth, Lentisk, Pistachio trees, Laurels, Pomegranates, &c.

3682. *We should convey but an imperfect idea of Oriental vegetation*, if we did not enumerate the following species which compose the greater part of the forests. The names that are marked with an asterisk are such as have not been hitherto found in Europe or Africa.

3683. Pinus halepensis, sylvestris, and Tournefortii*; Abies orientalis* and taxifolia, Larix Cedrus*; Juniperus drupacea, fœtidissima*, and phœnicea; Cupressus sempervirens, Taxus baccata, Betula alba and pontica*, Quercus Robur; Ilex coccifera, pseudo-coccifera, rigida, infectoria*, Libani*, Haliphleos*, Tournefortii*, Ægilops, and Æsculus; Fagus sylvatica, Castanea vesca, Ostrya vulgaris, Carpinus Betulus and orientalis; Populus alba, nigra, tremula, and euphratica*; Salix babylonica, monandra, alba, fragilis, &c.; Platanus orientalis, acerifolia*, and crinita; Liquidambar imberbe*, Celtis australis and Tournefortii*, Ulmus campestris and effusa, Osyris alba, Elæagnus angustifolia; Vitex Agnus, Fontanesia, phyllireoides*; Fraxinus Ornus, excelsior, and rotundifolia, Arbutus Unedo and Andrachne, Diospyros Lotos, Styrax officinale; Tamarix orientalis, Africana, Germanica, and Gallica; Sambucus nigra, Cornus mascula; Pyrus Sorbus, Aucuparia, eleagnifolia, terminalis, saticifolia, Aria, &c.; Cratægus trilobata, Azarollus tanacetifolia, &c.; Prunus avium, Cerasus Padus, &c.; Amygdalus incana and orientalis*, Mespilus germanica; Mimosa agrestis, Stephaniana, and Julibrissin*, Cercis Siliquastrum, Ceratonia Siliqua, Paliurus australis, Zizyphus vulgaris, Ilex agnifolium, Juglans regia*, Acer monspessulanum and heterophyllum &c.

3684. The Olive, the Terebinth, the Pomegranate, the Sweet Bay, the Oleander, the Myrtle, the Fig, and the Vine, follow the shores of the Black Sea through Pontus, Mingrelia, and Colchis, and appear on the coasts of the Crimea, from lat. 44° to 45°. In these parallels, the lowest temperature scarcely reaches — 6°; but on the other side of the mountains which protect these countries from the northerly winds, the cold is so severe, that one might believe it was 4° or 5° nearer the pole.

3685. *As the Holy Land* constitutes so important a feature in the dominions of Turkey, we cannot close this account of the Botany of that empire without noticing more particularly some plants for which Palestine is celebrated: "a land of Wheat and Barley, of Vines and Fig trees and Pomegranates, a land of Oil (Olive), and Honey;" and in innumerable other places do the Scriptures bear testimony to the abundant vegetable products of the country.

3686. *The size of the Grapes*, mentioned in Numbers xiii. 23., of which "one cluster was borne by two men, upon a staff," might almost lead to a suspicion that the fruit was that of some other plant different from what we now call the Vine, were it not for the testimony of modern travellers. Stephen Schultz relates, that at a village near Ptolemais, he took his supper under a large vine, of which the stem measured a foot and a half in diameter; its height was about thirty feet; and, including its wide-spreading branches, which required to be supported, it formed a tent of above fifty feet in breadth and length. The bunches of grapes produced by this and similarly large vines weigh from ten to twelve pounds, and the individual berries are like small plums. When such a cluster is cut, the inhabitants place it on a table or board, about an ell and a half wide, and three to four ells long, and, several sitting around it, they pull off and eat the fruit. Christopher von Neitzschutz assures us that he has seen bunches of grapes in the mountains of Judea which measured half an ell long, and the berries were as long as two joints of the finger. This is corroborated by Mariti, who relates in his travels that none of the produce of the Vine, as it is known in other countries, can vie with the grapes of Judea and Syria, of which one man certainly could not carry a cluster far without destroying the fruit; thus rendering it probable that the spies conveyed the bunch between them, as much in order to preserve it entire, as on account of the weight, so that the beauty of the grapes might be fully seen in the camp of the Israelites.

3687. *With the grapes of the true vine* must not be confounded the vines of Sodom and Gomorrah:—"For their vine is of the vine of Sodom and of the fields of Gomorrah: their grapes are grapes of gall, their clusters are bitter:" and again, "Wherefore, when I looked that my vineyard should bring forth grapes, brought it forth wild grapes?" This is supposed to be a species of Nightshade, which bears its berries in bunches, the Solanum Sodomæum; and according to Hasselquist produces the apples of Sodom spoken of by Josephus in his *Wars of the Jews*, which, besides their widely different properties from the vine, have the fruit frequently destroyed by the attacks of an insect, and thus rendered full of dust (see p. 874.).

3688. *The fig tree* (*Ficus Carica*) abounds in Palestine, and not in gardens only, but growing in open places. Besides the branch with one cluster of grapes, borne between two upon a staff, and brought by the men who were sent by Moses from Paran to spy out the land of Canaan, there were "Figs and Pomegranates." So that, if not aboriginals of the country (and their native place has long been a matter of dispute), we know that those fruits existed there before the entrance of the Israelites. Josephus tells us that they have figs for ten months in the year; and it is certain that two or three crops are gathered annually. "For, lo, the winter is past; the rain is over and gone; the fig tree putteth forth her *green* figs," preparatory to the first crop, which sets about the spring equinox, and ripens about June: these are reckoned great delicacies, and are of short duration, as expressed in Isaiah, "The glory of Ephraim shall fade like the early fruit" (figs?). Jeremiah saw in a vision "a basket of figs that were very good, like *early figs*." The summer figs set in the middle of June, when the early ones ripen, and are themselves in perfection in August. The third crop is ready late in the autumn, when the tree has shed its leaves. In mild winters, fruit may be found on the trees even so late as January. Figs are eaten both fresh and dried. To render the fruit more certain of ripening, the process of caprification has been employed; and the advantage of this is very evident, when we consider the true nature of the fig. What we commonly esteem the fruit of a fig is no fruit at all, any more than the substance which is eaten of the common artichoke. Both of them are receptacles, or a fleshy base, upon which a number of florets are inserted. In the artichoke, the receptacle is plane, or nearly flat; and, consequently, all the florets that are placed upon the receptacle are visible without dissection. Now, the fleshy part of a fig, that part which so much resembles a pear, is also a receptacle, but hollowed out in the centre in a very curious and peculiar manner: and on the surface of that hollowed part are innumerable florets, male or female, or sometimes both, within this common receptacle. And the whole is so closed at the top, that it may easily be supposed that, in the case of the receptacle containing only female flowers, the male dust could hardly find access to them; and if there be mixed flowers, a more free passage for the air must be requisite. Even in France, it is well known that the quality of a fig is improved by making perforations in the top of it. The Eastern nations do more than this. Caprification is by them performed by going to the woods, and thence collecting from the wild fig trees a little insect which is very abundant, a species of Cynips, and bringing it home to their cultivated figs. These minute creatures fall to work directly, piercing the fruits, in order to deposit their eggs within them; and fluttering from one to another, with their limbs and wings all charged with pollen, they by this means convey fertility to the otherwise barren pistils.

3689. *The sycamore tree* (*fig.* 541.) of Scripture, into which Zaccheus climbed, must not be confounded with the tree so called in our country. It is a species of fig (*Ficus Sycomorus*), and is sometimes termed the Wild Fig tree; although it is the true sycamore, its name being derived from *sycos*, a fig tree, and *moros*, a mulberry; but this appellation is now generally, though very incorrectly, given to the Acer Pseudo-Platanus of Europe. The prophet Amos says, "I was no prophet, neither a prophet's son; but I was an herdsman, and a gatherer of sycamore fruit." From this and from other passages in Scripture, it may be inferred, that this tree was of very great importance among the Jews; although its fruit is extremely inferior to that of the true fig, for it has a disagreeable bitterness; nay, it is said by Pliny and other naturalists to be intolerably nauseous, until rubbed with iron combs, after which it ripens in four days. This evidently alludes to the process of caprification. Theophrastus observes, that, when the fruit is mature, it should be pulled some days before it is eaten. Abdollatif says, that, previous to gather-

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SYCAMORE.

ing the figs, a man ascends the tree with a punch, and pricks all the fruits with it, one after another: a kind of milky fluid oozes from this opening, and the wounded part afterwards turns black, and in a few days after the fruit becomes sweet and fit for use. This is indeed the only one (besides the *Ficus Carica*) of all the 120 species of Fig, of which the fruit is eatable, and a vast quantity is consumed by the Arabs and the natives of the Levant. It forms a large tree, said to be among the loftiest in Palestine, with heart-shaped angular leaves, whose wood is of considerable value, and alleged to be indestructible: of this we have a proof in the fact of the Egyptian mummy-cases being made of this wood. And so abundant were these trees in Palestine, that, in allusion to the building of the temple, it is stated that Solomon "made cedars to be in Jerusalem as the sycamore trees that are in the valley for abundance:" so plentiful, indeed, were they, that "David set overseers over them, and over the olive trees that were in the low plains he set Baal-hanan the Gaderite." Yet they were sometimes destroyed by the frosts. The fallen state of the Jews, and their future prosperity, are thus typified by Isaiah: — "The bricks are fallen down, but we will build with hewn stones; the sycamores are cut down, but we will change them into cedars."

3690. *The Pomegranate* (*Punica Granatum*) is common in Syria and Palestine, particularly in all the gardens of Aleppo. The ripe fruit is in abundance in August, and is then laid up for a winter stock. There are three sorts; a sour kind, a moderately sweet kind, and a very sweet kind. The juice of the first is used instead of verjuice, or the juice of the unripe grapes. The others are eaten at table, after being cut open, the seeds taken out, strewed with sugar, sprinkled with rose water, and served up on little plates. The pomegranates, on account of their round and graceful figure, formed a frequent ornament in the chapiters of the building of the Temple: — "And the chapiters upon the two pillars had *pomegranates* also above, over-against the network; and the pomegranates were 200, in rows round about." They were also embroidered upon the hem of the high-priest's ephod. A wine is sometimes extracted from these fruits, and probably was so by the ancient Jews, as may be inferred from the word "Gath-Rimmon," signifying "the press of pomegranates." The seeds, according to Russell, constitute an important culinary article, being used for conserves and syrups. This fruit was much prized by the Israelitish people, as appears not only by its description among the products of the land of Canaan, but also by the murmuring of the tribes when they came into the desert of Zin. "Wherefore," said they, "have ye made us to come out of Egypt into this vile place? It is no place of seed, or of figs, or of vines, or of pomegranates." We must not judge of the Pomegranate from the stunted specimens cultivated in England: in warmer countries it constitutes a tree, and several towns and places have derived the name of "*Rimmon*" from the abundance or excellence of this production. "Saul dwelt at Gibeah, under a *pomegranate tree* which was in Migron." The bark has been used in dyeing, and yellow morocco leather is thus stained.

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FRUIT OF THE CAROB TREE.

3691. *The* "HUSKS," *in Scripture, which* "*the swine did eat*," in the affecting and beautiful parable of the Prodigal Son, in Greek *κερατια*, are generally, and with much propriety, considered to be those of the fruit of the Carob tree, or Locust tree (*fig.* 542.) (*Ceratonia Siliqua*); sometimes called St. John's Bread, from an idea that its fruit was the Locusts eaten by the forerunner of our Saviour; but as Locusts have from time immemorial been the food of the people of the East, that word may, very fairly, be taken in its literal sense. The Carob forms a middle-sized tree, not unfrequent in the gardens of the curious in England: it belongs to the natural family Leguminosæ, having large pinnated leaves, with inconspicuous flowers, rather large pods, and seeds embedded in pulp. The husks are still commonly employed for feeding cattle in Palestine, after the seeds are taken out, and the juice is pressed from them, which is much esteemed, and used for preserving fruits. Mixed with liquorice root, dry grapes, and other fruit, the Mussulmans make sherbet of it, and it is with them an article of daily consumption. The pulp, too, is eaten after the seeds have been thrown away: it is dried in the sun, acquires a pleasant flavour, and contains a great deal of saccharine matter. The leaves and bark are used for tanning skins.

3692. *The Palm tree of Scripture*, generally spoken of, is the Date Palm (*Phœnix dactylifera*), and its fructification requires the assistance of art. Theophrastus and Pliny allude to this process in terms which go to prove that the ancients had some knowledge of the sexes of plants, and the fertilisation of vegetables. In the East, and in Barbary, as soon as the Date trees begin to flower, the inhabitants carefully collect the male clusters before the pollen has escaped, and, climbing to the top of the female trees, they shake the male blossoms over them; and then fasten some bunches of male flowers in the middle of the female ones. By this process the successive fecundation of the several clusters of the date, which appear one after another, is ensured. The Date trees of Cairo, says Delile, in his *Flora of Egypt*, bore no fruit in the year 1800, because they had not been fertilised as usual. The French and Mussulman troops were at war during the spring, and the labours of the agriculturist had ceased in the desolated plains. Thus the pollen of the Date trees, scattered by the wind, instead of being artificially carried, as was customary, to the female trees, failed to fecundate a single cluster of cultivated dates: but its influence was seen on the wild Date trees, several of which, though at considerable distances, bore fruit, though this fruit was so small and sour as to be unfit for food. The poet Pontanus has sung in glowing terms the history of two Date palms, of which the female was cultivated at Otranto, and the male at Brindisi; that is, at a distance of fifteen miles from one another. In spite of this immense interval, the Date tree of Otranto was fertilised by the other tree, and produced an abundance of delicious fruit. The winds performed the task of conveying the fecundating dust from the male tree into the young ovaries of the female. Many similar instances are recorded. Four or five months after the fertilisation has taken place, the Date trees begin to bend under the weight of their bunches of ripe fruit. The number of these clusters vary considerably. There are generally three or four on each tree, though some individuals have produced ten or twelve. Each weighs from twenty to fifty pounds. Before the fruit has acquired its full size, it is requisite to raise the clusters, and tie them to the base of the leaves, so that they may not be shaken and bruised against one another by the force of the wind. The dates must be gathered some days before they are perfectly ripe, or they speedily decay and ferment. When it is desirable to keep them for any length of time, they are spread on mats, and dried in the sun, and these are the dates that are sometimes seen in Europe. But the fruit, so parched, gives a very inadequate idea of the sweet and agreeable flavour that is found in the ripe and freshly gathered dates. They also prepare a kind of paste, by pressing the fruits very hard, and putting it in baskets made of the leaves of the tree, which are generally carried by the caravans. Jericho was called the city of Palms, from the number of Date trees in the neighbourhood; but they are now comparatively rare. They were emblematic of Palestine on the Roman coins, "where lone Judea wept beneath her palm," with the inscription "*Judæa Capta*." We shall not enter into a history of the uses of this celebrated and most valuable plant, for that may be found in various well known publications; but we shall content ourselves with observing, that, on account of its evergreen foliage, it has been considered by the Psalmist as an apt emblem of the flourishing and happy state of "the righteous," who "shall flourish as a palm tree;" and that palm branches or leaves (for palms have no branches) have been borne as indicative of joy and festivity, as is often mentioned in the book of Maccabees; and when our Saviour entered Jerusalem, the people "took branches of the Palm tree, and went forth to meet him." At the feast of Tabernacles, the Jews, as is well known, had a divine command to employ "goodly palm branches" in the erection of booths; and to this day, on the celebration of that festival, the Jews try, by every means, to procure dried ones, when living remote from the countries where they grow. In one part of the south of France, the sale of these leaves forms a staple article of trade. The village of Bordighiera, situated on an eminence sheltered towards the north by the Apennines, presents, from a distance, the aspect of a tropical spot, on account of the numerous Date trees which surround it. These are from forty to forty-five feet high; their fruit is seldom ripened sufficiently for eating; and it is for the sale of their leaves that these trees are cultivated. They are sold at two periods of the year, in spring for Palm Sunday, and in September for the Jewish Passover. The spring leaves are sold at 6*d.* or 7*d.*, Genoese money; but their price is annually falling, as the custom of substituting the branches of other trees for the Palms is much increasing in catholic countries. It is chiefly to the coasts of Italy, to Rome and Naples, that the palms of Bordighiera are sent. Those gathered in autumn, and destined for the use of the Dutch Jews, who adhere strictly to the letter of the law, yet cannot obtain recent Palms, fetch a higher price; they are sent off in parcels of 600, at 10*d.* or 11*d.* each. Many vessels are annually employed in this trade.

3693. *The Olive* (*Olea*) attains to a large size in Palestine, and the country has been considered eminently blessed for the abundance of this tree, and for the excellence of its oil, which the Israelites conveyed to the markets of Tyre. Solomon is said to have ordered to the workmen that king Hiram sent him, besides other provisions, 20,000 baths of oil. But the oil here spoken of, is supposed to have been not expressed from the cultivated olive. Schultz found near Jericho, in the bed of a brook that was dried up, several wild Olive trees, whose fruit was as large again as that of the cultivated kind, and from these the natives extracted an oil, which they used not for food, but as medicine.

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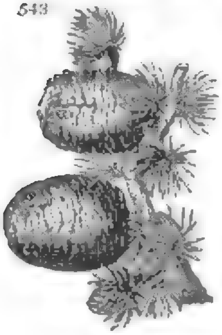

CEDAR

3694. *The Cedar* (*fig.* 543.) must not be omitted in an enumeration of the interesting plants of the Holy Land; it is a fir of the group of the Larches, and hence called by some authors Pinus Cedrus, and by others Larix Cedrus. It is remarkable for its stately size, its wide-spreading fan-like branches, and its not deciduous leaves, in which latter particular it differs from all the other larches. It is a native of several places in the Levant, and especially of the famed Mount

Lebanon, which has been celebrated from the most ancient times for its cedars. The temple of Jerusalem and the royal palace there were built of this wood; and in the last structure, so great a quantity of this tree was employed, that it was called the House of the Forest of Lebanon. Masts of ships were made of it at Tyre; and so important was it to the ancient Jews, that the Psalmist compares the boughs of "the vine brought out of Egypt" to the cedars of God ("goodly cedars," in our translation). Pococke measured a stem that was twenty-four feet in circumference. Abundant as were the cedars in Lebanon during the days of Solomon, they are now greatly reduced, and confined to the steep declivity of the more elevated parts of the mountain, in the neighbourhood of the Carmelite monastery of St. Sergius. Mayo, in the summer of 1813, calculated the number of trees, of which this grove consists, at 800 or 900, large and small. Among them were nine principal cedars, whose circumference, at four feet from the ground, was nearly twenty feet; so that it is with some justice that Professor Martyn has remarked that we have probably now more cedars in Britain, than there are in all Palestine. It is hardly necessary to remark, that the cedar wood, of which pencils are made, is not the produce of this tree, but of a species of juniper (*Juniperus virginiana*), called the red cedar.

3695. *The Terebinth tree* (*fig.* 544.) is often mentioned in Scripture: this is the Pistachia Terebinthus of Linnæus, if Celsius be correct in calling the Oak of our translation his Terebinthus judaica; and Rosenmüller, to whom we are indebted for much valuable information respecting the natural history of Scripture, informs us that the words El-Elah, in our Bible rendered oak, are particularly applied to the Terebinth. Jacob buried the idolatrous images that his family brought from Mesopotamia under a Terebinth tree. An angel appeared to Gideon under a Terebinth tree. It was in a valley of Terebinth trees that Saul encamped with his host, and under one of them were he and his sons buried. Absalom hung upon a Terebinth tree, and Isaiah threatens the idolaters (ch. i. v. 30.), that they shall be as a Terebinth tree whose leaves fall off; that is, being an evergreen, when the tree dies. On account of their great age, they are employed metaphorically to indicate the prosperous and enduring state of the Jews when they were to be again restored. One of them, under which Deborah is said to have dwelt, according to Josephus, was shown near Hebron at the time of St. Jerome. Towards the middle of the seventeenth century, between Jerusalem and Bethlehem stood an old tree, under which tradition relates that the Virgin Mary rested, when she went from Bethlehem to Jerusalem, to present her son in the Temple; and this was equally venerated by the Mahometans as by the Christians: but in 1646 it was accidentally destroyed by fire. The wood of the Terebinth tree is white, hard, and abounding in resin. The turpentine is obtained by making incisions, which should be done annually, else the accumulated fluid swells, and finally bursts and destroys the tree. From the neglect of this practice, Terebinth trees, which used to be so frequent in Judea, are now become of rare occurrence.

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TEREBINTH.

3696. *Gladly as we would enlarge upon the subject of the plants of the Holy Land,* want of space compels us to be brief. The Plane tree (*Platanus orientalis*) (*fig.* 545.) is abundant in Palestine, and is supposed by some commentators to be the same as the poplar, which yielded the rods that Jacob placed before the sheep in the watering troughs. The thorns with which our blessed Lord was crowned were the spiny branches of Zizyphus Spina Christi (*fig.* 546.), a frequent inhabitant of the Holy Land. Among the plants producing odoriferous gums or oils, of which the Balsam, or Balm of Gilead, or of Mecca, is the most celebrated, are the Amyris gileadensis (*fig.* 547.) and A. Opobalsamum

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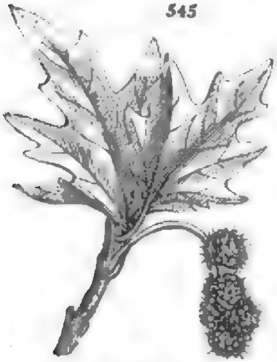

PLANE TREE.

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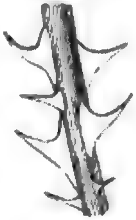

SPINA CHRISTI.

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AMYRIS GILEADENSIS.

of Linnæus; but these do not appear to be natives of Syria or Palestine, whatever they may have been of Arabia, the peculiar country of the precious balsams. Strabo, indeed, mentions a balsam garden at Jericho; and Judah is said in Scripture to have traded in wheat, oil, and *balsam* (or resin, as the margin has it); but whether the Amyris or not, must admit of great doubt. Gum ladanum is yielded by Cistus Ladaniferus, and is supposed to be the Lot of the Hebrews, and among the spices which the Ishmaelitish merchants brought from Gilead to Egypt. It is a beautiful and well-known plant in our gardens. The gum or resin is found on the branches, and being soft and clammy early in the morning, the goats are driven in among the plants, and it adheres to their beards. Myrrh and frankincense are the products of Arabian plants. Galbanum (*fig.* 548.) an ingredient in the incense of the sanctuary, was procured from the Bubon Galbanum, an umbelliferous plant of Syria. What particular Rose, "the Rose of Sharon," and the "Rose plant in Jericho," is, it is perhaps impossible to conjecture. The plant, vulgarly known under the name of the Rose of Jericho, is no rose at all, but a small cruciferous plant, a native of the deserts of Arabia, the Anastatica hierochuntica (*fig.* 549.). After flowering, and when the seeds approach maturity, this plant dries up, its leaves fall, the branches, which are rigid and thorny, shrink together, and form a kind of round tuft, about the size of a man's fist. In this state, the Anastatica is driven by the winds, which tear it up by the roots, across the deserts, and as far as the sea shore, and is brought to Europe, where it is designated as the Rose of Jericho or hygrometric Jerosa. The most ridiculous fables were invented respecting this plant, at a period when superstition greedily received them. It is an undoubted and remarkable fact, that the Rose of Jericho opens and extends its branches when immersed in water, or when the atmosphere is very damp, and resumes its former appearance when exposed to the wind or to heat.

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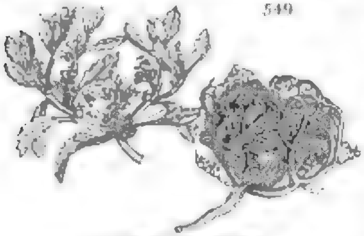
GALBANUM.

549



ANASTATICA HIEROCHUNTICA.

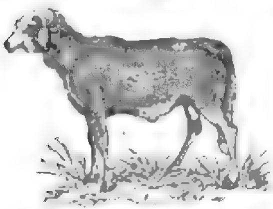
3697. *To sum up all in the words of Malte-Brun*, speaking of the state of the country, and of its most useful productions: — "It has been remarked, that if the advantages of nature were duly seconded by the efforts of human skill, we might, in the space of twenty leagues, bring together in Syria all the vegetable riches of the most distant countries. Besides wheat, rye, barley, beans, and the cotton plant, which are cultivated every where, there are several objects of utility or pleasure, peculiar to different localities. Palestine, for example, abounds in Sesamum, which affords oil, and in Dhoura, similar to that of Egypt. Maize thrives in the light soil of Baalbec, and Rice is cultivated with success along the marsh of Haoulé. Within these twenty-five years the Sugar canes have been introduced into the gardens of Soida and Beirout, which are not inferior to those of the Delta. Indigo grows, without culture, on the banks of the Jordan, and only requires a little care to secure good quality. The hills of Latakia produce Tobacco, which creates a commercial intercourse with Damietta and Cairo. This crop is at present cultivated in all the mountains. The White Mulberry forms the riches of the Druses, by the beautiful silks which are obtained from it: and the Vine, raised on poles, or creeping along the ground, furnishes red and white wines, equal to those of Bordeaux. Jaffa boasts of its Lemons and Water-melons; Gaza possesses both the Dates of Mecca and the Pomegranates of Algiers. Tripoli has Oranges which may vie with those of Malta; Beirout has Figs like Marseilles, and Bananas like St. Domingo; Aleppo is unequalled for Pistachio nuts; and Damascus possesses all the fruits of Europe, Apples, Plums, and Peaches growing with equal facility on her rocky soil. Niebuhr is of opinion that the Arabian Coffee shrub might be cultivated in Palestine." (Vol. ii. p. 130.)

Subsect. 3. *Zoology.*

3698. *The native zoology of Asiatic Turkey* does not present us with any remarkable species that are not equally found in the adjacent extremities of Africa and Asia. The lion was once common in Syria, and, according to Oppian, formerly over-ran Armenia; but this formidable creature is now, as M. Cuvier observes, almost confined to Africa and some parts of Asia. We have determined the fact of the African Lion (*Leo africanus* Sw.) being a distinct species from that of Asia, which we have therefore named *Leo asiaticus*. Noble specimens of both are now alive in the Surrey Zoological Gardens (1833). Angora is celebrated for its peculiar breeds of goats and of cats.

3699. *The Angora Goats are very beautiful:* the hair, mostly white, is long and soft, and much esteemed for fabricating shawls and other dresses: it has long buff-coloured ears, and the horns, pointing upwards, have a spiral turn.

550



ANGORA GOAT.

3700. *The Angora Sheep* (*fig.* 550.) are also peculiar. There are three breeds, all well proportioned, called Coquo Muana, Coquo, and Zomba, in all which the horns are small. The Coquo has the finest wool, that of the others being more hairy. They all have very long tails, but the ears are horizontal.

3701. *The cats* are much larger than ours, with beards like the lynx, and, although seldom seen in this country, are common in the houses of Paris.

Sect. III. *Historical Geography.*

3702. *To detail the revolutions of the countries* now comprehended in Asiatic Turkey would be little less than detailing those of the world. Down to the capture of Constantinople by the Turks, in 1453, they were the scene of the greater part of the events which decided the fate of mankind. These revolutions, indeed, are so well known, that it is scarcely necessary even to indicate them to the intelligent reader. First to be noticed are the numerous little states in Canaan subdued by the Jews, and those which continued as their neighbours. At last Judea absorbed nearly all these states, and had for its enemy only Syria, and for its friendly neighbour, Phœnicia, with its splendid commercial capital, Tyre. In Asia Minor we find a similar multitude of small states, — Ionia, Æolis, Lydia, Caria, and many others. Then comes the era of the great empires, commencing with Assyria, and continued by Babylon, both founded in this region, and both yielding to the Persian empire, which, under the conquering arms of Cyrus, extended itself beyond any former state; reaching over all western Asia, including Egypt, and attempting to overpower Greece. But its contests with this last power had a fatal issue. The phalanx of Macedon, trained by Philip and led by Alexander, overthrew at one blow this colossal but ill-compacted and enfeebled power; and a Greek empire was established from the Nile to the Indus. When that mighty mass of conquest went to pieces with the sudden disappearance of its head, the kingdom of the Seleucidæ was formed, which included nearly the whole of what is now termed Asiatic Turkey, with the exception of some portion of Asia Minor. Amid the confusion of wars and contests which ensued among Alexander's successors, Asia Minor became not only independent, but the seat of some very potent and celebrated monarchies, — Pergamus, Pontus, Armenia; each of which might have even aimed at general monarchy, had not a mightier foe appeared in the field. To Rome all the nations that had ruled Asia were destined to bow; yet none maintained a harder struggle, or fell with greater glory, than Antiochus, Mithridates, and some others of these kings newly risen to greatness. Asia Minor, Syria, Judea, were completely reduced to the condition of provinces; but whenever her legions attempted to pass the desert, and were involved in the wide plains beyond the Euphrates, they were enveloped by the flying clouds of Parthian cavalry, and their career was closed with signal disaster. Western Asia, under the Roman government, enjoyed for many centuries a peaceful and voluptuous repose. This was broken, in the seventh century, by that mighty revolution which has changed the whole aspect, moral and political, of the Eastern world. The empire of the caliphs, established at Bagdad, soon ruled, with absolute sway, Syria and Assyria. Even after this original kingdom had yielded to the pressure of those numberless hordes who, under the appellation of Turks or Toorks, poured down from the northern interior of Asia, they all equally fought under the law and standard of Mahomet. The vanquished were either compelled to embrace his religion, or reduced to a subject and degraded class, deprived of almost all the rights of humanity. These successive irruptions continually hemmed in more closely the Eastern Empire; and, even after the Turkish power seemed completely fallen, it broke forth under the Ottoman dynasty with increased vigour. At this era, however, the progress of Moslem domination received a temporary check, by that series of powerful expeditions from Europe so celebrated under the title of *crusades*. The crescent was, for the time, humbled: Jerusalem was rescued, and erected into a kingdom, which subsisted for about a century. At length all the Christian powers in the East gave way before the victorious arms, first of Saladin, and afterwards of Mahomet and Selim. In the course of the fifteenth century, all that part of Asia of which we are treating terminated its long series of revolutions by becoming a portion of the Turkish empire: it has ever since been subject to the degrading and brutalising sway of this empire, and of the austere and bigoted religion on which it is founded. Under this influence, that grandeur and prosperity which rendered it the most celebrated region of the world has entirely disappeared. Volney, who traversed it with the eye of a philosophic observer, has painted its downfall in the most eloquent and affecting terms. "Every where," says he, "I saw only tyranny and misery, robbery and devastation. I found daily on my route abandoned fields, deserted villages, cities in ruins. Frequently I discovered antique monuments, remains of temples, of palaces, and of fortresses; pillars, aqueducts, and tombs: this spectacle led my mind to meditate on past times, and excited in my heart profound and serious thought. I recalled those ancient ages, when twenty famous nations existed in these countries; I painted to myself the Assyrian on the banks of the Tigris, the Chaldean on those of the Euphrates, the Persian reigning from the Indus to the Mediterranean. I numbered the kingdoms of Damascus and Idumea, of Jerusalem and Samaria, the warlike states of the Philistines, and the commercial republics of Phœnicia. This Syria, said I, now almost unpeopled, could then count an hundred powerful cities. its fields were covered with towns, villages, and hamlets. Every where appeared cultivated fields, frequented roads, crowded habitations. What, alas! is become of these ages of abundance and of life? What of so many brilliant creations of the hand of man? Where are the ramparts of Nineveh, the walls of Babylon, the palaces of Persepolis, the temples of Baalbec and Jerusalem? Where are the fleets of Tyre, the docks of Arad, the looms of Sidon, and that multitude of sailors, of pilots, of merchants, of soldiers? Where are those labourers, those harvests, those flocks, and that crowd of living beings, which then covered the face of the earth? Alas! I have surveyed this ravaged land. I have visited the places which were the theatre of so much splendour, and have seen only solitude and desertion. I have sought the ancient nations and their works, but I have seen only a trace, like that which the foot of the passenger leaves on the dust. The temples are crumbled down; the palaces are overthrown; the ports are filled up; the cities are destroyed; and the earth, stripped of its inhabitants, is only a desolate place of tombs." Although this picture is overcharged in some of its features, its general character applies but too truly to the region now before us.

Sect. IV. *Political Geography.*

3703. *The principles and mode of government* are exactly the same in Asiatic as in European Turkey. The pachas, invested with the command of extensive territories, receive entire the power of the original despot from whom they derive their appointment. Their distance, indeed, affords them much more ample opportunities of acting independently, and of merely transmitting to the Porte such an amount of tribute and military aid as they can conveniently spare. Even Asia Minor, which is now the centre of Turkish power, has been the seat of formidable rebellions; and Paswan Oglou long governed an extensive tract of its western districts with little or no control from the Porte. The more remote pachalics of Acre and Bagdad have almost completely shaken off the yoke. The independence of the former dates from Daher Omar, in the middle of the last century, and was maintained still more completely under the ferocious Djezzar. Since the period first mentioned, the Porte has derived neither force nor revenue from an appanage which includes nearly the whole of the ancient Judea. A similar independence was earned by Ahmed, Pacha of Bagdad, after his gallant defence of that city against Nadir Shah, and afterwards against his successor Solyman. In 1810, indeed, the Porte succeeded in supplanting the reigning pacha by a creature of its own, who, however, effected the expulsion of his rival only by collecting a band of hardy Kurd mountaineers, who form at present the ruling power in Bagdad. In general, after a year or two of possession, a game begins between the Porte and the new pacha; the latter endeavouring to shake off his dependence, while the former strives to terminate the refractory vassal's life by the bowstring; and notwithstanding the decayed and decrepit state of the sultan's power, yet, by incessant perseverance, and by throwing his weight in the scale of a rival candidate, it has usually succeeded in the end. An attempt, indeed, partly successful, is even now making by the Pacha of Egypt to wrest the whole of these territories from the Porte; but its final issue is not yet ascertained.

3704. *This imperfect and precarious independence* is, generally speaking, the reverse of an improvement in the condition of the unfortunate people. The pacha rules with as complete and tyrannical a sway as the sultan: he is rendered cruel by the dangers by which he is surrounded; and careless of the welfare of his district by the precarious tenure on which his place is held. In order to maintain his power, he takes into pay the brave but fierce and predatory inhabitants of the mountains, and must secure their attachment by allowing them liberty to commit plunder and outrage. According to Volney, they raise a prosecution in one place against a rich man, and strip him under a specious pretext; in another, they hire false witnesses, and impose a contribution for an imaginary fault; they foment every where the enmities of sects, and encourage them to give informations against each other, in order to afford a pretext for *avanies*. Thus their imprudent avarice collects into one heap all the riches of a country. When the government pretends to avenge the oppressed people, it snatches to itself the spoil from the hands of the oppressor, and sheds his blood uselessly, for a crime of which itself is the accomplice, and by which it profits.

Sect. V. *Productive Industry.*

3705. *The causes which have rendered abortive the vast capacities* given by nature to this region for the production of almost every species of wealth, have been sufficiently explained in the preceding section. It is true that all these countries have, from the earliest ages, been distinguished rather by agricultural industry, and the rearing of cattle, than by the finer manufactures, which they have been accustomed to receive by caravans from the great empires of the East. In most of its districts, however, culture is rendered insecure by the oppression of the pachas, and the ravages of the Arabs, against which the government cannot, or at least does not, afford protection. Hence, in many parts, particularly in the tracts behind Jordan and Lebanon, and in Mesopotamia, which were formerly covered with the richest harvests, no trace of fertility remains, except only in their overgrown and deserted pastures. The upper tracts of Asia Minor and Armenia, where horses and cattle are reared, are both less exposed to inroad, and better able to defend themselves, though they too often abuse their strength to plunder the inhabitants of the neighbouring plains. Here, however, is produced the fine goat's hair or mohair of Angora, which is sought in Europe as a material of some valuable manufactures.

3706. *The manufactures of Asiatic Turkey* are chiefly of an ordinary kind, coarse, and for internal consumption only. Yet silk, cotton, leather, and soap are staples of the Levant; and the two latter find a place in the markets of Europe. Finer specimens, however, of all these commodities seem to be afforded from the cities of Barbary. The manufacture of Damascus blades, so famed in the middle ages, ceased from the period when Timur carried to Tartary the artisans employed on them. At Tokat there is a great fabric of copper vessels. The women among the wandering tribes in the upper districts weave the admired Turkey carpets; but the finest are made in the mountain districts of Persia.

3707. *No part of the world* appears more expressly destined to be the seat of an extensive commerce. The command of the Mediterranean, the numerous coasts and islands by which it is surrounded, its position at the connecting point of the three continents, and its contiguity to countries whose dissimilar tastes and productions peculiarly fit them to supply each other's deficiencies, are advantages which naturally rendered it the earliest and most favoured seat of commerce. The splendour of its ancient emporia excited the astonishment of the world; and they continued for a lengthened period, notwithstanding the hostile influence of revolution and oppression, to preserve a considerable portion of their early commerce and magnificence. These, however, have at length almost totally disappeared. Only Aleppo and Smyrna survive; the former supported by Syria and the caravan trade of interior Asia, by which at one time it received even the muslins and jewels of India. Since the discovery, however, of the passage by the Cape of Good Hope, the Indian trade has taken almost wholly a different route. The internal distractions which agitated Persia for half a century rendered the intercourse with that empire both dangerous and unprofitable. Through these causes Aleppo, once the chief seat of commerce in the Levant, has suffered a great decline. Smyrna, as it carries on merely the local commerce of Asia Minor, the part of the empire which has suffered least by anarchy and rapine, still maintains a respectable place as a trading city. It exports raw silk, goat's hair, Turkey carpets, raisins, drugs, and gums, in exchange for the cloths and hardware of Europe. (There is a very full account of the trade of Smyrna in M'Culloch's *Commercial Dictionary*, under the head SMYRNA.)

SECT. VI. *Civil and Social State.*

3708. *The state of social existence*, religion, learning, and manners, so far as respects the ruling people, is precisely the same in Asiatic as in European Turkey. They present that austere, uniform, and gloomy character, which the precepts of Mahomet tend to form, and which is produced in its utmost purity in the cities of Turkey. The native and subject races, however, exhibit marked distinctions. The Greek population, which in Europe makes the prominent feature among the conquered people, exists only to a limited extent on the coasts and islands of Asia Minor. In its room all the mountainous Asiatic tracts contain bold and hardy tribes, who, availing themselves of their distance and the declining power of the pachas, admit little control over their internal proceedings, and establish independent and sometimes almost republican governments.

3709. *The high and uncultivated table-lands* in the interior of Asia Minor are occupied by a wandering and pastoral race called Turcomans, either because they are really descended from the people of that name on the east of the Caspian, or perhaps, because a similar situation, producing similar habits and aspect, has caused the two to be confounded. They drive their flocks in summer into the most elevated tracts, and, as winter approaches, lead them down into the lower and sheltered valleys. All their habits are decidedly Tartar; and with the domestic simplicity of this race they combine its love of war and booty, with no nice consideration how this latter may be obtained. When summoned, however, to fight under the banner of the empire, and to unsheath the sword against the infidels, they are prompt in obeying the call, and form the main military strength of Turkey. They serve a short campaign without pay, but with little ardour, and with full licence of plunder. Though they cannot meet disciplined troops in the shock of battle, they make excellent irregular cavalry.

3710. *Syria, Palestine, and Bagdad* have attracted great numbers of *Arabs* from the vast deserts by which these countries are bordered. Besides those who make inroads for the sake of plunder, or who drive their flocks, with or without permission, into these more fertile pastures, there are many who have obtained a fixed settlement in the fields or the cities, and have become regular subjects of the empire. These conform to established manners, and have a more gay and polished address than the Turks. Many of them become thriving merchants; but they never forget those long genealogies, that respect for the beard, and admiration for the horse, which form the pride of the Arab in his native desert.

3711. *The steep and rugged heights of Lebanon* have given shelter to races of quite a different character from the wandering or the settled Arabs. Those high slopes, unfit for pasturage, are made, by the laborious culture of the people, to yield them subsistence; they fight on foot with the musket; they have, what is most rare in Asia, national assemblies, with some form of republican government. Among these mountain tribes, the chief are the Maronites and the Druses.

3712. *The Maronites* were originally the proselytes of Maron, a saint of the fifth century; but being stigmatised as heretics, they, in the seventh century, sought refuge, under a distinguished leader called John the Maronite, in the hilly country of Kesrouan, behind Tripoli. Here, when the Saracens over-ran Syria, carrying on a war of fierce persecution against the Christian name, the Maronite territory became the retreat of many who were willing to sacrifice all for the free exercise of that religion. Having procured arms, they bravely defended themselves, and the Mahometans were unwilling to waste their time and resources on a territory so difficult and so poor. By degrees they not only freed themselves from subjection of every kind, but, availing themselves of favourable occasions, made inroads into the surrounding territories, and carried their arms even as far as Jerusalem. At length Amurath III., a fierce and active prince, became indignant at seeing his power thus braved. In 1588, he collected a large force, penetrated into their territory, and compelled them to acknowledge the supremacy of the Porte, and to bind themselves to the payment of an annual tribute, which has ever since been paid, or at least owned as due. In every other respect, they endure scarcely any control. The catholic rites are celebrated as publicly in Kesrouan as in Italy. Of the numerous villages built on the sides of the hills, each has its priest, its chapel, and its bell. The Maronites, notwithstanding their deviations from strict orthodoxy, have been received into the communion of the church of Rome, which nothing could ever induce them to renounce, and which connives at their retaining a patriarch of their own, who resides at the monastery of Kanobin. Kesrouan contains upwards of 200 convents; but as the monks till the ground, and have brethren capable of carrying on all necessary handicraft trades, they cannot be ranked as useless members of society. The numerous priests are supported solely by the bounty of their flocks, which they are obliged to eke out by the cultivation of land, or the prosecution of a trade; even the bishops do not usually enjoy a revenue of more than sixty guineas a year. For this poverty, the clergy are compensated by the great respect paid them by the people, who kiss their hands whenever they meet them. The Maronites, in general, live in a happy simplicity, in rude hamlets or solitary houses, among the acclivities of Lebanon. They recognise no distinctions of rank. Those indeed, whom they call *sheiks*, or, as we would say, little gentry, have a few advantages of dress and food, but live in the most frugal manner; while very few are in want of the absolute necessaries of life. They have scarcely any form of government; the villages forming so many little communities, secured by simple and peaceful habits from those evils which, elsewhere, the sword of justice must remedy. When, however, any outrage is committed, they unfortunately assert and exercise the Arab right of private vengeance. The Maronites are all armed, and, when their strength is called out, can muster 35,000 men, on which Volney calculates the entire population at 115,000: we should rather suppose it 150,000.

3713. *The Druses*, who occupy the more northern and still loftier heights of Lebanon, are a people of much rougher aspect, and all the religion they have is of the Mahometan species. The notions that they derive their origin from the crusaders, and their name from the Count de Dreuse, are now completely exploded. Their creed is traced to Hakim, one of the Fatimite caliphs of Egypt, who, in the tenth century, commenced a radical reform of the Mahometan religion. In this career, he cut off at once all its peculiarities; the prohibition against eating pork and drinking wine, the pilgrimage to Mecca, the observance of fasting, and the recital of the five prayers. Unfortunately he extended this latitude to essential points of moral duty, permitting even incestuous marriages, and finally erecting a worse superstition than that which he had overthrown, by setting himself forth as an incarnation of the Deity. He finally fell a victim to the enraged multitude, whose opinions he trampled upon; but his dogmas, and even his wildest personal pretensions, spread throughout Syria. They were proscribed, however, as monstrous and heretical by the prevailing part of the Mahometan world; and their adherents, like the Maronites, were obliged to flee into the recesses of Lebanon. Being reinforced by other heretical sectaries, they proved extremely formidable, till Amurath III., in the same expedition in which he reduced the Maronites, compelled the Druses also to bind themselves to the payment of an annual tribute. He stipulated, moreover, that, instead of living in a species of anarchy under their sheiks, they should choose, subject to the approbation of the Porte, a prince or *emir*, who should be responsible for their peaceable deportment, and the regular payment of the tribute. This arrangement, however, had a result opposite to what was contemplated. It gave to the nation an union before unknown; the consequence of which appeared very obvious, when Fakr-el-din, or Facardin, founded a sort of kingdom of the Druses. Having taken Bairout, he made it the capital, and such it has ever since continued. Having been induced, however, to visit Italy, he contracted voluptuous habits, unsuited to Oriental ideas, which weakened his influence, and led, finally, to his captivity and death. The Druses, however, continued to be ruled by his family, till it became extinct, when another was established in its place.

3714. *The Druses derive from their independence* an energy and a vigour of character unknown to the other nations of Syria. A considerable part of the land is in the possession of a few great sheiks, whose factions often embroil the natives, but at the same time maintain a spirit of liberty and activity. All the great affairs of the nation must be decided in an assembly of these sheiks, at which even peasants are allowed to be present, and to give their voice; so that this government presents a mixture of powers somewhat similar to that existing in the British constitution; but it wants the fixed laws and established order which secure the latter against anarchy. The Druses are prompt in flying to arms. As soon as a hostile resolution is formed by the assembly of the nation, the criers, from the tops of the mountains, sound "To war! to war!" at which signal 15,000 Druses speedily muster. They have no bayonets, are strangers to tactics or discipline, and are merely a crowd of peasants with short coats and naked legs; brave almost to excess, and entertaining a proverbial contempt of death. They never encounter an enemy face to face in the open plain. They are a sort of rude chasseurs, firing behind rocks and bushes with such accuracy as seldom to miss their aim. Thus, when met on their mountain ground, they are nearly invincible. In regard to religion, although by no means wholly devoid of it, as their enemies allege, they show a singular absence of that ostentatious and sectarian zeal which pervades the Oriental world. They pray indiscriminately in a church or in a mosque, and appear to view Christianity with less aversion than Mahometanism. Any strict outward observance is chiefly confined to an initiated class, called *okkals*, or doctors, who consider themselves as alone holy and learned among an ignorant people. Europeans, after long and vain attempts, have at length obtained a sight of their sacred books, but without being much the wiser. Amid an obscure mystical jargon, it only appears that Hakim is still regarded with the same boundless veneration, and that his pretensions to a divine origin are fully admitted. In practice they adhere to his rejection of circumcision, fasting, and all the characteristic Moslem observances; they even admit his permission of incestuous connection, to the extent of marriage between brother and sister. They have the virtues and the vices of barbarous life; the same boundless hospitality, the same deadly feuds, as among the Arabs. A general levy of the nation produces 40,000 fighting men, from which we may probably estimate the entire population at 200,000; a number which, on this small and poor district, denotes a superior density to that of the plains beneath, and fully illustrates the beneficial effects of liberty, even in this rude form.

3715. *Heresy in Lebanon* has given birth to other national distinctions. In a part of its most elevated interior, towards the south, dwell the *Motoualis*, a race of the most bigoted Mahometans, but who adopt the sect of Ali, which prevails also throughout Persia. They are therefore designated by the Turks as *shiites*, or heretics, while they call themselves by a name which expresses the fullest confidence in its truth. This deadly schism, which has caused so much blood to flow in the Moslem world, has rendered the Motoualis hated by all their neighbours, Christian and Mahometan. They will not even drink out of a vessel which has been used by either of these sects, till it has undergone a purification. At holy seasons they are said to study to wash away their sins by shedding the blood of a heretic. They fight with such intrepidity, and even desperation, that, though not mustering above 7000 fighting men, they have remained always unconquered, and this handful has put to flight armies of many thousands. The *Ansarians* dwell along a range of northern heights towards Antioch. They live in a sort of anarchy both as to religion and government; but they are very little known. It would be improper to conclude without mentioning the *Latins* or *Franks*, who are almost all monks, and act the part of *ciceroni* to strangers in the Holy Land; but, as their character is essentially European, and only modified by local circumstances, their peculiarities will be better distinguished when we come to treat of Jerusalem and its vicinity.

3716. *The mountains of the eastern frontier of Turkey* produce races exhibiting decided peculiarities. The great and ancient kingdom of Armenia, situated in a mountainous corner of Western Asia, has remained comparatively little affected by that mighty train of revolution which has swept over that region. Here, too, religious schism has given its stamp to the character of the natives. In the famous controversy of the two natures, the Armenians followed the dogma of Eutyches, who admitted in the Saviour only one, compounded of divine and human. The character of the Armenians, however, has been formed, not so much by a dogma transcending human comprehension, as by habits of religious quietude and political exclusion. Their course of life much resembles that of the Jews, with whom they are often found in conjunction. But what in the latter is sordid and grasping parsimony, appears scarcely in the Armenian to exceed the limits of steady and meritorious industry. This people, in fact, carry on all the trade, and many of the manufactures, of Persia and Turkey. Ispahan, in the days of its greatness, had Julfa, a large suburb, expressly appropriated to the Armenians. They have penetrated into India, central Asia, Africa, and the east of Europe; and have been sometimes, though not often, seen in France and England. In general they lead a peaceable and orderly life, under the government of heads of families. The court of Rome, by indefatigable efforts at conversion, has succeeded in effecting a species of schism, by drawing over to her communion 20,000 out of the 170,000 families of whom the nation consists. The great remaining majority adhere to the Eutychean creed, and revere, as their head, the patriarch of Erzeroum. They admit the marriage of priests, and are free from other catholic superstitions; but in return they carry fasting and ablution to a pitch unknown to any other Christian sect.

3717. *The Koords*, or *Kurds*, inhabit a long and rugged chain stretching south-east from the mountains of Armenia, parallel to the Tigris, along the frontier of the Turkish and Persian empires. They are the same people known under the ancient name of Carduchi, through whom Xenophon so hardly fought his way, when conducting the famous retreat of the Ten Thousand. They have still the same name, and are the same people; the boldest and rudest in all Asia. Those pastoral pursuits which, on the high table plains of Tartary and Persia, vary and soften the habits of war and plunder, are impracticable in a region which presents nothing but rugged steeps, frightful ravines, and narrow valleys. Here every chief is seated in his castle, where he meditates, and whence he attempts, the plunder of the rich plains which lie beneath him. The Koords have, however, the characteristic virtue of barbarians, a frank hospitality, and also a pride of pedigree, founded on a national existence which may be traced to a high antiquity.

Sect. VII. *Local Geography.*

3718. *The deep interests which attach to this region of Asia* depend little on the divisions established by the Turkish government. It calls them pachalics, from each being governed by one of its modern satraps. This circumstance often very seriously affects, for a time, the destiny of the people; but it does not, to European eyes, form any permanent or distinctive features. We know these territories, not under the name of the pachalics of Acre, of Tripoli, of Istchil; but under others, which refer to the memory of their departed glories, and to what they were when they presented to the eyes of mankind the Holy Land, Troy, Tyre, Syria, and Babylon. We seek on these shores exclusively the monuments and traces of the period when they bore these immortal names; and we gaze on the modern inhabitants and their abodes, chiefly in wonder at the sad and surprising contrast which they exhibit.

3719. *In surveying, on this principle, the Turkish Asiatic empire,* we shall divide it into four parts: — Palestine, or the Holy Land; Syria; Asia Minor; provinces on the Euphrates.

Subsect. 1. *Palestine.*

3720. *Palestine,* a name supposed to be derived from the ancient Philistine coast, has been applied, from the earliest of modern ages, to the territory anciently assigned as the portion of the twelve tribes. The dimensions of this country do not correspond to its fame: it may be 150 miles in length north and south, and nearly as much in extreme breadth. It is bounded on the west by the Mediterranean; on the north it ranges along the southern skirts of Libanus; while, on the east and south, it passes into the Arabian desert, amid long ranges of rocky hills. Judea is a high country, rising by successive terraces from a shore that is, in many places, bold and lofty. Its principal eminences, Carmel, Bashan, Tabor, do not ascend into bleak and rugged heights: they are covered with villages, rich pastures, and luxuriant woods; on their slopes are copious vineyards, and in the clefts of the rocks numerous bees, feeding on their aromatic plants, deposit their honey. Traces are even found of a cultivation, by artificial terraces, equal to that which prevails in the most improved parts of the East. There has been here, however, a busier work of rapine and oppression than even in any other part of this suffering empire. Acre, under the sway of Daher, of Omar, and of Djezzar, scarcely paid even a nominal submission to the mandates of the Porte. The former was endowed with some great qualities; but Djezzar, ferocious and ignorant, having raised himself to power only by headlong determination and uncompromising cruelty, converted all the countries over which he tyrannised into little better than deserts. A line, however, drawn from north to south through Judea, attaches a large part of it to the pachalic of Damascus, which has long been, perhaps, the very best governed part of the Turkish empire. Within these limits, reaching from the sea of Galilee through Napolose, to the vicinity of Jerusalem, the region displays much of its ancient fertility. The declivities of the mountains are even formed into terraces, that they may retain the moisture, and be fit for bearing ample crops. This part of Palestine, however, and still more the other, is cruelly infested by bands of Arabs, who not only carry on habitual

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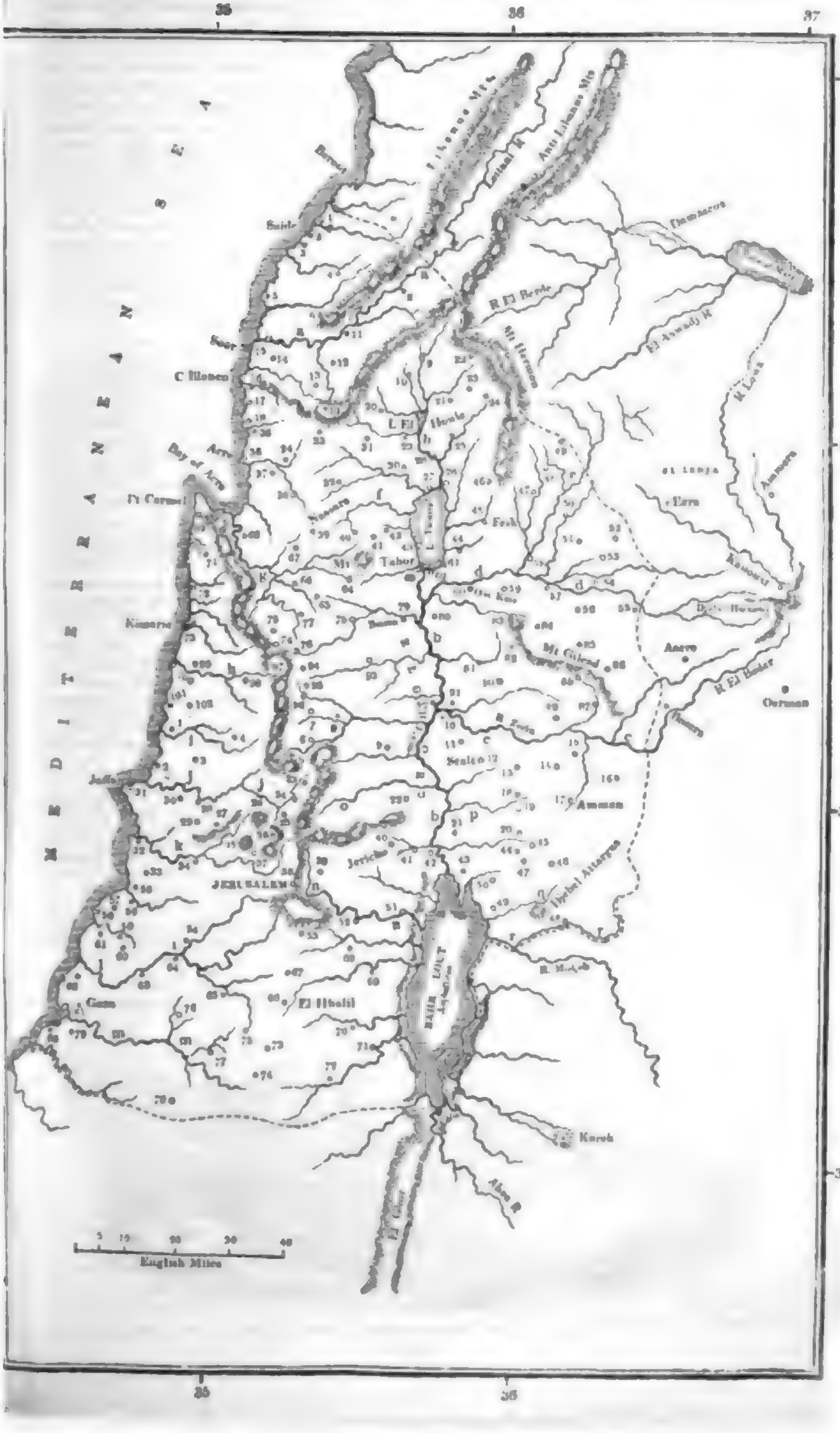
References to the Map of Palestine.

NORTH PART.
1. Rumeile
2. Saide
3. Kezia
4. Rama
5. Sarfand
6. Cana
7. Arnoun
8. Tayba
9. Parisa
10. Azer
11. Yasoun
12. Gaba
13. Tirea
14. Shimmeah
15. Sour
16. Scanderoon
17. Nakhora
18. Zib
19. Sogran
20. Abel
21. Nouran
22. Coneitra
23. Ras el Ma
24. Kuneytra
25. Newaran
26. Julias
27. Tel Houm
28. Jacob's Bridge
29. Akaby
30. Joseph's Well
31. Kadrus
32. Asochis
33. Jotapata
34. Sebus
35. Meshour
36. Acre
37. Saiyra
38. Shefhammer
39. Namara
40. Cana
41. Turan
42. Hettin
43. Taberia
44. El Ham
45. Feik
46. Joren
47. Tsell
48. Nawa
49. Kasem
50. Shemshein
51. Tefas
52. Dras
53. Mezareib
54. Terra
55. Kakham
56. Remtha
57. Abil
58. Capitolia
59. Zamma
60. Om Keis
61. Szammera
62. Szammagh
63. Summek
64. Nala
65. Makbeshy
66. Zargheen
67. Ghorteen
68. Arbey
69. Elsany
70. Pellegrino
71. Terfoon
72. Sarioura
73. Kissarie
74. Caphar Arab
75. Bourehem
76. Sanhour
77. Jenean
78. Zerin
79. Beisan
80. Gedem
81. Pella
82. El Hem
83. Beit el Ras
84. Hebras
85. Tel Dehama
86. Kafkafa
87. Djerash
88. Souf
89. Djezam
90. Kulaat Rabend
91. Amata
92. Mezar Abou Obeid
93. Azer
94. Jubbaugh
95. Beit Emiheen
96. Sebasta
97. Salee
98. Sanour
99. Zeta
100. Min Tabor Abassa
101. El Mukhali
102. Musna.

SOUTH PART.
1. Arsouf
2. Heram
3. Oudjas
4. Beit Seka
5. Houwe
6. Sawee
7. Nablous
8. Jacob's Well
9. Alexandrium
10. El Meyssra
11. Herath
12. Senit
13. Feleto
14. Szafout
15. Ye'kouah
16. Kaalat Zerka
17. Amman
18. Tabouk
19. Szyr
20. Naour
21. Livias
22. Oewan
23. Lebonah
24. Bethel
25. Selwed
26. Rama
27. Latroun
28. Loudd
29. Koloed
30. Ramla
31. Jaffa
32. Yebna
33. Tookrals
34. El Tor
35. Searia
36. Calioure
37. Kariet el Aneb
38. Jerusalem
39. Bethany
40. Jericho
41. Rihhah
42. Covent of St. John
43. Macherus
44. Heshbon
45. El Aal
46. Madeba
47. Baal Meon
48. Lob
49. Chenbah
50. Herodium
51. Kedron
52. Santa Saba
53. Bethlehem
54. Sach
55. Shelood
56. Harmand
57. Mistal
58. Askaloun
59. Ilia
60. Beeremale
61. Beitgeea
62. Bet Hanoun
63. Agla
64. Libna
65. Eglon
66. El Khalil
67. Khan
68. Tekoa
69. Ziph
70. Carmella
71. Adana
72. Dhimba
73. Malatha
74. Arad
75. Thella
76. Gettan
77. Betequla
78. Eseman
79. Dair
80. Khanyounes
81. Gaza.

Rivers.
a Leitani
b Jordan
c Zerka
d Mandhour
e Rabad
f El-she
g Canon
h Kanah
i Arsouf
j Petrus
k Roubin
l Sorec
m Gaza
n Kedron
o Farah
p Szer
q Zerka Mayn
r Wale.

Fig. 550.* MAP OF PALESTINE.



incursions, but have regularly established themselves on the line of the principal high roads, where they cause every traveller deeply to rue his temerity if he proceed without the security of a strong armed body, or without having propitiated by liberal gifts the favour of some great thief of the desert. In such a vicinity, the husbandman, of course, reaps his harvest in little or no security; and Judea, on the whole, groans under the double evil of being at once ill governed, and not governed, or at least defended, at all.

3721. *Entering Judea from the south*, after passing the confines of the desert, we come first to Gaza, called by the Arabs Razza (with a strong guttural sound on the *r*). This celebrated capital of the Philistines still derives some importance from its situation, which renders it a connecting point between Palestine, Syria, and Arabia. The surrounding country, a wide flat expanse, covered with date trees, is more than half Arabian; but the immediate vicinage consists of a black and fertile soil, the produce of whose gardens is valued even at Constantinople. Gaza has about 500 looms, which manufacture coarse cottons for the neighbouring Arabs. They collect from them the strong alkaline plants which grow in the saline and sandy soil, and from which a soap of superior quality is manufactured. Its main dependence, however, is upon the caravans to Sinai, Egypt, and Mecca, which, entering here upon a long route where no provision can be found, must lay in at Gaza a large stock of every necessary. Occasionally there occur good opportunities of making large profits, when the Arabs bring to Gaza the proceeds of such of the great caravans as they have succeeded in plundering. These rude bandits then often present the most precious commodities of the East, without being able to form the least idea of their nature or value. Volney mentions one who had procured a collection of the finest pearls, which, viewing them as a vegetable substance, he endeavoured to boil; but finding no appearance of their becoming fit for food, he gladly disposed of them for a trifle.

3722. *Coasting to the north*, along a rocky coral shore, where navigation is attended with some danger, we come to *Joppa*, now called *Jaffa*, so conspicuous as the port of Judea, and the only point of communication which David and Solomon had with the Mediterranean. At present, the port is one of the worst on that sea, being so encumbered with rocks and shoals that vessels can anchor only at the distance of a mile from the shore. There is, however, an ancient harbour, now choked up, but which might be made to contain ships of 300 tons. Great antiquity is ascribed to Joppa even by the heathen writers. In the middle ages it rose into fame, from being chosen, as the nearest point to Jerusalem, for the landing-place of the great crusade under Richard Cœur de Lion and Philip of France. Jaffa continued the head-quarters of the Christians in that celebrated campaign; and to the south extends the wide field of Ascalon, where the arms of the Crescent sustained so signal an overthrow. In the history of the present day, Jaffa has obtained a dismal celebrity from its capture by Bonaparte, and the subsequent massacre of the prisoners captured there. Jaffa is now a collection of poor huts built round the amphitheatre of a hill, with no military strength, though, from its situation, and two fine springs within its walls, it might be converted into a very strong fortress. At Jaffa is a convent of the monks of the Holy Land, a plain wooden building close to the sea, where Christian travellers and pilgrims meet a hospitable reception; but the fathers themselves live under continual apprehension for the safety of their property, and even their lives, from the bigoted enmity of the savage race to whose absolute sway they are subjected.

3723. *As soon as the pilgrim has secured a convoy*, he hastens towards the mountainous region before him, in the centre of which is Jerusalem, the main object of his expedition. He sees the vicinity stripped by the passage of hostile armies, at various periods, of the trees which once adorned it; but there are still a number of well-watered gardens, enabling Jaffa to make a considerable export of fruits, among which the watermelons appeared to Clarke the finest he had ever seen. The Vale of Sharon, which next presents itself, is still remarkable for its rose, celebrated in Hebrew poetry. After passing a number of villages, mostly in ruins, at the foot of the dark hills which ascend towards the rugged centre of Judea, we enter Rama or Ramla, the ancient Arimathea. No part of the Holy Land is more fertile than the plain round Rama, which resembles a perpetual garden. The Christian army found it a fenced city; strong, populous, and abounding with all the luxuries of the East. It is now only a collection of plaster huts, interspersed with olives, figs, and *nopals*, and overshadowed by fine palm trees. Three miles to the north of Ramla is Lydda, now Loudd, a place of some fame in scripture history, but much decayed, though a weekly market is held for the cotton spun by the neighbouring peasantry.

3724. *From Ramla* we ascend at once to the hill country of Judea, a dreary and gloomy region, the aspect of which appeared fully to explain to Chateaubriand why Jephtha's daughter and the prophets of sorrow repaired thither to pour forth their lamentations. To Dr. Clarke they appeared to resemble the rudest parts of the Apennines; the sides of the mountains consisting chiefly of naked limestone precipices towering like walls, and the strata of which resembled the seats of an amphitheatre. From their crevices grew dwarf oak, box, and rose-laurel; and considerable woods of olive trees in some places extend along their sides. Bands of Arabs have every where formed fixed stations in these rocky fastnesses, and render this the most dangerous part of the journey through the Holy Land. Between these hills, however, occur well-watered valleys, which produce plentiful crops both of grain and fruit. Some fine villages are embosomed in their recesses. At St. Jeremiah (named in memory of the prophet), Chateaubriand saw goats with pendent ears, sheep with large tails, and asses that, by their beauty, reminded him of the onagra of Scripture. In what is called the Terebinthine Vale may still be traced the scene of the great combat between Israel and the Philistines; the brook in which David collected the stones, with one of which he laid in the dust the gigantic boaster who had struck terror into the Jewish army.

3725. *After passing through about thirty miles of such territory*, the exclamation is made *El Kods!* (the holy city!) and the traveller sees Jerusalem (*fig.* 551.). Its aspect seems to

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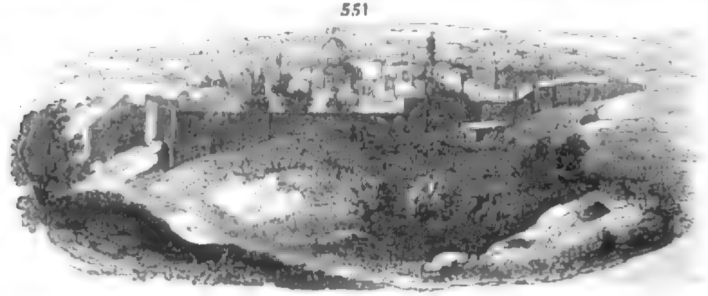

JERUSALEM.

have struck travellers variously. Chateaubriand describes it as a line of Gothic walls flanked by square towers, with the tops of a few buildings peeping above them. Dr. Clarke, on the contrary, who approached, indeed, from the north, says: — "Instead of a wretched and ruined town, described by some as the desolated remnant of Jerusalem, we beheld, as it were, a flourishing and stately metropolis; presenting a magnificent assemblage of domes, towers, palaces, churches, and monasteries, all of which, glittering in the sun's rays, shine with inconceivable splendour." It is probable that the difference of the aspect, and of the objects presented at the opposite sides of the city, may account for pictures so much at variance.

3726. *Jerusalem*, in its greatest extent, stood upon four hills, some of which might almost be termed mountains, were it not for the loftier elevations with which it was encircled. Mount Sion was the upper or principal quarter, — the Mount of God, the city of David, — on which were situated the finest edifices and strongest fortifications. To the east was Mount Acra, to the east and west Moriah, and to the north Bezetha. From the last, a broad and fine valley stretched towards the ancient Samaria. On the other side the deep valleys of Jehosaphat, Hinnom, and Siloe penetrated to the awful rocks which stretch towards the Dead Sea. These valleys are still watered by the brook Kedron and the pool of Siloam; and the rocky sides of the hills immediately bordering on them have been excavated into tombs; but they have never been built upon, and the inhabited part of the city has been always upon the summits and along the sides of the hills. The walls were formerly four miles in circuit, but this is now reduced to two and a half; and a part of what is commonly supposed to be Mount Sion is now covered only with ruins. Of the remaining circuit, a great part presents little more than the remains of a city. The gloomy desolation which pervades it is described by Chateaubriand as extreme. "The houses are heavy square masses, very low, without chimneys or windows. They have flat terraces or domes on the top, and look like prisons or sepulchres. The whole would appear to the eye one uninterrupted level, did not the steeples of the churches, the minarets of the mosques, and the clumps of nopals, break the uniformity of the plan. Enter the city, you will there find nothing to compensate for the dulness of its exterior. You lose yourself among narrow unpaved streets, here going up-hill, then down, from the inequality of the ground, and you walk among clouds of dust or loose stones. Canvass stretched from house to house increases the gloom of this labyrinth; bazaars roofed over, and fraught with infection, completely exclude the light from the desolate city. A few paltry shops expose nothing but wretchedness to view, and even these are frequently shut, from apprehension of the passage of a cadi. Not a creature is to be seen in the streets, not a creature at the gates, except now and then a peasant gliding through the gloom, concealing under his garments the fruits of his labour, lest he should be robbed of his hard earnings by the rapacious soldier. The only noise heard from time to time in this deicide city is the galloping of the steed of the desert; it is the janissary who brings the head of the Bedouin, or returns from plundering the unhappy fellah."

3727. *Two splendid objects shine conspicuous* amid this gloomy picture, which is probably, however, a good deal overcharged, and place Jerusalem on a level with whatever is most splendid in the East. These are, the Church of the Sepulchre (*fig.* 552.), and the mosque of Omar. The former has long been the grand object of pilgrimage and visitation to the Christian world. It was erected by the empress Helena, the mother of Constantine, upon a site which was supposed to include the scene of all the great mysteries of our religion, — the crucifixion, the entombment, the resurrection. It consists properly of three churches or chapels, connected together by walls and covered passages. The first and most extensive is termed the Church of the Holy Sepulchre. The rock, however, in which the tomb was excavated is allowed to have been almost entirely cut away, and that part which contains the sepulchre now rises above the ground in the form of a grotto covered with slabs of beautiful *verde antico*, rendered rough by the numberless fragments furtively broken off by crowds of devout pilgrims in search of holy relics. Close to the entrance is a block of white marble shown as the stone on which the angel sat, and in the interior lamps are continually burning. The two other churches consist of large apartments, one above, the other below. The lowest is called the Church of the Three Crosses, which were supposed to have been there miraculously discovered: it contains also the tombs of Godfrey and Baldwin, the Latin kings of Jerusalem; and a rent is shown in the natural rock, supposed to be that produced by

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CHURCH OF THE HOLY SEPULCHRE.

the earthquake at the crucifixion. The upper church is called that of Mount Calvary, where the rock again appears with the same rent, and with holes supposed to indicate the place of the Three Crosses.

3728. *Small apartments along the sides of the walls of these churches*, both within and without, are occupied by monks belonging to the different nations of the East and West; Latins, Greeks, Abyssinians, Copts, Armenians, Maronites, &c. According to Maundrell, the possession of these sacred places was often furiously contested. From abuse and vituperation, the combatants proceeded to wounds and blows; and the sacred floor was not unfrequently stained with their blood. The guide showed to the above-mentioned traveller, scars, which he had himself received in these unholy contests. In 1690, however, the French king is said to have secured for the Latins the exclusive command of these sacred places, the occupation of which is now distributed by them at will among the other sects. The monks are continually engaged either in keeping 200 lamps constantly burning, in preserving every spot in these churches strictly clean, or in celebrating the mysteries of their worship. "From the arches above, where they nestle like pigeons, from the chapels below, and subterraneous vaults, their songs are heard at all hours both of the day and night. The organ of the Latin monks, the cymbals of the Abyssinian, the voice of the Greek caloyer, the prayer of the solitary Armenian, the plaintive accents of the Coptic friar, alternately or all at once assail your ears; you know not whence these concerts proceed; you inhale the perfume of incense without perceiving the hand that burns it; you merely perceive the pontiff who is going to celebrate the most awful of mysteries on the very spot where they were accomplished."

3729. *It is remarkable that, after the precincts of this temple* have been so long venerated as containing the scene of all the mysteries of the Passion, a late great traveller has openly disputed, and even derided, the whole of the locality. Dr. Clarke insists that there is no hill such as could be Mount Calvary, and no space on which the crucifixion could take place; that the alleged sepulchre is not cut out in the rock, but is composed of a number of detached pieces of stone cemented together; that the stone does not fit it: in short, that it ought to be without the city, and by no means in its present position. He finds a much more probable site among a number of tombs, which he discovered in the valley of Hinnom, and some of which are spacious and handsome. We have not time or means to enquire what room there may be for this scepticism, and whether it is worth while to disturb a belief to which religious feeling has attached itself during so many ages. In general, we may observe, that the sepulchral monuments of Jerusalem, particularly the tombs of the kings, of the Virgin, and of the patriarchs, display no common share of labour and beauty. They are usually spacious chambers cut out of the solid rock, and elegantly ornamented with carving and sculpture.

3730. *By much the most splendid edifice* in Jerusalem, however, consists of the mosque erected by Omar on the site of the Temple of Solomon. It is an octagon surmounted by a lantern of the same shape, and is considered superior to any other structure in the Turkish empire, not excepting the mosque of St. Sophia at Constantinople: it yields only to the matchless boast of Saracenic art, the Alhambra. The walls are externally lined with painted tiles covered with arabesques, and with verses from the Koran in letters of gold. Its numerous arcades, its capacious dome, with the rich costume of Eastern devotees passing and repassing, render it, even from without, one of the grandest sights which the Mahometan world has to boast. The interior is in general rigorously shut against Christians; but Dr. Richardson contrived to effect an entrance. He found it a magnificent square 1489 by 995 feet, the floors and walls of marble, and the *sakhara*, or inner shrine, 60 feet square, of the finest materials, and covered with sentences from the Koran.

3731. *The manufactures of Jerusalem* consist chiefly of objects accounted sacred, and sold much above their real value. Among these are shells of mother of pearl, held as badges of pilgrimage, crosses, and beads made either of the stones of dates, of a species of hard wood, or of the black fetid limestone of the lake Asphaltites. These holy toys are largely purchased even by those who do not hold them in much account, but who know that they will form the most acceptable of all presents to the Greeks, and even to the Catholics. The Latin monks receive, lodge, and guide the pilgrims for a month, leaving it entirely optional with their guests whether they shall bestow a gratuity at parting. This, however, is usually done to the utmost of their ability; by which, with the remittances from Europe, Volney conceives that vast treasures must have been accumulated. Against this inference Chateaubriand urges, that the Latin pilgrims may be considered as nearly extinct, since not above 200 had been numbered in the course of a century; that the Oriental pilgrims do not exceed fifteen or twenty, often poor, and their purses drained by the exactions of the Turks and Arabs; that the monks themselves have often large sums extorted from them by the *avanies* or arbitrary demands of the government: in short, he does not think they can do more than support their establishment.

3732. *The highest and most desolate tracts of Judea* occur south-east from Jerusalem, and lead to Lake Asphaltites. The cultivated and smiling valleys of its lower stage appear no longer. The surface is broken only by deep and dreary glens, hemmed in by precipices so lofty as to exclude the sun; the chalky summits of the rocks, rent as by a convulsion, shoot into a thousand fantastic shapes. Their sides are perforated by deep caves, which served as a retreat to the saints and prophets of the Old Testament, and to the Christians of the middle ages. Every spot here recalls some of the great events of sacred history. "Extraordinary appearances every where proclaim a land teeming with miracles: the burning sun, the towering eagle, the barren fig tree; all the poetry, all the pictures of scripture, are here. Every name commemorates a mystery; every grot proclaims the future; every hill re-echoes the accents of a prophet. God himself has spoken in these regions: dried up rivers, riven rocks, half-open sepulchres, attest the prodigy: the desert still appears mute with terror, and you would imagine it had never presumed to interrupt the silence, since it had heard the awful voice of the Eternal." (*Chateaubriand.*)

3733. *The monastery of St. Saba*, rising perpendicularly from the ravine of the brook Kedron, appears in the heart of this desolate region. Once the refuge of the saints of the wilderness, it is now a scene of quiet monastic seclusion. In continual danger from the surrounding tribes of Arabs, it has less the aspect of a convent than of a fortress, the abode of some bold and ruthless crusader. Its immensely strong and lofty towers, frowning over hill and glen, are seen from a great distance; and one of the fathers, by turns, walks his nightly round on the top of the towers. Yet the Arabs, though continually hovering about in a menacing attitude, usually content themselves with levying a tithe of fine white bread, baked in the convent, and allow the convoys to pass unmolested. Somewhat to the south is Hebron, so venerable by its antiquity, and still a considerable Arab village. The court of Constantinople supports here a temple, built over the supposed sepulchres of the patriarchs, which are covered with magnificent carpets of green silk, embroidered with gold.

3734. These awful heights terminate in an object still more awful, *the expanse of the Dead Sea*. This lake, whose waves engulfed the guilty cities of the plain, presents, perhaps, the most dreary and dismal scene to be found in the circuit of the globe. The rocks by which it is enclosed present quite a different aspect on the eastern and on the western shores. On the former, which is that of Arabia or of Moab, a prodigious black perpendicular wall, in which there is not a summit or the smallest peak, and in which the least bird of heaven could not find a blade of grass, throws its perpendicular shadow over the waters. On the western or Judean side the limestone and sandy cliffs tower in varied and fantastic forms, suggesting often the idea of piles of armour, waving standards, and rows of tents. The gloomy sea which these rocks encircle has been clothed by fancy with awful and supernatural characters. A pestilential vapour, it has been said, rises continually from its waters; fish cannot live in, nor birds fly over them; iron will not sink in them; nor have they ever been navigated by ship or bark. Recent travellers, however, in the hasty glances which they have caught of this extraordinary scene, have dispelled all that is marvellous in these descriptions, though they have at the same time shown that there was some foundation for them. The water contains forty-one parts in the hundred of salt; a much greater proportion than that of the sea, and derived from entire rocks of this mineral continually dissolving on its southern shore. It is impregnated also with other mineral substances, particularly bitumen, which often rises from the bottom, and floats in large quantities on the surface. Thus it acquires a much greater weight than any other water, and is able to support bodies that would sink elsewhere. A fetid and perhaps pestilential air often exhales from water impregnated with sulphur, bitumen, and similar substances. Late travellers may have found a few shell-fish on the shore, or seen a few birds on the wing over the waves; but these form only exceptions to the general absence of animal life. That boats and vessels are never seen on it, can only be owing to the want of any motive for its navigation. Every thing around, in short, bears that dead, dreary, and fearful character that ought to mark a country struck by the malediction of Heaven.

3735. *The shores of the Dead Sea*, and the valley to the north of it, consist of an expanse of salt, dry mud, and moving sand. In proceeding through the plain, Chateaubriand discovered what at first appeared to be sand in motion. On drawing nearer, he beheld a yellow current, scarcely to be distinguished from the sands on its shores. It was deeply sunk below its banks, slowly creeping towards the pestilential lake by which it is engulfed. This was the Jordan. In its higher course, however, as it descends from the Lake of Tiberias, it is bordered by trees and shrubs, and its banks are often picturesque; and in spring, when "the swellings of Jordan" take place, the river fills its deep banks, and flows with rapidity. Its vicinity is dreadfully infested by Arabs; notwithstanding which, the visitants of Jerusalem make crowded pilgrimages, for the sake of bathing in its sacred waters.

3736. Between the Jordan and Jerusalem is *the wide, flat, plain of Jericho*, twenty miles in length and ten in breadth, walled in on all sides by the high mountains of Judea and Arabia. It is, for this reason, very hot, and in many places parched; but the skill of the ancients conducted through it, with such skill, all the waters on its circuit, as to render it the most luxuriant spot in Judea. Even in its present neglected state, it yields good crops of wheat and barley; also the balm, for which this country has always been famous, though not equally with Arabia; the palm and, the *zaccon*, seemingly the *myrobalanum* of the ancients, which yields an oil superior to that of the olive. In this plain, the city of Jericho, famous through so many ages, is recognised, with some doubt, in the village of Ribha, a collection of about fifty Bedouin tents, that present no vestige of a city. Mr. Buckingham, however, noticed some ruins, at the distance of three or four miles, that appear to mark more precisely the real site of Jericho.

3737. Before quitting Jerusalem, it may be advisable to make an excursion south-west to *Bethlehem*, which ranks high among the sacred places. Bethlehem is still a considerable village, containing, according to Volney, six hundred men capable of bearing arms. It is chiefly visited for the sake of the convent built by Helena over the manger of the nativity (*fig.* 553.). The identity of the spot, seeing it is admitted even by Dr. Clarke, we shall not dispute; but the taste which has paved this humble scene with white marble, supported it with Corinthian columns, and hung it with blue satin embroidered with silver, may well be questioned.

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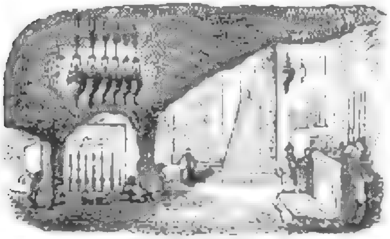

CHURCH AT BETHLEHEM.

3738. *From Jerusalem, the road northwards to Samaria* is through a rugged and stony country, which the industry of the people has, however, so formed into terraces, and so covered with vine and fig trees, and even with millet, cotton, and tobacco, that Dr. Clarke ranks it in many parts as the Eden of the East. Its flourishing state is the result of the beneficent influence of a better government, that of the Pacha of Damascus, within whose domain it was included. Here the traveller passes Bethel, the scene of Jacob's dream, and a fine valley called Kane Leban, the Lebonah of Scripture. After a march of sixteen hours, he reaches Naplous, or Napolose, near the site of the ancient Samaria. This city is one of the most beautiful and flourishing of the Holy Land. It stands in a bold and fertile valley, surrounded by hills, and embosomed in stately groves and rich gardens. The inhabitants, about 10,000, are employed in manufacturing for the extensive country around: soap is the chief staple. Here may be seen, seemingly well authenticated, the tombs of Joseph and Eleazar, and of Joshua, cut in the living rock. A small remnant is found of the ancient Samaritans, adhering to their worship upon Mount Gerizim, to their sacrifice of the ram, and to their peculiar version of the Pentateuch.

3739. Before proceeding onward to the fine regions of Galilee, it will be necessary to descend towards *the coast*, and notice some prominent features which it presents. Almost in a line with Napolose occurred Cæsarea, the magnificent capital of Herod, long the seat of Roman government, and where Paul made his eloquent appeals to Felix and Agrippa. During its glory, no city of Palestine, scarcely any of Syria, could vie with Cæsarea. Its marble palaces, theatres, and temples, looking towards the sea, struck with astonishment the passing navigator. Its temple rivalled that of Jerusalem; and its games, celebrated every five years, attracted a concourse of all the nations of the East. Plundered by Baldwin in 1101, and subjected to various turns of war and fortune, it was gradually deserted; and its materials have been employed in the ornament of modern capitals. Only a few remnants of marble walls and some porphyry columns remain scattered over its site.

3740. Quitting the ruins of Cæsarea, we approach *the heights of Carmel*, which, after running for a considerable space north-west, terminate in a rocky promontory about 2000 feet high, projecting into the sea. It contains a considerable number of grottoes, once occupied as cells and chapels by the austere order bearing the appellation of Carmelites. A very few still remain, who lead a recluse life, and are venerated even by the Mahometans, who supply their wants. The mountain bears the traces of ancient aqueducts, and of plantations of vines and olives; and on the top are the ruins of a considerable monastery erected by Helena.

3741. On the opposite side of the bay, partly enclosed by Mount Carmel, is *Acre*, which now ranks first in political importance of any town in this neighbourhood. Though often considered as Syrian, its position within the domain of the ten tribes, and its modern relations, appear to attach it to Palestine. During the crusades, it exchanged its ancient obscure name of Acon for that of Ptolemais, celebrated as a scene of siege and contest, and for the repeated change of masters which it had to endure. These vicissitudes reduced it almost to a desolate state, till, in the seventeenth century, the celebrated Emir Facardin began to rebuild it. In later times it became the capital both of Daher Omar and of Djezzar Pacha; and this last tyrant, while he desolated the rest of his dominions, made it his pride to restore and embellish Acre. It became still more famous when the Turks, fighting behind a mere garden wall, but guided and seconded by Sir Sydney Smith and a few British seamen, set bounds to the hitherto irresistible career of Napoleon, and forced him to retreat to Egypt. Acre is now a considerable place, though its streets, like those of most Eastern towns, are narrow and dirty; yet Djezzar, by collecting all the remains of Cæsarea and other surrounding ruined cities, erected the most elegant mosque and the finest baths that exist in Syria. More useful works are those of a bazaar and of a fine fountain for the supply of water, which was much wanted. He was even induced, by motives the urgent policy of which was obvious, to extend to commerce some measure of that protection which was elsewhere withheld: still, even here it was severely cramped by the blind cupidity with which he imposed duties and monopolies. There is, however, a considerable export of corn and cotton, the produce of the flat and fertile plain by which Acre is surrounded. The port, though it has lost much of its former importance, in consequence of being partially choked up with sand, has been in a good measure restored, and is the best on any part of this coast.

3742. *The route from Acre into the interior* is across the delightful plain of Zabulon, which Dr. Clarke compares to the finest parts of the Crimea or of Kent. On the other side is *Sephoury*, anciently one of the principal towns of Palestine, and augmented by the Romans under the appellation of Diocæsarea. A great part of its church, one of the stateliest edifices in the Holy Land, still remains: it is adorned with some very curious ancient paintings. The place itself is reduced to a miserable village.

3743. *Between Sephoury and Nazareth* a hilly and stony tract intervenes. This last spot, distinguished by the early residence of the Saviour, was raised to considerable importance during the crusades, and, after falling into almost total decline, was rebuilt by Facardin, and enlarged by Daher Omar. It now contains 2000 or 3000 inhabitants, who were reduced to great poverty under Djezzar; but, since his death, have enjoyed some tranquillity. The convent is large, resembling a fortress, and almost forming a little town by itself. It contains fourteen inmates, usually with a good many visitants. Nazareth ranks second to Jerusalem among the holy places, and the scenes of all the events in the life of Joseph and of the Virgin are carefully pointed out. The church, composed of three naves, is very handsome, adorned with magnificent staircases, and two beautiful columns of oriental granite. The most venerated spot is the Grotto of the Annunciation, the descent to which is by a flight of marble steps. The natives believe that, when sick of the plague, they may, by rubbing themselves against the columns, assuredly obtain restoration of health. Hence its approaches are continually crowded by the sufferers under this distemper; a circumstance which renders it very unsafe for other visitants.

3744. *East from Nazareth is Mount Tabor* (*fig.* 554.), a grand natural feature, rendered doubly celebrated by the transfiguration, of which it has, perhaps erroneously, been supposed the theatre. It is a very fine hill, about four miles in circumference, but rising so gradually that it may be ascended on horseback. On the top is a circular plain, about a furlong in length, which appears to have been at one time surrounded by a wall, when it formed a strong fortification; and traces of this wall are reported to have been discovered by some modern travellers. From the summit the view is truly magnificent, extending over the richest and most picturesque tracts of Judea; the plains, the hills, and the sea of Galilee; the mount of Gilboa to the south, a high narrow ridge, famous for the signal triumph of the Philistines; and to the west, towards Nazareth, the plain of Esdraelon, which has been described as a portion of the Holy Land gifted by nature beyond any other. Abandoned, however, to oppression and misrule, it is nowhere turned up by the plough; it forms one vast meadow of the richest pasture, sustaining only a few scattered herds, guarded by trembling shepherds. This plain was the scene of the defeat of Sisera by Barak; of that of Josiah by Pharaoh Necho, and of many great encampments formed by the crusaders or the defenders of Palestine. Near its northern extremity is the small neat village of Cana, celebrated for the miraculous conversion of water into wine. Both Dr. Clarke and Dr. Richardson here observed traces of the custom to which the scripture narrative alludes, of water being kept in large jars or pots made of the compact limestone of the district.

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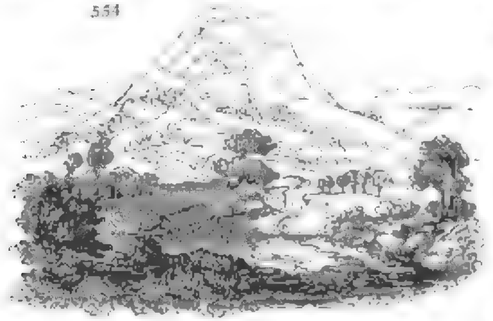

MOUNT TABOR.

3745. After passing Mount Tabor, and the range of which it forms the loftiest pinnacle, we enter the fine region of *Galilee*, a varied and fertile scene, extending along the western shore of the Lake of Tiberias. This large sheet of water, traversed by the Jordan in its early course, presents a different aspect from the dreary sea, begirt with naked rocks, in which that stream terminates. Enclosed by fertile valleys, and by verdant hills sometimes wooded to their summits, it presents, on a greater scale, the beauties of the finest lakes of

England. It is seventeen or eighteen miles long, five or six broad; its waters clear and transparent, with the current of the Jordan visible through them. On its shores were once many prosperous and flourishing cities, of which few traces remain. The only one which retains any importance is Tiberias, a Roman city founded by Herod the tetrarch, in honour of the emperor whose name it bears. Herod made it a splendid city, where he received with festive pomp deputies from many of the Asiatic princes, and entertained them with naval games upon the lake. Tiberias afterwards became the seat of a rabbinical university, in which character its fame was so great, that, notwithstanding its recent and Roman origin, the Jews still account it one of their four holy cities; Saphet, Jerusalem, and Hebron being the other three. As it continues to be a received opinion, that unless suitable prayers were addressed twice a week in each of these cities, the world would return to chaos, a just ground is afforded to solicit the contributions of all the wealthy disciples of Moses to avert such a disaster. Tabaria thus retains a population of 4000, of whom a large proportion are Jews. The present city is modern and Turkish; and though its site and fortifications have externally a grand and imposing aspect, the interior is very poor, and a great part of it deserted. The old city, at a little distance south, is marked by many fragments of walls and columns, but without any definite feature, or any great building in an entire state. In this quarter are baths, which retain their ancient reputation. Being very hot, and strongly impregnated with mineral substances, they are found of great virtue in rheumatic and eruptive diseases. Remains of other great cities may be found along the western shore; but the precise positions of Capernaum, Chorazin, and Bethsaida remain a subject of controversy.

3746. *In ascending to the high regions of the Upper Jordan*, and turning somewhat to the westward, we find the town of Saffad or Saphat. It is not mentioned in Scripture, and occurs only in the apocryphal book of Tobit; nor is it till the time of the crusades that it begins to figure as a place of importance. Notwithstanding this comparatively late origin, the Jews, influenced by its being the seat of a famous university, and the burial-place of some of their most learned rabbins, attach to it a degree of sanctity sometimes exceeding that of Jerusalem itself. It has been supposed that, 150 years ago, it was inhabited by 12,000 Jews. It became also a principal seat of the power of Daher Omar, who founded there a Mahometan college. After his time it was much neglected, and Volney represents it as dwindled into an almost deserted hamlet. Burckhardt, however, found it containing 600 houses, built on several small hills, in a high and commanding situation.

3747. *Returning eastward to the banks of the Jordan*, the general level of the country is found continually rising. The river here forms a flat marshy lake, some miles in circumference, called at present Lake Houle, anciently Julias, or Samachonitis. This upper plain of the Jordan is here shut in to the north by a lofty branch of Lebanon, called Jebel Sheik, or the Prince Mountain, which may be considered as forming the boundary between Palestine and Syria. Near its foot is situated Panias, which Herod, after embellishing and enlarging it, called Cæsarea-Philippi. It has now resumed its original name, and is sunk into a small village, though situated in a fine elevated country, fertile in grain, profusely embellished with plants and wild flowers, and abounding in game. Considerable architectural remains distinguish the vicinity, though it is still difficult to trace the magnificent temple erected by Herod in honour of Augustus. Round Panias, several rivulets, descending from the declivities of Jebel Sheik, unite, and form the Jordan. To the east of all these countries is a territory less closely attached to Palestine; that of the Hauran, called anciently the country beyond Jordan, which insensibly partakes of the character of the Arabian Desert, and becomes identified with it. For a considerable space, however, being traversed by Mount Gilead, it continues to be well watered, and contains a great extent of ground well fitted either for culture or pasturage. At present it suffers severely from the ravages of the Arabs; but under the Roman sway it appears to have been prosperous and flourishing. Djerash (the ancient Gerasa), Amman (Philadelphia), Bosra, and other towns, display on a great scale the remains of temples, theatres, baths, triumphal arches, and other structures which usually adorned a classic city. The remains of Gerasa have even been compared to those of Palmyra.

Subsect. 2. *Syria.*

3748. *After passing the northern boundary of Palestine*, we enter Syria, a great kingdom, equally famed in history, and presenting nearly a continuation of the same natural features: on one side the Mediterranean coast extending north and west; the high mountain chains parallel to it; the fine intervening valleys; and the great desert boundary on the west. Syria cannot boast an equal breadth of level territory; it may be considered in this respect almost a pyramid, of which Judea is the base. The mountains, however, are on a grander scale. Lebanon (*fig.* 555.) towers to a height unrivalled by any of the southern chains; its summit crowned with perpetual snows, its sides still presenting the remains of those majestic cedars with which they were anciently covered. The plains of Syria, though narrower, are richer, and have been more highly cultivated; and more striking contrasts have thus been produced between the extremes of civilised and savage existence. Her cities have always outshone those of the neighbouring countries; her capitals of Damascus

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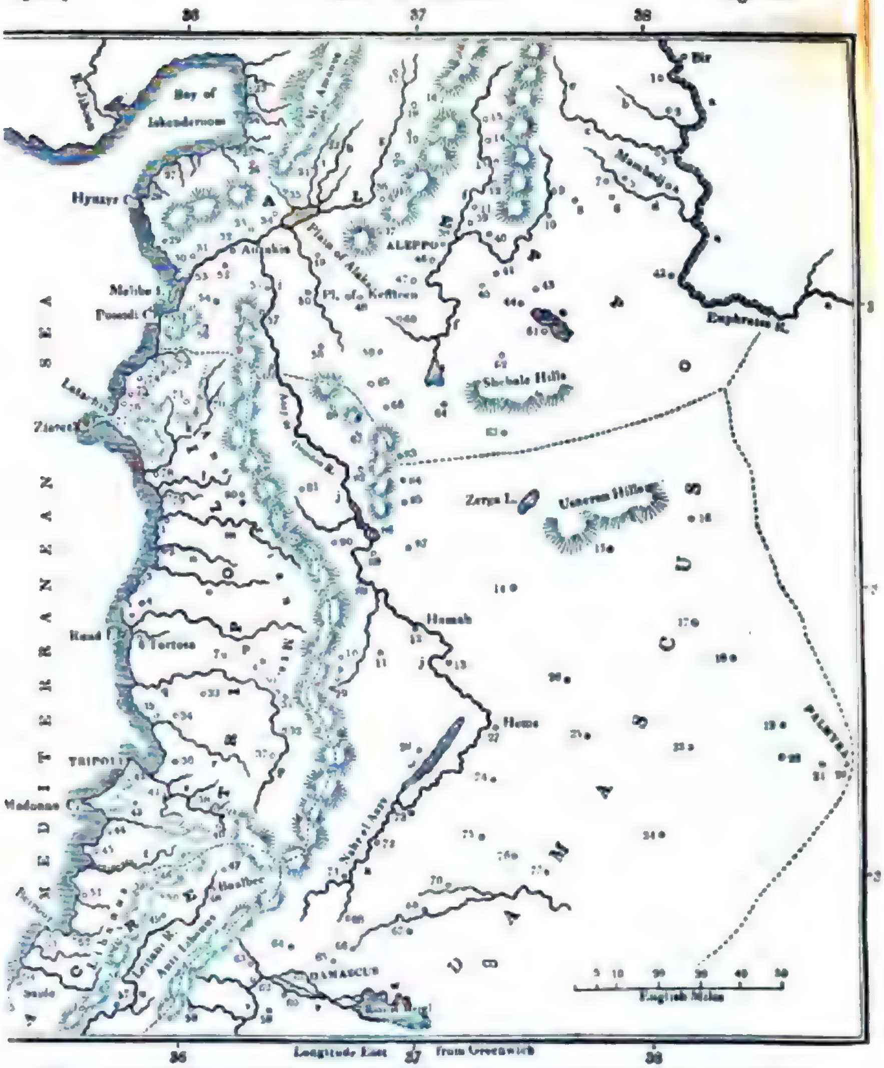
HEIGHTS OF LEBANON.



References to the Map of Syria.

NORTH PART.
1. Jerablous
2. Dasharen
3. Sadjour
4. Mambedj, or Bambouch
5. Shihier
6. Pirtwell
7. Aadana
8. Besay
9. Pasha
10. Jedriff
11. Hassan Pasha
12. Tinmen
13. Haktet
14. Altareen
15. Zeichef
16. Chillis
17. Cyrus
18. Sinhaloe
19. Calmale
20. Ariba
21. Derbeak
22. Aswad
23. Ourlar
24. Bayas
25. Skanderoon
26. Bylan
27. Arsous
28. Roos
29. Kepse
30. Souadiah
31. Zerhon
32. Antakia
33. Alarlran
34. Aagri Dengee
35. Caramout
36. Powrul
37. S. Simon
38. Aleppo
39. Hasan
40. Nazar
41. Gibly
42. Batos
43. Fibas
44. Jeloul
45. Ain Shaik
46. Khan Toumain
47. Kinesrin
48. Keffteen
49. Tenin
50. Salchein
51. Harmekia
52. Heit-el-ma
53. Sostent
54. Sheik Cul
55. Posidi
56. Lour-dee
57. Blatanous
58. Teveree
59. Edlip
60. Sermein
61. Malhessa
62. Erjiil
63. Shah Althes
64. Vordan
65. Reiha
66. Bevin
67. El Bara
68. Haran
69. Djesr Shoghur
70. Alienal
71. Sheifaria
72. Nahr Gebor
73. Gebey
74. Ras Catale
75. Sharnah
76. Candele
77. Latachia
78. Tower
79. Jelaling
80. Salsun
81. Heraleh
82. Hoomab
83. Marah
84. Jeralolle
85. Ebal Cabed
86. Kalaat el Medyk
87. Khan Sheikune
88. Sekeeleive
89. Kalaat Seldjar
90. Neby Mata.

SOUTH PART.
1. Caria
2. Markab
3. Alarta
4. Hussein
5. Nasib
6. Tortosa
7. Saafettah
8. Masiat
9. Deyradhein
10. Mazyad
11. Bearyn
12. Hamah
13. Rasten
14. Salemih
15. Keree
16. Eateeh
17. Wells of Imp. Malcha Grab
18. Alenyrtha
19. Abrishal
20. Palmyra
21. Castle of Antara
22. Quarnan
23. Kalaat
24. Kalaat
25. Mama
26. Salmia
27. Hems
28. Janechiah
29. Nessaf
30. Mar Djordos
31. El Hosn
32. Rafineh
33. Arnab
34. Mosque
35. Orisna
36. Arka
37. Akmar
38. Kanobin
39. Baflif
40. Behirel
41. Deimtri
42. Tripoli
43. Amyoun
44. Tesmeida
45. Gebail
46. Aboura
47. Deir el Akhmar
48. Balbec
49. Esmoutre
50. Zahle
51. Anteura
52. Hadad
53. Beirout
54. Saade
55. Korte
56. Barouk
57. Bocat
58. Metoaleya
59. Daria
60. Meidan
61. Damascus
62. Mekaan
63. Dummer
64. Menai
65. Tal
66. Mesoem
67. Kastel
68. Malula
69. Nebk
70. Kara
71. Kaim el Herme
72. Ouadis
73. Ribleh

and Antioch have been the most brilliant; her marts of commerce, Tyre, Sidon, Aleppo, the most flourishing and wealthy of any in the west of Asia.

3749. *Notwithstanding the strong natural barriers of Syria,* she has always with difficulty maintained an independent political existence. The early kingdom of Damascus is best known to us by its wars with the kingdoms of Israel and Judah. Being more directly on the road from the Euphrates, it was absorbed earlier into the empires of Assyria and Babylon. Following its successive destinies, Syria, after the death of Alexander, attained, under one of the heirs of his divided empire, a separate though not a native government. The powerful and warlike monarchy of the Seleucidæ endured until, after some brilliant efforts and with some glory, it was absorbed in the wide-spread empire of Rome. Syria was reduced completely to the condition of a province; but it formed always the centre of the Roman power in Asia, and Antioch was considered the eastern capital of the empire. On the decay of Rome, Syria was early occupied by the Saracens; although, as subordinate to Palestine, immense efforts were made by the crusaders to wrest it out of their hands. Syria, however, never assumed any independent aspect, and at last fell wholly under the Mahometan dominion. For the last three centuries it has continued subject to the Turks, except when agitated by the turbulent ambition of some of the pachas. Real independence has been achieved only in a certain partial degree by some of the mountain tribes, alluded to as inhabiting the ruder recesses of Lebanon, and who there, even in the very bosom of despotism, secure by their valour the enjoyment of the realities as well as the forms of liberty.

3750. *Syria, divided through its whole length by Lebanon,* like a huge spine, is formed into *two portions,* entirely distinct; one bounded by the coast, the other by the desert. Both are narrow and fertile; they contain many great cities, both ancient and modern. Tyre and Antioch, in the maritime district, are pre-eminent among the former; while, in modern times, the interior cities of Damascus and Aleppo have preserved, or acquired, a superior importance. A grand feature is the Orontes, which, rising near the southern extremity of Syria, flows behind Lebanon through its whole length, until it turns its northern point, and passes by Antioch into the sea. Perhaps, however, it injures the fertility of interior Syria, by receiving and conveying away all the waters which flow westward from the mountain, and which might otherwise have spread out, and watered a considerable portion of the sandy desert.

3751. *We shall commence our local survey with the southern maritime frontier.* Here, proceeding from Acre, under which pachalic this part of Syria is still comprised, we come at once upon a name which revives the grandest recollections. The little fishing town of Sour, or Tsour, is all that remains of ancient Tyre (*fig.* 556.). Modern times have seen the dread sentence fulfilled, that the queen of nations should become a rock, on which fishermen were to dry their nets. The accomplishment of that doom, however, has been modern; for even in the time of the crusades it had some importance, and, what is singular, was distinguished by its zeal in the cause of Christianity. It was under the Mahometan sway that its ruin was completed. Maundrell found it a mere Babel of broken walls, pillars, vaults, &c., without one entire house left. Only a few wretched fishermen harboured in the vaults, and plied their trade on the rocky coast. Of late, the governments, which had their seat at Bairout and Acre, have made some efforts to revive Tyre. A few tolerable houses have been built for the offices of government; and some of the Maronites, Motoualis, and other inhabitants of the neighbouring mountains, have been induced to settle there, and to undertake some trade. For this, scope is afforded by the grain, tobacco, and dried figs which are grown in the flat and somewhat fertile district by which Tyre [illegible] surrounded. The grain is sent to the islands; the other articles find a market in *Egypt.* Even under this faint revival, however, Tyre presents no image that can recall the memory of its ancient magnificence. Jolliffe heard the population estimated at 5000, with a doubt, however, which is strongly confirmed by Turner, who does not think it can contain above 200 houses, two thirds of which are inhabited by Motoualis. The harbour can now admit only boats. There are traces [illegible] city walls about a mile in circuit, but none of any edifices more ancient than Christian churches, one of which [illegible] of very large extent. A priest still resides here, bearing the pompous title of Archbishop of Tyre.

556

TYRE.

557

SIDON.

3752. *From Tyre we proceed northwards* by a very flat plain, which becomes continually narrower till we arrive at *Sidon* (*fig.* 557.), the sister city of Phœnicia, superior, it is said, in antiquity, yet second in greatness

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References to the Map of Syria — continued.

74. Shemsin
75. Hassia
76. Owareen
77. Kariateen.

Rivers and Lakes.
a Euphrates, R.
b Aphor, R.
c Sadjour, R.
d Samjour, R.
e Salt Lake
f Kosie, R.
g Aphreen, R.
h Yegra, R.
i Aswad, R.
j Aasy, or Orontes, R.
k Corache, R.
l Shobor, R.
m Malb, R.
n Hamas, R.
o Maskob, R.
p Hemcam, R.
q Kebir, R.
r Berd, R.
s Kades, R.
t Ibrahim, R.
u Leitani, R.
v El Heade, R.
w Bahr el Morel
x El Asy [illegible]
y [illegible]

and fame. Though there is nothing corresponding to its ancient name, it has never suffered so total a downfall. A considerable trade is still maintained by the export of silk, and also of cotton, the spinning of which employs a considerable number of inhabitants. Sidon forms the principal port by which is carried on the maritime commerce of Damascus, from across the mountains. The vast moles, of which the ancient harbour was composed, are now entirely destroyed, though some of those huge stones which filled their entire breadth, may still be seen lying on the shore. Saide, like other Turkish towns, dirty and ill built, contains from 5000 to 7000 inhabitants.

5753. *Northwards from Saide*, the level plain of Phœnicia ceases. Lebanon, here towering to its loftiest height, throws down its branches to the sea, between which only deep and narrow valleys intervene. This is the seat of the power of the *Druses*, that remarkable people, who have been already introduced to the notice of the reader. Their capital, or, at least, the residence of their prince or emir, is at *Dair-el-Kamar*, merely an extensive rough village, with from 15,000 to 18,000 inhabitants, and a large *serai* or palace, which has no pretensions to elegance. Their most important town is *Bairout*, the ancient Berytus, now almost wholly in their possession. The mountains here enclose a fine plain, covered with mulberry trees, on which is reared the finest silk in Syria. Its export, and that of cotton, cause some trade at Bairout, and support a population which Volney and Jolliffe estimate at 6000.

5754. *The next place of any importance is Esbele*, called by Europeans Gibele, or Djebail; names which recall at once the Byblos of the Greeks, and the Gebal, whose ancient inhabitants, according to Ezekiel, were the calkers of Tyre. This place was the chief seat of the worship of Adonis, whose beauty and tragical history gained for him so conspicuous a place in the classic mythology. About a mile from Esbele flows the Ibrim, the ancient Adonis, the periodical reddening of whose waters, "supposed with blood of Thammuz yearly wounded," gave occasion to a wild and fantastic Phœnician festival. The circuit of the walls, about a mile in extent, was traced by Pococke, as well as the remains of a beautiful church of the Corinthian order, which must have been built in the fourth or fifth century: Volney reckons 6000 inhabitants.

5755. Behind Djebail is *the hilly district of Kesrouan*, a lower and extended branch of Lebanon, on which the *Maronites* have formed their establishment. Considerably in the interior, and far up the ascent of Lebanon itself, is the monastery of *Kannobin*, the residence of their patriarch. It consists merely of a number of grottoes cut in the rock, the largest of which has been excavated into a tolerably handsome chapel. Beneath rolls a river between two very high ridges of pine-covered mountains; so that the scene is awful and romantic. The ascending road becomes continually more wild and rugged, with numerous cascades dashing down the rocks; yet a few villages still occur, delightfully situated, and surrounded with groves of olive and mulberry. At length the inhabited part of Lebanon is terminated by a Carmelite convent dedicated to St. Sergius, which, in summer, forms a cool and delightful retirement; but the rigours of winter compel the monks to remove to Tripoli.

5756. *Although, however, human habitations be passed, the wonders of the mountain are not yet exhausted*; for in a plain, enclosed by its highest summits, is found the small but precious remnant of the *cedars of Lebanon*. About fifteen large old trees alone survive of that mighty forest, which recalls so many sacred and poetical ideas. The trunks are ample, one of them measuring twenty-four feet in circumference; but they soon part into several limbs, which rise parallel to each other for some space, till they begin to extend horizontally. The foliage is wide-spreading, like that of the oak. The wood is fragrant and white, but not materially unlike common timber. The young cedars, which, with the old, form a grove of about a mile in circumference, appear to be quite of an inferior race, scarcely to be distinguished from the pines with which they are intermixed. Although the remnant be so small, yet Volney, in pronouncing the view to be wholly unworthy the fatigue of reaching it, appears rather insensible not only to the influence of associations, but to the magnificent scenery which the traveller discovers on this route. An ascent of three hours from the cedars brings him to the snow-covered pinnacle of Lebanon, whence he discovers all the varied aspect of its mountain regions; the rich plains at its feet, and the distant shores of the Mediterranean. Before reaching this point, however, vegetation has expired, with the exception of a few stunted cypresses, which lose their spiral form, and, throwing out their branches sidewise, have the appearance of small oaks.

5757. *From Djebail the road leads close along the sea*, here bordered by the rocks of the Kesrouan, which shoot up into forms the most varied and picturesque. Nothing is passed except a paltry village, called Batroun, or Patrone, and a finely situated convent of the Greek catholics, called Belmont. At length the route opens upon the plain of *Tripoli*, stretching far to the north, and one of the most extended and fertile in all Syria. At its entrance is found *Tripoli*, capital of the pachalic of the same name, which consists of this wide maritime plain, reaching nearly to the northern limit of Syria. A mountain chain, indeed, continued from Lebanon, still runs through the interior, parallel to the sea, but neither so broad nor so lofty. It is thinly inhabited by the Ansarians. The plain along the sea is broader there than in any part of Palestine or the ancient Phœnicia. This plain is well watered, covered with rich pasture, and with extensive groves of mulberry, orange, and other valuable trees. Notwithstanding these natural advantages, it has, we know not why, been neglected, having never contained a capital city, or been chosen as the central seat of any of the kingdoms established in Syria. Even the pachalic into which it was formed has of late, according to the alternations of power and influence, been merged into those of Acre and Damascus.

5758. *Tripoli* is supposed by Burckhardt to contain 15,000 inhabitants, about a third of whom are catholic Christians. It is one of the few Turkish towns which have any pretensions to neatness, the houses being in general tolerably built, and of good stone. It is said to have been originally founded by three successive colonies from Tyre, Sidon, and Aradus; whence the Greeks called it Tripoli, or three cities. Some of the lower branches of Lebanon approach, and enclose round it a triangular valley, covered with the finest gardens and fruit trees. The situation is thus not only beautiful, but happily formed to command the advantages of every climate. It is, however, unfortunately subject to fever, in consequence of inundations made for the purpose of improving the growth of the mulberry trees. Under the crusaders this city was governed, with the title of *count*, by Bertrand, son of Raymond of Toulouse. Six large towers, which had been built for its defence, still remain; but no fine ancient edifices. The trade is considerable, and before the last war was chiefly in the hands of the French. Its exports consist of raw silk, soap, and some sponges which are collected on the sea-shore. The harbour is tolerable, and the marina, or port, inhabited by Greek sailors and shipwrights, forms a little town by itself.

5759. *About forty miles north of Tripoli is Tortosa*, or Tortosa, once a very strong city, showing still the remains of two walls half a mile in circumference, the inner of which is fifty feet high. It contains

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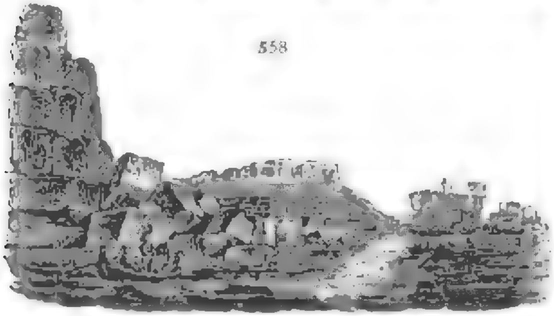

ISLAND OF ROUAD.

also a beautiful church of the Corinthian order. Nearly opposite to Tortosa is the island of Rouad (*fig.* 558.), the ancient Aradus, the Arad of Scripture, whence Tyre is said to have drawn her mariners. It is a mere naked rock, in which the spring of water by which the inhabitants were anciently supplied can no longer be discovered; but its position protected it from the despotism of the princes on the continent, and drew to it a great number of inhabitants, to accommodate whom the houses were raised to a surprising height. Only a few strong masses of wall, and numerous cisterns cut in the rock, attest the former existence of this thriving commercial state.

5760. *In journeying to Latakia*, a few striking objects present themselves; such are the strong castle of *Merkab*, seated on a hill, and about half a mile in circumference; the village of *Banias*, which scarcely presents any traces of the ancient city of Balanea; *Jebilee*, the ancient Gabala, equally poor in ancient and modern times. Much greater importance belongs to Latakia itself, the ancient Laodicea, founded by Seleucus Nicanor, and the port of Antioch. Its trade consisted in exporting to Egypt the fine wines for which the district was celebrated. At present this, being a branch of commerce prohibited by the Mahometan religion, has been superseded by that of tobacco. The returns are made chiefly in rice. The port is now small, as the Turks have allowed it, in a great measure, to choke up; but it is still the most secure of any on the coast. It is said that twenty years ago, Latakia was a very flourishing place, containing 10,000 inhabitants, and that it had nearly supplanted Scanderoon as the port of Aleppo; but of late it has deeply felt the effects of that misgovernment which extends over all this quarter.

5761. We have now traced the maritime plain of Syria, till it touches on that of Antioch, which forms the northern extremity of the kingdom, and which we shall consider in combination with that of Aleppo. It is time to retrace our steps, and, beginning afresh at the south, to survey *the great plain situated on the opposite side of Lebanon*, and bordering immediately on the desert, which forms *Eastern Syria*.

5762. *But before reaching this second division*, a striking feature claims our attention. In crossing from Sidon to the plain of Damascus, the great mountain appears separated into two parallel portions, distinguished by the ancients as *Libanus* and *Anti-Libanus*. These enclose between them a broad valley, anciently called Cœlosyria, or the hollow Syria; by the moderns it is named the Valley of Beka. The reflection of the rocks and mountains renders it intensely hot; but it is extremely well watered, and yields abundantly either pasturage or grain, according to the industry of the occupants. Of late, Turkish oppression, and the inroads of the Arabs, have almost entirely annihilated the peaceful labours of the husbandman, and converted great tracts of this fine territory into a desert. This valley presents, however, one grand and important feature, the ruins of Baalbec.

5763. *Baalbec* is situated at the northern head of this great valley, near to where the two Lebanons, uniting together, close in above its termination. From a town of some importance, it has dwindled into a decayed village, containing not more than 1000 or 1200 inhabitants. But Baalbec is famous for a mass of classic ruins, which, those of Palmyra excepted, nothing in Asia can rival. At the very entrance of the town, lofty walls and rich columns indicate the site of an ancient temple. The principal gate, obstructed by stones and rubbish, enters into a court 180 feet in diameter, strewed with broken columns, mutilated capitals, and various fragments; around it is a row of ruined edifices which display all the ornaments of the richest architecture. At the end of this court, another gate introduces the spectator to the view of a still more extensive range of ruins. The court here is enclosed by chambers, seven of which may be reckoned in each of the principal wings. It is difficult to discover their use; but this does not diminish the admiration excited by the beauty of the pilasters, the richness of the entablature, the large foliage of the capitals, and the sculpture of wild plants with which they are ornamented. At the end of this court appears the grandest feature of the edifice: six lofty solitary columns, formerly the peristyle of the chief shrine, to which all the rest of this temple was only subordinate. The square marked out by their foundations is said to be 268 feet long, and 246 wide. The shafts of the columns are 58 feet high and 21 in circumference; their entire height 71 or 72 feet. The order is Corinthian, and the workmanship of the richest and most splendid description. To the left is a smaller temple, the walls of which, and the peristyle, composed of thirty-four columns, are still entire. After passing over trunks of columns, ruined walls, and other obstacles, the gate may be reached, and a view obtained of the interior, now roofless; but instead of the grand spectacle of a prostrate and adoring people, and of sacrifices offered by a multitude of priests, the light of heaven shows only a chaos of ruins covered with dust and weeds. Nature and barbarism have combined in demolishing this noble fabric. When Wood and Dawkins visited it in 1751, there were standing nine columns of the great temple: Volney found only six; and of the small temple they found twenty-eight, he only twenty. These have been partly overthrown by the earthquake of 1751, partly undermined by the inhabitants for the sake of the iron cramps, by which the several blocks composing the columns are so closely held together as not to leave room for the blade of a knife. Of these blocks, now lying on the ground, some are of enormous dimensions; three of 58, one of 69 feet long. The natives, astonished at the power by which these fragments have been transported, ascribe the origin of the edifice to genii acting under the orders of king Solomon. It is customary in these countries to refer every great work to that prince; and Volney, with some reason, derides the idea of his having erected a *Corinthian* temple; prefering on good grounds the tradition which refers the erection of this noble structure to the reign of Antoninus Pius. Dr. Richardson, however, conceived that he clearly discovered, under the Grecian orders, a trace of Jewish foundations; in which case Baalbec would form a very natural position for the "house of the forest of Lebanon," on which Solomon bestowed so much cost and care; and, when accident and time had demolished it, the new edifice might have been built upon its site.

5764. After traversing all the branches of Lebanon to the eastern border of Syria, we arrive at the noble *plain of Damascus*. The environs of this city rank as the paradise of the East. Ranges of hills, branching off from the high chains of Lebanon, enclose it, and pour down numerous waters, which unite in forming the boasted Abana and Pharpar of the ancients. These waters, indeed, cannot penetrate beyond the desert boundary on the east, where they are soon evaporated in a large lake; but before reaching it, they irrigate every portion of the plain and even of the city, and communicate to the former its matchless beauty and fertility. There is, perhaps, no city which has had a longer duration. From the earliest ages the existence of Damascus has been recorded, and always as a great capital. It is named in the history of Abraham; it is celebrated for its wars with the kings of Israel; it has survived all the variety of desolating revolutions which have passed over this part of Asia. Under the Turkish empire it has maintained a high importance, being on the route of the great caravans to Mecca, whence even the Turks esteem it holy, and call it the "gate of the Caaba." This causes not only an immense resort, but a great trade, which the pilgrims are careful to combine with the pious objects of their journey. Damascus has lost the manufacture of sword blades for which it was famous in the middle ages; but it has still considerable fabrics of silk and cotton; and the fruits of the neighbouring plain, dried and prepared into sweetmeats, are sent to every part of Turkey. It is at present the most flourishing city in Syria; a distinction which it owes to the excellent character of several successive pachas, through whose exertions the whole of their territory has assumed an improved and cultivated aspect, which strongly contrasts with the desolate condition of that of Acre. Damascus is built of brick, and its streets are narrow and gloomy, like those of all other Turkish cities, the people reserving their magnificence for the interior courts and palaces. The great mosque, of which Europeans can obtain only stolen glances, is very splendid, and the bazaar has no rival in the East for convenience and beauty. Several of the streets have rivulets running through them, which afford plentifully the great Eastern luxury of water. Many of the coffee-houses are built on the banks, and the Turk enjoys the luxury of smoking and sipping his coffee while the cool stream is flowing at his feet. The delight of the Damascenes is to make excursions into the environs of the city, adorned with numberless gardens, and to the "plain of roses," covered with that beautiful flower in its utmost perfection. The Hebrew name of Damascus, or Demesk, is not now known to the Orientals, who call it Sham, or El Sham. The inhabitants, amounting to about 100,000, have a bad reputation in the East, where *Sham Shoumi*, "the wicked Damascene," has even passed into a proverb; but perhaps the alliteration may have had some share in promoting its currency.

3765. *Almost all the remainder of the plain of Eastern Syria* is watered by the Orontes, in its long course from south to north along the foot of Lebanon. Though it has not the brilliancy and beauty of that of Damascus, it is yet well fitted for grain and pasturage, and anciently produced them in abundance. In modern times, from its exposure to the plundering Arabs, against whom the government has not energy to defend it, it has been in a great measure abandoned. On this route, however, occur two celebrated cities, still not wholly deserted. The first is *Hems*, about 100 miles north of Damascus, on the site of the ancient Emesa. It was a considerable place under the Roman empire, having acquired notoriety, though not glory, as the birth-place of Heliogabalus. At present, only a fourth of its site is occupied; and the place is noted merely for some antiquities of inferior importance. Forty miles farther north is *Hamah*, once supposed to be the ancient Apamea, but which Pococke seems to have proved to represent Epiphania. That traveller found in it no coins more ancient than those of the Greek empire. Hamah, which Volney reckoned at only 4000, is supposed by Burckhardt to contain 30,000 inhabitants. They subsist chiefly by supplying the wants of the Arabs, who roam over the vast desert to the east as far as the Euphrates. These freebooters are deterred from their usual violent proceedings, partly by a tacit convention, but more effectually by a body of 300 or 400 horse, stationed here for that purpose by the Pacha of Damascus. Famieh, called by Burckhardt Kalaat-el-Medyhr, is a mere village, with an old castle, containing all that remains of the real Apamea. This spot, where the kings of Syria once maintained 500 elephants and 30,000 horses, is now so marshy and inundated, that it can scarcely support a few buffaloes. Volney allows it 9000 inhabitants. It is situated near the banks of a considerable lake abounding with fish.

3766. *As the Orontes approaches the lower part of its course*, it is bordered on the east by a range of mountains, which reduces to a breadth of six or seven miles the valley through which it flows. This valley, inundated during the summer, yields fine pasture. Burckhardt there found the village of *Hoasha*, containing about 140 houses; and farther down, on the borders of the territory of Aleppo, is the large but dirty town of *Shogger* or *Shoggle*.

3767. *That we may visit Palmyra* before quitting the Orontes, we must make an excursion into the depth of the Syrian desert, which extends far to the eastward. The traveller sets out from the small village of Hussia, to the south of Hems. He finds himself on a great naked plain, where the stunted shrubs afford but a scanty browsing to the antelope. At the distance, however, of every three or four hours of march, occur little villages, or rather clusters of huts, where rest may be obtained: Sodoud, Houarein, Karietein. From the last place Palmyra can be reached only by a march of twenty-four miles over an expanse of uninterrupted desert. When this weary route has been passed, the hills, which have hitherto run in parallel lines about ten miles distant from each other, close in, and form a narrow valley, traversed by a ruined aqueduct, and on whose sides appear a number of tombs. At length the valley opens, and the eye is struck with a most amazing extent of ruins, covering a wide expanse of the desert; behind which, towards the Euphrates, stretches a level waste, as far as the eye can reach, without any object manifesting either life or motion. In this surprising scene, the front view presents a range of Corinthian pillars, occupying a space of more than a mile, and behind which, crowds of other edifices appear in dim perspective. The grandest, and also the most entire structure, is that called the Temple of the Sun. The court of this temple has a wall nearly complete, in which appear twelve noble windows. Behind rise the ruins of the temple itself, almost wholly

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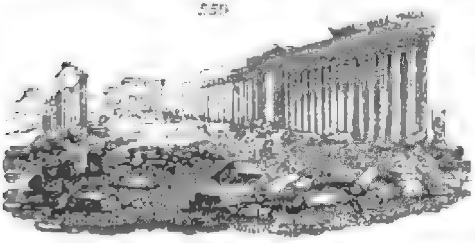

PALMYRA.

composed of magnificent ranges of Corinthian columns (*fig.* 559.) supporting a rich entablature, which has, partially at least, resisted the injuries of time. The eastern gateway, on which all the resources of Grecian art have been lavished, is still in a tolerably perfect state. A noble arch, farther to the right, forms the commencement of a truly superb colonnade, which, even in its shattered and broken state, may be traced to the distance of 4000 feet. The vacuities left by the fallen columns open a view to the other ruins; and the remains of magnificent structures are seen though the intercolumniations. Sometimes a group of three or four columns, standing entire, indicates some grand edifice, of which they are all that is left. But besides these ruins, from which definite indications may be drawn, a vast number of scattered columns cover the plain, some with and some without their entablatures; and the ground is every where strewed with broken pillars, scattered capitals, defaced sculptures, and large marble fragments, all lying prostrate in the dust.

3768. *The early and high importance of Palmyra*, or Tadmor, appears evidently derived from its being the channel by which Indian commodities passed across the desert to the countries of the West. Solomon, who occupied and enclosed it with strong walls, is reported as its founder; but was probably attracted by the wealth which commerce had already drawn to this desolate spot. The historical greatness of Palmyra, however, began only in the reign of Aurelian, when the spirited and high-minded Zenobia ventured to establish it as an independent kingdom, and to set at defiance the master of the Roman world. The issue of this daring attempt was fatal; Zenobia was carried in chains to Rome; and Palmyra never again recovered its prosperity. At present, beneath these hallowed monuments of a polished people are seen about thirty mud-walled cottages; the inhabitants of which, poor in the extreme, obtain a subsistence by cultivating a few detached spots, and feeding some flocks of goats and sheep. Two small tepid streams, impregnated with sulphur, which traverse the ruins, and are absorbed in the sand, might to ancient industry have afforded facilities for considerable culture.

3769. *Another portion of Syria still remains*, which has long been pre-eminent over the rest in power and commerce. It constitutes the pachalic of *Aleppo*, a sort of division which we have not much regarded, but which here coincides with that formed by nature. The vast mountain chain which has hitherto crossed Syria from north to south, sinks gradually, until it entirely disappears; but the mighty range of Taurus, projecting from Asia Minor, and crossing towards the Euphrates, here forms the northern boundary of Syria. It leaves, however, an interval of luxuriant plains and groves, which long rendered this region the pride of Syria, and the chosen seat of pomp and pleasure. Antioch, both under the Greek kings and under the Roman dominion, was celebrated as the gay capital of the East. Under the Turkish government it has yielded precedence to a rival of later origin.

3770. *Aleppo*, the modern capital of Syria, is, as it were, only an outpost of that country, and half belongs to the desert. From a number of low hills, however, which surround the city at a few miles' distance, streams descend, which water the chalky soil of the environs, and enable them to be formed into those beautiful gardens, with which the inhabitants of the East studiously surround their cities. Those of Aleppo are chiefly filled with fruit trees, of which the pistachio is the special boast. The city has some marks of antiquity, though none of them striking, and is usually supposed to be the ancient Beræa. It is built on several hills, above which are seen towering numerous minarets and domes which command a delightful prospect, especially to the eye fatigued with the monotony of the brown and parched plains that stretch around. Aleppo is very populous; Dr. Russel, who resided there for many years, reckons the number at 235,000, and is probably more to be depended on than other early travellers, who raise it to nearly 300,000. Volney, on the other hand, calculating that Aleppo does not stand on more ground than Marseilles or Nantes, and that the houses have only one story, reduces the estimate to about 100,000; but these data seem too vague to stand against the positive and careful calculations of other travellers. Seetzen has lately assigned 150,000; but whether that number result from a decline in the place, or a different mode of estimate, may admit of question. Aleppo is generally accounted the third city in the Turkish empire, yielding only to Constantinople and Cairo. This greatness it owes to the vast extent of its inland trade, for which it is most favourably situated, in front of Syria, and in close vicinity to Asia Minor, Armenia, and Persia. It is also a rendezvous for pilgrims from all these countries to Mecca. Athough it contains no grand monuments, nor even any very magnificent modern edifices, it is yet reckoned the neatest and best built of the Turkish cities. At least its streets have those negative qualities which are almost all that can be expected in an Eastern city. They are less narrow, less dirty, and the walls, built of a species of white stone, have not quite so gloomy an aspect. The society is also represented as displaying more of toleration and urbanity than that of other Mahometan cities. This may be chiefly owing to the many strangers, of all religions, who are attracted by its commerce; since the Christian population alone is reckoned at 31,000, and the Jewish at 5000. A violent principle of schism had, however, always subsisted between the janissaries on one side, and the pacha with his adherents on the other. While the Ottoman power remained entire, the latter easily maintained their predominance, and the discontent of the janissaries was vented in occasional tumult or impotent growling. In 1804, however, after a somewhat bloody contest, they succeeded in making themselves masters of the city. Aleppo thus, like Algiers and Tunis, became subjected to the sway of a turbulent soldiery. It suffered, but not in an equal degree. The janissaries preserved a good police, and chiefly employed themselves in systematically extorting as much money as possible from the inhabitants. Each of the latter was obliged to purchase, at a high rate, the protection of a janissary, and having paid this price he was secure in the possession of his remaining property.

5771. *Within the last ten years Aleppo has been visited by a calamity of the most dreadful nature*, which has rendered its future existence as a city problematical. On the night of the 13th of August, 1822, not only the city itself, but every town and village in the pachalic, were shaken almost to pieces by an earthquake, which was felt from Diarbekir to Cyprus. The most appalling picture is drawn of the horrors of that dreadful night; the awful darkness, the quick repetition of the most violent shocks, the crash of falling walls, the shrieks, the groans, the accents of agony and despair, with which the city resounded. Twenty thousand persons are supposed to have been killed, and the same number bruised and maimed. Those who, amid falling houses, through heaps of rubbish, and stumbling over dead bodies, succeeded in reaching the open fields, found themselves destitute even of food and shelter. Exposed to a tropical sun and to nightly damps, and scantily fed, a large proportion became a prey to disease; and even the liberal subscription collected in London for the sufferers proved a very inadequate relief. It has been supposed that Aleppo would never again rear its head, and that its commerce would be removed to Smyrna. But its site possesses advantages which cannot be transferred elsewhere, and which must always, it should seem, occasion the existence of a great city in this part of Syria.

5772. *The remaining cities in the pachalic of Aleppo* present only faint traces of that grandeur by which they were formerly distinguished. *Antioch* (*fig.* 560.), the ancient queen of the East, is only a poor, ill-built, little town, containing, according to Colonel Squire, not more than 11,000 inhabitants. This city was built by Antiochus and Seleucus Nicanor, and was the capital of the Græco-Syrian dynasty. Under Rome its wealth and distinction were still further augmented; and it became, at an early period, the seat of the most flourishing of the Christian churches. In the great crusading expedition, Antioch was the first place which fell into the hands of the Christians; and it continued a main centre of their power till 1269, when it was taken by Bibars, the sultan of Egypt. All the fury of Mahometan bigotry was then let loose upon a city long supposed a main bulwark of the Christian power. Its churches, accounted the finest in the world, were razed to the ground, and the site of those edifices, once the boast of Asia, can now with difficulty be traced. Aleppo, under Moslem auspices, became the emporium and capital of Syria; and Antioch soon sunk into insignificance. For the reason above stated, scarcely a remnant is left of those structures which rendered it the pride of the East. The most remarkable object is a portion of the city wall, which has resisted so many disasters, and even earthquakes. It is of great strength, built of stone, and defended by noble towers, at equal distances. In some places it is carried up the hills which border the city on the side opposite the Orontes; in others, along almost perpendicular heights. Yet a walk, rendered accessible by steps, has been carried all round it. The aqueducts also remain, and are fine, though not more so than those of some other Eastern cities.

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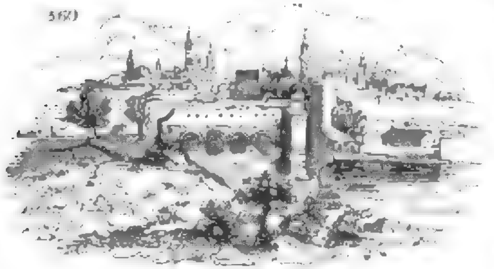

Antioch.

5773. *The environs of Antioch* have been particularly famed for their luxuriant and romantic aspect. Indeed, the banks of the lower Orontes, for a considerable space, are said to equal any thing in the world in point of picturesque beauty. Mount Casius, the termination of Lebanon, towers above it to a very lofty height, and the inferior mountain ranges run along the river, presenting broken precipices, rocks, and caves overhung with a luxuriant variety of foliage; myrtle, laurel, fig, arbutus, and sycamore. Travellers have particularly sought the grove and fountains of *Daphne*, celebrated for the temple of Apollo, and the dissolute superstitions of pagan Antioch. The site is usually fixed about five miles from the city, on the road to Latakia, and on a spot where a number of fountains, bubbling out of the earth with a loud noise, terminate in two beautiful cascades which fall into the valley of the Orontes. Instead, however, of magnificent temples and stately groves, it exhibits only a few clay-built water-mills surrounded with dwarf myrtles.

5774. *On a plain to the south of the Orontes* is the straggling seaport of *Suadeah*, and near it the remains of *Seleucia Pieria*, a city of great importance under the kings of Syria. Strength seems to have been chiefly studied, with the supposed object of forming a retreat in case Antioch should ever fall into the hands of an invader. There are still remains of a double wall built on high cliffs overlooking the bed of a mountain torrent. The outer wall is built of very large stones, and the inner defended by turrets of fifty paces apart. There are also remains of large piers which formed and defended the harbour. Pococke calls the place Kepse, and notices a singular ornament used there by the females, consisting of coins stuck round their head-dress, many of which, having been obtained from the ruins of Seleucia, were valuable as antiquities.

3775. *About thirty miles to the south-west of Antioch is Scanderoon*, or Alexandretta, which the Turks made the port of Aleppo. It possesses a very fine road, the only good anchorage in all Syria. On the other hand, extensive surrounding marshes render the town subject to epidemic diseases in a degree beyond any other in the Turkish dominions. Being, therefore, inhabited only by those whom the absolute necessities of commerce compel to make it their residence, it has never been any thing more than a large open village; and, of late, a great part of its trade has been transferred to Latakia. The only resource which the residents of Scanderoon possess, is an occasional retirement to Bedan, a cool and delightful village situated, among the mountains of the west. The houses are built along the declivity of a hill, so that the terraced roofs of one row serve as streets to the row immediately above.

SUBSECT. 3. *Asia Minor.*

3776. *Asia Minor*, another of the great divisions of Asiatic Turkey, derives a deep interest from sources unconnected with the degraded race by which it is now ruled. Its physical features, indeed, are not on so sublime a scale, nor does its past history recall events so awful and solemn as those which distinguished the banks of the Jordan and the Orontes. Still, the scenes of nature which it presents are full of grandeur, and its antiquities are replete with historical interest.

3777. *Asia Minor* forms a large oblong peninsula, about 700 miles in length, and somewhat more than 400 in breadth. It is almost completely separated from the rest of Asia, not only by the sea, which surrounds the greater part of it, but by the almost impassable mountains and elevated wastes which closely bar the broad isthmus by which it is joined. The structure of this country is remarkable. Its interior is completely encompassed with a girdle of lofty mountains. They run parallel to the sea-coast, sometimes closely approaching it, sometimes leaving intermediate plains and valleys of considerable extent. On the north runs the celebrated chain of Taurus, which extends across to the Euphrates, and was supposed by the ancients to intersect the whole of Asia. On the west it is continued by Tmolus and Sipylus, and these lock in with the southern chain, of which the most remarkable summits are those denominated Ida and Olympus. We give the classic appellations; for Ala Dagh, Baba Dagh, and other uncouth names imposed by its present possessors, will scarcely be endured by European ears. These mountains enclose a vast interior hollow, which is, however, considerably elevated, and into which they pour almost all their waters. We must, indeed, except those of the east, which are conveyed by the Halys, the modern Kizil Irmak, into the Black Sea; and part of the western waters, which find their way by the Sangarius into the same receptacle. But Mr. Leake calculates that there is an interior space, of 250 miles in length and 150 in breadth, of whose copious waters no part finds its way to the sea. They terminate in a long chain of little saline lakes, and during the rainy season cause wide inundations. It is even supposed that, at that period, the whole region would be laid under water, but for some elevated ridges by which it is penetrated. A territory covered with such profuse moisture would require a more industrious people than the Turks, to render it fit for the production of grain. It forms an immense range of pasture, over which are led numerous flocks of sheep, droves of horses, and, in the hilly tracts, herds of goats; while the inhabitants lead nearly the same irregular and nomadic life which prevails among the Tartar hordes.

3778. *The part of Asia Minor* which intervenes between the mountains and the sea presents a different and more smiling aspect. This is particularly the case with the western tracts of the peninsula. The Cayster, the Caicus, the Meander, and the Hermus roll through enchanted valleys stored with the richest gifts of nature. Taurus, on the south, presses closer upon the sea; but it still leaves ranges of finely watered, though not extended, valleys. On the northern shore, also, which extends along the Euxine, the interval between the mountains and the sea is often very narrow; though the plains of Sinope, of Amisus, and of Trebisond have been the seat of great and powerful kingdoms. They are marked, however, rather by the substantial productions of grain and pasturage, and in the mountains by the useful minerals of copper and iron, than by the gay fruits and smiling luxuriance of the south and west.

3779. *In history*, the interesting transactions connected with Asia Minor have been so numerous and varied, that we can attempt only a very rapid enumeration. The first picture is that of its nations when arrayed against Greece in the Trojan war. Troy, in that great contest, drew auxiliaries from Caria, Syria, Mysia, Phrygia, and Mæonia, so that it became almost a contest of Greece against Asia. Even the Greek pencil of Homer seems to delineate on the Asiatic side a people more polished and humane, though less energetic and warlike, than their invaders. Afterwards in the republics of the refined and effeminate Ionia, we find an early perfection of the sciences, poetry, music, and sculpture, then unknown to Greece, though that country, in arts as well as in arms, soon eclipsed the glory of its masters. Here, too, the kingdom of Lydia was early famous, first for power, but much more afterwards for wealth and luxurious effeminacy. These unwarlike states soon yielded to the arms of Persia, were included within its empire, and their arts and resources served only to swell the pomp of its satraps. In this humiliating situation, they lost all their former high attainments; and it became of little importance that they passed sometimes under the sway of Athens, and were ruled by Greeks instead of barbarians. After the conquest of Alexander, however, and when his rapidly formed empire fell so suddenly to pieces, some of the most conspicuous among the fragments were kingdoms established by his successors in Asia Minor. It was there that Antigonus and Demetrius collected a great portion of the resources with which they made such a mighty struggle for the supremacy among the Macedonian chiefs. After their fall, the kingdom of Pergamus was founded, whose princes, by their own ability, and the alliance of the Romans, became for some time the most powerful in Asia. Their glory, however, was surpassed by that of a kingdom formed in the opposite quarter of the peninsula, that of Pontus, by the powerful character and high exploits of Mithridates, under whom the last great stand was made for the independence of the world, which with him finally sunk. Asia Minor was reduced completely into a Roman province, and made few and feeble attempts to shake off the yoke. It was chiefly distinguished in ecclesiastical history by the formation of apostolic churches, and the assemblage of general councils; of which those of Nice and Chalcedon, in particular, had an important influence on the belief and worship of the Christian world. Protected by its distance from Arabia, and by the mountain chains of Taurus, this peninsula escaped in a great measure the tide of Saracen invasion. That great succession of hordes, however, who, under the appellation of Toorks or Turks, poured down from the north-east of Asia, after conquering Persia, crossed the Euphrates, and established a powerful kingdom in Caramania. Being divided, however, and crushed under the first successes of the crusaders, the Turkish power sunk into a languishing and almost expiring state. Suddenly, however, from its ashes, rose the family of Othman, who, collecting the Turkish remnant, and combining it with the neighbouring warlike tribes, allured or compelled to this standard, formed the whole into a vast military mass, which there was no longer any thing adequate to oppose. This power continued to have its principal seat in Asia Minor, until Mahomet II. transferred to the Ottoman Porte the dominion of the Cæsars, and made Constantinople the capital of his empire. Asia Minor, however, has always continued more entirely Turkish than any other part of the empire; and it is thence chiefly that the Porte continues to draw those vast bodies of irregular cavalry which form the chief mass of its armies. The peninsula has not, however, been exempted from that spirit of revolt which, amid the weakness lately exhibited by the Porte, has become so universal. The different pachas act nearly as independent princes, make peace or war with each other, and can only be displaced by manœuvre or intrigue. Paswan Oglou, in particular, established at Ooscat an independent kingdom, supported by an army of 40,000 men, and scarcely yielded to the Porte a nominal submission.

3780. *The Turks have made a political division* of Asia Minor into pachalics; of which the principal are Anadoli on the west, Trebizond on the north coast, Sivas and Konieh in the interior, Adana on the south coast, and the Musellim of Cyprus. For reasons already stated, however, we shall not pay much regard to this ephemeral division, but recognise the country chiefly under other names which, though unknown in its present fallen state, are alone interesting to a European reader.

3781. *The local survey* to be made of this region, will most advantageously commence from the south-eastern corner, where the narrow pass of *Issus* allows the only communication with Syria and the countries on the Euphrates; and where Alexander, by a signal victory, opened his way into the boundless regions of Asia. Pococke and D'Anville place this celebrated spot near the village of Ayas, in a plain two miles long, and three quarters broad, enclosed between the hills and the sea. Mr. Kinneir, after a careful survey, seeks to transfer it to another plain more spacious, two miles in width, hemmed in by loftier mountains, and about sixteen miles north of Scanderoon. He contends that this space was necessary to enable two such armies to be drawn up in order of battle; and that it agrees with the data given by the ancient historians and geographers. We have not space to enter into the minute details of this controversy. Pias was till lately the wealthy and populous seat of a marauding freebooter, who plundered the caravans, and laid the neighbouring districts under contribution; but the Porte having succeeded in reducing him, his capital also went to ruin.

3782. *The ancient Cilicia*, now the pachalic of Adana, consists of two districts; the mountain range, composed of some of the most lofty and rugged branches of Taurus; and the level tract, composed of the two considerable and extremely fruitful plains of Adana and of Taurus. Adana, situated on the Gehoun, the ancient Sarus, is a very ancient capital, and still a flourishing town surrounded by extensive cotton plantations, tolerably built, and presents, in testimony of its former magnificence, some walls and a magnificent gateway. Its situation is agreeable, on a declivity above the river, which is larger than the Cydnus, and enclosed by fruit trees and vineyards. Tarsus retains its name and its position on the Cydnus; but Mr. Kinneir sought in vain for any monuments corresponding to its great name. The materials of all its ancient structures seem to have been taken down to build the modern city, which has thus a neater appearance than is very usual in Turkey; but as these fine hewn stones are merely built into houses of one story high, the place has no air of magnificence. Tarsus was not only the capital of Cilicia, but, under the auspices of Rome, rose to be one of the principal cities of the empire, both for wealth and for the cultivation of science and literature. It may be recollected as being the birth-place of St. Paul; and there is still an ancient church which bears his name. Tarsus continues a populous and stirring place. Its population, as well as that of Adana, is estimated at about 30,000 each; to a great part of whom, however, these cities afford only winter quarters. The Turcoman shepherds who, in summer, pasture their flocks on the heights of Taurus, during the rigorous season seek shelter for them in the rich plains around these cities. That of Adana is of exuberant fecundity, and, being tolerably cultivated, yields wheat, barley, sesame, and cotton, not only for home use, but in large quantities for exportation. To these are added copper from the northern districts, and gall nuts from the mountains. The returns are taken in coffee, rice, sugar, and hardware. Tarsus, however, is seven or eight miles from the sea.

3783. *To the east of Adana is another plain* equally fertile, on which the ancient Mopsus, or Mopsuesta, is still found under the name of Messis. This place, however, has been occupied by a band of Turcoman depredators, who have reduced the plain around to a state of desolation, and the place itself to a poor village, composed of mud cottages.

3784. *At the western boundary of Cilicia* begins the coast of Pamphylia, to which the moderns give the name of *Caramania*, from an early Turkish kingdom formed upon the coast, of which Karaman, in the interior, was the capital. This tract consists of a succession of valleys separated by ridges that branch from the loftier heights of Taurus. These valleys, though often narrow, are usually watered by fine streams, and very fertile. The ridges often terminate by presenting to the sea, in the boldest and most picturesque forms, lofty perpendicular cliffs of limestone or marble.

3785. *Selefkeh*, on the Ghiuksu (the ancient Calycadnus), a river of some magnitude, is merely an assemblage of cottages built of wood or earth, but near it are considerable vestiges of the ancient *Seleucia*. There is a theatre partly cut out of the side of a hill; and in front of it a long line of porticoes and other remains of large ancient edifices. In the vicinity is an extensive necropolis or cemetery, consisting, as usual, of numerous tombs cut in the rock, with some sculpture, and a variety of inscriptions. An aga resides here, subject to the governor of Cyprus. Farther up the river, near its junction with a tributary called the Erminah, is *Mout*, a miserable village of 200 hovels, built with reeds and mud, while some wretched inhabitants seek their abode in the rocky caverns. This, however, was the site of a magnificent ancient city, supposed by Mr. Kinneir to have been Philadelphia, the plan and principal edifices of which may be distinctly traced. The cottages are intermingled with long colonnades and porticoes, still partially standing; and pillars of verd antique and other marbles lie half buried, or covered by ruined mosques and houses. The castle is large, and nearly entire; it is built on a precipice overhanging the Ghiuksu; its walls are surmounted with battlements flanked by square towers open to the interior. This scene of wretchedness, the result of misgovernment, is found in a valley, the aspect of which promises peculiar fertility. It abounds also with the most beautiful scenery; the pastures, groves, and streams, of the lower tracts contrasting admirably with the majestic forms of the mountains above, and the dark woods with which they are covered.

3786. *Proceeding westward along the coast from Selefkeh, is found Kelendri*, called by the Turks Gulnar, a few wretched hovels, built amid the ruins of the ancient Celenderis, which lie about in scattered and mouldering heaps. Here, however, a magazine and a custom-house are kept, to maintain the communication with Cyprus.

3787. *Looking from Kelendri*, on the opposite side of a small bay, a grand feature presents itself in Cape Anamour, the most southerly point of Asia Minor, presenting to the Mediterranean a bold, and on one side inaccessible, cliff. The other side is secured by a castle, and a double range of lofty walls, within which are the remains of the ancient Anemuria. It appears to have been considerable; but scarcely a block or fragment of marble remains. Only the abodes of the dead remain entire, exhibiting a remarkable proof of the durability of their materials, compared with those which formed the habitations of the living. These tombs, many of which display considerable magnificence, have all been opened; but their walls are still standing. The spot is entirely deserted; but about six miles distant is the modern castle of Anamour, a large edifice, now going to ruin.

3788. Cape Anamour is succeeded by *a range of rocky coast*, at only two points of which torrents penetrate into the sea: here ruins are all that indicate the site of *Charadrus* and *Antiochia ad Cragum*. At the end of this coast, the lofty and romantic cliffs of Cape *Selinty* project into the sea. On its pinnacle are the remains of a castle, which looks down perpendicularly from a great height upon the waters. At its foot, along the banks of a river, are the foundations of large edifices and bases of columns in long ranges, all the superstructures having been carried away. These are the remains of Trajanopolis. To the west is a beautiful plain, five or six miles in extent.

3789. *Proceeding westward*, the traveller meets numerous towns and villages, modern upon ancient sites, but both deserted, bearing marks of the desolation which now reigns in this part of the empire. At length are espied the white cliffs of *Alaya*, rearing themselves high above the waves. This mountain fortress, called in the middle ages *Castel Ubaldo*, is compared by Colonel Leake to a second Gibraltar. Two of the sides are absolutely perpendicular, the other is completely fenced with high solid walls and towers. The town, situated near the foot of the hill, is about a mile in circuit. It scarcely contains any vestige of Coracesium, on whose site it stands; and as a modern town, though the residence of a sangiack, it is poor, destitute of commerce and thinly peopled, having, according to Captain Beaufort, only 2000 inhabitants.

3790. On a low and desert promontory, to the westward of Alaya, Captain Beaufort discovered the superb monuments of *Side*. They are numerous; but the prominent object is a theatre, the most extensive preserved among those of the many Greek cities of Asia Minor. It is half excavated, half composed of masonry, and has an exterior diameter of 409 feet. There are forty-nine rows of seats, all of white marble, and of admirable workmanship. On these might sit 13,370 persons; and by standing or sitting on the steps, an audience of 15,240 might be accommodated. Among other remains are those of a building dedicated to astronomical purposes; those of a spacious bath; and many others, now scarcely to be distinguished amid the thorns and brambles with which they are overgrown. The traces of a spacious double harbour accord with the report given by Livy, of the naval skill and prowess of the Sidetians.

3791. *Passing Laara*, the ancient Magydos, *Dashashehr*, and some smaller places, we come to *Attalia*, called by the Turks Adalia, and by the Italians Satalia, the principal town in this quarter. Attalus Philadelphus, by whom it was founded, made it his capital, and spared no cost in adorning it. The situation is peculiarly beautiful, along the side of a rising hill which fronts the sea, and upon which the streets are arranged like the seats of a theatre. Its ancient importance is attested by numerous granite columns and fragments of sculpture, particularly by a magnificent gateway of the Corinthian order. The gardens behind, interspersed with country houses, are filled with the finest fruit trees, and refreshed by the breezes from Mount Taurus. The population is estimated at 8000, of whom two thirds are Mahometan, and the remainder Greek. A considerable trade has of late been carried on in grain, which is copiously produced in the surrounding fields, watered by streams that are loaded with calcareous deposits.

3792. *The coast now takes a southerly direction*, forming a side of the deep bay at the bottom of which Attalia is situated. On this coast are found the ruins of *Phaselis*, in a swampy and unhealthy situation, at the foot of Mount Solyma, which rises to the height of 7400 feet, and by its frowning aspect, and the formidable sounds which echo through the caverns, inspires the natives with superstitious dread. Deliktash, situated on a plain, enclosed by mountains, is filled with the remains of the ancient Olympus. Its name, signifying the perforated rock, designates the principal object for which it is remarkable. Places of only secondary importance occur until, after passing Cape Khelidonia (the ancient *Promontorium Sacrum*), and reaching the river Andraki, we discover the ruins of the ancient and celebrated city of *Myra*. A theatre, tolerably entire, 355 feet in diameter, with other remains of public buildings and inscribed sepulchres, mark its ancient splendour. It is situated three miles up the river, in a plain, fertile, and tolerably cultivated. Westward, along the coast, is a crowd of rocky islands, abounding with fine creeks and bays, which might render them the seat of a considerable commerce and population. That they were so anciently, appears clearly from traces left on those of Kakava and Castelorizo.

3793. Winding round the interior of a deep and circuitous bay, we find at its eastern head *Macri*. This town, having an excellent harbour, is employed by the government as its medium of communication with Egypt. It exports firewood to that country; timber, tar, cattle, and salt to Rhodes. It is, however, rendered extremely unhealthy by an almost constant *malaria*, arising partly from the damps of ancient edifices, partly from its situation, in a pit, as it were, amidst overhanging mountains which produce confined air and frequent chilling breezes. Nothing can exceed, in gloomy grandeur, the aspect of this part of Asia Minor, presenting an unbroken range of mountains, the tops of which are covered with perpetual snow.

3794. Near Macri are *the ruins of the ancient Telmessus*, which rank with the grandest and most perfect of any in Asia Minor, and have been described by Dr. Clarke in a manner peculiarly careful and interesting. The first object which strikes the spectator from the sea, consists of the remains of a spacious theatre (*fig.* 561.), built on the side of a mountain, to whose shelving sides the structure was adapted. Several of its portals are yet standing, of enormous magnitude, and built of stones eight or ten feet long, put together without any

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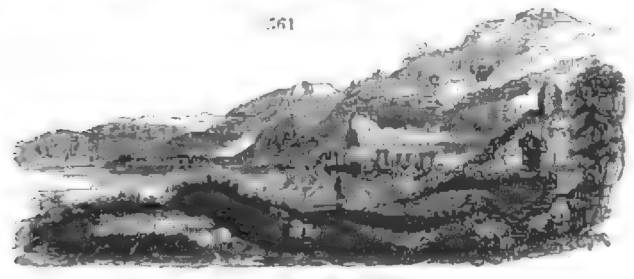

THEATRE AT MACRI.

cement. Dr. Clarke observes, that, "in the plans of Grecian architects, the vast operations of nature were rendered subservient to works of art; for the mountains on which they built their theatres possessed naturally a theatrical form, and towering behind them, exhibited a continuation of the immense *koilon* which contained the seats for the spectators, giving a prodigious dignity to their appearance. Every thing at Telmessus is Cyclopean: a certain vastness of proportion, as in the walls of Tiryuthus or of Crotona, excites a degree of admiration mingled with awe; and this may be said to characterise the vestiges of the Dorian style all over Asia Minor." Peculiar care has here been taken in adorning the tombs both with sculpture and architecture. The greater have both their interior chambers and the columns in front excavated out of the solid rock; and the stones are joined together so nicely, as to make it almost impossible to discover the entrance. Other tombs represent the Grecian *soros*, consisting of huge single stones pitched often on the summits of high rocks. Others, again, consist of a number of these stones joined together; and one was of such magnitude, that Dr. Clarke conjectured it might be the mausoleum of Artemisia (*fig.* 562.).

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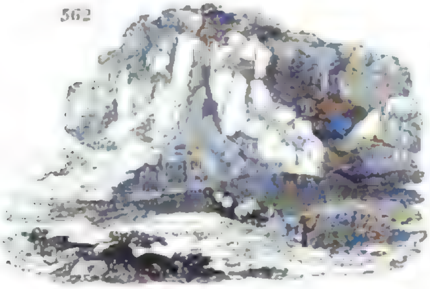

TOMBS AT TELMESSUS.

3795. *Emerging from the Gulf of Macri*, and passing along the deserted sites of Colynda and Cannus, the former capital of Peræa, the navigator descries a narrow passage, through which, if his vessel reach the dimensions of a frigate, he will work his way with some difficulty, unless the wind be favourable. On entering, however, he finds himself in *the spacious bay of Marmorice*, twenty miles in circumference, and which its lofty wooded shores secure from every wind. The town, at the head of the bay, is small, composed of whinstone cottages like those in the highlands of Scotland.

3796. *As we approach the confines of Ionia* and the western coast, the monuments of antiquity become more numerous and striking. The two deep bays of Symi and Cos, which follow almost immediately after that of Marmorice, are nearly unexplored by the moderns. At Cape Crio, however, the point of separation between them, are found the extensive ruins of *Cnidus*. No Greek city is said to present more varied specimens of ancient architecture; and in none has the work of destruction been more active. The whole area of the city is one promiscuous mass of ruins, amongst which are numbered three theatres, one of them 400 feet in diameter; several temples, many tombs, and some superb fragments of sculpture. The white marble steps of one of the theatres may still be found buried under the grass and bushes, and near it are the fragments of a Corinthian temple of the same materials. The remains of two artificial harbours, formed by long piers projecting into the sea, may still be traced.

3797. *At the head of the Gulf of Cos* is *Melasso*, rather a considerable modern town, the residence of an aga, though ill built; but it is distinguished as occupying the site of Mylasa (*fig.*563.), once a capital of Caria. The temples of this city were in ancient times so numerous, that a crier, entering the market-place, instead of the usual exclamation, "Hear, ye people!" called out, "Hear, ye temples!" They are now almost entirely demolished; and of one very fine portico, of the Composite order, which was found by Pococke, there remained, in Chandler's time, only the basement. The tombs are extremely numerous, and some are of peculiar structure. About ten miles to the south-east, Eskihissar, a poor modern village, stands on the site of Stratonicea.

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ARCH OF MYLASA.

3798. *Lower down the same gulf*, to many parts of which it gives its own name, is *Boodroom*, on the site of Halicarnassus (*fig.* 564.). It is still a considerable Turkish cruising port, with a modern castle and palace that possess strength and magnificence. There are no remains at all entire, except that of a theatre overhanging the town; but the attentive eye of the traveller soon discovers numerous fragments indicative of the former existence of a magnificent city. A traveller of the sixteenth century asserts that he saw some vestiges of the mausoleum of Artemisia; and the exquisite beauty of several of the fragments now transferred to modern buildings seems to characterise them as having belonged to some celebrated structure. Friezes inserted into the walls of the castle have been considered as specimens of sculpture equal to those of the Parthenon.

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HARBOUR OF HALICARNASSUS.

3799. Turning the head of the bay of Boodroom, we find on a smaller bay, *Assam Kalasi*, the ancient Jassus, marked by many monuments, chiefly sepulchral. Across a broad neck of land, on the Latonian Gulf, travellers sought, but have scarcely found, the still more celebrated site of Miletus. On the opposite side of the same gulf is the village of Palatsha, the considerable ruins adjoining whose beautiful site have been supposed by Spon and others to be those of Miletus (*fig.* 565.); but a different opinion now prevails.

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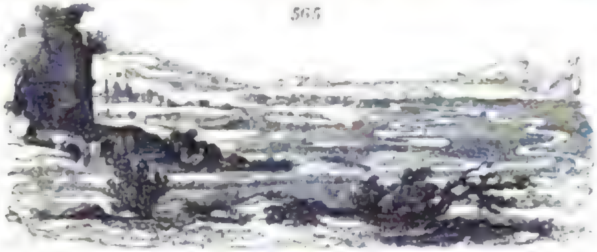

MILETUS.

3800. *We have reached the finest and most celebrated region of Asia Minor*; at the mouth of the Meander, whose winding stream waters the most extended and fertile of all the vales of Ionia. At every step we ascend occur the remains of magnificent cities. Those of Magnesia, on the Meander, are usually supposed to be found at Guzelhissar, itself a large town, and the Turkish capital of this district. It is about four miles in circumference, built on a hill which commands an extensive and beautiful view over the valley of the Meander, reaching downward as far as the sea. Even the city itself, though composed of the usual Turkish materials, presents considerable beauty in its exterior aspect, containing numerous courts and gardens, filled with orange and cypress trees, whose foliage mingles with its lofty minarets. Even the streets are broader and better disposed than is usual in Turkey. Guzelhissar is the residence of a pacha, and carries on a great trade in cotton and cotton yarn, part of which is manufactured within itself into coarse calicoes. These circumstances make it the residence of many Jews, and other rich merchants, and one of the most considerable places in Asia Minor. The ruins are scattered in fragments, and in general only their foundations can be traced; but Pococke saw on the north side remains of a very splendid temple, which appeared likely to be the celebrated one of Diana Leucophryne. Mr. Leake, however, places the site of Magnesia twelve miles lower down the river, at a place called Juckbazar, where Van Egmont found a number of large ruins. He makes the Guzelhissar ruins to be those of Tralles, which have been usually referred to the village of Sultanhissar, fifteen miles higher up, but where Mr. Leake finds the remains of Nysa. On the opposite side of the river, near the village of Yeni Bazar, is found a magnificent palace and other remains of the ancient Alabanda. Near Yeni Shehr are those of Antioch on the Meander, in a neighbourhood still celebrated, as in ancient times, for the excellence of its figs. Considerably farther up, some miles from the left bank, is Degnizlei, which was a large town at the beginning of the last century, when 12,000 of its inhabitants were swallowed up by an earthquake: it has since become a very poor place. From this point, the lofty cliffs and snowy pinnacles of the great encircling range, called by the Turks Baba Dagh, the "father of mountains," begin to appear; but the foreground beneath them consists of a tract crossed by low calcareous hills. Amid these are the majestic remains of Laodicea and of Hierapolis.

3801. *Laodicea* is situated on a hill of dry, hard porous earth, which resounds under the feet; at the base of which flows the Lycus, a tributary of the Meander. It was founded by Antiochus, but did not rise to high importance until under the Roman empire, and about the Christian era. It presents, in shattered profusion, all the monuments which gave grandeur to a Grecian city; and its columns appear to have been formed of the most precious materials (*fig.* 566.). These remains cover the whole surface enclosed within the walls. At present the desertion is complete: there is neither house, church, nor mosque; a fox passing from behind a wall was found by Dr. Chandler the only inhabitant of Laodicea. On the opposite side, and nearer the Meander, is *Hierapolis*, whose mineral baths were formerly so celebrated. The mountain above it has been completely petrified by the

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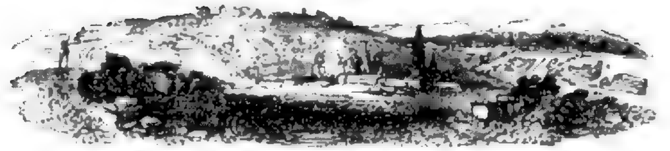

STADIUM AT LAODICEA.

streams flowing down its sides, which have given it, when seen from a distance, the appearance of chalk, and, on a nearer view, that of an immense frozen cascade. The incrustation is alkaline, without taste or smell, and effervesces with acids. The ruins are extensive; a very beautiful and perfect theatre, the marble seats of which are still standing; two large churches; and, as might be expected, most ample and magnificent baths, composed of marble, combined with the petrified substances, and formed above into huge vaults, the appearance of which is almost awful. The site of *Colosse* appears to be in this neighbourhood, and has been fixed at a Turkish castle on a rock called Konous, which, however, presents no ruins of the requisite magnitude.

3802. *From the mouth of the Meander* the coast makes a large circuit, stretching out till only a narrow strait separates it from the island of Samos. This spot was the theatre of the celebrated naval action of Mycale, and has in our own times been distinguished by the exploits of the modern Greeks. The coast again bends inward, and we reach Scala Nova, a great modern Turkish sea-port, which carries on a considerable trade with Egypt and the neighbouring districts and islands. The population, prior to the late convulsions, was estimated at 1700 families, of whom more than a third were Greek. The site is that of Neapolis, and contains some ruins.

3803. *At a little distance from Scala Nova* is the mouth of the Cayster, which waters another of the beautiful vales of this fine region. Though every way inferior to the Meander, it contains one almost unrivalled site — *Ephesus*. This city, once the pride of Asia, is now represented by Aiasaluck, a poor village, of a few cottages, fallen even from what it once was as a Mahometan town. This is attested by a large castle and mosque, containing beautiful stones enriched with the finest sculpture: the traveller soon discovers, however, that these are not Ephesus, but fragments taken from its ruins. At the distance of half a mile, the traces of the city may be clearly recognised. The stadium, now converted into a cornfield, the theatre, the odeon, and the gymnasium (*fig.* 567.), may all be distinguished in outline, and their area is strewed with fine fragments. There is a particular part of the entablature of a Corinthian temple, delineated by M. Choiseul Gouffier, which, in the richness and variety of its ornaments, as well as their fine execution, has, perhaps, never been surpassed (*fig.* 568.). But it is not without difficulty, and even doubt, that he can determine the spot where stood that proud boast of antiquity, the temple sacred to Diana of the Ephesians. All that constituted the splendour of this edifice; its columns, of which 127 were the gifts of kings; its works of art, comprising the master-pieces of Apelles and Praxiteles, have disappeared. After the temple had been repeatedly pillaged by the barbarians, Justinian removed the columns to adorn the church of St. Sophia at Constantinople. It can now be identified only by the marshy spot on which it was erected, and by the prodigious extent and magnitude of the arches raised above as a foundation. The vaults formed by them compose a sort of labyrinth, and pure water is knee-deep underneath. There is not an apartment entire; but thick walls, shafts of columns, and fragments of every kind, are confusedly scattered.

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GYMNASIUM AT EPHESUS.

3804. *The Upper Caicus* presents, in its short course, no trace of any celebrated city. It has, however, on its southern bank a modern town, bearing the remarkable name of Tyria or Tyre, but presenting no monuments to justify the inferences which might be drawn from so remarkable a name. It is large and well built, and from fourteen to twenty minarets, rising amid trees and surrounding gardens, give it a very beautiful appearance. Its flourishing state is due to its situation in the finest part of the vale of Cayster, which yields large crops of rice, and affords the richest pastures.

3805. *From the mouth of the Cayster* the coast sweeps out into an extended peninsula, which runs parallel to the island of Scio; after which it turns inward, and forms a side of that deep bay, at the head of which *Smyrna* is situated. This modern capital of Asia Minor, and emporium of the Levant, presents almost the only remnant of that prosperity which was once so widely diffused. The situation is such, that Smyrna could scarcely fail to be a flourishing place. It has a fine bay, with good anchorage, a secure and capacious harbour, and, behind, a plain watered by the Meles, which produces abundantly fruits and vegetables. Although Smyrna be not placed in any of the great western valleys, it is so near, and in so central a position with respect to them all, that it can easily draw from them every valuable product. With so advantageous a site, this city rose early to eminence. Its first boast was to have given birth to Homer; and it was received, though somewhat late, into the Ionian confederacy. It was destroyed by the Lydians, but, having been rebuilt by Antigonus, rose then to its highest prosperity; so that Strabo pronounces it the most beautiful city of Asia. This praise it owed particularly to its gymnasium, its temple dedicated to Homer, and the general elegance and arrangement of its streets. Of the ancient edifices which stood on the hill above the city, only the ground plan can now be traced, the whole materials having been removed for the purpose of building the modern Smyrna, which extends along the bay four miles in length and one in breadth. Its groves and minarets make a magnificent appearance from the sea; and the hill, though stripped of its classic edifices, has still a large Genoese castle on its summit. Within are gloomy walls, narrow and ill paved streets; but the houses along the shore are very delightful, having gardens stretching down to the water, and summer-houses at their verge. The city is liable to earthquakes, which, unless in 1739, have caused more fear than injury; and, what is worse, the plague seldom allows a year to pass without committing serious ravages. The population has been estimated from 100,000 to 120,000, of whom 30,000 are supposed to be Greeks, and 8000 Armenians. Upwards of 2000 Europeans, chiefly French, are settled here for the Levant trade, and form a numerous society within themselves, which enlivens the gloom peculiar to a Turkish city. The exports of Smyrna are those of Asia Minor; raw silk, cotton, carpets, mohair, raisins, drugs, and a few precious stones. The returns are chiefly in wrought silk, woollens, tin, lead, and glass.

3806. *From Smyrna*, after rounding a small promontory, we come to the mouth of the *Hermus*, the modern Sarabat, which watered one of the western valleys, rivalling in extent that of the Meander. At a considerable distance up, is another *Magnesia*, a celebrated ancient capital, which continues to be a large and populous town. Above rises a very lofty mountain, celebrated for the production of loadstone, whence the term magnet is supposed to be applied to that mineral. But the most remarkable place on the Hermus is that occupied by the ruins of Sardis, scattered over a verdant plain, near a miserable village, which yet retains the name of Sart. Of the Ionic temple of Cybele, the existing remains show that it was one of the most stupendous of Grecian monuments, and the capitals of that order appeared to Mr. Cockerell the finest specimens he had any where seen. Some of the structures are of brick, and exhibit a striking proof of the durability which the ancients could bestow on that material. Five miles distant, near a small lake, is the tomb of Halyattes, celebrated by the ancients as a monument that might almost vie with those of Egypt or Babylon. This mound is a full quarter of a mile in circumference; but the rains have diminished its original altitude of 200 feet. We know not if Chandler has much ground for thinking that treasure would be found here, if any one would undertake the immense labour of digging.

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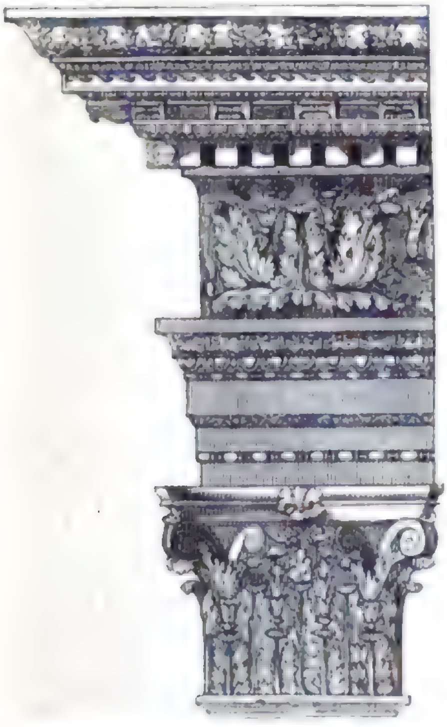

ENTABLATURE OF TEMPLE AT [illegible].

3807. *We have still to survey the last and least of the Ionian valleys*, that of Caicus. It presents the name and the site of *Pergamos*, once the capital of a powerful line of kings, and containing a library which ranked only second to that of Alexandria. The place still flourishes, and has a great population, stated, perhaps too high, at 15,000. The ruins have not been accurately observed. In a fine plain, on a tributary of the Caicus, is a tolerably large but poor town, called *Akhissar*, on the site of the ancient Thyatira, of which, however, no monuments are now left. About fifteen miles distant is Kirkagatch, a town said to contain 10,000 inhabitants.

3808. *From the mouth of the Caicus*, the sinuosities of this coast form, with the opposite coast of Mitylene, a long succession of straits. On this part of Asia Minor lately rose *Aivali* or *Cydonia*. Half a century ago it was a poor village, when a Greek native, of the name of Economos, succeeded in obtaining from the Porte a firman, by which his countrymen on this spot enjoyed a protection, and even privileges, elsewhere denied. Under these immunities, and under the wise measures of Economos, who became the governor, Cydonia rose to be a sort of capital of the Greeks, and the centre of all the measures taken for their renovation as a people. A college was established there, which was soon crowded with youths ambitious to revive the ancient glory of the Grecian name. The adjacent country was brought into a state of high cultivation; large manufactories of oil and soap were established. In 1820, Cydonia was estimated to contain 35,000 inhabitants: the houses were well built of stone; though, from the neglect of forming an original plan, they were arranged without order, and without any preventive against the accumulation of filth. The population was entirely Greek, and formed a sort of independent republic, governed by its own magistrates, and paying merely a tribute to the Porte. Next year, on occasion of the general rising of the Greek nation, the Pacha of Brusa sent a body of troops to occupy the place; a step which induced most of the inhabitants to abandon it, and seek shelter on the neighbouring islet of Mosconissi. A general descent being soon after made by the Greek fleet, the Turkish garrison was driven out; but, in retreating, they set fire to the city in more than twenty places; and the native population had scarcely time to make their escape, when it was reduced to a heap of ashes. No account has yet been received of its revival.

3809. *Passing round the Gulf of Adramyti*, with a small town of the same name at its head, we enter on a scene less adorned by nature and art, but surpassing in fame any of the splendid regions already surveyed. This is the "campi ubi *Troja* fuit,"—an interesting and mysterious subject; on which, in recent times, volumes have been written. Such a controversy would evidently be far beyond our limits. It is soon obvious that all the grand outlines of nature, as delineated by Homer, remain unaltered. The island of Tenedos, the neighbouring straits of the Hellespont, the plain traversed by several small and rapid rivers; and, behind, the lofty summits of Ida and the rugged steeps of Gargarus — these still form the characteristic features of *the Troad*. The details are involved in much greater perplexity. Perhaps, in regard to these, Homer may have been less exact, and may have taken such liberties as suited the objects of his poem. In a plain often inundated, considerable changes of surface and boundary may probably have taken place; and the parties in the controversy have assumed the right of supposing such as might best accord with their hypotheses. The leading data given by Homer are, the Scamander rising almost under the walls of Troy, from two fountains, one hot the other cold; the Simois afterwards flowing into it from the right; a plain between the Scamander and the Simois; and Troy from a height overlooking that plain. The actual features are, the Meander, a considerable mountain stream, which rises, however, as Dr. Clarke has shown, not near any possible site of Troy, but forty miles up the country, amid the heights of Ida. It receives, on the left, a rivulet from the height of Bonarbashi, the site of some hot springs, and several remarkable tombs; on the other, a small sluggish stream, called the Kallifat Osmack. A larger one, the Ghiumbrek, runs parallel to it on this side, but falls into the sea. The first hypothesis was that of Chevalier, according to whom Bonarbashi is the site of Troy, and the stream flowing from it the Scamander. He thus obtained for the site of the city a hill, the fountains, several large tumuli, and other ancient remains. Dr. Clarke, however, having clearly proved the Meander to be much the greater stream, and bearing still the ancient name, rejected the rivulet of Bonarbashi as unworthy of notice. The Simois appeared to him to be found in the Kallifat Osmack, which has a course of fifteen miles, and a tolerable body of water, but a slow current: floods, however, might render it "the rapid Simois." Between these rivers is the village of Tchiblak, which may, he conceives, have been the site of Troy. A late ingenious writer has sought to fix the Simois in the Ghiumbrek, supposed then to have fallen into the Meander, though its course is now changed. The intervening plain would afford ample room for the contending armies, and such as no other hypothesis presents; while within its circuit is a spot ascertained by Dr. Clarke to be the New Ilium of Strabo, believed, in his time, though not by himself, to be the spot on which Troy stood. Mr. Leake, again, has revived the almost forgotten hypothesis of Chevalier. He imagines that the Bonarbashi, in consequence of coming from Troy, was honoured with the principal name, while the Meander, above the junction, was considered merely as a tributary. In its height, in the two fountains, and in every other particular, it will then correspond to the description of Homer.

3810. *Dr. Clarke scaled the heights of Ida*, where he found the most rugged and romantic scenery, and obtained from its summit a splendid view over a great part of Asia Minor. In the interior, on a fine plain, he found the village *Aene*, recalling the name of Æneas; and Beyramitch, a populous town, the modern capital of the Troad. Below, opposite to Tenedos, appear the remains of Alexandria Troas, built by Antigonus and Lysimachus in honour of Alexander. Even now, when it has been robbed of most of its ornaments to enrich Constantinople, all the splendid appendages of a Greek city are traced on a great scale (*fig.* 569.); aqueduct, theatre, baths, and a very fine building, erroneously called the palace of Priam, the marble of which appears to have been covered with a coating of metal.

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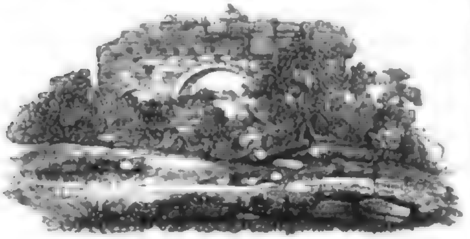

GYMNASIUM AT TROAS.

3811. *We now enter the narrow strait of the Hellespont* (the modern Dardanelles), forming the entrance into the Propontis or Sea of Marmora. The passage is defended by two opposite forts, called the Castles of Asia; a little to the south of which are the remains of the ancient cities of Sestos and Abydos, rendered famous by the tragic loves of Hero and Leander.

3812. *As the Propontis approaches its eastern boundary*, it shoots up the long and narrow *Gulf of Modania*, about fifteen miles inland from which, to the south, is *Boursa*, or *Broussa*, the ancient Prusa, capital first of Bithynia, and afterwards, for a short time, of the Turkish empire, till the conquest of Constantinople, when the seat of government was transferred thither. Boursa is still a great and flourishing city, containing probably not fewer than 60,000 inhabitants. Its situation is noble, in a plain twenty miles in length, covered with magnificent forests, behind which, to the south, rise the snowy pinnacles of Olympus. The air is considered by Browne as very salubrious, with which quality, however, the ravages committed by the plague during Mr. Kinneir's residence seem ill to accord. The ancient structures have been entirely taken down, and re-constructed in the shape of modern mosques, which amount, it is said, to the number of 365, and some of them are very splendid. The ordinary houses are of wood; the streets very narrow, but clean; and Boursa is altogether a very fine Turkish city. Cloths are extensively manufactured out of the excellent silk and cotton produced in the neighbourhood; and a constant intercourse is carried on with Smyrna and Aleppo. These manufactures are chiefly in the hands of the Armenians, who inhabit the city to the number of 7000. Modania, which is situated on the gulf of that name, and may be termed the seaport of Boursa, is a town built of wood, inhabited chiefly by Greek sailors.

3813. *Only a few wretched cottages occupy the place of Nice*, so celebrated under the Lower Empire, particularly for two great ecclesiastical councils. Those humble dwellings are beautifully situated in a fine plain bordered by the lake, and enclosed by wooded hills, rising into the lofty heights of Olympus. At the end of this plain the yet entire circuit of its walls, with their lofty towers and massy gates, make a most magnificent appearance. The interior, however, presents an entire contrast. A considerable Turkish town had been built out of the ancient city; but this too is now deserted, and nothing appears but ruin upon ruin. The decaying walls of the mosques and palaces are seen every where variegated with columns and other fragments of the more ancient edifices out of which they were constructed.

3814. On turning the eastern boundary of the Sea of Marmora, we immediately descry another great fallen capital, *Nicomedia*, the modern *Is-Nikmid.* It was an early residence of the kings of Bithynia; but its highest greatness began under Diocletian, who made it the metropolis of the Roman empire, the wealth of which he lavished in raising it at once to a rivalry with Rome. In this character it was soon supplanted by Constantinople, and all its ornaments were probably carried off to embellish this new residence; for there does not now remain the vestige of an ancient city. Is-Nikmid, containing 700 families, has the appearance of a town entirely modern. Similar has been the fate of *Chalcedon*, so distinguished in ecclesiastical history; its unoccupied area is covered with cornfields and vineyards.

3815. *Scutari* is referred to Constantinople, of which it forms entirely a suburb. Passing, therefore, the Bosphorus, or channel of Constantinople, we reach the Black Sea and the coast of the *ancient Bithynia.* It is described as a romantic and beautiful country, intersected with lofty mountains and fertile valleys; rich in fruits and wine, and abounding in noble forests. Through this region the Sikaria, the ancient Sangarius, after traversing a great extent of the high interior plains, rolls a full and rapid stream into the Gulf of Erekli. A great part of its lower course is through a gloomy and intricate defile, bordered on each side by rugged perpendicular precipices. To the east of this river the country becomes very lofty and presents an aspect like that of Sweden, being covered with noble pine trees, above which rise the snowy tops of the mountains. These rugged and gloomy tracts enclose a large plain, in the heart of which lies Boli, the ancient Hadrianopolis, now a poor town of about 1000 houses, and twelve mosques; noted for the mineral baths in its vicinity. Due north from Boli, at the foot of stupendous mountains, is the seaport of Erekli (Heraclea), which still carries on some commerce, but retains nothing of the grandeur which it displayed under its original name.

3816. *Proceeding eastward, we enter the ancient Paphlagonia*, an elevated, rude, and naked region, with detached cultivated spots, but chiefly occupied by the pastoral tribes. The commerce is carried on by Amassero, formerly Amastris; by Gydros, once Cytorus; by Ineboli, Inichi; but above all by *Sinope.* This celebrated capital of Pontus, and emporium of the Euxine, though destitute of its former wealth and extensive fisheries, retains still a population of 5000 souls, carrying on an export trade in rice, fruits, and raw hides. Docks for the imperial navy are also maintained there, though no longer on a great scale. The modern metropolis of all this country, however, is Kostamboul, or Kostamouni, situated about thirty miles in the interior, in a bare dreary region, bounded on the south by the lofty ridges of Olgassus, one of the highest parts of the great encircling chain. It contains about 15,000 Turkish and 3000 Greek inhabitants, thirty mosques, and numerous baths. On a high perpendicular rock, in the centre, is a ruinous castle, that once belonged to the Comneni.

3817. *Eastward from Kostamboul* the country rapidly improves, being watered, among other rivers, by the *Kizil Irmak* (Halys), which is the largest in Asia Minor, and traverses, by a circuitous line, nearly the entire breadth of the continent. On this route we pass *Tash Kapri*, with 4000 families and thirteen mosques, situated in a rich valley, and carrying on some manufactures of leather and cotton. It is the ancient Pompeiopolis, and presents some beautiful remains of Greek architecture. Some of the pines in this neighbourhood measured sixteen feet in circumference, and were immensely high, well fitted to be "the mast of some tall admiral;" but they are left to rot, neglected and useless. Here, also, is found Weiwode, a large beautiful village, in a narrow valley watered by a rivulet, and surrounded by hills and groves. Vizier Kapri, beyond the Halys, situated in a rich pastoral district, has forty-six villages dependent on it, and contains 2000 inhabitants.

3818. A route almost directly east, through a picturesque mountainous and woody country, leads to *the shores of the Euxine, and to Samsoon*, the ancient Amisus. This city, celebrated first as an independent Milesian colony, and afterwards as a residence of Mithridates and Pompey, has not now above 2000 Turkish inhabitants; but many of the adjacent villages are inhabited by Greeks, who carry on a brisk trade with Constantinople.

3819. *The ancient kingdom of Pontus*, which we are now traversing, consists, in a great measure, of a very flat plain along the sea-shore, in many places highly cultivated; in others, the streams, unable to reach the sea, spread into swamps and morasses. About thirty miles east of Samsoon, the Jekil Irmak, the ancient Iris, pours into the sea nearly as large a body of water as the Kizil Irmak, though after a much shorter course. A little beyond is the Thermodon, now called Termeh, only famous as the spot on which history or fable has placed the female warriors memorable under the name of Amazons. Farther on, a fine wooded ridge, which has formed a vast amphitheatre round the plain of Pontus, approaches the sea at Unieh, the ancient Ænos, a dirty wooden town, most beautifully situated, and carrying on a thriving trade in cotton stuffs, fruit, and wine from the interior. To the east, through a rugged and difficult country, is Keresoun, the ancient Cerasus, a town of 700 houses, with a ruinous aspect; and the Tereboli (Tripolis), about half this size, but in better condition. At length we arrive at Trebisond, the ancient capital of the Comneni, and the chief emporium of this part of Asia Minor. Xenophon called it Trapezus, from the oblong form which it still retains. The houses are built of stone, but are as usual crowded and gloomy. The lofty ancient ramparts, also built of stone, extend along two deep ravines by which the city is defended; and considerable ruins show the site of the palace. The inhabitants are estimated at about 50,000, consisting of all the races that inhabit Turkey, mixed with the more varied tribes from the Caucasus. They carry on a considerable trade in fruit and wine, and in silk and cotton stuffs of their own manufacture.

3820. *The high and wide expanse of interior Asia Minor,* the most extensive, though by no means the finest or most productive portion, remains to be surveyed. The general character is that of a high bare table land, begirt with lofty ridges of mountains. Being for the most part destitute of trees, it has a naked aspect. Though capable of successful cultivation, the indolence of the natives, and the insecurity of property, prevent the raising of any adequate supply of grain. On the banks of all the rivers, however, are rich pastures, which, with the open country in general, are occupied by the nomadic tribes called Turkmans, or Turcomans, whose habits are almost wholly Tartar. They are subject to little princes, who, according to circumstances, do or do not pay a small tribute to the Porte; and, according to immemorial Scythian usage, combine their pastoral pursuits with that of plundering the unprotected traveller.

3821. *Interior Asia Minor may be divided,* though without any precise demarcation, into two portions, western and eastern. The former comprises the wide range of the ancient Phrygia, with the smaller bordering districts of Galatia on the north and Lycaonia on the south. In modern times it is divided between Anatolia and Caramania, forming the interior of both. The eastern division consists of the ancient Cappadocia, now the Pachalic of Sivas, or Sebaste, reaching almost to the Euphrates.

3822. *The western division* contains several large cities. Kiutayah, reckoned its capital, is situated amid the mountains which give rise to the rivers of Ionia; and the whole country around forms the vast mass of those mountains. Even in its decay, the population, amounting to between 50,000 and 60,000, of whom 10,000 are Armenians, carry on a lucrative trade. The houses are large, built on the model of those of Constantinople; and the streets adorned with many handsome fountains. There are fifty mosques, thirty public baths for the use of the people; and twenty large khans for the reception of travellers. About fifty miles to the north is Eskishehr, situated on two rivers that fall into the Sikaria. Around it is an extensive arid plain, the same on which Sultan Soliman was defeated by Godfrey of Bouillon. It was the ancient Dorylæum, celebrated for its warm baths, of which an ancient one, adorned with columns of jasper, still remains: it is so hot as to be intolerable for more than two or three minutes. The modern town is of considerable extent, but the houses are poor and ruinous. On the other side, about sixty miles due south from Kiutayah, is *Osium Karahissar,* which D'Anville, on somewhat equivocal grounds, supposed to be the ancient Apamea. It is placed at the western limit of the great chain of Taurus, called here Kalder Dag, and is a large city, containing about 12,000 families, almost entirely Turkish, who are extensively engaged in the manufacture of black felt, and the culture and preparation of opium; both of which form articles of export.

3823. *The great road through Asia Minor* runs now in a direction nearly south-east towards the southern coast. On this route is Ak-shehr (the white city), the ancient Antiochia ad Pisidiam, at the foot of Taurus, whence cold winds blow, and torrents rush down upon the city; yet it contains 1500 houses, is adorned with many beautiful gardens, and with a mosque and college consecrated to the memory of Bajazet. Farther on is Ladik, the ancient Laodicea Combusta; but this is now a poor mud village, presenting only some fragments of marble columns, which the Turks have converted into tombstones.

3824. Proceeding on this route, and approaching the southern line of mountains, the traveller reaches *Konieh,* long one of the grand scenes of Turkish magnificence. It was Iconium, the capital of Lycaonia; but its splendour dates from the period when it became the residence of the powerful and warlike sultans of Roum; which it continued to be till that kingdom sunk beneath the arms of the Tartars. Konieh still displays superb specimens of all the edifices that constitute Turkish grandeur; mosques, colleges, baths, gradually crumbling into ruin. There are twelve large and above 100 small mosques: those of Sultan Selim and Sheik Ibrahim are spacious and magnificent structures; the marble gates also of the Capan

Madressa and other old colleges, richly adorned with fretwork and entablature, afford some of the finest specimens extant of Moorish architecture. The ruins of the ancient Greek city, however, had contributed largely towards its ornament. Among these, Mr. Kinneir remarked a colossal statue of Hercules, which appeared to him fully equal to any ancient sculpture he had ever seen. The modern city, destitute of commerce, is built of wretched brick huts, and is not supposed to contain above 30,000 inhabitants.

3825. *Fifty miles from Konieh*, about midway to the coast, is *Caraman*, which, after the fall of Iconium, became the residence of a chief or sultan of its own name; who reigned over a great extent of the south of Asia Minor, which is still denominated Caramania. It is much inferior in magnificence to Konieh, but carries on a considerable manufacture of coarse blue cotton cloth, and drives a brisk trade with Taurus, Cæsarea, and Smyrna.

3826. *In the heart of Phrygia*, and nearly in the centre of Asia Minor, is a considerable city, *Angora*, the ancient Ancyra, capital of Galatia. The surrounding pachalic consists of a vast plain, abounding in fruits and pasturage, but scantily supplied with grain. It is covered with Turkmans, from whose roving hordes the Porte in vain endeavours to exact even any regular tribute. Their principal chief can muster, it is said, 30,000 horsemen under his banner. The most curious product of this region is the Angora goat, the hair of which rivals silk in fineness. This beautiful animal thrives only within a limited tract to the westward of the Halys, immediately beyond which it degenerates. The city crowns a range of small eminences, one of which, having on its summit the now ruinous castle, resembles the castle rock of Edinburgh, being perpendicular on three of its sides. The foundations and scattered fragments of great ancient edifices may still be traced, but nothing more. Pococke estimated the population at 100,000; Mr. Kinneir at only 20,000. Probably the actual decrease has been considerable; as the present pacha makes a monopoly of the grain, and in various ways oppresses the inhabitants. They still, however, carry on a manufacture of fine camlet, from the goats' hair produced in the neighbourhood.

3827. *The eastern interior of Asia Minor* does not materially differ in its aspect from the western: it consists of wide plains, bare of trees and grain, but rich in pasturage. Subject to its roving tenants, the Turkmans, the frontier districts are also exposed to inroads from the Kurds, a fierce people, whom we shall find in their native seats on the upper Tigris. The people of Cappadocia were considered by the ancients as rude, stupid, and uninformed; but distinguished as rearing a breed of excellent horses: they still retain their reputation in both respects. In modern times this territory bore the name of Roum, or Rumyiah, being that given to the kingdom formed by the great Turkish dynasty of the Seljuks; and this name it retains, through the Porte ranks it as the pachalic of Sivas.

3828. *The city of Sivas*, the ancient Sebaste, is a dirty, ill built place; the inhabitants coarse and rude, without any other industry than the old Cappadocian occupation of rearing horses. The finest city in this part of Asia is Tocat, about forty miles to the north-west of Sivas, rising in the form of an amphitheatre round the banks of the Jekil Irmak. Vessels of copper are here made to a great extent, from the mines in the neighbourhood; to which is added the manufacture of blue morocco and of silk stuffs. It is the great channel of the inland commerce of Asia Minor, communicating by caravans with Diarbekir and with Smyrna, and sending others to Boursa and Sinope. These resources support a population of 60,000, among whom, as in all the commercial cities, the Armenians form a large proportion. Proceeding seventy miles in the same direction, the traveller reaches Amasia, romantically situated on the banks of the same river, which here flows in a narrow valley enclosed between rocky mountains. The surrounding country is finely wooded, and produces excellent silk.

3829. *Changing our direction to the south-west*, after a course of eighteen miles we arrive at *Ooscat*, a city raised to celebrity in modern times by the residence of the powerful chief, Paswan Oglu. He long maintained an independent dominion over all the east of Asia Minor, which was greatly improved under his auspices. His palace occupied an immense space in the middle of the town; and though the exterior presented, as usual, only a mass of dead wall, the apartments were richly furnished, and profusely adorned with painting and gilding. The place was then supposed to contain 16,000 inhabitants, chiefly Turks; but since the death of this chief, and the fall of his house, it has probably sustained a considerable diminution. Nearly due south from Ooscat, at the foot of the stupendous and snow-capped mountain of Argish, stands *Kaisarieh*, capital of ancient Cappadocia, and called then Mazaca; but the name was changed to Cæsarea in honour of Tiberius. When sacked by Sapor, it was supposed to contain 400,000 souls. It still flourishes by the product and export of cotton, which occupies within a very narrow circuit a population of 25,000. To the south-east is found Ul Bostan, the ancient Comana, at the very head of the Kizil Irmak, in a finely watered plain covered with trees, and in high cultivation. It has 8000 or 9000 people, and forty flourishing villages under its jurisdiction. The vicinity forms one of the most agreeable spots in Asia, and affords a large quantity of wheat for exportation. To the south, in Upper Cilicia, below Mount Taurus, is Maragh, capital of a small pachalic of the same name, which immediately borders on Syria.

3830. *To complete the picture of Asia Minor*, we have still to survey its *isles*, once celebrated for wealth, beauty, and power, now reduced to a more complete state of desolation than even the continent. *Cyprus*, interposed between Syria and Phenicia, is the most extensive, and was in ancient times the most beautiful, as well as the most voluptuous. It is 140 miles in length, by 63 in breadth. The Cypriotes boast that the produce of every land and climate will flourish on their soil in the highest perfection. Its wheat is of superior quality, and notwithstanding the imperfect cultivation, a good deal is exported. Wine, however, may be considered as the staple product. The grapes contain the richest and most luscious juice of any in the world; and the wines made from them are peculiarly famed for their generous and restorative qualities. They resemble Tokay; but they are disliked by the English as having a sickly sweetness, which only great age can remove. Its fruits also are delicious, particularly the orange and apricot; and game is abundant. All these gifts of nature, however, are rendered abortive by the deplorable system under which the island is at present governed. The inhabitants, two thirds of whom are Greeks, are considered just objects for oppresion of every kind. The governor, who resides at Nicosia, is changed every year; and, having obtained his place by purchase, is impelled to indemnify and enrich himself by every form of extortion. Thus, Cyprus, from a fertile and populous island, has been reduced nearly to a desert, not containing more than 60,000 or 70,000 inhabitants, and even these are sensibly diminishing. Such was the case, even before the recent Greek insurrection had afforded the pretext for letting loose upon this unfortunate island a horde of banditti, who exercised on an unresisting people every form of plunder and cruelty. Till then, Cyprus retained still a remnant of what was rich and beautiful in its ancient aspect. Its females still display that finest model of the Grecian form and features, for which they were anciently celebrated. These charms they seek to heighten by artificial and often meretricious decoration; and their conduct often accords but too well with the ancient ideas, which represented Venus as born on this coast, and as choosing Paphos for her favourite shrine. They still carry on the staple Turkish manufactures of leather, carpets, and cotton; all of great excellence, the colours being particularly fine and durable.

3831. *Nicosia*, chief of the cities of Cyprus, is situated in the centre of the island, in a noble plain, bounded by lofty mountains. Its fortifications appeared to Dr. Clarke the grandest he had ever seen; and their extent and solidity, with the domes and minarets rising amid the trees, give it an air of grandeur which, in Mr. Kinneir's apprehension, even Shiraz cannot rival. These fortifications are neglected, and indeed would not now be of much value, since the place is commanded by neighbouring hills. The church of St. Sophia, a very ancient Gothic structure, retains its magnificence; but the palace of Lusignan is almost entirely in ruin. The place contains about four thousand families, of whom half are Christian, divided between the Greek and Maronite churches. They carry on the three manufactures above mentioned, and are also engaged in the collection of medals and other antiquities, of which the neighbourhood is full. *Larnica*, on the southern coast, is the seat of Cypriote commerce, and the residence of the consuls from the different European powers. The ancient harbour is choked up; but the roadstead is good, and there is a considerable traffic carried on with Malta, Egypt, and Smyrna, by Levantine ships under English colours. The inhabitants amount to 3000, chiefly Greeks. A neighbouring cape, still called Chitti, exhibits the ruined fragments of the ancient Citium. Famagosta, the capital, held by the Venetians till it yielded to the arms of Selim, shows its former grandeur by a number of old churches, and by a handsome palace, now partly converted into a mosque. Cerina and Baffo (Paphos), though only villages, are the most agreeable parts of the island, particularly the latter, distinguished by ancient fable as the birthplace and residence of the goddess of love.

3832. *Another island, still more celebrated in antiquity*, and still more completely fallen, is *Rhodes*. It was at an early period renowned as a commercial power; but its existence as a great republic commenced under the successors of Alexander. It then alone asserted that independence which had been lost by the other Grecian states; extended its commerce to the most distant regions; and rivalled the splendour and power of the greatest kings. Demetrius, the first captain of the age, not only exhausted against it all the ordinary resources of war, but invented the *helepolis*, an immense machine, to batter its formidable walls. He was completely baffled, and suffered before Rhodes the wreck of his military fortunes. Even when this island was merged in the Roman empire, her commercial code was adopted by that wise people; and she acquired in after-times a high military glory, when the knights of St. John, expelled from the Holy Land, made Rhodes one of their last retreats, where they long baffled the arms of Mahomet and Solyman. Of all these glories the Turkish sway has obliterated almost every vestige. The city of Rhodes presents no longer a fragment of its colossus, one of the wonders of the world, or any trace of the numerous fine edifices with which it had been adorned by the taste and wealth of its inhabitants. It exhibits only some massy Gothic churches converted into mosques; and contains within about a fourth of its former area a population of about 5000 Turks and 1000 Jews; for, in consequence, probably, of the jealousy inspired by its former obstinate resistance, no Christian is allowed to reside within the walls. The Greeks occupy, however, almost all the remainder of the island, but are not supposed to exceed 14,000 in number. Rhodes enjoys a delightful climate, the heats being cooled by the lofty mountain of Artemira, which rises in the centre, and is covered with those noble forests of pine, out of which the Rhodian navy was anciently constructed, and which are still conveyed in large quantities to the arsenals at Constantinople. The lower hills still produce a little of that wine, so much celebrated for its delicate perfume by the ancient writers. Industry and cultivation, however, are now nearly extinct, and Rhodes is obliged to import corn from Caramania.

3833. Proceeding in our circuit of the coasts of Asia, we find *Stanco*, the ancient *Cos*, the birth-place of Hippocrates and Apelles, and producing, in abundance, that stone which serves as a whetstone; *Stampalia, Amorgo, Patmos*, where St. John wrote the Apocalypse. *Samos*, a larger and more important island, which gave birth to Pythagoras, has been always celebrated for its industry, of which striking antique vestiges remain. It has been lately distinguished for its brave stand in the cause of independence, and it is to be regretted that the European states, from local considerations, have assigned it to Turkey.

3834. *Scio* has experienced a very different fate. Nature had rendered this spot almost a paradise. It is calculated by Mr. Turner, that among 150,000 inhabitants, there were not above 400 Turks. Scio had become a great centre of that intellectual regeneration at which the Greeks have lately aimed. A college had been established, to which resorted the youth of opulent families from every quarter of Greece, and which could number many eminent professors and scholars. All this prosperity and these fair prospects were in one day destroyed. A landing having been effected by part of the fleet from Hydra and Samos, the Sciotes made a general rising in the cause of liberty. Unfortunately, their habits had been those not only of peace, but of effeminacy; while their shores, unlike those of Samos, presented no barrier against invasion. They were unable, therefore, either to stop or resist the hordes of Asia, who poured across the narrow strait which separates Scio from the continent. The immediate consequence was, not a fight, but a dreadful and general massacre; the unfortunate Sciotes fleeing for shelter to the ships or to the rocky caves in the interior. Only a few escaped; 25,000 are supposed to have perished. For the survivors was reserved a fate, if possible, worse than death; the whole, including opulent citizens and ladies of high rank, being bound, and put on board the ships, to be sold as slaves in the markets of Smyrna; and Scio became at once a desert.

3835. *Mitylene*, the ancient Lesbos, of voluptuous and poetic fame, the country of Sappho and Alcæus, in later times gave birth to that daring piratical chief Barbarossa. At present it is in great decay, though still supporting a population of 40,000, half of whom are Greeks. These it maintains by the trade in oil, of which are exported 50,000 quintals, not, however, of very superior quality. *Tenedos* is a small rocky island, chiefly memorable from the position in which it stands with regard to the plain of Troy. It derives also some maritime importance from its proximity to the entrance of the Dardanelles; and it produces a wine more highly esteemed than any other in the Archipelago.

Subsect. 4. *Provinces on the Euphrates.*

3836. *The provinces on the Euphrates* have been one of the least secure appendages of the Turkish empire. Besides forming a sort of debatable ground with Persia, and beset on all sides by fierce and independent tribes, they have presented, in their remoteness and the difficulties of approach, a strong incentive for the usual ambition of the pachas to assume independent power. Although they possess a still greater name in history than the more western divisions, they do not attest it by the same magnificent monuments. No Greek or Roman kingdom ever possessed such a firm hold of this region as to rear on it structures marked by that high architecture and those durable materials which elsewhere excite the admiration of the world. The palaces of Nineveh, of Babylon, and of Bagdad, were composed of earth and brick, and have crumbled into dust. Nature, however, retains all her grandeur and original fertility, and presents her features of mountain, river, and plain, on a vaster scale, though not, perhaps, under such happy and beautiful combinations, as on the shores of Syria and Ionia.

3837. *We need scarcely* name the *great empires*, which established their seat in the plain between the Tigris and the Euphrates. *Nineveh*, the earliest, and *Babylon*, perhaps the most splendid in history, erected here their vast capitals, and endeavoured to reduce the world to subjection. They did not, however, nearly equal the extent of that established by the caliphs of Bagdad, which during its brief existence connected the remotest extremities of Africa, Asia, and Europe. Internal dissension, and the tide of Turkish and Tartar invasion had reduced it to a mere shadow, before Holaku made himself master of Bagdad. This event extinguished the lustre of this region as a seat of empire and power, and converted it into a mere frontier and provincial district, in a great measure laid waste and neglected. It has since been viewed by the contending powers of Persia and Turkey rather as an outer bulwark of their respective dominions, than an integral or valuable portion of them.

3838. *In commencing our survey of this region*, we shall begin at its summit, — *Armenia*. This is one of the most ancient kingdoms of Asia, and has almost always maintained a respectable and even independent rank. Though on the route, as it were, of all the great conquering potentates, its inaccessible site prevented it from being entirely absorbed by any one of them. They merely passed by, demanding tribute and military aid, and allowed it to be governed by its native kings. Only once, under Tigranes, Armenia came forward as a conquering power, and its career might have been prolonged, had it not encountered the disciplined legions of Rome, led by Lucullus and Pompey, who soon reduced it to the rank of their humblest tributaries. When Parthia set bounds, however, to the Roman arms, her rivalry enabled Armenia again to rear its head; and amid all the subsequent revolutions, it preserved a native government, until it was finally reduced into a pachalic by the Turkish power. A part, however, was severed, and appropriated by Persia.

3839. *Armenia,* notwithstanding its fallen political situation, still encloses between its rugged mountains, cultivated valleys and even large cities. Erzeroum, which ranks as the capital, is situated on one of its highest points. The climate in winter is intensely cold: snow begins to fall in August; and covers the ground from October to March. Erzeroum however, is exceedingly healthy, and the country round it fertile; yet Major Sutherland has perhaps over-rated the population at 100,000, of which 15,000 are said to be Armenians, and the rest Turks. About eighteen miles distant is *Hassan Kela,* a small town defended by the strongest castle in Armenia. *Khars,* to the north, is a large town, fortified under Amurath III. and contiguous both to the Russian and Persian frontier; but the present pacha has attached himself in a great measure to the interest of the latter power. *Akiska,* which touches on the frontier of Georgia, and Imiretta, stand on the Kur, in the midst of a fine arable district. The latter is an open populous town, of considerable trade.

3840. *Proceeding southwards along the foot of Ararat,* we come to the fine city of *Bayazid,* the inhabitants of which are reported to be the most warlike and most learned of all the Armenians. It is adorned with a splendid and celebrated monastery, and is supposed to contain 30,000 souls. To the west is *Van,* noted as one of the bulwarks of the empire in its contests with Persia. Its situation is so strong as to be accessible only by a narrow passage, admitting two persons abreast; and it is carefully fortified, in the Oriental style, with a strong wall and a deep ditch. The surrounding country is equally beautiful and fertile; and at two miles' distance is the great lake bearing the same name, 168 miles in circumference, but the water of which is too brackish for use.

3841. On a lower level than the region now described is the *pachalic and territory of Diarbekir.* It forms a high table-land, about 120 miles long, between the Euphrates and the Tigris. Its surface is rugged, but interspersed with numerous valleys, that are highly picturesque, beautiful, and fertile. The city of Diarbekir is the ancient Amida, a bulwark of the Eastern Empire against the Parthians. Its wall of black stone, the work of the Romans, though now neglected and ruinous, was considered by Mr. Kinneir as superior, for height and solidity, to any he had ever seen in Europe or Asia. This wall, with the towers, and the minarets peering above, gives to the city a peculiarly grand and imposing aspect. It contains 38,000 inhabitants, and from its situation on the high road between Persia and Turkey, as well as on the communication down the rivers, forms a sort of key to the commerce of Western Asia. On the northern extremity is *Maden,* a town situated in the very heart of Mount Taurus, and surrounded by lofty ridges of bleak and barren mountains, through a prodigious chasm in which the Tigris is seen dashing. These mountains, however, are rich in metallic wealth, from which Maden derives its importance. They produce abundance of excellent copper, some iron, and even a little gold and silver.

3842. Crossing now to the eastern bank of the Tigris, we find ourselves in *the rude mountainous region of Koordistan,* occupied by the proudest, fiercest, and most predatory race of all who infest the Turkish dominions. They inhabit castles rather than cities; but Betlis, on the northern frontier, forms a sort of capital. This city is built on a number of narrow ravines, branching out from a perpendicular rock in the centre, on which the castle is erected. The streets are steep, but the houses are well built of hewn stone, surrounded by gardens, and each so constructed as to form a sort of petty fortress. The city is well supplied with fruits and provisions; but few merchants venture on the perilous tracts which lead to and from this mountain capital. Although Betlis is nominally included in the pachalic of Moosh, the real power is possessed by the Khan of the Koords, the descendent of a long line of feudal princes. About fifty miles to the south is Sert, the ancient Tigranocerta, so named from Tigranes, who made it the capital of his short-lived empire. At present Sert is a large mountain village, where each house is a castle, surrounded by a wall, and even a moat. These chiefs resemble the ancient heads of the Scottish clans: they possess the power of life and death over their vassals, whom, however, they treat with kindness and familiarity, and are regarded with reverence and affection. They feel unbounded pride in their pedigree, which they trace back to the age of Noah, cherish a rooted attachment to their native soil, and a hatred of strangers, towards whom they observe neither faith nor humanity.

3843. *Immediately to the west of Betlis is Moosh,* the town of which name has been made by the Turks the residence of a pacha. It is poor and ill built; but the district contains many fertile spots and large villages, cultivated and inhabited by the industrious Armenians. To the south-west of Diarbekir, on the banks of the Upper Euphrates, is found the small pachalic of *Orfa*, marked by a gradual transition from the mountainous part of Armenia to the sands of the Syrian desert. Its capital occupies the site of the ancient Edessa, a city of some fame, both under the successors of Alexander, and afterwards when the arms of the crusaders placed over it one of the Courtenays, to whom it gave the title of *count*. It is said to be still well built, with a magnificent mosque consecrated to Abraham, and a population of 20,000 souls. A village inhabited by Arabs still bears the name and site of Harran, the original abode of the patriarch. Other places of some importance on the bank of the Euphrates are Racca, the ancient Nicephorium, a favourite residence of Haroun al Raschid; Bir, or Beer, where the passage of the river by the caravans is facilitated by a bridge of boats; Koum Kala, the ancient Zeugnia, a small castle and fort, formerly the great Roman military passage.

3844. Descending from these heights, we come to *the great plain between the two rivers* called at present *Algezira*, and by the ancients *Assyria* and *Mesopotamia*. Though partly rocky and sandy, it is in general capable of being rendered productive; but being in many places occupied by the Arabs, and in others exposed to the inroads of the Kurds, less cultivation is bestowed upon it than on the mountain valleys to the north. Mosul, the capital, is a large, ancient, gloomy-looking town, in a state of sensible decline. It contains about 35,000 inhabitants, with the remains of some fine Arabic structures; and carries on a little trade. On the opposite or western side of the Tigris, the village of Nunia appears to occupy a part of the vast circuit of the ancient Nineveh. The only monuments are mounds of earth, nearly a mile in circumference, similar to those of Babylon, though not nearly so lofty or so perfect. A rampart may still be traced some miles in circumference, surrounded by a fosse, and covered with grass, which gives it the appearance of one of the old Roman entrenchments. On a vast plain to the east was fought the battle of Arbela, in which the fate of the Persian empire was finally decided. Mosul, with a territory of two miles round it, has been formed into a pachalic by itself.

3845. *All the rest of this country* is included in the *pachalic of Bagdad*, the upper part of which, touching on Diarbekir, retains still the mountainous character of that province. The most northern town is Merdin, the old Roman position of Mardis, the walls of which are still in tolerable repair. The houses, which are rather well built, rise in ranges above each other, along the declivity on which the city is built, and which forms a branch of the great chain of Mount Masius. About thirty miles to the south appear the towers and ramparts of *Dara*, the deep foundations of which may be traced for more than two miles. The southern gate is ten feet in thickness and sixty in height, and some fragments of ancient architecture are scattered over the site, which is now occupied only by a few detached families, attracted by the abundance of water. But of all this chain of mighty fortresses, none equalled the strength of Nisibis, which stood always impregnable against the Parthians, till it was ceded to them by treaty; after which the Romans attempted in vain to recover it. Only the foundations of the walls can be traced for about three miles. The interior is filled with hillocks of stone and rubbish, amid which appear the black tents of the Koords and Arabs. On the Euphrates, opposite to Mosul, are only a few small towns, on the site, however, of some Roman stations; among which we may remark Kerkesieh, the ancient Circesium, raised to importance by Diocletian; and Annah, a pretty large place, which, being situated at the point where the Desert becomes of less immense breadth, is often a rendezvous of caravans coming up the river and proceeding across to Damascus.

3846. Between Annah on one side, and the ruined fortress of Tekrit on the other, the rivers approach to within fifty, and sometimes twenty-five miles of each other, enclosing between them that magnificent plain called, successively, *Babylon*, *Chaldea*, *Mesopotamia*, and now *Irak Arabi*. As it is completely a flat surface, and the waters of the Tigris and Euphrates, during the wet season, rise to a level with it, the irrigation of the whole region is practicable, and during its prosperous era was completely effected. Hence arose an extensive and luxuriant fertility, which was rivalled only by the Delta of Egypt, and rendered it the early seat of wealth and civilisation. Even under Persian dominion a tribute was drawn from it equal to a third of that paid by all the rest of Asia. At present, the luxuriant harvests which once covered this plain have entirely failed, for want of the simple processes necessary to produce them. The inundated banks of the rivers are overgrown with impenetrable brushwood; the interior, deprived of the canals which formerly watered it, is reduced almost to the level of the bordering deserts. "The humble tent of the Arab now occupies the spot formerly adorned with the palaces of kings; and his flocks procure a scanty pittance of food, amid the fallen fragments of ancient magnificence."

3847. Notwithstanding, however, the desolation to which this region is now consigned, the traveller still eagerly seeks in it the trace of *those mighty capitals*, which, both in the ancient and middle ages, gave to it a lustre unrivalled by any other part of the world. Of these, *Bagdad* alone retains any actual existence, and is still a large city, the metropolis of the extensive pachalic which bears its name. It exhibits, however, scarcely any remnant of the gay and romantic splendour of the court of the caliphs. Not even a vestige of their palace remains; and the same may be said of most of the costly edifices with which they embellished

Bagdad, when it was the capital of the Mahometan world. The chief monuments of that period are the gates and towers, which, even in decay, far surpass any of modern erection. To these may be added the tomb of Zobeide, with one or two colleges and minarets. Almost all that is modern of Bagdad is mean, and foreign to the ideas which the name excites. The streets are so narrow that two horsemen can scarcely pass; and the bazaars, though containing accommodation for a very extensive trade, are by no means handsomely fitted up. Bagdad, since its capture by Hulaku, in 1258, which finally extinguished the caliphate, has passed through many vicissitudes. Being the greatest of the debateable subjects between the empires of Persia and Turkey, the most strenuous efforts of both were exerted for its possession.

3848. From Bagdad, we proceed by a direct line almost due south to the Euphrates, in search of *Babylon*, a spot to which recollection gives an almost unrivalled interest. Here, over a space extending five or six miles in every direction, are spread the undoubted remains of that ancient "glory of nations," which none of the proud capitals of the ancient world ever rivalled in magnitude and the grandeur of its structures; and which is rendered still more imposing by the awful antiquity to which its origin ascends. It owed its foundation, or at least its splendour to Semiramis, whose era is that of the formation of the first of the great empires. Large additions were made, particularly by Nebuchadnezzar; and Babylon was thus the work of successive ages; but we have now no means of tracing the share taken by each in its erection and embellishment. The walls, according to Herodotus, were sixty miles in circumference, and, by the most moderate reports, at least forty-five. They were 365 feet high, and so broad that six chariots might drive abreast along the top. The form of the city was that of a regular square, with twenty-five gates on each side; and the streets ran in straight lines from gate to gate. Among the structures three were pre-eminent, and ranked among the wonders of the world. One was the palace, eight miles in circumference, enclosed within three successive walls, the interior of which was covered with paintings. Near it was the second wonder, that of the hanging gardens. These were raised, it is said, by Nebuchadnezzar, to gratify a Median spouse, accustomed to the bold scenery of her native country, and disgusted with the tame uniformity of the Babylonian plain. Having undertaken to transport thither the landscapes of her own land, he raised masses of huge extent, supported by arches upon arches, and covered with deep earth, which not only produced plants and flowers, but presented a range of wooded steeps, similar to those in the mountains of Media. Thirdly, the gigantic tower of Babel, or Belus, was a still more celebrated structure, respecting which tradition, fable, and history are strangely blended. Though dedicated by the Babylonian kings to an idolatrous worship, it traces its first origin to a much earlier period, when men, intoxicated by their first successful achievements, formed the daring project of an edifice reaching to the skies. Converted into the shrine of Belus, it was adorned by colossal images and statues of solid gold, the value of which has been rated by Herodotus, doubtless much too high, at 5000 talents, or 21,000,000*l.* sterling. Equally exaggerated has been its reputed height, which some Jewish authorities fix at twelve miles, and even Jerome quotes contemporary authority for its being four miles high. These ridiculous estimates give way before the sober testimony of Strabo, who states the height at a stadium, or 660 English feet, exceeding only a little that of the highest pyramid. Even after the downfall of Babylon as the capital of an empire, it continued to be the most splendid city in Asia. Alexander was strongly attached to it, and, if he had lived, would, perhaps, have made it his residence. The gradations of its utter decay are not distinctly traced by history. It seems to have been slow, as the powers which held sway in this neighbourhood chose other positions in the vicinity for their seats of empire. The kings of Syria chose Seleucia; the Parthians, Ctesiphon; the Saracens, Bagdad; and each, according to the custom of the East, sought to aggrandise his favourite city by transporting to it the inhabitants of Babylon, and the materials out of which it was built. Babylon is at present the scene of utter desolation:—"The wild beasts of the forest lie there; the dragons howl in her pleasant palaces." Yet even now, after so many ages of desolation, and after so many great capitals have been built out of its ruins, enough remains to attest the fidelity of those who described it as the greatest capital of the ancient world; "the glory of kingdoms, the beauty of the Chaldees' excellency." Its mighty structures, indeed, are resolved nearly into their original elements: instead of walls and towers, we see only confused heaps of earth, bricks, and rubbish; but these are piled almost in mountain masses; and, seen afar along the Mesopotamian plain, proclaim still the wonders of a distant age. Mr. Rich, in his careful survey, has described four remarkable masses, which cannot, however, without some difficulty, be traced to the ancient structures. The first is a large mound, called by the modern inhabitants the mound of Amran, 1100 yards in length, 800 in breadth, and from 50 to 60 feet in height. Its great extent and loose texture seem, with great probability, to suggest the idea of its being the remains of the hanging gardens. After crossing a valley somewhat more than a quarter of a mile in width, he came to another pile forming a square of about 700 yards, evidently the site of a finer and more elaborate structure. Several walls were entire, built of the finest brick, cemented with lime, ornamented with niches, and with some remains of painting and sculpture. The natives called it the *Kasr*, or palace, and its appearance seemed strongly to warrant that appellation. About a mile to the north is another, called the *Mujelibe*, whose sides are only 219 by 136 feet in length and breadth; but its elevation is 141 feet, greater than that of those just named. The summit is strewed with various fragments, and the interior contains many cavities, tenanted by wild beasts, bats, and owls. From two of them Mr. Rich extracted wooden coffins containing skeletons in high preservation; and he was of opinion that a considerable proportion of this structure would, upon search, be found similarly filled. These relics indicate a royal cemetery, of which several, particularly that of Ninus, are mentioned by historians. Mr. Rich and some other travellers have considered it as the tower of Belus, or Babel. But there is another mass, of vaster dimensions, about ten miles distant, more strongly assimilating with the aspect which we should conceive that famous structure to present. It is of an oblong form, 762 yards in circuit, and rises to the height of 192 feet. The bricks are of the finest description, and cemented with lime so closely, that it is nearly impossible to extract one entire. It has some appearance of having been built in stages, and on its summit there is a solid pile of brick thirty-seven feet high, diminishing in thickness to the top. In short, it is in all respects the greatest monument of Babylon, and would have unquestionably corresponded to the most remarkable edifice of that city but for its great distance from the other remains, which causes a doubt how it could have been comprehended even within the vast limits of Babylon. Yet, when we consider how immense these were, suggesting the idea of a fortified territory rather than that of a city, it seems scarcely sufficient to outweigh so striking an accordance in other respects, especially as there is no record of any such extraordinary structure situated without the walls of Babylon.

3849. Adjoining to this remarkable scene is *the modern town of Hillah*, built on both sides of the Euphrates. It contains 12,000 inhabitants, has several stately caravanseras of Babylonian brick, well regulated markets, and carries on a considerable trade, both with Bassora and the districts higher up the river.

3850. Returning to Bagdad, and proceeding down the Tigris, we find, about eighteen miles below, the ruins of two great capitals, which had been built out of those of Babylon: *Ctesiphon*, by the Persians, on the east side; and *Seleucia*, by the Syrian kings, on the west. Of Seleucia, only the walls and ramparts are now discoverable; but Ctesiphon still presents the outline of the Tauk Kesra, a palace of Chosroes, the richness and beauty of which have been a favourite theme of Oriental history and romance. It contains in the interior a vaulted hall, which rises to the height of 106 feet, and its lofty walls are seen from far along the plain.

3851. *The banks of the Tigris, down to its junction*, cannot boast a single village; but *to the west of the Euphrates*, and even in the desert, occur several remarkable places. *Meshed Ali* was founded by Alexander; but its fame in the East rests on its being, as its name imports, the tomb of Ali, the great Mahometan prophet. This tomb forms a handsome structure in the centre of the city; and infidels are forbidden on pain of death to enter its walls. An elegant dome which surrounds it was gilded by order of Nadir Shah. It is supported by a constant influx of pilgrims, and by the number of Persians of rank, whose bodies are transported from the most distant quarters to be interred in this holy ground. Between Meshed Ali and the river is Koufa, a place of such antiquity, that from it the Arabic characters have been termed Koufic, or Cufic. It was enlarged by Omar, who made it the residence of the caliphs; but after the transference to Bagdad it fell soon into decay. At present there remains little more than the mosque where Ali was assassinated; a plain building, which the Mahometans, however, hold in peculiar veneration. Both banks of the Euphrates are here possessed by Arab tribes, among whom the most powerful is that of Montefidge, which can bring four thousand horse into the field. Among them are some of the finest specimens of the Arabian breed.

3852. *The Euphrates and the Tigris*, after having for so long a space enclosed this majestic plain in their parallel course, *unite* a little below the village of Korna. The combined stream receives the name of Shat-ul-Arab, and presents still some remnant of the fertility of the plain of Babylon, its banks abounding with grain, dates, and a variety of other fruits.

3853. On this branch is situated *Bassora*, or *Bussora*, a great city, which absorbs nearly all the foreign commerce of Persia and the Euphrates. It is seven miles in circumference, a great part of which space is laid out in gardens and plantations; and intersected by canals navigable for small vessels. Its most important trade, being that with India, is carried on partly by British, but chiefly by Arabian vessels, of which those of 500 tons burden can ascend the river to this point. The inhabitants are estimated at 60,000; a heterogeneous mixture of Arabs, Turks, Indians, Persians, and all the people of the East. They have not expended much of their wealth in the embellishment of the city, which is dirty in the extreme. The houses are meanly built of brick; the bazaars are wholly unsuitable to the valuable merchandise deposited in them; and there is only one mosque which has a decent appearance.

Chap. III.

ARABIA.

3854. *Arabia* forms an extensive country, or rather region, of Asia. It is a peninsula comprising nearly the whole south-west portion of that great quarter of the globe.

Sect. I. *General Outline and Aspect.*

3855. *The boundaries of Arabia are*, on the west, the Red Sea, called also the Arabian Gulf, which separates it from the opposite coast of Africa. On the south it has the Indian Ocean, part of which separates it from Berbera. As the coast changes its direction, it has still for some time this ocean on the east, opposite to the distant shores of Malabar; but this great sea is soon narrowed into the Persian Gulf, which divides Arabia from the south of Persia. A line drawn from the head of the Persian Gulf to the head of the Arabian Gulf would seem the natural boundary of Arabia, were it not for the vast desert which stretches to the northward, and is of a character so decidedly Arabian, that it has always been referred to that part of Asia. This wilderness forms a gulf, as it were, between two of the finest portions of the continent,—Syria and Palestine, on the west; and the once great empires of Babylon and Assyria, now sunk into the Turkish pachalic of Bagdad, on the east. This tract of Arabia, continually narrowing to the northward, is finally closed at an angle, as it were, by the lofty mountain heads of the Euphrates and the Tigris.

3856. *The boundaries of this vast region* are somewhat imperfectly defined, especially towards the north; but if we close it, as seems reasonable, about Palmyra and Anna, we shall then have a length from north to south of 22°, or somewhat more than 1500 miles. The greatest breadth across from Mecca is not less than 20°, or 1200 miles; but this is narrowed by the Persian Gulf to little more than half that dimension, and gradually diminishes to the northward. With these dimensions, under such a climate, and in a position so central, Arabia would have been the finest country of Asia, had it possessed one essential element, that of water. Deprived of this, it has, for the most part, ever borne the character of *desert*, for which its very name has become proverbial. There are, however, some brilliant exceptions, particularly the country of Yemen, which has been called the Happy Arabia; but in general, over all the vast expanse, naked rocks and arid sands predominate.

3857. *The privation of water*, whence the barrenness of Arabia arises, is incident to all countries under the torrid zone in which moisture is not collected by great ranges of *mountains*. Lofty chains, like those of Ararat and Imaus, seem necessary to pour down those mighty streams that fertilise the burning plains of Asia. Arabia is not, indeed, destitute of tracts that have a mountainous character; but these present, in general, only long rocky ridges, whose scanty streams are quickly absorbed in the surrounding waste. Sinai and Horeb, towering over the head of the Red Sea, and rendered famous by great events, form, probably, the most elevated portion. In the Hedjaz, however, the country round Mecca and Medina, are found the Ramleah mountains, and other chains, whose aspect suggested to the ancients the name of the Stony Arabia. Another continuous chain of the same character appears to cross the whole of the Nedsjed, or central district. Between these stony ridges are interspersed what are called *wadis*, narrow watered valleys, which a degree of vegetation, sometimes even brilliant, distinguishes from the surrounding waste. Yemen, the *Arabia Felix* of the ancients, presents an aspect still more favourable. Along the whole of the Red Sea, indeed, extends a belt, called the Tehâma, of the most absolute and dreary barrenness. But behind this Yemen rises, not into the naked rocks of the interior, but into variegated hills, covered with some of the finest aromatic shrubs. Yet even this tract, though distinguished for beauty, is fertile by contrast, and cannot vie with the luxuriant plains of other Oriental countries.

3858. In all Arabia scarcely *a river* can be said to exist. Torrents alone are seen dashing down the rocks; and, after diffusing verdure over a valley of small extent, are absorbed in the sand. They seem never so copious as to form any thing that can properly be called a *lake*.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

3859. The reader is referred to the remarks under Chap. I. Sect. II. antè, p. 854.

Subsect. 2. *Botany.*

3860. The general nature of the vegetation of this country may be at once surmised from the name of its two great divisions, *Arabia Petræa*, and *Arabia Deserta*. A third portion is the *Yemen*, or *Arabia Felix*, so called on account of its comparative fertility.

Another reason assigned for the name of *Happy* being given, is, that from this district were introduced, by way of Egypt, into Europe, so many precious spices, as spikenard, cinnamon, cassia, cardamoms, pepper, &c., which were supposed to be natives of the country, though the Arabs are now well known to have themselves imported them from the East Indies. Forskäl, however, who has published a flora of this particular district, tells us that an almost continual drought and a too serene sky grievously injure the soil, and render it unfit for cultivation. To this evil may be added whole armies of locusts ("the daughters of heat"), which every where devour the herbage; graminivorous birds, which are the pest of the corn-fields; and inundations of the sea, that impregnate the fields with salt, and destroy their fertility. Cryptogamic Plants are almost wholly wanting; the Grasses cannot bear a comparison with those of the north, and Junci and Carices are almost unknown. Littoral plants occupy the shore in a sandy or argillaceous soil. Campestral Plants (*Campestres*) abound more as you approach the mountains and under the shade of trees, and exist in society. There are perennial pastures, yielding Holcus and Panicum dichotomum. The Phaseolus is alone sown for fodder, as the Trifolium alexandriuum is in Egypt. The camel, when he enters the woods, luxuriates on Cucurbitaceous and Climbing Plants.

3861. *The Cerealia are not confined to the plains*, but they extend to the mountains; art assisting nature in the formation of hanging gardens and fields, these being supported by walls and earth carried thither. Coffee, esculent plants, and the Cerealia, are planted, especially Wheat. These amphitheatres of fields, supplied with water by cisterns, afford an extraordinary and novel spectacle to the traveller. In the plains the Holcus Durra (*H. Sorghum*) is almost the only bread-corn cultivated. Of this there are three harvests in the year; two months and a half sufficing to bring the grain to maturity. The first crop is sowed by the natives, the two next spring up spontaneously; but the grain can only be secured by keeping up a constant noise, and a perpetual watch, to drive away the birds.

3362. *The forests are confined to the mountains and adjacent valleys.* In all Tehâma (a district which occupies almost all the land between the mountains and the sea) there are none except at Surdud. These mountain-trees, though exposed to the most powerful winds, grow straight and lofty: they consist of various species of Fig, of which Forskäl enumerates no less than eight; Sceura, Keura odorifera, a superb tree, like a palm, but without a spatha, much prized on account of the delicious odour it exhales, one spike alone sufficing to perfume a whole apartment for a long time, if placed in a rather moist situation; Tomex glabra; Cynanchium arboreum; Catha, a tree also cultivated in the gardens along with the Coffee, the Arabs eating the leaves on account of their many virtues: no plague can come near the dwelling where this is cultivated, nor any infectious disease attack a person who carries a branch of this tree in his bosom; and Mœrua, besides some unknown species. Palms inhabit the sandy plains of Tehâma.

3863. *The gardens of this country* contain little more than esculent, odoriferous, and dyeing plants. Thus much M. Forskäl.

3864. *Rather than attempt an account of the* distribution of the *vegetable productions of Arabia*, of which so little is known, we shall content ourselves with noticing some few of the plants which are most valuable in the arts or in commerce, and in a greater or less degree peculiar to the country. And in the first rank will undoubtedly stand the

3865. *Coffee* (*fig.* 570.), of which Arabia Felix, if not the native country, is the favoured spot where this shrub arrives at the greatest perfection. It is a production of the highest value. Some say it is a native of Upper Ethiopia, whence it was introduced to Arabia; others consider it an aboriginal of Yemen. Bruce maintains that it grows spontaneously in Abyssinia, being found wild in the greatest abundance from Caffa to the banks of the Nile. In that country, indeed, it has been considered to be cultivated from time immemorial; and the same author tells us that the Gallæ, a wandering tribe of Africans, in their incursions into Abyssinia, being obliged to traverse immense deserts, carry with them nothing to eat but coffee, roasted till it can be pulverised, and then mixed to a consistency that will permit of its being rolled up in balls and put into a leathern bag. One of these, about the size of a billiard-ball, keeps them, they say, in strength and spirits during a whole day's fatigue, better than a loaf of bread or a meal of meat. Be this as it may, it is from Arabia that Europe first became acquainted with coffee; and it is from Arabia that the islands of the East and the islands of the West have derived it, where it is, perhaps, cultivated to a much greater extent than in Arabia itself. We can, at best, form but a very incorrect idea of the quantity of coffee grown, from that which is exported to Europe: for all Arabia yields to Europe annually only 1,500,000 lbs. weight; while St. Domingo has in one year exported 71,665,187 lbs., Surinam 15,387,000

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COFFEE PLANT.

lbs.; and other American islands, and even Persia, and Suez, have greatly exceeded in export the quantity derived from Arabia. The plant grows to the height of forty or fifty feet, with a stem four or five inches in diameter. Its copious evergreen foliage, white flowers, and red berries, are too well known in the stoves of our own country to need description.

3866. *The Mocha Coffee*, as the seeds of the berry cultivated in Arabia are called, is distinguished from the coffee of other countries by the roundness and smallness of the grain; the reason for which is, that one out of the two seeds in the berry is abortive, and the other assumes a rounded form, for want of the mutual pressure that would otherwise have been given. The superior quality depends partly on the time and manner of gathering the Mocha coffee, and still more, perhaps, on the soil and site chosen for the cultivation of the plants. The best sort is grown on the mountains of Hadje, about sixteen miles east of Beit-el-fakieh, a spot, of which, besides an execrable plate, we have a description in the first volume of *Voyage en Arabie*, by Niebuhr. "My travelling companions," says he, "whom I had expected to find at Hadje, were in the gardens on the mountain where the coffee grows. I followed them thither the next day, taking a nearly east-south-east direction, towards Kusma; and I overtook them at Bulgose, one of the villages which principally depend for subsistence on the culture of coffee. Neither asses nor mules can be used in climbing these mountains: it is necessary to ascend the steep places by a road, which, being only mended at wide intervals, is extremely bad. To me, however, who had just quitted the arid and sandy plains of Tehâma, where I had been accustomed to walking, it appeared delightful, as I was surrounded on all sides by gardens, which formed the principal plantations of coffee.

3867. "*It was only near Kahhme* that I had seen a single small hill of those long and pentagonal stones that I have formerly described; but here a great portion of the mountain seemed to consist of this sort of stone; the detached rocks, likewise composed of it, presented a striking appearance, especially where water was trickling from the summit of the rocks, and formed cascades which appeared as if supported on little upright columns. It is easy to detach these stones from the rocks, and they are used to make steps on the road, as well as for the walls with which it is needful to prop up the gardens where the coffee is grown, on the slope of the mountains; from which it appears that these stones are very serviceable to the inhabitants of this hilly country.

3868. "*The tree that produces coffee* is well known in Europe. It was covered with flowers near Bulgose, which diffused an agreeable scent. All the gardens are situated on platforms, one above another. Some are only watered by rain: in others there are large reservoirs (*Birket*) on the higher parts, whence the running water is conducted and distributed over all the beds, where the trees are generally grown so close together, that the sun cannot make its way between them. We were told that the trees, thus artificially irrigated, bore fruit twice a year: but that the beans ripened only once; those of the second crop, which did not attain to complete maturity, being inferior to the first."

3869. *Balsam, Frankincense, and Myrrh, Gum, Aloes, Senna, and Tamarinds*, are other staple commodities of Arabia, that have given the country a name and a rank among commercial nations. The Balsam (*Amyris Opobalsamum* or *gileadensis*, perhaps both one and the other) has already been noticed when treating of Palestine; it being generally supposed to have been introduced from Arabia to Mount Gilead. Frankincense is the produce of Juniperus lycia (which, however, does not appear to be a native of Arabia), — and was extensively employed in their sacrifices by the Hebrews, who obtained the best from Arabia, as do the Roman catholics at the present day for their incense. According to Niebuhr, the plant affording it is chiefly cultivated on the S. E. coast of Arabia, and is there called Liban or Oliban. Yet, on the authority of a paper in the *Asiatic Researches* by Mr. Colebrooke, the true Olibanum is the gum of an East Indian plant, the Boswellia serrata of Dr. Roxburgh, and the frankincense it yields was very likely to be imported by the Arabians, and thence sent to different countries.

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ACACIA ARABICA.

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ALOE SOCOTRINA.

3870. *Myrrh* is a gum-resin which is supposed to exude from the Amyris Kataf of Forskäl. Gum-arabic, as it is called, is produced by Acacia arabica (*fig.* 571.), (of which an excellent figure is given by Dr. Roxburgh), and probably many other individuals of the same genus.

3871. *Of the Aloes*, the Aloe

officinalis of Forskål is mentioned by that author as the species which affords the famous East Indian Aloes, called Soccotrine Aloes: the same, probably, as the Aloe Soccotrina (*fig.* 572.) of De Candolle, and a native of the island of Soccotra, at the mouth of the Red Sea. Perhaps the same species exists in Africa. In the presence of six species of this genus as mentioned by Forskål, of several Stapelias, and some Mesembryanthema, Arabia has some affinity in its vegetation to that of the Cape of Good Hope.

3872. *The Arabian physicians* first made known the valuable properties of Senna as a medicine, and the Senna of Arabia is the foliage of Cassia lanceolata of Forskål.

3873. *Tamarinds* are the fruit of Tamarindus officinalis, a beautiful tree, now cultivated in all the hot parts of the world, on account of the valuable nature of the fruit.

3874. *The fruits* of temperate and warmer climates are equally grown in Arabia. Gourds and Melons, Cocoa-nuts, Pomegranates, Dates, Apricots, Peaches, Almonds, Filberts, Pears, Figs, Oranges and Lemons, and even the Mangosteen.

Subsect. 2. *Zoology.*

3875. *The Zoology of Arabia* is nearly of a similar character to that of Northern Africa and Caspian Russia; nor is it possible, with our present knowledge, to detect the slight variations in the productions of countries artificially separated by man. Arabia, in common with the whole extent of Northern Africa, Persia, and Western India, possesses the Camel and the Dromedary, to which travellers also add Lynxes, Jackals, Hyenas, Monkeys, Jerboas, and various Panthers. Information so desultory and vague is of little value, as leading to no correct knowledge of the particular species intended.

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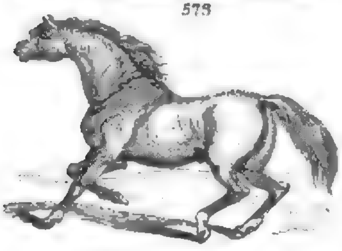

ARABIAN HORSE.

3876. *The Arabian horses* (*fig.* 573.) are well known to be the finest in the world; but the idea that they are found wild in the deserts, as asserted by the old writers, is now justly exploded. Major Smith is of opinion that this noble animal was aboriginal in Great Tartary. In no country is he more esteemed, or are his faculties in consequence more developed, than in Arabia. The wandering Arab of the desert places his highest felicity in his horses, and is so attached to them, that they are more his companions than his servants. It is by these tribes that nearly all the horses are bred; and they are known under two denominations. *Kadeschi* are horses of an unknown race, and *kochlani*, those whose genealogy is known for 2000 years: this race, they assert, originated from the stalls of Solomon. To establish the genealogy of a kochlani, the most rigorous vigilance is employed, and such formalities and certificates required, as defeat all attempts at imposition. The horses of this noble race are sold at enormous prices, but no consideration whatever will induce the Arabs to part with the mares. An Arabian will generally carry his master from eighteen to twenty leagues in the day. They perspire little, and possess in the most eminent degree the qualities of endurance, vigour, and admirable temper.

3877. *Locusts in vast numbers*, and of different species, periodically devastate this and the neighbouring regions of Africa, from whence they have emigrated, at distant intervals, to Sicily and the south-eastern shores of Europe.

Sect. III. *Historical Geography.*

3878. *In taking a retrospective view of former periods of Arabian history*, we find reason for surprise at the *little change* that has taken place in the social life and manners of the people. By the aid of scripture, we are enabled to ascend to a period long anterior to the commencement of ordinary record; and in the patriarchal ages, we find a mode of existence precisely similar to that of a modern Arabian sheik. In the Ishmaelites and Midianites, on the borders of the desert, we find the same combination of plunder and traffic which has ever since formed the occupation of their countrymen. The borders of the desert, however, where it merges into the fertile territory, became ultimately the seat of several demi-Arabian states, which attained to considerable power and even opulence. Foremost among these were Ammon, Moab, and Edom or Idumea; countries which, besides their other advantages, appear to have been enriched by a portion of the transit trade with India. The most brilliant and distinguished part of Arabia, however, was that designated "the Happy," and called Sabæa, and in scripture Sheba. Adding to its own productions the myrrh and balsams of the opposite coast of Berbera, it seems also to have been a depôt for the gold, spices, and other precious commodities of India and tropical Africa, which appear even to have been often considered by the ancients as its native products. The Arabs, indeed, of this and of the eastern coast of Ommon appear to have always been the most active mercantile navigators of the Eastern seas.

3879. *Thus, during the whole of that long era which belongs to ancient history*, Arabia preserved its interior pastoral state, while its relations with foreign nations were confined to commerce and to petty marauding. It also preserved its independence unaffected by those great events which changed the fate of the surrounding nations. It was not until the sixth century of the Christian era, that, after a singular revolution, it came forth with a mighty sweep to change the destinies of the world. The decline of the Roman empire, the corruption and distractions of the Eastern church, all favoured the impulse given by a fierce and warlike fanaticism.

3880. *Mahomet*, after being for years an exile and a fugitive, at length succeeded in uniting under his standard all the nomadic and warlike tribes of central Arabia. In less than fifty years, that standard waved triumphant from the Straits of Gibraltar to the hitherto unconquered regions beyond the Oxus. Wherever it came, it stamped on mankind a new character, — dark, gloomy, severe, — combining a hard austerity with a voluptuous indulgence, and, except in some transient instances, hostile to all the improvements of art and science. The caliphs who first succeeded Mahomet, and ruled the most extensive empire on the globe, still retained the rude simplicity of the Arab pastoral life, with the ascetic self-denial of saints and religious teachers. The messenger who brought to Omar the tidings of the capture of Alexandria found him sleeping among the beggars on the steps of the temple of Mecca. The wealth, however, which flowed in from every quarter soon produced their usual effect of exciting a taste for pomp and pleasure. The court of the caliph acquired an almost magic splendour; while poetry and the sciences, regarded with contempt and horror by the earliest of these militant apostles, were raised to the highest pitch under the patronage of Haroun Al Raschid and Almamoun. By that time, however, the rude rocks and desert sands of Arabia had ceased to be regarded as a fit residence for the opulent commanders of the faithful. They had transferred their residence to Bagdad, within the old and favourite seat of empire, on the rich Mesopotamian plain. Thus left to herself, Arabia seems to have resumed her natural and original character, even long before the court of Bagdad had been swept away by the torrent of Tartar invasion.

3881. *Arabia* was thus again detached from other countries, and restored to her pristine state of rude and roving freedom. Her coast, however, suffered severely from the extended domination of the *Turks*, who two centuries ago had occupied its eastern ports as far as Mocha, and established a system destructive of the commercial prosperity which they had so long enjoyed. The decline of that empire, first felt in its extremities, enabled the Arabian sheiks to regain their independence.

3882. *A fresh fermentation*, similar to the former, during the last century agitated the interior of Arabia. A prophet of obscure birth, *Abdul Wahab*, appeared, about 1720, and drew numerous followers. His first aim seems to have been to effect a reform in the Mahometan religion, to remove the traditions which had been grafted upon it, and to prevent divine honours from being paid to any human object, even to Mahomet. Ultimately, perhaps, he has only, by becoming a prophet himself, added one to its superstitions. He does not appear in the first instance to have contemplated the diffusion of his tenets by force. But Ibn Saoud or Sehoud, a young and warlike prince, inspired either by religious proselytism or political ambition, not only espoused the Wahabite tenets, but undertook, by the sword, to compel mankind to embrace them. Successively conquering and incorporating the little surrounding communities, he at length united under him all the warriors of the Nedsjed, the central and purest seat of the Arabian manners. He made himself master of the sacred cities of Mecca and Medina; and, extending his conquests, threatened at once Mocha, Cairo, and Damascus. Perhaps he and his successors might have established a new empire over the East, had they not been encountered by the kindred energies of Mohammed the Pacha of Egypt. That chief, directing with equal vigour more regular resources and more disciplined troops, proved an overmatch for the militant apostles of the desert. He drove them from Mecca and Medina, and obliged them to sign a humiliating treaty. Ibrahim, his son, pursued them down to Deraie, the capital, which he took, making prisoner Abdallah, the son of Saoud, who was conveyed to Constantinople and put to death. A situation so remote, however, girt with so wide a circle of desert, rendered it impossible to extirpate the Wahabites, who watch, probably, a more favourable moment, if such should arise, for another invasion of the more favoured regions by which they are on every side surrounded.

Sect. IV. *Political Geography.*

3883. *Arabia* is, and has been from the earliest ages, ruled by a number of *princes* and *petty lords*, independent of each other, and exercising within their own territory a sort of supreme independent power founded on patriarchal principles. The sway of the father of a family, the first source of subordination among men, is that of which the influence is still most strongly felt among the Arabs. Each little community is considered as a family, the head of which exercises paternal authority over the rest. These, in the course of succession of migration, are split into several branches, that still form one tribe, without being dependent on each other; but their genealogies are carefully counted, and the representative of the senior branch is always regarded with a high degree of respect and deference. The republican form, which originated in the bosom of cities, has never been known or even attempted in Arabia; but a certain form of confederation is made by the election of a great sheik or "sheik of sheiks," who holds the supremacy. This dignity belongs to a certain family, but out of that family the election is made by the inferior sheiks, from general favour or the opinion of merit. This sway, however, can never be said to assume a feudal aspect, or enable him to summon the other chiefs as vassals. Each, entrenched in his rocky castle, or roaming with his camels and flocks over the expanse of the desert, holds himself independent of every other human power. Individual followers, however, are always ready to flock in considerable numbers to the standard of some successful warrior, who promises either daring adventure or rich booty. Hence it is no difficult matter to collect some thousands of freebooters, sufficient to lay under contribution all who pass by the route near which they hover. On that between Egypt and Palestine, the borders of Syria, and the tract along the Euphrates, large moving encampments continually pass to and fro, observing the progress of the traveller and the caravan, and ready to avail themselves of any favourable juncture. In the interior, among the Bedoween camps, this warlike temper vents itself in almost perpetual petty conflicts with each other. Twice only, men of powerful and aspiring genius have succeeded in uniting together these multitudinous tribes, who then formed armies which the mightiest kingdoms of Asia attempted in vain to resist. These eruptions, however, were only transient, and even that of the followers of Mahomet, though it altered the aspect of the rest of the world, left Arabia itself almost wholly unchanged.

3884. *Yemen forms an exception* to this proud and aristocratic independence of the Arabian tribes, in a district distinguished from all the rest by its populousness and fertility. The Imam of Sana, who succeeded to the government upon the expulsion of the Turks in 1630, has established a government formed strictly upon the model of the despotic kingdoms of Asia. He claims an authority both spiritual and temporal, demands from his subjects the most unqualified submission, and the extreme abuse of his power can only be checked by the desperate expedient of deposition and strangling. He governs the districts and towns by *dolas* and *sub-dolas*, raised usually from the lowest ranks, and the passive instruments of his will. Some traces yet remain of Arabian independence in the *cadis* and the college of justice, without whom no sentence of death can be pronounced. Though they are appointed and may be removed by the sovereign, this last prerogative is one which he seldom ventures to exercise, and their decisions are said to be often distinguished by a high degree of independence and integrity.

Sect. V. *Productive Industry.*

3885. The industry, wealth, and commerce of Arabia may be very briefly described.

3886. We have already seen, *that the general character of the soil* of Arabia is, in a peculiar degree, arid and barren. In a great part of its surface no grain can be raised at all, and in others only that coarse kind of millet, called *d'hourra*, which is the general food of the inhabitants in dry tropical climates. The Arabs, notwithstanding their natural disadvantages and their wandering life, display in some quarters considerable industry in cultivation, particularly in turning to account the scanty rills with which their valleys are refreshed. In Yemen, the contrivances for this purpose are elaborate and extensive. Terraces are formed, and dikes constructed to retain the waters, which are also raised from wells by the labour of the hand to irrigate the fields; for the use of water-wheels, which answer this purpose with so much more ease and effect, has never been imported from Egypt. But the most interesting culture of these upland tracts consists in the coffee tree, which has now become a necessary of life over a great portion of the civilised globe. This plant grows at a considerable height, where it can be well watered and enjoy even a measure of coolness; to promote which, it is often fenced round with other trees. The coffee has been transplanted with success to other climates, particularly the Island of Bourbon and the West Indies, where most of that consumed in Britain is now grown. None, however, has ever rivalled in quality the coffee grown on its native hills. That of Bourbon ranks second, though still at a great distance. Its value here is derived from culture, for the wild coffee is altogether upalatable. The date is extensively produced, and forms a great part of the food of the people. The balsam of Mecca, the most agreeable of all the odoriferous woods, is collected in the neighbourhood of that city, and thence transported to the different Eastern countries. In Yemen it is used only as a perfume, and in Egypt is burnt as firewood in cookery, for the sake of the agreeable odour which it communicates to the dishes. The incense and myrrh, for which southern Arabia is famous, are found there only in small quantities, and are chiefly brought from the opposite African coast.

3887. *If the vegetable culture of Arabia* be thus scanty, its natives, a race wholly pastoral and wandering, have cultivated with care and success the breed of *the nobler species of animals.* The horse of Arabia, as to swiftness and beauty, enjoys a higher reputation than any other species in the world. This, as already observed, is maintained by an almost fantastic attention to their birth and training. The camel, which seems created expressly for the soft soil and thirsty plains of Arabia, is indigenous to that country, and seems to have been transported thence to the wide tracts, of similar character, which cover so great a part of northern Africa. Even the ass is here of a very superior breed, tall and handsome, generally preferred for travelling to those proud steeds which, reserved for state and for war, cannot be subjected to any species of drudgery.

3888. *Manufactures* can scarcely be said to exist, with the exception of some quite common fabrics for domestic use. But for commerce Arabia enjoyed an early celebrity, of which only faint traces are now to be found. At all periods anterior to the discovery of the passage by the Cape of Good Hope, the greater part of the rich commodities of India were transported either up the Red Sea, or across Arabia from the Persian Gulf. The desert glittered with pearls and gems; and majestic cities, that lie now in ruins, arose amid the waste. Now that the whole of this trade has taken a different channel, the maritime commerce is almost wholly limited to the export of coffee, in exchange for the manufactures of Hindostan. This intercourse, after having been for a long time nearly engrossed by the English, when it centered in Bombay, has of late been appropriated by the active rivalry of the Americans, who, though they give a higher price for the commodity, bring it to Europe thirty per cent. cheaper. The entire quantity exported is now estimated at 16,000 bales, of 305 lbs. each, which the Americans sell at 7*l.* sterling per bale. Aden exports gum arabic, myrrh, and frankincense, chiefly brought, however, from Berbera. Besides this maritime trade, the pilgrimage to Mecca forms a commercial tie between the remotest extremities of the African and Asiatic continents; for the numerous devotees who, from every part of the Mahometan world, resort thither, scruple not to combine with their pious object a good deal of profane traffic, which is made at least to pay the expense of the journey.

Sect. VI. *Civil and Social State.*

3889. *The social existence of the Arabs* is, in one respect, remarkably interesting, as it presents, almost unaltered, an image of what human society was in the earliest ages. The whole going out and in of the patriarchs, their feelings and habits, as described in the book of Genesis, are found unchanged in the tent of the Arabian sheik. A recluse and monotonous life, in the midst of the desert, distance from great cities, and from all the scenes where rivalry and the eager pursuit of pleasure inspire the spirit of change, has left the veneration of ancestry, and the love of antique habits, to operate in full force.

3890. *The Arabs are of small size, spare, and even meagre.* They are less distinguished by strength than by extreme agility. Few nations surpass them in horsemanship, and they are alike intrepid and skilful in the management of the bow, the javelin, and latterly of the musket, since its manifest superiority has introduced that weapon. Their complexion is sallow; a defect which some endeavour to cover by staining their whole body of a brownish yellow colour with the juice of the plant *el henna.*

3891. *The Arabs* are not only temperate, but extremely abstinent. Animal food is scarcely used at all: even among the rich there is little variety of vegetable diet; the milk of their camels, with its several preparations, particularly butter, is the only article with which they season their bread. Among the rich, this bread is composed of rice imported from abroad, and which they boil into pilau, and serve up in a large wooden plate; but the body of the nation are obliged to content themselves with such as can be made from the *d'hourra.* This abstemiousness, no doubt, arises chiefly from necessity; but the higher ranks seem also to value it as a means of preserving those habits of delicacy and cleanliness on which they pride themselves. Any of those symptoms of indigestion which excesses of the table are apt to produce, are marked by them with the deepest disgrace; and instances have been known of individuals who, in consequence of having so exposed themselves, have fled their country, never to return. Though coffee is little valued in its native district of Yemen, where thy drink merely an infusion of the husks, it is the favourite liquor in eastern Arabia, and over the desert. They pound it in a mortar, which appeared to Niebuhr to preserve the flavour better than grinding it in a mill.

3892. *The dress of the Arabians* is, in its outline, extremely simple, though set off, among the rich, with ornaments somewhat varied and fantastic. A piece of linen over the shoulder, another round the middle, a girdle, with a *jambea* knife, form the attire of ordinary Arabs during the day, and their bedclothes when asleep. Some wear only drawers and a shirt. Their sandals, sometimes of wood, cover merely the soles of the feet. The head-dress is the part on which they bestow a lavish profusion of covering and ornament, regardless of comfort, convenience, or any adaptation to the climate. Persons of fashion wear often as many as fifteen caps, piled one above another, and some of thick cloth. This mass is surmounted with one very splendid cap, embroidered with gold, and having always a sentence of the Koran worked into it. A muslin turban is then wrapped round the whole, the ends of which, flowing loosely upon the shoulders, are ornamented with gold and silver fringes.

3893. *The chiefs of the desert* are deeply imbued with aristocratic feelings, and dwell on their high descent with a pride as lofty as ever prevailed in feudal Europe. This dignity is the more flattering, as it is not conferred or withdrawn at the will of any monarch. It is founded on ideas thoroughly rooted in the mind of the nation, who, like the Highland clans, view every sheik as the natural head of a race so ancient that its origin is traced back for thousands of years. A sheik of an ancient Arabian family would not exchange his title for that of sultan. Another hereditary Arabian dignity is that of *sheriffe*, or descendant of Mahomet, marked by the nearly exclusive privilege of wearing a *green* turban. This is a distinction of a different class, more widely diffused, and descending often to the poorest among the people. When the green turban is worn by the head of an ancient tribe, it denotes the highest dignity that can exist in Arabia. Such are the twelve families of the Koreish, who can establish by undoubted proof their descent from the immediate office-bearers under Mahomet. In general, however, the inhabitants of cities are viewed by the chiefs of the desert as a mixed and debased race, whom they scarcely own as belonging to the same nation with themselves.

3894. *The most prominent feature* in the Arab character consists in the combination of hospitality and robbery, which are practised, the one most liberally and generously, the other in the most deliberate and merciless manner. It is towards strangers that these opposite dispositions are exercised; and the alternative of good or ill treatment often depends on very nice particulars. The rich traveller, who journeys in caravan over the open plain, is considered as a rightful prey; while he who approaches singly, in a defenceless state, and soliciting protection, acquires an irresistible claim to it. The being once admitted to partake common bread and salt is a sure pledge of safety and protection; and he who, by whatever means, has penetrated into the tent of the Arab, has reached a sanctuary. A change of circumstances often renders the same person an object of the most opposite feelings. He who, under the domestic roof, has experienced the most lavish kindness, may, if met on the open plain, be robbed and murdered; and he who, after being plundered of every thing, enters with confidence the tent of his enemy, will be commiserated, and his distress relieved. In the daily habits of life the generous feeling predominates. A Bedouin, as he sits down to his meal before the door, hesitates not to invite the passenger to share, without consideration that he himself is poor, and the provision scanty.

3895. *The right and practice of private vengeance*, always prevalent among rude tribes and in irregular governments, is carried by the Arabs to the greatest height, and reduced to the most regular system. The fastidious pride of the high Bedouins lays them open to many fantastic wrongs unfelt by others. To say to such an one, "Thy bonnet is dirty," or, "The wrong side of thy turban is out," forms an insult which only blood can efface. Even for one to spit in the presence of another is deemed a provocation that calls for vengeance. In case of murder, the right and duty of inflicting punishment is supposed to devolve upon the friends of the deceased; and they seek to exercise it, not against the guilty individual, but against the head of the tribe, or at least the highest whom their swords can reach. Thus the distinguished Bedouins, especially when they visit the cities, must be armed at all points, and cannot for a moment sleep in security. This fierce pride, however, tolerates and admits a composition not very consistent with itself, which yet is not peculiar to the Arab. It is "the price of blood," upon the acceptance of which the deadly feud is appeased. Such a compensation, however, is of course considered as very little honourable, when compared with the exaction of the bloody vengeance for which it is substituted.

3896. *The Arab, like the European nobleman of the old school,* is ceremoniously and ostentatiously polite. When two Bedouins meet, they shake hands more than ten times, often with fantastic and peculiar ceremonies. The common salutation is "*Salám aleïkúm!*" (peace be with you!) to which the aged commonly add their blessing. Coolness, command of temper, and a great exterior gravity, are considered as the only deportment becoming manhood, and are even affected by children at an early age. Although this studied decorum, and the habits of an ascetic religion, estrange them from every thing which in Europe is called gaiety, they are of a curious and social disposition. This they indulge by frequent resort to coffee-houses, the only public places known in the East: the markets, also, in which all business is transacted, are frequented, as affording opportunities of entering into social intercourse.

3897. *The right of polygamy*, and the seclusion of the female sex, are established principles in Arabia, as in all Mahometan countries; but not to the same extent as among the great in Turkey and Persia. Niebuhr assures us, that the idea which has been held out, of the whole sex being for sale, and going off to the best bidder, is altogether chimerical. Only the poorest and least respectable submit their offspring to that degradation. Such, on the contrary, as are at all in easy circumstances, make it their ambition to provide a dowry for their daughters. Even in the rude tents of the desert, two apartments are provided, of which the inner is reserved for the females. Here, unless when the husband receives visits of ceremony, they go about almost as freely as European females. In the cities, on the contrary, they never appear in public without a veil, like that of the Egyptians, having only two holes for the eyes to peep through. It is a remark, that Arabian women often maintain great sway over their husbands, and even hold them in open subjection.

3898. *The religion of Mahomet*, which originated in Arabia, still maintains undisputed sway; and Christians, who were once numerous, are now so completely extirpated, that Niebuhr could not hear of a single church existing. The *Sunites* and the *Shiites*, who divide between them the empires of Turkey and Persia, and wage such mortal hostility about they know not what, have also their respective districts in Arabia. The *Sunites* rank foremost, having always had in their possession the holy cities of Mecca and Medina. The Zeidites and the Beiari, two native sects, reign in the eastern territory of Ommon. These, though they unite in acknowledging the authority of Mahomet and the Koran, have, like other religious sects, some differences, in virtue of which they account themselves the only acceptable worshippers, and all others as heretical and profane. A much more mild and tolerant spirit, however, animates the sects peculiar to Arabia, and is thence communicated to those of foreign origin. They are not affected by the same hostile feelings towards those of other religions, and are strangers to that furious spirit of proselytism which rages among Mahometans in general. Contempt towards foreign sects has with them three gradations: it falls lightest on the Christians; on the Jews next; and heaviest of all on the Banians. The Christians, when they appear in the character of merchants, the only capacity in which Europeans of any consideration usually resort to this country, experience little difference of treatment on account of their faith; and even the Banians, on the same footing, are allowed to settle, and carry on, in Ommon, extensive traffic. Lately, the Wahabite sect, whose political influence has already introduced them to our notice, had absorbed nearly the whole of central Arabia; but their contest with Mohammed Ali, and his triumphant success, have now reduced their influence to a very low ebb.

3899. *The Arabic*, akin to the Hebrew and the Persian, ranks among the classic *languages* of the East. The distinguished works, however, which have raised it to this eminence were produced out of the limits of Arabia, in the splendid courts founded by the Mahometan conquerors. Yet the spirit which breathes in them is still to a great extent Arabian. The perpetual movements among this multitude of little tribes, their wanderings, their feuds, their wars, the comparative estimation of the female sex, have generated a spirit of romance and adventure affording scope for the imagination. The tale, in listening to which the Asiatic, as he reclines at ease in the coffee-house, finds his most refined and animating amusement, seems to be the form of composition carried by their writers to the greatest perfection. The stories, indeed, so celebrated under the name of the *Thousand and one Nights*, were produced at Bagdad, under the brilliant reign of Haroun Alraschid. That work has, however, a basis of Arabian ideas mingled with those inspired by a splendid and mercantile capital. The romance of *Antar*, lately introduced to the British public, was produced within Arabia itself; and, though of ruder construction, and less suited to the general taste of mankind, is by no means destitute of poetical merit. The Arabians have still poets, who celebrate the exploits of their sheiks; but none of these can dispute the palm with the ancient bards of the nation. The works upon astronomy, history, geography, and medicine, by which Arabian writers have distinguished themselves, were produced at Bagdad, Fez, and Cordova; and these sciences, in Arabia itself, have always been and are in a very low condition. The first elements of knowledge, however, are pretty generally diffused. Schools are attached to every mosque; and there are others, by means of which many, even among the lowest of the people, learn to read and write. The schools are merely sheds, open toward the street, in which the scholars repeat their lessons aloud, undisturbed by what is going on without. Printing, however, has not made any progress; and the Arabs, who value themselves on an easy and flowing mode of writing, dislike the stiff appearance which their characters make when they issue from the presses of Europe.

Sect. VII. *Local Geography.*

3900. *In making the circuit of Arabia*, we shall begin with the region at the head of the Red Sea, one of the most desert tracts of this desert land; yet a celebrated and sacred spot, where rise the holy mounts of Horeb and Sinai. The wilderness in which they are situated is most gloomy, presenting long ranges of rugged and precipitous rocks, intersected by deep valleys, at the bottom of which are found the only traces of verdure. Sinai is ascended by a very steep route, which in many places is rendered practicable only by steps cut in the rock. The summit is marked both by a Christian church and a Mahometan mosque; and this combined veneration is further cherished by a pretended impression made in the rock by the foot of the camel on which Mahomet was conveyed up to heaven. Sinai can boast of two spacious convents erected on opposite sides of the mountain, for the reception of the numerous pilgrims by whom it was once visited. The largest, called the Monastery of the Forty

Saints, is now entirely in the hands of the Arabs, who have driven out the monks, its former tenants. The convent of St. Catherine, however, is still supported by the contributions from the faithful of the East. It is really a handsome building, 120 feet long, having a church paved with marble, of which the altar is enriched with gold and jewels. At a little distance is an excellent garden, accessible from the convent by a subterraneous passage. This precaution is necessary, as the roving Arabs, who keep the place in constant blockade, are always on the watch to kill and carry off whatever they can. A little to the west of Sinai is Horeb, a mountain neither so lofty nor so rugged, but containing on its top some springs and verdure.

3901. *Proceeding south-east*, along the Red Sea, we come to the Hedjaz, or Stony Arabia, a region sacred over the East, as the birth-place of Mahometan superstition. It consists of a sandy and barren plain, behind which, in the interior, rise chains of mountains, rugged indeed, but yielding some valuable products, especially the balm of Mecca. Amid these mountains are situated the metropolitan cities of Hedjaz and of Arabia, the holy cities of Mecca and Medina. An awful prohibition against any infidel foot which should attempt to approach these sacred spots rendered them almost unknown ground until very recently, when the daring curiosity of European adventurers triumphed over every obstacle. Mecca (*fig.* 574.) was then found to be a considerable city, one of the handsomest in the East. It stands in a narrow valley, enclosed between rocky hills, following their sinuosities, and partly built on their declivities: the fronts of the houses, instead of presenting, as in some Eastern cities, a long range of dead earthen wall, are of stone, raised to the height of three or four stories, and ornamented with columns and architectural ornaments. This gay aspect seems assumed in a great measure to attract pilgrims as lodgers, and with the same view the apartments are made neat and commodious. The resort of devotees of so many nations, from the extremities of Tartary to the banks of the Senegal, rendered Mecca, in peaceful times, a very flourishing city; and it has been supposed, probably with exaggeration, to contain 100,000 inhabitants. Burckhardt reckons now only 30,000. The Wahabite war, from which it suffered deeply, rendered the avenues to it no longer secure, especially as the Wahabites, though they themselves reverenced the holy places, shut them against the approach of those whom they deemed heretics; but since they came into the possession of Mohammed Ali, they have been thrown open to the Mahometan world. The temple of Mecca forms a very spacious square, about a quarter of a mile in each direction, with a triple or quadruple row of columns. A number of steps lead down into the interior, containing the object sacred to a Mahometan eye, the *Kaaba*, or house of the prophet, and within it the black stone, brought down by the angel Gabriel to form its foundation. To kiss this sacred stone, to go round it seven times, reciting appropriate hymns, form the completion of that religious service for which thousands of miles have been travelled. The last ceremonial is ablution in the well of Zemzem, which, though itself not the purest water, is supposed to cleanse the votary from all sin. A pilgrimage, often tumultuary, to Mount Arafat, completes the round of religious observance. A very active commerce in Mecca is combined with pilgrimage, consisting in the exchange of the richest commodities from the most industrious countries of the Mahometan world. Mecca, till it was conquered, first by the Wahabites, and then by the Pacha of Egypt, was almost a free city under its own sheriffe. The Meccaways are proud, gay, and somewhat dissolute; they are enabled to live in pomp by the gifts and sums paid for lodging and attendance by the numerous pilgrims.

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MECCA.

3902. *Medina*, notwithstanding its high claims as the burial-place of Mahomet, has never rivalled Mecca in the veneration of the East. To visit it is not even considered as an indispensable duty, and is little practised, unless by the Turkish pilgrims, in whose route it lies. Hence Medina contains not more than 600 houses, few of which show any degree of elegance or splendour. The great mosque, however, which encloses the tomb, is described as very splendid, being surrounded by numerous pillars of marble, jasper, and porphyry, on which letters of gold are in many places inscribed. The tomb itself is rather remarkably plain, conformably to the simplicity still affected in the age of Mahomet; and on each side of it are those of the two early caliphs, Abu Beker and Omar.

3903. *Of the ports along this coast*, Tor, once an extensive seat of the commerce with India, now scarcely exists. Its harbour is still good, and in its vicinity are several populous villages. Yembo, the port of Medina, is of moderate size, like the city to which it is subservient; yet has a population of 5000 or 6000. Judda belongs to Mecca, and is the main emporium of the Hedjaz. It is mainly supported by the caravans which, from motives of religion, trade, or both combined, come across from Suakin to Mecca. This route is followed by almost all pilgrims from the interior and centre of Africa, while those from Barbary take the way of Egypt. Judda serves in a great measure as the port of Egypt as well as of Mecca. The annual Indian fleets here unload their cargoes, which are transported by the merchants of the place to Suez and Cairo. Judda has thus a population of 12,000 or 15,000 inhabitants, and Burckhardt understood it to contain individual merchants worth nearly 200,000*l.* The town is neatly built of madrepores, and is, on the whole, a flourishing place. The entrance is obstructed by dangerous shoals, but upon a signal given, pilots hasten out, and guide the vessel through all those perils.

3904. After a protracted voyage along a dreary coast, the navigator at length reaches the celebrated shores of *Yemen*, or the *Happy Arabia*. It does not, however, at once present that smiling aspect, nor waft those gales of perfume, which have been described by the fancy of the poets. A belt of flat, sandy, barren territory still forms the immediate border of the sea; and the traveller must penetrate a considerable distance into the interior before he reaches those fertile valleys, and those hills richly crowned with aromatic shrubs, for which Yemen is famed. This, like other fertile countries, has been subjected to a despotic yoke; the government being exercised by the Imam, in the capacity of priest or servant of Mahomet. He maintains an army of 4000 foot and 1000 horse; but his revenue is not supposed to exceed 80,000*l.*, produced chiefly by duties on the export of coffee. His power, as already observed, is considerably checked by some controlling bodies; and the Djebal, or mountainous district, contains many little tribes by whom it is set at open defiance.

3905. *Yemen* contains some considerable cities. Sana, the capital, is one of the neatest in the East. It is built of brick and stone, and contains several handsome mosques and palaces, as well as spacious caravanseras for the reception of travellers. The vicinity abounds with fruits, but scarcely affords wood sufficient for fuel. *Taas* is another city, about half the size of Sana, surrounded by a mountainous territory, supposed to be the richest in the world in botanical productions.

3906. *It is by its ports*, however, that Yemen is best known to Europe. Loheia, the most northerly, though situated in a poor country, with a shallow harbour, and bad water, exports a good deal of coffee, but of secondary quality. A better sort is found at Hodeida, to which has been transferred the trade of the once flourishing port of Ghalefka, now entirely choked up with sand. All these are secondary to Mocha, (*fig.* 575.), the chief mart for coffee, and superior to all others on the Arabian Gulf. It has declined, however, very considerably from the period when that favourite beverage could be procured only on the hills of Yemen; but now that the maritime nations of Europe derive their supply chiefly from their own colonies, recourse is had to Mocha only for some of very superior quality. It is situated on a flat sandy plain, over which hot winds continually blow. From the sea, its whitewashed houses, variegated by handsome minarets and tombs, make a pleasing appearance. On entering it, however, the filth of its streets, and the decayed appearance of many of the walls, built only of unburnt brick, produce a much less favourable impression. The population is not supposed by Lord Valentia to exceed 5000; and the trade is chiefly conducted by about 250 Banians and Gentoos. Moosa (*fig.* 576.), in its vicinity, the ancient emporium of Yemen, though now decayed, presents still a noble appearance. Beyond the straits is Aden, also a famous port, usually considered part of Yemen, but recently erected into a separate kingdom. Its commerce rests upon the export of myrrh, frankincense, and balsams, drawn in small quantities from Arabia itself, but largely from the opposite African coast of Berbera.

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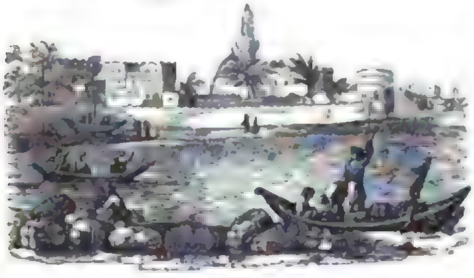

MOCHA

3907. *The coast of Arabia*, where it ceases to be parallel to that of Africa, and faces only the expanse of the Indian Ocean, is called *Hadramaut*. A great part of it is barren and dreary, and the interior, called Mahrah, forms a most extensive desert; but there are tracts interspersed with hills which almost rival Yemen in their smiling fertility. They produce few commodities, however, that are fitted for export; and the ports of Macula, Curiamuria, Morebat, and some others, are visited by foreign vessels chiefly for the purpose of obtaining water and refreshments.

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MOOSA

3908. *The coast of Arabia*, after extending north-east more than 1000 miles facing the ocean, and passing Ras Masera, changes its line to the north-west, and runs parallel to southern Persia. From this point to the entrance of the Persian Gulf is the coast of Oman, or Ommon. Though not the most celebrated, this appears to be the most flourishing and prosperous part of the whole Arabian peninsula. It is destitute, indeed, of the aromatics of Yemen; but its rich soil produces in abundance grain, fruits, and dates. Muscat, the capital, was taken by Albuquerque in 1507, and remained subject to the Portuguese until 1648, when they were driven out by an insurrection of the natives. It is now governed, like Yemen, by an Imam, or spiritual chief, who seems to exercise his power much for the benefit of his people. The government of the Imam is the most tranquil and protecting of any in the maritime parts either of Persia or Arabia. It is frequented as a sort of general depôt for the merchandise of Persia, India, and Arabia, which, from the excellent police, lies open and unguarded in the streets, without danger of depredation. All the ports upon this coast are tributary to the Imam, and he has subjected Brava, Zanzibar, and other important points on the eastern coast of Africa. A considerable trade is also carried on by caravans with the interior. High rocks on one side, and the island of Muscat on the other, form a spacious secure harbour, which cannot indeed be entered without certain precautions; but on a signal made, excellent pilots immediately come out. The town is surrounded by a strong wall, within whose precincts only Arabs and Banians are allowed to reside: all strangers must remain in mat-houses without the gates. The population is stated by Mr. Buckingham at about 10,000. About 100 miles to the south-west, near the mouth of a small river, is Sohar, anciently celebrated as the capital of eastern Arabia, but now much declined, its greatness being completely eclipsed by Muscat.

3909. *Cape Mussendoon*, a bold and deeply indented promontory, forms the termination of a long rocky peninsula, and shuts in, upon the eastern side, the entrance of the Persian Gulf. This peninsular tract is inhabited by a mixed race of Arabs and Portuguese. As we proceed up the shores of the gulf, we find it in possession of a bold and desperate race, the *Joasmi Arabs*. Placed on the maritime route by which all the commerce between Persia and India must pass, they have availed themselves of this position to carry on a most outrageous system of piracy, accompanied with every circumstance of deliberate cruelty. These proceedings roused the indignation of Britain, who felt herself called upon, as the chief maritime power in these seas, to put down this destructive scourge. The first expedition, though successful, being insufficient to prevent a recurrence of the evil, another was undertaken some years ago, in which the main hold of the pirates, Ras el Khyma, was taken and completely destroyed, and their power so broken, that it is expected they will no longer interrupt the tranquillity of the Persian seas.

3910. *Continuing to ascend the gulf*, the next district is that of *Lahsa*, or Lasha, inhabited by the powerful and wide-spread tribe of Beni Khaled, and forming the eastern termination of the great mountainous interior tract of the Nedsjed. It is well watered, and traversed by one of the chief of the small rivers of Arabia, called the Aftan. Lahsa, the capital, near the mouth of this river, is described as a considerable city; and Katif, built of rock salt, carries on some trade. Opposite to it is the island of Tarent, seven miles long, and covered with delightful gardens. But the most interesting object on this coast is the large island of Bahrein, near which is a bank producing the finest pearls in the world. They are procured by divers, who, descending to the bottom, cut the long thin fibre by which the muscle containing the pearl is attached to the ground. The commerce in this product has given rise to the town of Medina, of 800 or 900 houses, which, though its harbour can receive only vessels of 200 tons, carries on a good deal of intercourse with Bassora; and the rest of the island is covered with gardens and villages.

3911. We have now completed the survey of the coasts of Arabia: *the interior* is too little known to call forth much observation. The southern part presents, on our maps, almost an entire blank; generally understood to consist of desert, though, doubtless, a closer observation would bring to view many fertile spots. The centre from Mecca to Lahsa is crossed by the mountainous tract called the Nedsjed, which, according to credible information, contains fertile valleys, a considerable population, and even towns of some magnitude. It carries on also some inland trade, and is traversed by caravan routes in several directions. No European traveller, however, has ever ventured across it, or illustrated it with any precise or authentic details. This region, however, is now the most important of all Arabia, since it contains the seat and origin of the Wahabite power; and the numerous hosts which have issued from it under the standard of that power afford a clear proof that it is not throughout a desert. In its eastern quarter is Deraie, the Wahabite capital, lately taken and demolished by the Pacha of Egypt, but which, being too distant to be permanently held by him, will probably resume its importance. More in the centre is the city of Yemama, noted as the birth-place of Moseilama, the most celebrated of the Arabian prophets before Mahomet.

3912. *The remainder of Arabia* consists of that outer portion which, in the form of a triangle, extends along the borders of Palestine, Syria, and the course of the Euphrates. In its central part, this is the most completely desert tract of all Arabia, presenting nowhere any vestige of culture or fixed habitations, and traversed only by tribes shifting as the sand of the soil on which they tread. In approaching Syria and Judea, the desert insensibly loses its character, and passes into the fine soil of those fortunate regions. The districts, however, which have succeeded to the powerful semi-Arabian states of Moab and Ammon, are, according to modern geography, annexed to Syria and Palestine, and nothing is left to Arabia but complete desert. Even Palmyra, with its surrounding wastes, is considered as Syrian. On the south the ancient Edom, or Idumea, contains some well-watered valleys, and presents monuments of the power and commerce for which it was anciently celebrated. The ruins of its capital, Petra, lately discovered by Burckhardt, display considerable magnificence. He found 250 tombs cut in the rock. The monuments were partly of Greek and partly of Egyptian architecture. Along the Euphrates, the desert and the river touch immediately on each other. Its banks form necessarily a great and crowded caravan route, and there the plundering tribes expect their richest harvest. They are found, accordingly, in large bodies, and of the most hardy and desperate character. A number, availing themselves of the decayed state into which the Turkish government has sunk, have penetrated into the rich Mesopotamian plain, between the Euphrates and the Tigris, where they feed their flocks, set the government at defiance, and, tempted by the exuberant fertility of the soil, have, in many instances, gradually acquired industrious and agricultural habits.

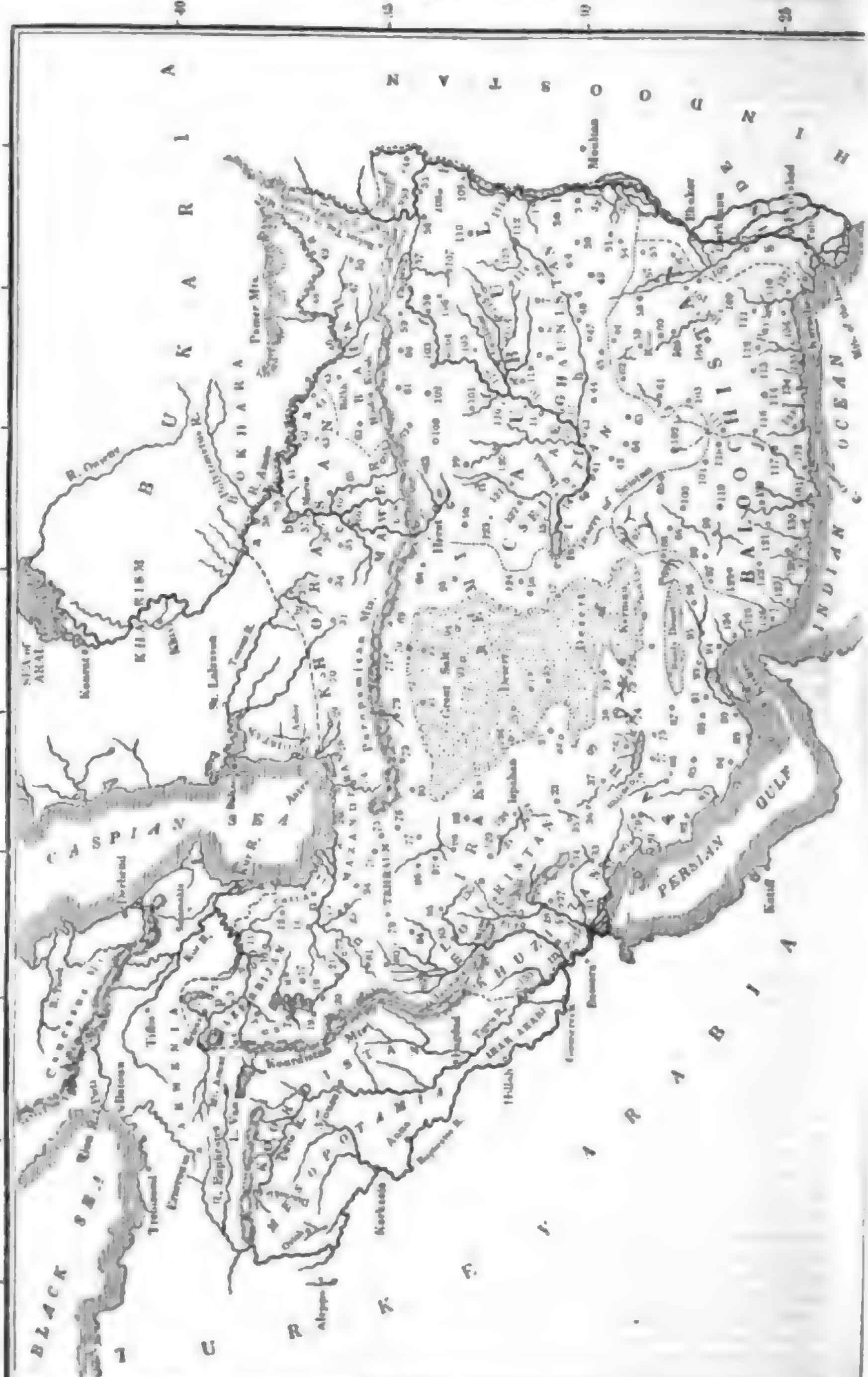
CHAP. IV.

PERSIAN EMPIRE.

3913. *Persia*, in the earliest times, was the seat of one of the most powerful Asiatic monarchies, connecting Eastern with Western Asia, and, in later ages, acted with energy on the political system of Europe. Although abridged of its ancient greatness, it still presents many interesting features.

SECT. I. *General Outline and Aspect.*

3914. *There is no country whose boundaries are more difficult to define than those of Persia.* It has none decidedly formed by nature, and is surrounded on every side by disputed provinces, whose lot depends on the varying fortune of arms, and on those frequent revolutions to which Oriental empire is liable. Long usage has made the Indus be looked upon, in Europe, as the western boundary of Persia; but the recent observations of Elphinstone, Pottinger, and other English travellers, have proved that the regions of Cabul, Candahar, and Balk are, in a political sense, entirely independent of Persia, and present a physical and social system in many respects opposite. Upon the same principle, it seems impossible to concur in the arrangement by which the savage tracts of Mekran and Beloochistan continue to be considered as part of the Persian empire. We shall, therefore, designate this vast and rude interval between that empire and Hindostan by the appellation of Independent Persia; for that of the kingdom of Cabul would apply only to a small part, and would indicate only a temporary and fluctuating state of things. Again, the northern limit to the west of the Caspian has been closely narrowed by Russia, which, by a long train of successful warfare, has nearly annihilated the ancient influence of Persia over the Caucasian



CASPIAN SEA
BLACK SEA
SEA OF ARAL
PERSIAN GULF
INDIAN OCEAN
ARABIA
TURKEY
BUKHARIA
HINDOOSTAN
BALOOCHISTAN
KHORASAN
KHARISM
BOKHARA
ARMENIA
MESOPOTAMIA
KURDISTAN
KHUZISTAN
Great Salt Desert
Isfahan
Herat
Kerman
Tehran
Bussora
40
45
50
55
60
65
70
75
35
30
25

Fig. 577.

regions, and deprived it even of its provinces of Shirwan and Daghestan. In the north-east, notwithstanding the loose tenure by which the great province of Khorassan is held, and though Herat, its greatest city, has been in the hands of the Afghans, it would be yet premature to separate that province from the great empire to which it has been so long united.

3915. *Persia, thus defined, presents* a large, irregular expanse of territory. Its northern boundaries are the Caucasian region, now occupied by Russia, the Caspian Sea, and Independent Tartary. On the east, it has that country to which we have given the name of Independent Persia. The Persian Gulf, and a small part of the Indian Ocean, form its limit to the south. On the west is the Turkish empire, from which it is separated by a line drawn somewhat within the Tigris. The empire may thus, in a large view, be considered as extending from 26° to 40° of north latitude, and from 42° to 60° of east longitude, which would give in the former dimension somewhat less, and in the latter somewhat more, than a thousand miles.

3916. *This vast region does not present a very varied aspect.* Although Persia can boast some of the grandest natural features, they rather range along her boundaries than penetrate the interior. The Caspian and the Persian Gulf are entirely limitary. The Euphrates and Tigris are now within the Turkish frontier. Russia has wrested from her the chain of Caucasus, and Turkey disputes the lofty heights of Ararat. From these two chains, however, branches one of considerable magnitude, which runs through the northern provinces, leaving only a narrow but fertile plain between it and the Caspian. It is thence supposed to take its course westward, till it joins the mighty ranges of the Hindoo Koosh and Himalayah. Through these mountains is that rugged pass, which the ancients considered as the main access from southern to northern Asia, and to which they gave the appellation of the Gates of the Caspian. Another chain, under the appellation of Alagha Tag, separating from the Taurus, runs parallel to the western frontier, and, under the names of the mountains of Louristan and Bucktori, extends to the Persian Gulf. With these exceptions, Persia is rather a high than a mountainous country; its ridges soon terminate in wide table-lands, traversed by nomadic and pastoral hordes. Between these elevated tracts, however, intervene plains, as those of Shiraz and Ispahan, displaying all that brilliant fertility and beauty which distinguish the favoured regions of these fine climates. The streams which water them, absorbed in cultivation, or expanding into lakes, form merely local features, and never attain a magnitude which can give them a prominent place in the general delineation of the country.

References to the Map of Persia.

NORTH PART.
1. Erivan
2. Mesian
3. Nakshivan
4. Cara Aineh
5. Khoi
6. Kotur
7. Urumea
8. Tabreez
9. Harno
10. Ahar
11. Ootchand
12. Ardebil
13. Sungooshan
14. Reshd
15. Zengan
16. Mianeh
17. Maragha
18. Meando
19. Shirwan Shady
20. Hilbahan
21. Hazar
22. Taki Suliman
23. Sultania
24. Casbin
25. Roudesir
26. Amol
27. Balafroosh
28. Astrabad
29. Gowgaun
30. Barungird
31. Meshed
32. Derejaz
33. Mera
34. Kelat
35. Coochang
36. Sirikusege
37. Merve
38. Amol
39. Seastan
40. Marghiam
41. Koodnam
42. Rilwura
43. Ankoi
44. Chadil Baba
45. Balkh
46. Huzzutimaum
47. Fyzabad
48. Durwaz
49. Berzar Beg
50. Munjan
51. Dunsee
52. Wama
53. Bajour
54. Minas
55. Peshawer
56. Jellalabad
57. Cabul
58. Koweristan
59. Bamean
60. Debrungee
61. Hussunuk
62. Soorton Suffee
63. Kola
64. Kilibermak
65. Boorun
66. Serakhs
67. Toos
68. Khaff
69. Turbut Hydereah
70. Turshees
71. Nishapore
72. Bostan
73. Damghan
74. Saric
75. Teheraun
76. Rubaut Kerem
77. Zerun
78. Sooleemania
79. Toorzey
80. Senna
81. Zagha
82. Dainur
83. Kermanshah
84. Hamadan
85. Sanavun
86. Chummerun
87. Koom
88. Kashan
89. Nathuns
90. Surmum
91. Khanabondy
92. Beyeshtan
93. Tubbus
94. Toon
95. Ghain
96. Yarkun
97. Ghorian
98. Herat
99. Sukher
100. Khoossoo
101. Comberanee
102. Gudda Khang
103. Dehbunder
104. Terree
105. Kherloot
106. Bayer
107. Ghizni
108. Cohaut
109. Karabaugh
110. Oorghoor
111. Dera Ismael Khan
112. Sirmugha
113. Doorchelly
114. Bura
115. Killagungabad
116. Tajou
117. Candahar
118. Bala
119. Girrish
120. Polat
121. Furrah
122. Teal
123. Killach Khan
124. Neh
125. Yezd
126. Charbasher
127. Nain
128. Ispahan
129. Kousar
130. Aliabad
131. Dezfoul
132. Shuster
133. Sercar.

SOUTH PART.
1. Buza
2. Sungur
3. Batil
4. Boree
5. Gardan
6. Hindoo Bagh
7. Tola
8. Koruk
9. Kenchy
10. Bost
11. Kalaboon
12. Dergaupe
13. Sufur
14. Dooshak
15. Pulgee
16. Nasweerabad
17. Khubbees
18. Deh Soolan
19. Serjeed
20. Usfaroon
21. Kharashur
22. Deh Shirear
23. Yezdikhast
24. Julfa
25. Askaroon
26. Shuster
27. Ahwaz
28. Bundi Kheel
29. Haweeza
30. Sabla
31. Dorak
32. Zeitoon
33. Bebahan
34. Doore
35. Kishlak
36. Asapas
37. Muzzghaub
38. Killahee Agha
39. Aurabad
40. Toomuse Md. Khan
41. Rodbar
42. Mummee
43. Konasheen
44. Sherawuk
45. Moostaung
46. Kohak
47. Quetta
48. Sir Kila
49. Tull
50. Drasno Kot
51. Bahunwala
52. Dera Gazee Khan
53. Jampore
54. Shorue
55. Goree
56. Jannee Dehra
57. Bhung
58. Deradur
59. Kelat
60. Soormusung
61. Sarowan
62. Nooshky
63. Ruins of Geelarsabah
64. Boodoo
65. Jalk
66. Basman
67. Surhud
68. Regan
69. Busum
70. Tchurreet
71. Bayun
72. Kerman
73. Hageen
74. Pa Killah
75. Derabgherd
76. Shuhri Bebek
77. Fesa
78. Shiraz
79. Cazeroon
80. Zeara
81. Bushire
82. Cangoon
83. Naben
84. Nukhilo
85. Lar
86. Jaron
87. Tarum
88. Tangedelon
89. Mogoo
90. Congo
91. Dehribe
92. Gombroon
93. Velasgherd
94. Minab
95. Girest
96. Hormoz
97. Purug
98. Oodeam
99. Bunpoor
100. Mughsee
101. Kohuk
102. Ruins of Regan
103. Kharan
104. Nal
105. Soherab
106. Khozdar
107. Gundava
108. Jaull
109. Kanajee
110. Bayla
111. Lukh
112. Noondreo
113. Tusher Mahomed Ft.
114. Ibraheem Bamis Ft.
115. Punjgoor
116. Bhooleha
117. Kedje
118. Kulung
119. Surbaz
120. Kussurkund
121. Gehr or Gieh
122. Beint
123. Tanoch
124. Cahirtug
125. Sereek
126. Seork
127. Jask
128. Koongoom
129. Buleg
130. Choubar
131. Gwutter
132. Gwaddel
133. Passanee
134. Chermut
135. Goorund
136. Heengoor
137. Sonmeanee.

Rivers and Lakes.
a Amoor (Oxus), R.
b Balahamdir, Lake
c Herat, R.
d Furrah, R.
e Zerrah, Lake
f Helmund, R.
g Turnak, R.
h Lara, R.
i Indus, R.
j Bhugwur, R.
k Baktegaun, Lake
l Karoon, R.
m Haweeza, R.
n Kizil-Ouzen, R.
o Urumea, Lake
p Aras, R.

Sect. II. *Natural Geography.*

3917. *The Geology* of this country is too little known to afford room for any observations; and the botanical remarks chiefly belong to the mountainous region of Independent Persia. The following observations occur under the head of Zoology.

Subsect. *Zoology.*

3918. *The Zoology of Persia*, from the little authentic information existing on the subject, appears of a mixed nature, exhibiting many of the European animals, with several others more strictly belonging to Asia. The most remarkable of those common to this country are the following: —

Felis uncia. Ounce.
Arvicola astrachanensis. Astrachan Mouse.
Mus decumanus. Brown Rat.
Mus phæus. Astrachan Hamster.
Aspalax typhlus. Spalax.
Sciurus persicus. Persian Squirrel.
Antilope leucoryx. White Oryx.
Antilope subgutturosa. Persian Gazelle.
Antilope Dorcas. Dorcas Antelope.
Rupicapra persica. Persian Chamois.

3919. *Of the above, we shall subsequently notice* the Spalax, the Brown Rat, and the Persian Gazelle. The Asiatic Lion is stated to be not unknown in the deserts of Persia. The *Lynx caracol* has been called the Persian Lynx, although, from being spread over the northern parts of Africa and of south-eastern Asia, it does not merit this peculiar designation. The White Oryx Antelope prefers the deserts; and the Dorcas Antilope appears to be also found in those of northern Africa. In addition to these, Linnæan writers mention the Brown Bear, the Otter, Viverra Mungo *L.*, Striped Hyena, Fallow Deer, and the European Hare, as all inhabiting the Persian empire.

3920. *The Spalax, or Blind Rat of Pennant*, was formerly confounded with the mole. This singular animal has a thick head, terminating in a very hard and strong cartilaginous muzzle. It was long believed the Spalax was destitute of eyes, nor can any external trace of these organs be seen; but on removing the skin they are found to be perfectly organised, although so small as not to exceed half a line in thickness. On the other hand, the organs of hearing, although externally very small, are shown to be considerably developed, by the great size of the auditory canal. The habits of the animal are equally curious. The Spalax lives in societies beneath the earth: they bore excavations towards the surface in search of roots; but they dig one hole much deeper, into which they retire for shelter and safety. As they prefer cultivated grounds, and subsist principally upon roots, they frequently become a serious evil to the agriculturist. Their movements are precipitate, turning or running sidewise, or even backward, with facility; and they bite most severely. When on the surface, they almost always carry the head raised, apparently for the purpose of more effectually hearing what is passing around them; thus relying on their most perfect faculty for a forewarning of approaching danger, which they have not the means of detecting by sight. (*Griff. Cuv.*)

3921. *The Brown Rat* (*fig.* 578.), improperly called the Norway Rat, one of the greatest pests of our dwellings, originally came to us from Persia and the southern regions of Asia. This fact is rendered sufficiently evident from the testimonies of Pallas and F. Cuvier. The former acquaints us with their migratory nature, by stating that, in the autumn of 1729, these animals arrived at Astrachan in such incredible numbers that nothing could be done to oppose them: they came from the western deserts, nor did the waves of the Volga arrest their progress. They only advanced to the vicinity of Paris in the middle of the sixteenth century, and in some of parts of France are still unknown. Towards the north their gradual extension has been slow, nor have they yet been found in Siberia.

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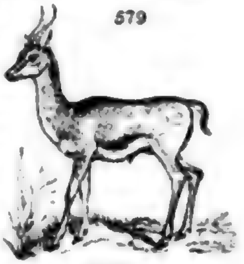
BROWN RAT.

3922. *The Gazelle* (*fig.* 579.) has been long immortalised by the poets of Asia and of Europe. It is called by the Persians *Tzeiran*, and by the Turks *Jairan*: its size is small, being seldom more than two feet high and three feet seven inches long. The eyes are large, dark, and peculiarly expressive of softness: all its movements are replete with grace, agility, and timidity. It not only inhabits the hills of northern Persia, but is found also in troops in the sandy deserts of Asia Minor, and on the shores of Lake Baikal. It is hunted by the Persians and Tartars for its venison, which is said to be delicious.

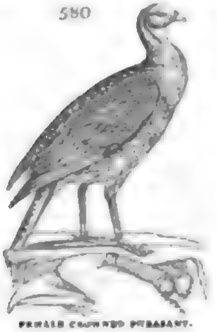
579



GAZELLE.

3923. *The Ornithology* does not present us with any subjects of peculiar interest. The Nightingale is well known, and has long been celebrated by the poets of Persia; but whether it is the same species with that of Europe may safely be questioned.

580



FEMALE CROWNED PHEASANT.

3924. *The female of a new species of crowned Pheasant*, belonging to a decidedly Asiatic group (*Lophophorus Nigelli*) (*fig.* 580.), has recently been discovered in the more secluded and mountainous parts of Persia, where it is called the Mountain Partridge: it is so rare, that the male bird has not yet been seen in Europe. The female measures about twenty inches in length: the colours are brown varied with black, with the throat and sides of the neck white.

3925. *Of the Domestic Animals*, the Persian breed of Goats is peculiar. The horns form an acute angle to the front; the ribs not very broad, with the margin undulated, and the posterior part rounded. It has long coarse brown hair, tipped with rufous, and a large tuft stands forward between the horns, like the forelock of a horse. The two-humped or Bactrian Camel, and the Dromedary or Arabian Camel, are both in general use as beasts of burden. The Persian Horses are esteemed inferior alone to those of Arabia, and the preservation of the noble breed is attended to with equal care. Towards the northern provinces there is a much stronger race, used for cavalry.

Sect. III. *Historical Geography.*

3926. *The Persian empire* is celebrated in history. In its vicinity, and almost on its site, were the great and early monarchies of Assyria and Babylon. The name and people of Persia were then confined to the mountainous districts of Fars and part of Kerman; while the Medes, tributaries of Babylon, held the fine plains of the interior. The Persian empire was formed after the triumph of Cyrus over Babylon; and, by the addition of Syria, Egypt, Asia Minor, and part of India, attained a magnitude unprecedented. The progress of luxury and effeminacy having sapped those manly virtues by which the Persians rose to power, they were unable to withstand the hardy and disciplined troops of Macedon; and this country, with all its conquests and possessions, was rapidly swallowed up in the fourth or Greek empire. Persia ceased to have an independent government, and was subject partly to Seleucus, and partly to a Greek kingdom formed in Bactriana. In the third century before Christ, Artaxerxes rescued his country from foreign sway, and founded Parthia, a monarchy which has ever since retained nearly the same limits. It acquired distinction in history by setting bounds to the conquests of Rome, and by frequently defeating the armies of that power. About the year 220, the Parthian dynasty was subverted by that of the Sassanides, who restored the name of Persia, with its ancient religion and laws. It could not, however, withstand that torrent of fanatic invasion which in the seventh century overran a great part of the East. After one great battle, the native dynasty was subverted, and Persia received the new faith and the new laws, which have ever since ruled over more than the half of Asia. This Saracen dynasty, which soon began to exert an influence friendly to science and civilisation, was subverted, in its turn, by successive Tartar invasions under Zingis, Timour, and the race called Turks. These successively supplanted each other; and Persia became, during many centuries, a dreadful theatre of war and devastation. She possessed, however, a native energy, by which she ultimately repelled every foreign yoke. In 1506, Abbas, justly surnamed the Great, raised himself to the throne; and, by enforcing a rigid administration of justice, and encouraging every species of industry, restored Persia to much of that prosperity for which nature had destined her. After thus flourishing for more than two centuries, she was desolated in the most cruel manner by the successful invasion of the Afghans, who carried fire and sword to her remotest extremities, and reduced her proudest capitals to ashes. In about fourteen years, the avenging sword of Nadir Shah vindicated the independence of his country, and, under the name of Kouli Khan, carried her victorious arms into India; but this fierce conqueror suffered her to taste none of the blessings of peace. His death without any regular successor, affording scope to the contending claims of a number of chiefs, gave rise to a long and furious civil war, which almost rent Persia to pieces. She enjoyed an interval under Kurreem Khan, an able chief and one of Nadir's lieutenants, who having at length triumphed over all his rivals, endeavoured during sixteen years to heal the wounds of his native country. His death, in 1779, was followed by a new train of civil wars, only terminated, in 1792, by the triumph of Aga Mohammed, an eunuch, who transmitted the throne, in 1796, to Futteh Ali Shah, the reigning sovereign. Persia, under his administration, has begun to respire. Although he has had severe contests to maintain with the Russians, who have wrested from her extensive provinces, internal peace has been preserved, and considerable exertions have been made to improve the condition of the country. Attempts have even been made, particularly under the auspices of his third son, prince Abbas Meerza, to introduce European improvements.

Sect. IV. *Political Geography.*

3927. *The Persian monarchy* is more deficient than even other Oriental states in all that belongs to a constitutional system. The sword alone reigns. Those strict and immutable laws, for which she was anciently celebrated, have, by successive revolutions, been entirely obliterated. The despotic principle inculcated in the Koran, by which the sovereign exercises a divine right over the persons and properties of his subjects, is fully recognised. All the resources of Oriental exaggeration are exhausted by the grandees in the lofty epithets with which they address the monarch, and the humble appellations which, in his presence, they apply to themselves. It is remarked by Porter, that there never was such a thing as a popular commotion in Persia; a remark which does not apply to Turkey. The numberless contests for power have been carried on merely by the princes and their adherents; the people look on as spectators, ready to be transferred to one or other as the fortune of war may decide. Yet, though there are no legal, there are some rude actual limits to the royal authority. The khans of the upland districts, ruling over tribes attached to them by ties of kindred and clanship, enjoy permanent and hereditary rights, to which the sovereign seldom attempts to refuse his sanction. They pay merely a tribute, and furnish their quota of troops in war, but are not interfered with in the internal administration of their district. As they form the military strength of the empire, the most powerful monarchs dare not offend them; and as, from motives of personal attachment, caprice, or ambition, they are often ready to espouse the cause of different pretenders to the throne, they have a powerful influence in perpetuating those evils of disputed succession to which Persia is liable. From the khans the principle of hereditary succession has taken deep root in the political system of Persia. It formerly extended even to the governors of cities and provinces, who were also collectors of the revenue; but under the dynasty of the Abbassides this system was changed, and the power intrusted to removable officers. Although the patronage and even the revenue of the sovereign were thus augmented, the measure is supposed to have been substantially injurious to Persia. These high-spirited chiefs, who had a real interest in the prosperity of their districts and of the empire, have been replaced by the base creatures of despotism, who had no object but to amass wealth by the temporary possession of power. The precarious tenure by which they hold the throne induces the sovereign to employ strange and barbarous methods of crushing the attempts of rival claimants. Mutilation, particularly the putting out of the eyes, is the method peculiarly employed against those from whom danger has been experienced or apprehended. The daughters of the king are given in marriage not to the nobility, but to the priesthood, excluded by their profession from any pretensions to reign.

3928. *Persia, though a warlike kingdom,* has scarcely any force which can be considered *a regular army.* There is a body of 2000 or 3000 horse guards, called Goolam, composed of youths of distinction, who assume, however, the title of royal slaves. A larger body of 10,000 or 12,000 cavalry have lands assigned them round the capital, and are ready to attend the king when called upon. But the main force of the Persian armies has always consisted of their highland tribes, led by their khans. The number which can be called out on an emergency is estimated at 150,000, 200,000, or even 250,000. They possess many of the qualities of good cavalry troops, are well mounted, skilful horsemen, personally brave, and inured to hardships. They handle their arms with the greatest dexterity, but have not the least idea of discipline, tactics, or the art of war. A late traveller compares them to "an army of wild animals from the jungle, led on or scared by accidents." They are arrayed, indeed, according to their tribes, under their khans; but the review of a corps consists merely in causing the troops to march past individually, to show their persons and equipments. They will often, as humour leads, abscond in large bodies, or turn back without seeing an enemy. Through these defects they are altogether unable to bear the shock of disciplined European troops, and have always been vanquished in pitched battle. But as voltigeurs or light cavalry they have scarcely their equals in the world. They hover round an enemy, cut off his provisions and water, make sudden onsets, and insensibly wear him out. The most formidable regular army, when once involved in the heart of those endless and trackless plains which compose the interior of Persia, can scarcely fail to be finally overwhelmed. Thus, the Parthians destroyed the armies of Crassus and Julian, and have always been invulnerable except against Afghans and Tartars, nations of migrating horsemen like themselves. Even the Russians, notwithstanding their great superiority in the field, have not been able to maintain any line advanced beyond the Caucasian districts, or the course of the Kur.

3929. *The present sovereign* has made extraordinary exertions to form and discipline a corps after the European manner. This system was first introduced by Gardenne, a French envoy sent by Bonaparte for that purpose, with the view of acquiring an influence in the court of Persia, and of rendering it an instrument for shaking the British empire in the East. Sir Harford Jones, however, succeeded in opening the eyes of the shah to the ambitious designs of that potentate. The English then succeeded to his favour; and arms and officers were supplied from this country. The system was carried on. According to Sir R. K. Porter, the actual amount was about 12,000 men in infantry and artillery, who went through their exercise in a very tolerable manner. The cavalry, however, accustomed to roving excursions, and believing, with truth, that they could manage the sabre better than any troops in the world, could not be brought to place themselves under discipline. These troops were neglected by the reigning sovereign; and, on the breaking out of the war with Turkey, the English officers, not being allowed to serve against that power, were almost all dismissed. The present regular army is reckoned by Mr. Frazer at 9400 foot and 1200 horse; and from the provinces of Aderbijan and Erivan, which are alone much under the control of the shah, he can levy about 40,000 irregulars.

3930. *An unhappy circumstance in the condition of Persia* consists in the numberless predatory hordes by which the country is ravaged. Her fertile plains are every where intermingled with mountains and deserts tenanted by these rude banditti. Even those who defend the country in war, plunder it during peace. That mountain chain, in particular, which we have traced from Armenia to the Persian Gulf, parallel to the great road that passes through the kingdom, forms a "labyrinth of countless ravines and formidable gorges," whence they can issue forth to lay waste the finest plains, and attack the richest caravans. In consequence of their continued *cheepaos* or forays, many of the finest tracts are now abandoned by the husbandman, and given up to those marauders. To repress them was one of the grand objects of the policy of Abbas, which he pursued by measures cruel, indeed, but vigorous. The present monarch, less energetic, and residing in the northern extremity of his empire to watch the movements of the Russians, does not seem to have taken such effective steps for this object.

3931. *The only attempt of Persia to form a navy* has been on the Caspian Sea, and in this she has never succeeded.

Sect. V. *Productive Industry.*

3932. *The Persians* are an active and laborious people; and if all the branches of national industry are in a low state, it is owing only to the anarchy of the government, and the inroads of the predatory tribes.

3933. *In regard to agriculture,* the country labours under considerable disadvantages. The interior, as formerly observed, is not traversed by any great rivers, and a great part of the soil is naturally salt, sour, and arid. This evil, however, in the better days of Persia, was in some degree obviated by artificial irrigation; and at all times the plains of Ispahan and Shiraz, and the provinces on the Caspian, have displayed an exuberant fertility. The kinds of grain cultivated are chiefly those of Europe, particularly wheat; for rice, which would naturally have been the staple of the southern provinces, cannot be raised there for want of water. In return, the fruits are of peculiar excellence, and some of the most valuable are even traced to Persia as their native country. The melon is supposed to be there unrivalled, the orange is of peculiar size; the fig, the almond, the peach, the apricot, are all good. The vine and its produce were once the pride of Persia; and, notwithstanding the severe prohibition against its use, the wine of Shiraz continues to be the theme even of Eastern poetry. Those of Yezd, of Ispahan, and of the hilly provinces in the north, are all esteemed. In these last, the mulberry tree grows in such abundance as to render silk a staple product of the empire; and in its days of prosperity a large article of export. The plains of these provinces afford also extensive plantations of the sugar cane; which, however, is used only in its raw state. They abound also in woods, which are turned to little account. After all, it is to pasturage that the greater, and of late an increasing, portion of the surface of the empire is devoted. In these tracts the primary object is to rear those fine horses which are in universal demand; for every Persian rides, and delights in the possession of the finest horses he can possibly procure. Those of the Turkman breed are preferred to the Arabian; for, though inferior in swiftness, they are stronger and more serviceable; and, though not equally light and elegant in form, they are tall and handsome. Sheep of the long-tailed species are bred in great numbers, and their wool forms the basis of the finest manufactures. Kerman produces a breed of goats yielding wool, which has, in a certain degree, the qualities so much esteemed in that of Cachemire. The camel, the ass, and a valuable species of mule, are used for the conveyance of burdens.

3934. *Persia, during the days of her prosperity,* was greatly distinguished as a manufacturing country. Her fabrics, suited to the Oriental taste, have supported not only the ostentatious magnificence of her courts and great men, but those of Turkey, Tartary, and even Northern Africa. The women of the wandering tribes weave from the wool of their sheep those rich carpets which we call Turkey, from the place of their immediate importation. They form through the East the most important branch of ornamental furniture. The carpets of Herat, in Khorassan, possess the highest reputation. The next staple consists in silk fabrics, rich and ornamented, particularly brocade and embroidery. Sometimes the tissue is entirely silk, sometimes mixed with cotton and wool. Under the Abbasside dynasty, the precincts of the court contained great works of tapestry, composed of silk and wool embellished with gold; but this art, though not entirely lost, languishes for want of encouragement. Arms, particularly sabres of a superior quality, and richly embellished with gold, silver, and precious stones, are prepared on a great scale, to meet a sure demand; and in this branch no decline has been observed. The manufacture of earthenware is very extensive throughout Persia, and some of its products almost rival the porcelain of China. These, with shawls made from the goats' wool of Kerman, leather, paper, and jewellery, complete the list of her principal manufactures.

3935. *Persia is not a mining country.* Nature has not been bountiful in this respect, and art has done nothing to improve the little she has bestowed. Considerable quantities of copper are drawn from the mines of Mazanderan and Kerman; but those of iron and silver are neglected; for the silver mines of Maden now belong to the Turks. Salt is only too abundant; for a great part of the surface, whenever left to itself, is covered with a saline crust, which renders it unfit for vegetation. Persia abounds, however, with those fat and oily minerals which in other countries are rare. Bitumen and naphtha are found in all the countries bordering on the lower Euphrates and the Tigris; they serve as cement, as pitch for lining the bottoms of vessels, and as a substitute for oil in lamps. A small quantity of a species of black liquid petroleum flows from a rock in Kerman, which is made a royal monopoly. The king also claims the right of selecting the best from among the turquoises of Khorassan.

3936. *The foreign trade of Persia* may be described in few words. The Caspian, besides its difficult navigation, communicates solely with the south of Russia; and the spirited attempts of the English to open a trade across so many natural obstacles had no result. In the Persian Gulf, the splendid settlement of the Portuguese on Ormus was only temporary;

and since Persia lost the countries on the Euphrates, she can obtain Indian commodities only by the ports of Bushire and Gombroon.

SECT. VI. *Civil and Social State.*

3937. *The actual population of modern Persia* was guessed by Chardin at 40,000,000; but this number is considered by all to be beyond the truth, at least in the present day. Among geographical writers, Pinkerton hazards the estimate of 10,000,000 for the whole, including Candahar; Malte-Brun that of 6,000,000, or 8,000,000 for Western, and the same number for Eastern, Persia. We should suspect both these estimates to be under the truth. Mr. Elphinstone, founding on an estimate which, though conjectural, seems to have been carefully made, conceives the kingdom of Cabul, independent of its Indian possessions, to contain 8,300,000; and if this rugged mountain territory, interspersed with huge deserts, hold such an amount, imperial Persia, of considerably greater extent, and containing fertile and highly cultivated plains, ought, after all its losses, to maintain a greater. We should think 12,000,000 nearer the truth, which, after all, would not make one third of the density of England. It would nearly agree with Mr. Kinneir's idea of 18,000,000 or 20,000,000 for the whole country between the Euphrates and the Indus.

3938. *The physical character* of the Persians is fine both as to strength and beauty, but without possessing any very marked features. So many migratory nations have settled in the country, that it retains only a fragment of its native race. The complexion, according to the climate, varies from an olive tint to a deep brown.

3939. *In disposition*, the Persians, with a portion of the grave exterior peculiar to the Orientals, manifest a *disposition* considerably different. They are gay, lively, and animated, and have even been termed the Parisians of Asia. It seems to be their principle to "take the world lightly." This prevailing *gaieté de cœur* and courtesy of manner render the society of the higher ranks particularly amiable, while that of the lower is at least free from rudeness. The humblest peasant, from the old man to the boy, expresses himself with civility. They seem to understand the administration of flattery better than perhaps any other nation; and, besides directly lavishing hyperbolical compliments, take the most delicate circuitous modes of inducing the belief that their sentiments are sincere. The stranger, however, who, from these flattering appearances, has conceived the most favourable idea of the Persians, soon finds, on a nearer intercourse, that "they are mere whited sepulchres;" that the most profound dissimulation, and the grossest falsehood, mark their whole conduct; and that self-interest almost universally is the sole spring of action. Thus avarice impels them to over-reaching extortion, and all despicable modes of collecting money; while the tyranny of the government drives them to the subtlest expedients for its concealment. At the same time, they are represented by Chardin as the greatest spendthrifts in the world; exhibiting in their dress, their houses, and their harams, a splendour beyond their fortune. They were observed to take a peculiar latitude relative to that precept of the Koran which forbids the use of wine; but the present emperor, who is a rigid Mahometan, has suppressed these convivial habits, and has compelled all prone to indulge in toping to "drain by themselves, bowl after bowl."

3940. *In regard to their faith*, the Persians adhere to that grand Mahometan schism, at the head of which was Ali, the son-in-law of Mahomet; and, on account of some trifling distinctions, they and the Turks, who are followers of Omar, mutually doom each other to everlasting perdition. The political rivalry of the two nations has, no doubt, tended to embitter this enmity. In other respects, the Persians display little of that bigoted and persecuting spirit which reigns among the nations by whom the Mahometan faith is professed. Europeans, in passing through the country, are not treated as objects of horror and opprobrium; and even the long and cruel persecution practised against the Guebres, or ancient worshippers of fire, by which that unfortunate race was almost exterminated, has now ceased. About 4000 of them reside unmolested in Yezd and in other cities of Kerman.

3941. *The Persians are the most literary people* among the Asiatics, at least of modern times. Poetry, in particular, is a ruling passion; and Hafiz, Sadi, and Ferdusi, have displayed an Oriental softness and luxuriance of imagery, which have been admired, even in European translations. Ferdusi is the epic poet of Persia: the theme of Sadi is wisdom and morality; while Hafiz has strung only the lyre of love. The latter is the most popular poet, though strict Mahometans scarcely consider it lawful to peruse his verses, unless after straining them into a refined and mystical sense. The monotony of Eastern manners, especially in what regards the female sex, precludes that variety of scenes and situations which give interest to the love stories of Europe. Elaborate descriptions of the beauties of the beloved object, of the miseries of absence, and the joys of presence, are expressed in those hyperbolical terms and that flowery imagery peculiar to the Oriental writers. The present emperor has a poet in constant attendance, whom he extolled to the English embassy as superior to any other bard of the age, and even to any on earth; and, not contenting himself with empty praise, gave him a gold tomaun, nearly two pounds sterling, for every couplet. As no specimens, however, have been produced of the works of this modern Hafiz, we cannot estimate the real value of these extravagant plaudits.

3942. *The sciences* have also been cultivated in Persia with ardour; and considerable assiduity is still shown in the prosecution of them; but the splendid establishments by which they were supported are in utter decay. The present king is doing all in his power to revive the study of the sciences formerly cultivated. Morals, however negligently practised, are an object of diligent study; as are also geometry, arithmetic, the Turkish and Arabic languages, but above all medicine and astrology, which last is the high road to fame and fortune. Europeans, on account of their ignorance of this vaunted science, are held in contempt. According to an old writer, 400,000*l.* were annually spent on its fallacious professors; and though the sum is doubtless much smaller at present, the craft of divination is not the less esteemed.

3943. *Persia contains fragments of several ancient languages,* of which the Zend is known only by the Zendavesta, a religious work preserved by the Guebres, but of which the authenticity and antiquity are a subject of controversy. The Pehlevi appears to have been the court language of Persia during the period of its connection with Greece and Rome. Under the dynasty of the Sassanides, the preference was given to the Persic, the dialect of their native province of Fars. This language having been enriched by a mixture of Arabic introduced by the Saracen conquerors, and polished by a succession of great writers, who made it the vehicle of their effusions, has become the most refined and classic in the East, and is spoken not only at the Persian court, but at the Mahometan courts of Hindostan. Its close alliances with all the branches of the Teutonic, and with the ancient Greek and Latin, have afforded ample ground to exercise the ingenuity of the etymologist. Meantime the Turkish, introduced by the irruption of the Turks from Western Tartary, and implanted during their temporary dominion, is spoken extensively among the people.

3944. *The Persians,* as already observed, surpass in pomp the other Oriental nations. This magnificence with them, as with the others, does not display itself in houses and furniture. The mansions even of the richest present to the street only dead walls of clay, and a mean door, leading to a large interior court, into which all the apartments open. These apartments are spacious and commodious; but they contain scarcely any furniture, except carpets, on which the owners sleep, sit, eat, and pass the greater portion of their lives. Their dishes are merely trays of painted wood, or copper tinned. Their baths, paved with marble, open to the sky, and furnished with every provision for magnificence and coolness, are also their favourite resorts for pastime. The Persians are splendid in their attire (*fig.* 581.). Gold, silver, and precious stones, proscribed by the Turks, are lavished by them on their head-dress, their robes, and particularly their sabres, many of which are thus raised in value to 15,000 to 30,000 piastres. The beard, highly respected over all the East, is viewed by the Persians with peculiar veneration: they spare no pains in embellishing it, in making it thick and tufted; they even adorn it with jewels. Their horses are the objects of still greater attention. Even a man who has not clothes worth half a guinea will have a good horse.

581

PERSIAN KHAN.

3945. *The women of rank* wrap multiplied folds of silk round their heads, and wear long floating robes; nor do they ever appear in public without long veils (*fig.* 582.). The harams of the great are filled, as over all the East, by negotiation with the family of the bride, and by the purchase of Georgian and Circassian slaves. From the lavish use of the warm bath, or from some other improper regimen, the beauty of the fair sex is of very short duration. "In eight or ten years," says Porter, "the lately luxuriant and sportive beauty becomes thin, withered, rheum-eyed, and every way a hag." The son takes precedence entirely according to his father's rank: as to the mother, whether she have been wife, concubine, or slave is considered a matter of indifference.

582

WOMAN OF RANK.

3946. *The Persians are simple in eating,* and use little animal food. Pilau, or rice stewed with various ingredients, forms their favourite dish. The chief luxury of their table consists in a profusion of the finest fruits.

Sect. VII. *Local Geography.*

3947. *In fixing the difficult boundaries of the Persian empire,* we shall continue to include *Shirwan,* because its separation is not complete, nor perhaps finally decided. Shirwan consists chiefly of a fertile plain, arched round, as it were, by the mighty chains of Caucasus. The Kur forms its southern boundary. Being watered by numerous streams, it produces plentifully cotton, rice, wine, and fruits. There is, however, a flat track along the sea-coast, which is nearly desert. Shamachie is reckoned the capital, and old Shamachie, of which only the ruins, over-run with brushwood, can now be traced, was a large and populous city. New Shamachie, built of unburnt brick, and surrounded by a broad ditch, was supposed in 1795 to contain 5000 or 6000 inhabitants, when it was taken and reduced to ashes by Mahommed Aga, a calamity from which it has not fully recovered. Baku, from its trade, and its situation on the Caspian, is of more modern importance. In the plain to the south-east are found inexhaustible pits of naphtha, which yield upwards of 1000 pounds weight a day, and which begin to fill as soon as they are emptied. Near Baku is the plain of fire; a spot from which an inflammable gas continually issues, producing a blue flame. This plain, to the extent of about a mile in circumference, had been walled round, was a place of great resort, and held in deep veneration by the ancient Guebres. All the ground to a great distance round Baku is, as it were, impregnated with this fire, which is sometimes seen rolling in streams down the mountains. Kuba, a small well fortified town, is the residence of a khan, whose sway extends over a very fertile and populous district, called, from one of its admired productions, "the paradise of roses."

3948. *After passing the Kur, we enter Ghilan*, a long narrow province, formed of a plain which extends 200 miles along the Caspian, and is bounded inland by a range of mountains which can be penetrated only by a few narrow passes. There is no river of any magnitude except the Kizil-Ouzen, which, after traversing a considerable part of Persia, forms the boundary between this province and Mazanderan. Numberless streams, however, descending from these mountains to the Caspian, maintain an almost excessive richness of vegetation; for the fruits, though in the greatest profusion, are considered unwholesome. Reshd, the capital, is described by Mr. Frazer as a flourishing commercial city, having from 60,000 to 80,000 inhabitants, with well kept bazaars, but abounding in beggars. As its harbour is unsafe in stormy weather, many prefer the smaller port of Lankeroon, situated to the north-west. Large crops of wheat, rice, and other grain, cover the fields; but the staple production is silk, which is either worked up within the province, or exported to Astrachan. The air is rendered very unhealthy, by excessive moisture, with which it is so impregnated, that metallic instruments can scarcely be preserved from rust. From its mountain streams, and luxuriant verdure, Ghilan exhibits the most beautiful and romantic sites even in this picturesque empire.

3949. To the west of Ghilan is *Aderbijan*, or Azerbijaun, also encircled by mountains: on the north those of Armenia, while on the south those of Koordistaun, in an accumulated mass, raise their towering heads to the clouds. This province is traversed by numerous smaller hills, and being well watered by the Araxes, Kizil-Ouzen, and other streams, is one of the pleasantest and most fertile regions of Persia, though the prosperity of the people is much depressed by the tyranny of their rulers. No city in Persia was more illustrious than Tabreez, or Tauris, both as a splendid capital and a seat of commerce; and in the time of Chardin it was supposed to contain 500,000 inhabitants. Nature and man have co-operated in its destruction. It has been sacked eight different times, and has been shattered by repeated and dreadful earthquakes. Of the 250 mosques numbered by Chardin, only three could be traced by Sir R. K. Porter. That of Ali Shah, 600 years old, still retains traces of the greatest magnificence, being cased with lacquered tiles of porcelain, disposed and adjusted into intricate and elaborate figures, and surrounded with a complete band of gilded Arabic sentences, embellished with flowers in green and gold. There is also a splendid tomb of Sultan Cazan, without the city. Ardebil, a fine old town, and a seat of the shahs, is likewise much declined. Between it and the Kur is the plain of Mogam. The eastern part forms a picturesque and flourishing district, surrounding the lake of Urumea, which is about 300 miles round, salt like the sea, emitting a sulphurous smell, and of such quality that fish cannot live in it. Urumea, the reputed birth-place of Zoroaster; and Maragha, the favourite residence of Holaku, where that great prince built his famous observatory, are ancient and still flourishing towns.

3950. *Mazanderan* forms on an extended scale the continuation of the small line of plain, backed by mountains, and is the southern boundary of the Caspian. The wheat is not good, and silk is not cultivated to the same extent as in Ghilan; but rice is raised in vast quantities, and the sugar cane abounds. It is, too, a very picturesque province, and, moreover, the seat of a brisk trade. It is unhealthy, not quite so much so as Ghilan, though from the same causes. Its southern boundary is Mount Elburz, which stretches along the whole length of the province, and eastward into Khorassan. Demavend, forming its loftiest peak, is situated in a district called Tabrestan, and across it is that long defile called the Caspian Gates, leading from Teheran to Amul.

3951. *Mazanderan contains a number of pretty little cities.* Lari, the residence of the governor, is small, but well fortified and very ancient, containing several lofty temples of the early Guebres. Balfroosh, however, is the largest town, and carries on a very extensive commerce. Enjoying free trade, and having been protected by a wise governor from the revolutions which were laying waste other parts of Persia, it has lately flourished in an extraordinary degree, and is reckoned by Mr. Frazer to contain 20,000 people. It is but meanly built, however, in a low damp valley, about a mile and a half in circumference. Amol is a very old town, celebrated for its bridge, and containing a manufactory of iron. The population is stated at 35,000 or 40,000; but a great proportion consists of shepherds, who in the summer go up to the mountains. Ferabad and Meshed are agreeable sea-ports, with some trade. Ashraff, which Abbas attempted to make a naval arsenal, and at which he built a magnificent palace, has since his time fallen into neglect. The most eastern part of Mazanderan is composed of the agreeable district of Astrabad, the ancient Hyrcania, and sometimes reckoned a separate province. The town has some silk and woollen manufactures, and carries on a commercial intercourse between Turkey and Persia. From its vicinity to the turbulent race of Turcomans, it has often been the seat of insurrection. To the east is Jorjan, the ancient Hurkaun, still a very strong fortress, celebrated in the wars between Persia and Tartary.

3952. *Eastward from Mazanderan is Khorassan*, the most extensive province of Persia, from whence that empire passes insensibly into the boundless plains of Independent Tartary. During the late weak and distracted state of the monarchy, this limitary province has been in a great measure alienated. The Afghans hold Herat, now the most populous of its cities, and the king of Bochara holds the north-eastern districts. Not content with this acquisition, he makes, with his swarms of irregular horse, continual inroads into the rest of the province, lays waste the country, and carries off the inhabitants as slaves. These desolations have converted Khorassan, from one of the most fruitful regions in the world, almost into a desert. It appears nothing uncommon, when the gates of a city are opened in the morning, for a body of Tartar horse, which has been lying in ambush, to rush in, set fire to the town, and carry off the inhabitants into slavery.

3953. *Meshed* is considered the capital of Khorassan. It is a large and strongly fortified city, situated in a fine plain, and distinguished by the superb sepulchre of Haroun Alraschid. Though much decayed, it still numbers 50,000 inhabitants. To the south, Nishapour, once a splendid capital of Persia, and continually rising anew, after its destruction by Alexander, by the Arabs, and by the Tartars, was, when it had become the capital of the Turkish princes of the Seljuk dynasty, so completely destroyed by Zingis Khan, that the inhabitants, on returning, could not recognise their own houses. Its 12,000 aqueducts are now dry, and its population, occupying a mere corner beyond its former circumference of twenty miles, are reduced to 15,000. Tursheez, Tubbus, Serukhs, Tabas, are large towns with some trade, still included in the Persian dominion. *Herat*, now comprised in the Afghan domain, is the finest city in Khorassan. It is situated in an extensive, somewhat elevated, but most fertile plain, which produces wheat, barley, and fruits in the greatest abundance. It is the emporium of the trade between Persia and the East, which is carried on chiefly by 10,000 Jews and 600 Hindoos who inhabit the city. *Meru-Shah-Jehan*, the principal town of the Tartar division of Khorassan, is governed by a brother of the king of Bochara. Among the many ephemeral capitals of Persia, none surpassed the fame of this city when it was the residence of Alp Arslan, the most powerful prince of his time. By the vicissitudes of war, and the devastations of the Usbecks, it has been almost annihilated.

3954. *Having disposed of these northern divisions*, we come to *Irak, the grand central province*, which forms, as it were, the body of Persia. It is understood to have composed the ancient Media. This province is almost entirely traversed by chains of mountains, with long valleys intervening, from ten to fifteen miles in breadth. The mountains are naked and barren; but the valleys would amply repay the highest culture, were it not for the desolation brought on them by civil war and misrule. Indeed, in the most deserted tracts, the ruins of cities and aqueducts still indicate their former prosperity, which part of them, under the management of an enlightened governor, are beginning to recover. The eastern part of this province, with the adjoining tract of Khorassan, is occupied by a salt desert of great extent.

3955. *Irak* is, as it were, covered with splendid cities and celebrated capitals, most of them in a state of ruin, from which a few are beginning to rise. Among these, Ispahan, or Spahawn (*fig.* 583.), stands pre-eminent. By the caliphs of Bagdad it was made the capital of Persia; and being placed in the centre of the empire, surrounded by a fertile and beautiful plain, it became a rendezvous of the inland commerce of Asia, and attained an extent and splendour unrivalled in Western Asia. It was destroyed by Timur, but restored by Shah Abbas. Chardin reckoned that in his time it was twenty-four miles in circuit, contained 172 mosques, 48 colleges, and 1800 caravanserais. The most magnificent edifice was the palace, the gardens attached to which occupied a space of five miles in circumference, and were interspersed with the most splendid pavilions. The Meydun, a square, serving for military reviews and for a market-place, round which were built the palace, and a number of splendid mosques; with the Chaur Baug, a long avenue of plane trees, were also distinguished ornaments of Ispahan. The Zenderood, a fine river, giving fertility to the plain of Ispahan, which it is expended in irrigating, traverses the city, is conducted through its gardens and pastures, and crossed by several magnificent bridges. This magnificence of the public structures is combined, as usual in Asia, with meanness and wretchedness in the streets, and in the huts occupied by the mass of the people. In 1722, it was taken and almost destroyed by the Afghans, and, the later sovereigns having preferred a northern residence, no exertions have been made for its restoration. A man may now ride through it for miles without seeing an inhabited house; only three colleges are open; and its proudest edifices present only piles of rubbish. It is still, however, a great city, with extensive trade, and some flourishing manufactures, particularly of gold brocade. Hussein Khan, a native, who has raised himself to extraordinary wealth, is making great efforts to revive its magnificence.

583

ISPAHAN.

3956. *Teheran* (*fig.* 584.), founded by Kurreem Khan, is situated at the northern extremity of Irak proper, at the foot of the loftiest mountains of Elburz. The two last sovereigns have made it their residence, in consequence of its vicinity to the Russian frontier, the theatre of almost perpetual war. It is four miles in circumference, strongly fortified, and rather a camp than a city. It has no grand edifices except the *ark*, combining the character of a palace and of a citadel. In summer the place becomes so extremely unhealthy, that all leave it who can. The king with the troops, and the chiefs with all their trains, depart, and encamp on the plains of Sultania. The population of the city thus varies, according to the season, from 10,000 to 60,000. Adjacent to Teheran are the remnants of the ancient Rhaiz, mentioned as a spot to which the Jews were conveyed after the Babylonish captivity. It continued a great city till destroyed by the generals of Zengis Khan. The remains are of sunburnt brick, and the whole surface for three miles in every direction is marked by hollows, mounds, mouldering towers, tombs, and wells.

584

TEHERAN

3597. *Among all the fallen capitals of Persia,* none lie so low as *Sultania.* Its broken arches and mouldering remains, displaying all the pomp of Oriental architecture, are mixed with a few cottages of peasants, inhabited by about 300 families. There is in particular a grand unfinished mosque, in the interior of which the whole Koran is writen in ornamented characters. The prince royal has begun to erect a citadel, to be called Sultanabad, and will probably do something for the repair of the place. *Casbin,* or Casween, though it has lost its grandeur as a capital, is still a neat flourishing city with a considerable trade. Koom, on the contrary, is described as a large straggling wilderness of ruins, all crumbling and tumbled into heaps. It has, however, been in part rebuilt; and the modern structures are confusedly mixed with the ancient. A road along the great salt desert leads from Koom to Cashan, a city still very flourishing, particularly by its manufactures of silk brocade. It commands a magnificent view of the mountains of Taurus.

3958. *The western part of Irak* is mountainous and irregular, though still interspersed with rich plains. Here occurs Hamadan, supposed the ancient Ecbatana, and presenting, in fact, the appearance of great antiquity. It is still large; though, since its destruction by Timur, it has never held more than a secondary rank. It is finely situated near the lofty peak of Elwund, but suffers under extreme cold during eight months of the year. Still farther west is Kermanshah, a large and flourishing town, bounded by a long range of mountains. Those to the north present some remarkable sculptured rocks. Besittoon forms a high and perpendicular rock, cut smooth on one side, and impending over the road like a canopy. In one of its most inaccessible points is sculptured a group of figures representing a procession. Taki Bostan is a more remarkable feature, and presents a series of excavations made in these mountains; the most considerable of which is an arch cut in the rock, fifty or sixty feet in height, and twenty-four feet wide. The figures represented are numerous, executed with great precision and judgment, in a manner which Mr. Kinneir conceives would not have disgraced the finest artists of Greece and Rome. They are very similar to those of Persepolis, and, though ascribed by some to Semiramis, seem traced, on much more solid grounds, by M. de Sacy, to the Sassanian dynasty.

3959. *The south-eastern part of Irak* is arid and poor; yet it contains the large city of Yezd, still flourishing as a seat of commerce, and of a valuable silk manufactory. It contains the remnant, amounting to about 16,000, of the persecuted race of the Guebres. Yezdikhast, the most southern town, is of some consequence, from its situation on the high road from Ispahan to Shiraz.

3960. *To the north of Irak* is Fars, a province of much less extent, but interesting, as it composes that territory which was originally called Persia, and whose hardy inhabitants subverted the kingdoms of Media and Babylon. Its western part consists of chains of lofty mountains, forming part of that great range which extends from Caucasus to the Persian Gulf, and with fertile though often neglected valleys interspersed. The eastern part is a large plain, often sandy and arid, but, when supplied with water, very fertile, particularly in tobacco.

3961. *Shiraz,* or Shiraus, though neither very ancient nor very extensive, has long been one of the boasts of Persia, from the beauty of its environs, and the polished gaiety of its inhabitants. It has been the favourite seat of the Persian muses, and near it are still to be found the tombs of Hafiz and Saadi, the chief of the national poets. Its wines are celebrated as the most valuable in the East; and it is the seat of a considerable and increasing trade; but since it ceased to be the residence of Kurreem Khan, the inhabitants have lost their character for taste and refinement. The latest travellers have found the romantic spots, so celebrated by Hafiz, abandoned to decay. The bower of Mossella was desolate, and the pure waters of Rocknabad choked with rubbish. The tomb of the poet was surrounded by common graves, and no longer adorned with a copy of his poems. That of Saadi, situated in the hills, at the distance of two or three miles, was equally neglected.

3962. *Near Shiraz is the large salt lake of Baktegaun,* from which a great part of Persia is supplied with salt of a peculiarly fine quality. To the north, along the road to Ispahan, are the plains of Oojaun and Kooshkyjerd, which, though now in a great measure abandoned to the wandering tribes, are still capable of becoming again the garden of Persia.

3963. *The only other place of much consequence* in this province is Bushire, or Abu Shehr, which, since the empire lost Bassora, has been the emporium of its foreign trade. This is chiefly with India; and it is not sufficient to render the town either large or handsome. Large vessels cannot anchor nearer than six miles, in a roadstead which, though good, is not perfectly safe in north-west winds.

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PERSEPOLIS.

3964. *The grandest feature of this province,* however, consists in its *ancient remains,* which far surpass any that are to be found in the northern capitals. Thirty miles to the south of Shiraz are found the remains of the palace of Persepolis (*fig.* 585.), one of the most magnificent structures which art ever reared. Its front is 600 paces in length, and the side 390 paces. The architecture is in a peculiar style, but remarkable for correct proportions and beautiful execution. The staircases leading into the interior are peculiarly extensive and magnificent. The portals and the capitals of the columns are adorned with numerous figures in basso-rilievo, representing combats and processions of various kinds. The drawing of the figures is correct; but as only their contour is represented, without any of the prominences and details, they present a heavy appearance, and cannot rival the great works of Grecian sculpture.

3965. A few miles to the south of Persepolis we discover a remarkable feature, the excavated hill of *Nakshi Roustan* (*fig.* 586.). It is about 300 yards high, and presents a precipitous face of whitish marble, nearly the whole of which is covered with sculptured tombs. The four highest are in a superior style of execution, apparently coeval with Persepolis, and belonging to the early kings of Persia. The lower tombs appear to belong to the Parthian Sassanide dynasties, and represent their wars with the Romans and Tartars. Near Murgab, ninety miles north of Persepolis, are two remarkable objects. One of them, called Tuckt-y-Sulieman, consists of a large marble structure raised in the face of a hill, and forming a platform at top. It is supposed to mark the site of Pasagardæ, the city of the Magi, for the celebration of whose rites the platform appears to have been raised. The other, called Madre-y-Sulieman, for the Asiatics ascribe every thing to Solomon, appears proved to be the tomb of Cyrus. A large flight of marble steps rises to the tomb itself, which is in the form of a house.

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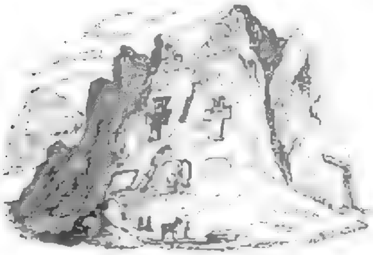

NAKSHI ROUSTAN.

3966. At the end of the long valley in which Kazeroon is situated are found *the magnificent remains of Shahpoor*, founded before the time of Alexander, but restored and embellished by Sapor the Great. It lies in a wild romantic spot, on the banks of a rapid river, amid rocks and precipices. Several of these rocks are covered with sculptured monuments, representing the triumphs of the second founder of Shahpoor. His colossal statue, fifteen feet six inches long, lying on a cavern, has been recently described by Ouseley. The circuit of the ramparts, and the remains of several public buildings, may still be traced.

3967. To the south of Fars is the small *maritime province of Lar*. The interior is extremely arid, producing only dates, with a small quantity of grain. Lar, however, was once a magnificent city, though now much decayed; and Taron, though poor, carries on a considerable inland trade. The sea-ports are now in the hands of the Arabs, who combine trade and piracy. The largest sea-port is Congoon.

3968. To the east of Fars is the province of *Kerman*, presenting arid mountains, and interspersed with extensive tracts of desert; but in others capable of high cultivation. Its hilly tracts are distinguished by a species of goats with hair, or rather wool, of peculiar fineness. Kerman, the capital, was one of the proudest cities in the empire, till, in the course of the civil wars, having afforded shelter to a pretender to the throne, it was taken and destroyed by Aga Mohammed. From this blow it has never recovered, though it still retains considerable trade and population, and is celebrated for its manufacture of shawls and carpets. Bumm, an important city, also decayed, and Regan, a neat little town, are both situated on the eastern frontier, and strongly fortified. On the sea-coast this province has Gombroon, which Shah Abbas, after destroying Ormus, rendered the emporium of Persian commerce. It now belongs to the Imam of Muscat, and, with Minab, a large fortified sea port to the east, yields customs to the amount of 20,000 rupees annually. Opposite to Gombroon is Ormus, no longer the seat of that vast commerce which, in the days of Albuquerque, rendered it one of the most splendid cities of the East. When it came into the hands of the Imam it did not contain twenty houses, but he has in some degree restored it. Every thing of the old city is in ruins except the reservoirs. Adjoining is the large and fertile island of Kishme, containing a town of some magnitude.

3969. As Kerman forms the eastern, *Khusistan forms the western* portion of Persia. This province exhibits a complete contrast to that aridity which dooms so great a portion of the kingdom to barrenness. It is watered by four fine rivers, the Kerah, the Karoon, the Teraki, and the Endian, which fall into the Tigris and the Persian Gulf. With these advantages it might regain the distinction, which it formerly enjoyed under the name of Susiana, of being one of the most fertile regions in the world, were it not entirely laid waste by anarchy and misrule. The southern and maritime part belongs to the chief sheik, an Arabian prince, whose capital is at Dorak. The Persian part, called Shuster, is under a governor, whose power, however, is insufficient to restrain the predatory tribes and independent chiefs, who make this country a scene of perpetual confusion. The capital, Shuster, is a place of some importance, containing considerable woollen manufactures. On its site are extensive ruins, which have been supposed to be those of Susa; but these have, with greater probability, been traced to a spot called Shus, on the upper Kerah, where, for a space of twelve miles in length, the ground, as at Babylon, is covered with hillocks of earth, rubbish, and broken bricks. It is now a gloomy wilderness, infested by lions, hyenas, and other beasts of prey. The desolation of this fine province is strongly marked by the ruins of Ahwas on the Caroon, which, under the protection afforded by the powerful dynasty of the Abbassides, became one of the greatest cities of the East. The water of the river was almost entirely employed to irrigate the surrounding country, which, now overgrown with wood, was then covered with the richest plantations. The site, ten or twelve miles in length, and half that breadth, is covered with vast mounds of bricks and rubbish, and of which Captain Mignan conceives there might be built as large a city as any that now exists. The inhabitants of the modern village, about 1600 in number on searching the ruins after a fall of rain, seldom fail to discover gold and silver coins, medals, and sculptures.

3970. *Besides these provinces*, belonging entirely to Persia, there are two which she divides with Turkey, and which have long formed the theatre of contest between the empires. One of these is Koordistan, the ancient Carduchia, inhabited by a brave, hospitable, fierce, and turbulent race; who are described as such by Xenophon, and appear never to have been changed or thoroughly subdued. The eastern part, called Ardelan, is, in so far, subject to the Persian monarch, that the inhabitants pay a small tribute, and are ever ready, at his call, to engage in their favourite pursuits of war and plunder. The country consists entirely of ranges of rocky mountains and high table-lands, traversed by difficult and often perilous routes. They are governed in a despotic but mild manner by hereditary chiefs. The principal of these, called the Wallee, resides at Senna, the only town of much importance, situated in a fine valley, and carrying on some trade.

3971. *Another divided province*, long a theatre of contest between the East and the West, is the ancient kingdom of Armenia. The lofty mountains of Western Asia have their central place in this region. As, however, it contains numerous valleys, watered by the early streams of the Euphrates, the Tigris, and the Araxes, it is well adapted for cultivation. A great part of it, however, having long been the theatre of constant war between Persia, Russia, and Turkey, has become a vast depopulated wilderness, and presents the remains of cities, towns, and villages, that belonged to a flourishing people, now swept from the face of the earth; a border land or high road, through which the Asiatic powers pass in open war or predatory hostility. For three centuries, however, Erzeroum, Diarbekir, with the finest and most fertile tracts, have belonged to Turkey. In the Persian division, the chief town is now Erivan, a strong fortress, situated on a precipitous rock, over the river Tergui. In 1808, the Russians were driven from it after a blockade of six months; but the repeated sieges sustained by it have greatly impaired the prosperity of Erivan. Fifty miles distant are the remains of Nackshivan, an ancient and magnificent city, now reduced to a heap of ruins. Near this spot the Persian camp is usually pitched in the campaigns against Russia.

Chap. V.

INDEPENDENT PERSIA.

3972. *The large region* to which we have given the name of *Independent Persia* forms rather an aggregate of various territories than a distinct or connected kingdom. For the reasons already given, we have separated it from the empire of Persia, and have included in it the provinces of Seistan and Mekran, which never formed any regular part of that empire. Cabul, till lately the seat of the only important monarchy in this region, has been very commonly considered as a province of Hindostan; and, indeed, the cities of Cabul and Ghizni were the residence of celebrated dynasties which reigned over that empire: but its moral and physical character is entirely distinct, and the ties which unite them are altogether precarious. The kingdom of Cabul is now dismembered, and a great part of it is in the possession of Runjeet Sing, the Seik ruler; yet the Indus forms too natural a boundary to be superseded by any temporary changes of this nature. For the same reason, though Ahmed Shah held sway over Balkh, the mountains form still the natural limit between Independent Persia and Tartary.

Sect. I. *General Outline and Aspect.*

3973. *Upon the principles above stated, Independent Persia will be comprehended* within the marked natural boundaries formed by the mighty chain of Caucasus, or Hindoo Koosh, on the north; by the Indus on the east; the Indian Ocean on the south; and, on the west, by a winding line drawn along the desert boundaries of Kerman and Khorasan. It will thus, in a general view, be included within the 57th and 71st degrees of east longitude, and the 25th and 36th of north latitude. It forms nearly a square of about 800 miles in length and 700 in breadth.

3974. *This region presents a sort of compound of Persia and Arabia:* on the north, vast mountains, high table-lands, and rapid rivers; on the south, sandy and salt deserts. The most conspicuous feature is that grand mountain chain, continued from the snowy range of Hindostan, which forms the whole of its northern boundary. Though its height does not equal that of the loftiest peaks of the Himalayah, it is yet truly amazing, and scarcely paralleled in any other region of the globe. One point, the most elevated yet observed, has been stated to reach 20,593 feet. Its summits, though only in the 34th degree of latitude, are covered with perpetual snow; and being seen at once from the whole extent of this region, form, as it were, a bond of connection between the various nations by which it is peopled. From numerous accounts, not yet perhaps very accurately combined, it is supposed to extend without interruption westward till it locks in with Mount Elburs, and thus connects itself with Taurus and Russian Caucasus. That part which rises above the plain of Cabul is, from a peculiarly elevated peak, called generally Hindoo Coosh, or Hindoo Koh. In its progress westward, it takes, or at least it received from the ancients, the name of Paropamisus. Here its elevation is considerably less, and it is not covered with perpetual snow. Ranges proceeding from this main one, or connected with it, traverse in every direction the territory of Cabul and Candahar. Of these the most important is that of Solimaun, which runs parallel to the Indus, and nearly at right angles with the Hindoo Coosh, leaving behind them, near its highest peak of Suffaid Koh, only a narrow pass, through which flows the Kama. The intervening territories are to be considered not properly as plains, but as elevated table-lands, yielding the products rather of the temperate than of the tropical climates. The southern regions, Seistan, Beloochistan, and Mekran, consist partly of rugged mountains of inferior elevation; partly of vast deserts which are equally dreary with those of Africa and Arabia, and of which the sands, being blown into waves, oppose greater obstruction to the traveller.

3975. *The rivers of Eastern Persia*, unless we include among them the limitary stream of the Indus, are not of the first magnitude. The Kama rises beyond its limits in the territory of Kaushkaur, and, after crossing the Hindoo Koosh, and receiving the river of Cabul, which rises in the southern part of that chain, falls into the Indus at Attock. The Heermund derives its origin from a source not far from that of the Cabul; it traverses the plain of Candahar, and, giving some degree of fertility to the arid plains of Seistan, terminates by forming the salt lake of Zerrah, or Zurrah. It must have flowed then nearly 600 miles. The mountain tracts in the south give rise to numerous rivers, or rather torrents, nearly dry in summer, but rapid and desolating in winter.

Sect. II. *Natural Geography.*

3976. The Geology of this region has not yet been explored; and its Zoology does not differ from that of the Persian empire. The following remarks occur in relation to its Botany.

Subsect. 1. *Botany.*

3977. *This country*, which extends from the extremity of the Himalayah mountains to the western frontier of Beloochistan, and from the mouth of the Indus (lat. 24°) to the shores of the Oxus (lat. 37°), is very little known. The famous districts of Cashmere, Cabul, and Candahar find more place in the marvellous tales of Arabian writers than they do in the more dry and learned disquisitions of European naturalists.

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HOLCUS SPICATUS.

3978. *The southern part of the great desert* is not so sterile but that traces of the vegetation of hot countries may be perceived. Here and there, among the drifted sands which heave like the waves of the ocean, grow scattered tufts of dry plants, and bushes of Mimosa and Zizyphus. The Holcus spicatus (*fig.* 587.) is cultivated round some lonely huts; and it is a circumstance worthy of remark, that the inhabitants of these wild abodes are obliged, in their search for water, to dig to a depth of 300 feet, in a soil whose arid surface produces, without any cultivation, Water Melons more than a foot in diameter. The rivers Setuleje, Chunab, and Indus, diffuse fertility along their shores in the very heart of this desert.

3979. *At its eastern extremity is the province of Sinde*, of which the southern part, bathed by the sea of Oman to the westward, descends to the tropics. The shore presents a large level plain, which is intersected by the Indus, and the various channels which convey the waters of that river to the sea. The shores of this fine stream are remarkably fertile; but so soon as the traveller goes to a short distance from them, he finds on one hand the desert, and on the other a range of bare mountains, that offer a striking resemblance to Egypt, as is remarked by Pottinger. At Tattah (lat. 24° 44′), this traveller remarks that, from the middle of June to the middle of July, 1810, the thermometer, in the coolest apartments, never fell lower than from + 38° to + 33°; and that at Hyderabad (lat. 25° 22′), in August, the rainy season, it rarely sank below + 38°. Among the plants of this country, we can only point out the Mimosas, the Tamarix, and the Euphorbia antiquorum (*fig.* 588.). The same may be said of Seistan, reputed to be the warmest province of the empire.

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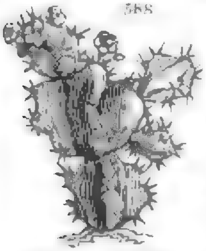

EUPHORBIA ANTIQUORUM.

3980. *The annual temperature of the shores of Beloochistan* must be inferior to that of Sinde, because the year is there clearly divided into two seasons, the warm and the cold; but it is requisite to observe, that this latter season only appears cold when compared with the excessive heats of the former. The soil is only fertile where it is irrigated, and elsewhere is as sandy as the desert. It produces the Date, the Pride of India (*Melia Azedarach*), the Banyan (*Ficus religiosa*), the Dalbergia Sissoo, the Mango (*Mangifera indica*), the Tamarind, the Zizyphus, and some Mimosas of considerable stature: the Walnut, the Sycamore, and the Oriental Plane, succeed very well: Ashes, Oaks, and Firs, with the other Coniferæ, are unknown. At a very short distance from the coast, the country becomes mountainous, and the temperature varies with the inequalities of the soil. In the low and favourably situated valleys, between lat. 27° and 30°, grow the Date, the Guava, the Banana, the Fig, the Pistachio, the Mulberry, the Pomegranate, the Vine, the Walnut, the Quince, the Peach, the Apricot, the Almond, the Cherry, and the Currant. Rice, Cotton, and Indigo are cultivated on the plains; but on the slopes and declivities of the hills, where long winters and severe frosts are experienced, they can hardly reckon with certainty on a slender harvest of wheat and barley; so tardy is the ripening of grain. The ground brings forth spontaneously Mimosa, Tamarix, Hedysarum Alhagi, and Assafœtida.

3981. *Turning towards the north-west,* we enter on the desert of *Kerman;* a burning, arid, and saline sand, quite destitute of vegetation. In the centre of this vast and dreary solitude, some springs of fresh water irrigate the little oasis of Kebis, which gladdens the traveller with the sight of its hospitable roofs, its perennial verdure, and its cooling shade.

3982. *The whole of this empire,* from the desert of Kerman to the western declivities of the Himalayah mountains, and from the desert of the south to the Indian Caucasus, and the Paropamisan range, must be included in the Transition Zone, though the accidents of soil often obliterate its distinctive features. Between lat. 30° and lat. 33°, the flat and low districts enjoy a very hot summer, and a remarkably mild winter. Sometimes, in the latter season, a thin coating of ice is formed, during the night, on the surface of still waters and the brink of rivers; but it dissolves at sunrise. Frequently there is a fall of snow in the western districts, but it is never seen at Candahar (lat. 33°). At a considerable distance from this city, to the south-east, in the fertile plains of Moultan (lat. 30° 50′), shaded by the Date, the Melia Azedarach, and the Banyan, Elphinstone remarked, in December, 1809, that the thermometer fell in the morning to — 2° 2′. All the country which stretches from the left bank of the Indus to the Himalayah, and to the southern mountains of Cashmere, enjoys a climate that is warm enough to ripen the fruits of India. The Plane and the Willow become rarer as the latitudes are more low.

3983. *To the north, Cashmere* (lat. 34° to 35°), enclosed between two chains of mountains, whose lofty summits are clothed with perpetual snow, has a cold winter, and a moderately warm summer. Of all the Indian trees, the Mulberry alone succeeds; the fruits of Europe and of the north of Asia Minor, such as Wheat, Barley, and Rice, are cultivated. The mountains are covered with Pine and Fir, particularly on their northern sides; the rivers are fringed with Willows, and the adjacent plains, near the inhabited parts, are adorned with Poplars.

3984. *The valley of the Indus* divides the chain of northern mountains of Cashmere from the Indian Caucasus, which stretches from east to west, and terminates at the commencement of the Paropamisan mountains. Its crest, of which some of the summits attain a height of 3000 toises, is always covered with snow. The lower ranges are skirted with forests of Lentisks (*fig.* 589.), Pistachio trees, Olives, Oaks, Firs, Pines, &c. In the low valleys grow a multitude of plants belonging to the same genera as those of Europe.

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LENTISK.

3985. *To the south of the Indian Caucasus,* and not far from its base, in the valley intersected by the Punjsheer, are two famous towns, Cabul and Peshawer. The latter (lat. 34°), situated in the centre of a little low plain, surrounded by mountains, owes probably to this locality the excessive heat of its summer and the moderate cold of its winter. Elphinstone reckons, by memory, the *maximum* heat of the summer of 1809, which was considered as temperate, at + 49°. Frequently the thermometer indicated + 45°, under a tent that was kept artificially cool. During winter, frost is frequent in the night and morning; the *minimum* is — 3° 88′; during the daytime the atmosphere becomes warmer, and the air is very mild. Few localities are so favourable to the combination of the vegetables both of warm and temperate climates. The atmosphere, which is generally mild when it is not very hot, and the soil, that is constantly watered by numerous rivers, keep up a vigorous and varied vegetation. Thick grass, whose verdure, during most of the year, rivals that of the meadows of the north, covers the uncultivated spots. The banks of the rivers are fringed with Willows and Tamarisks, thirty or forty feet high. The villages can scarcely be discerned through the fruit-trees which environ them. The Pomegranate, the Mulberry, the Banyan, the Date, the Orange, and some other Indian trees, which retain their foliage at Peshawer all the winter, mingle with all the species that our orchards afford. The avenues to the town are bordered with Cypress and Planes.

3986. *At Cabul,* where the summers are not so hot, and the winters, without being severe, are colder, and accompanied with frequent falls of snow, the fruit-trees of Hindostan are not seen, while those of Europe abound. The emperor Baber caused the Sugar-cane to be planted, but it is not probable that it would succeed.

3987. *We must not omit the central part of the empire.* It is raised, so to speak, by several chains of mountains, which, like the rays of a circle, springing from different points, meet at a common centre. The farther these chains advance into the country, the higher do the valleys become, and the more, consequently, does the temperature decline. Between the parallels of 32° and 34°, there are summers hardly warmer than those of England; and winters which, if not so severe as those of Norway, are equally subject to frost. The snow lies for three or four months; all the rivers are frozen, so that men on horseback, and camels loaded with baggage, can cross upon the ice. It is said that the plain of Ghazna (lat. 33° 30′), which is a part of the central table-land, is the coldest spot in the kingdom.

3988. *Few Indian plants inhabit Cabulistan*, while those of Europe are in great abundance there. The Vine, the Peach (*fig.* 590.) and Apricot (*fig.* 591.), &c. grow wild, and seem as indigenous as in Asia Minor. The prevailing trees on the mountains are various species of Pinus, one of which bears cones as large as artichokes, and seeds as big as pistachio nuts. It is probably the Stone Pine (*Pinus Pinea*). There are likewise Cedars, a Cypress of prodigious height, and several kinds of Oak. The Walnut, Pistachio, and Terebinth also inhabit the mountains. Elphinstone thinks, too, that he remembers having seen the Holly, the Birch, and the Nut (*Corylus Avellana*). On the uncultivated plains, the commonest trees are the Mulberry, the Tamarind, the Plane, the Poplar, and several sorts of Willow. The culture of Sugar-canes, Cotton, Indigo, Melons; of Sorghum spicatum and S. vulgare; of Sesame (*Sesamum orientale*), and of Rice, is not unusual in the warmer districts. That of Wheat, Barley, Maize, Beet, Carrot, and many other kitchen vegetables, is prevalent, wherever there is little industry, combined with a productive soil.

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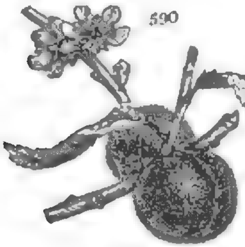
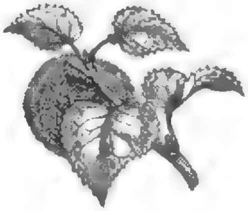


PEACH.

591



APRICOT.

3989. *These vague and incomplete accounts* rather awaken than satisfy our curiosity. Indeed, the Flora of the empire of Cabul is even less known to us than that of China.

3990. *Before passing into Persia*, we must say a few words on the countries which extend to the west and north-west, from the Paropamisan mountains to lat. 41°, and which comprehend the districts of Balkh, Mauer el Nahr, Bokhara, and Khorassan, &c. Already the climate is too cold for the growth of the Olive; but a great number of the woody vegetables which are found along with it in the Transition Zone may be seen, either wild or cultivated, according to the localities. These districts present a curious assemblage of plains and mountains; of steppes which are grassy or arid, sandy, sterile, or frequently saline; of bad soil, and of remarkably fertile land. In the cold season, the water is all frozen, and caravans cross the rivers on the ice. In the winter of 1820–1, the Baron Meyendorff, who was sent from the court of Russia to Bokhara, saw the thermometer fall there to twelve or thirteen degrees below zero, though the season was in general very mild. The heats of summer compensate the cold of winter; the former is so intense and prolonged, that it dries up almost all the watercourses.

3991. *The provinces* of Herat, Dhei, Molla, Khiva, Bokhara, and Samarcand, &c., environed by deserts, resemble the lovely oases of Egypt. Nowhere is the population more numerous, the cultivation more careful, and vegetation more productive. The gardens and orchards, which are very frequent, contain a great quantity of fruit-trees, among which the Pomegranate, the Pistachio, and the Fig afford most delicious fruits. There are large plantations of the White Mulberry (*Morus alba*) (*fig.* 592.), and the Tartarian Mulberry (*M. Tatarica*). Cotton, Indigo, Sesame, Sorghum saccharatum, Rice, and all the European grains and vegetables, are cultivated.

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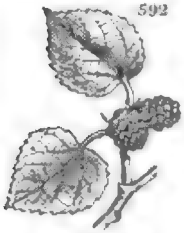

WHITE MULBERRY.

3992. *According to Falk*, the common trees and shrubs of Bokhara are the Terebinth tree (*Pistachia terebinthus*), Eleagnus angustifolius, Ulmus campestris and effusa, the Whitethorn (*Crataegus Oxyacantha*), Pyrus Aria and Aucuparia, Mespilus Cotoneaster, Spiraea crenata, Rosa pimpinellifolia, the Caperbush (*Capparis spinosa*), Clematis orientalis, the Birch (*Betula alba*), the Poplar (*Populus alba*), &c.

3993. *The steppes produce in abundance* the Tamarix, the Almond (*Amygdalus nana*), the Calligonum polygonoides, and a tree of low growth which has caducous leaves, like those of the Larch, and which Falk supposes to be the Abies orientalis, and Pallas the Juniperus lycia, or the Savin (*Juniperus Sabina*).

3994. *In the southern parts of Bokhara*, the Oriental Plane (*Platanus orientalis*) becomes a tree of colossal growth.

Sect. III. *Historical Geography.*

3995. *This region was very little known* or regarded by the ancients. Under the names of Arachosia, Paropamisus, Drangiana, and Gedrosia, it was regarded as a rude, barbarous, and impracticable tract. The route to India and the East was through Aria (the bordering part of Khorassan) and Bactria on the south of Hindoo Koosh. It was chiefly known by the expedition of Alexander, who, in entering India from the side of Bactria, was obliged to penetrate through the defiles of Cabul, and who, in returning by the southern deserts of Gedrosia, encountered obstacles of the most formidable character. In modern times, Independent Persia has acted a prominent part in the revolutions of Asia. In the eleventh century, Mahmood of Ghizni made that city the capital of an empire which extended to the extremities of Persia and India. His dynasty was crushed before the victorious invasions of Zingis and Timur; and Cabul was comprehended with Hindostan under the Mogul empire. The city of that name became a Mogul capital, and was the favourite residence of Baber, one of the greatest monarchs of that race. When the empire fell to pieces, the hardy population of Cabul was not slow in re-asserting its independence; and towards the commencement of the last century they became the conquerors and the desolaters of Persia. Nadir, however, a Persian adventurer, drove out the Afghans, subdued them in their turn, and carried his arms into Hindostan. On Nadir's death, his kingdom fell to pieces; and Ahmed Shah, a brave Afghan chief, seized the opportunity to render his country independent, and himself its king. He also invaded India, and in the battle of Panniput broke the power of the Mahrattas, who were about to seize the fallen sceptre of the Mogul. His successes enabled him to appropriate the finest provinces of Western India, Lahore, Moultan, and Cashmere, to which he added Balkh. The kingdom of Cabul became one of the most powerful in Asia; but since the death of Ahmed Shah, it has been broken up by the dissensions among his family and the power of Runjeet Sing, who has occupied several of its finest provinces. Its limits do not now extend beyond Afghanistan Proper.

Sect. IV. *Political Geography.*

3996. *The political constitution of Cabul* exhibits peculiarities which distinguish it from that of almost every other Asiatic monarchy. Instead of the power being monopolised by the sovereign, or at least by the khans, with no check but the influence of rival chiefs, it admits a large infusion of popular elements. In every *ooloos*, or tribe, there is a *jeerga*, or representative assembly, without whose consent the khan can undertake nothing, and who also administer justice, though in some subserviency to the rooted principle of private vengeance. Among the people, much more attachment is felt to the jeerga than to the khan. These tribes may be said to form independent states, and they even carry on war with each other. Their only vassalage to the king consists in a tribute, and a contingent of troops in war; both which, especially the former, are with difficulty exacted. In the large cities and their vicinity the authority of the sovereign is much more extensive; but the rude and desert tracts to the south are abandoned to independent chiefs or lawless banditti.

3997. *Among the Afghan tribes* great reverence is paid to *birth*, and particularly to *antiquity* of descent. The khan must be taken out of the oldest family in the tribe; but the king either appoints him, or at least has great influence in procuring his appointment. The two leading tribes are the Ghiljies and the Dooraunees: of whom the former are the rudest, the fiercest, and the most warlike; the latter are more orderly and peaceable, and in all respects of a superior character. The Ghiljies were the conquerors of Persia; but Ahmed Shah belonged to the Dooraunee tribe, which became, therefore, the ruling one. At this ascendency the Ghiljies cherished mortal resentment; and, indeed, the antipathy beween the two tribes is such, that it is with difficulty restrained from breaking into open war.

3998. *The revenues* of the kingdom of Cabul arise from the land-tax, the tributes paid by vassal chiefs, the royal demesnes, and some minor sources. A considerable proportion, however, must often be remitted to the tributary princes, who, if they did not receive this remission as a grant, would be in danger of rebelling against the power which should persist in exacting the full amount.

3999. *The military force*, or at least the most regular and efficient part of it, consists of Gholaums, a body formed partly of military adventurers, partly of persons holding lands or grants on a military tenure in and around the great cities. They form a well-disciplined and disposable army, about 13,000 strong. The Dooraunees are easily mustered, to the amount of 12,000 brave highland militia, each fighting under the banner of his own chieftain. The contingents of the other tribes amount collectively to a much greater number; but they are drawn out with great difficulty, unless for local purposes, or with a peculiar hope of plunder. The entire force commanded by Ahmed Shah, in the battle of Panniput, was estimated at 40,000 men, which, perhaps, may be nearly as large an army as can be levied from the country for a foreign expedition.

Sect. V. *Productive Industry.*

4000. *A very great portion* of this vast region is doomed to complete and irremediable barrenness, produced by the opposite extremes of lofty and snow-covered mountains, and of sandy plains. Other portions, however, of considerable extent, bear quite an opposite character. The lower declivities of the mountains, and the high plains interspersed between them, though they do not offer the profuse products that cover the plains of Delhi and Ispahan, are often equal to the finest parts of Europe. Nor are these natural advantages neglected by a rough but active and laborious people. Irrigation, as in all tropical countries, forms the most important and arduous part of husbandry. It is attended here with peculiar difficulties; the water from the heights being apt to run over its slopes in destructive torrents rather than in fertilising rills. To remedy this evil, it is not only necessary by canals to lead the water through the fields, but by levelling and embankment to retain it. A remarkable process is employed, by which the water of a number of wells is collected together, and distributed over a field. Extensive operations of this kind are the more difficult, from the small portions into which the occupancy of land is here divided. They are sometimes performed by an association among the little proprietors; sometimes by a rich man employing his capital on this object. Wheat and barley, instead of rice, are the principal species of grain; the first for the food of man, the latter for that of horses. Fruits and vegetables are produced in such abundance, that their cheapness is almost unequalled.

4001. The people have not extended their industry to *manufactures*, except those of coarse fabric for internal consumption. The kingdom of Cabul, by its situation, is excluded from maritime commerce; and the coast of Mekran is too poor to make much use of its natural advantages in this respect. The country, however, carries on a considerable inland trade within its own provinces, with the neighbouring countries, and also as a thoroughfare between Persia and India. This traffic is conducted by caravans, which employ camels where the route is practicable for them, but in the rough mountain roads of Afghanistan horses and ponies are substituted. These caravans journey under continual dread of the predatory tribes, which infest almost every part of this country. Above all, in passing through the territories occupied by them, the strictest precautions become necessary. The best parts of Eastern Persia produce rather the simple necessaries of life, than those superfluities which can become the objects of exchange. Fruits, assafœtida, madder, and a few furs, form the principal articles. In return, they receive the manufactures of Persia and India, and even those of Europe, by way of Orenburg and Bokhara.

Sect. VI. *Civil and Social State.*

4002. Mr. Elphinstone gives the following conjectural estimate of *the population* of the kingdom of Cabul: —

Afghans - - - - - -	4,300,000	
Belooches - - - - -	1,000,000	
Tartars - - - - - -	1,200,000	
Persians - - - - -	1,500,000	
		8,000,000

4003. *This estimate*, besides the main body of the kingdom, includes, we presume, Balkh and the subject part of Khorassan, but not the Indian provinces of Cashmere and the Punjab, to which are assigned a population of about 6,000,000.

4004. *The Afghans* (*fig.* 593.), who form the main body of the population, present, in their aspect and character, a very striking contrast to the Hindoos, on whom they immediately border. Their high and even harsh features, their sunburnt countenances, their long beards, loose garments, and shaggy mantles of skins, give the idea of a much ruder and more unpolished people. The arts of life are less advanced, and many of the luxuries of Hindostan unknown: there is nothing like the same organised police and regular course of justice. Under this rough exterior, however, are soon disclosed estimable qualities, which advantageously contrast with the timid servility produced by long subjection in the Indian. Their martial and lofty spirit, their bold and simple manners, their sobriety and contempt of pleasure, their unbounded hospitality, and the general energy and independence of their character, render them on the whole a superior race. In India, every movement originates with the government or its agents, and the people are accounted as nothing; while here,

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AFGHAN.

men put themselves little under control, and follow undisturbed their own inclinations. Although Asiatic dissimulation prevails, especially at court, yet their intercourse is by no means marked by that profound and systematic deceit which characterises the subjects of the great empires. They show also an active curiosity with regard to the products of European art and skill, with an eager diposition to enquire into the processes employed; while in India all these things are regarded with a mere polite indifference. Although polygamy and the obtaining of wives by purchase are equally established, yet the former is not carried to the same extent, nor attended with the same strict seclusion; and hence the degradation of the female sex, which is the necessary consequence of such arrangements, does not take place in a degree so remarkable. Matrimonial contracts are not, as usual in Mahometan countries, negotiated entirely by the friends of the parties; but, in the country districts especially, the parties themselves have often the opportunity of meeting and forming attachments. These cannot be fulfilled, indeed, until the youth has earned the purchase-money of his mistress; but though this be in itself far from a romantic feature, it gives rise to delays and difficulties, which often impart a character of interest and adventure to the connection. It has thus become the subject of love-tales somewhat similar to those which are popular in Europe. This pecuniary value of the female sex, and difficulty of purchase, has led to a very odd species of penal infliction. The offender, on being convicted, is sentenced to pay to the injured person or his friends, a number of young women, proportioned to the enormity of the offence. Twelve ladies form the fine for murder; in minor offences the amount is of course diminished.

4005. *The established religion, in Afghanistan,* is strictly Mahometan, though toleration prevails more than even in the Persian empire, where it has been observed to be greater than usual in Mussulman countries. As in other Mahometan states, no established provision is made for the priesthood. The mollahs, or religious doctors, are solely supported by individual donation, whether in the shape of permanent foundation, regular salary, or occasional gift. They form, however, a species of corporate body, called the ulema, who admit new members, after a due course of study and a strict examination. They are numerous, and often assert their rights in that turbulent manner which characterises the nation. They take arms, and in the neighbourhood of the great cities muster sometimes hosts of 2000 or 3000, who, though they cannot match the prowess of the Afghan warriors, are so aided by the superstitious awe of the multitude, as generally to carry their point. In the rural districts their character is more respectable; and by promoting peace and inculcating the moral duties, they render themselves really useful to this rude people.

4006. *A taste for knowledge* is general among the Afghans, though they have not produced any writers who can rival in fame those of Persia and India. Few of the works in the language, indeed, are above two centuries old, and they are evidently imitations of the Persian. The late sovereigns of Cabul have sought to promote learning, and even cultivated the muses, though not with any brilliant success. Unfortunately, the Afghans, considering the Persians as heretics, guard against resorting to their colleges. Peshawer enjoys the highest reputation in the country, and a considerable number resort to Bokhara. There are, besides, schools in every little town and even village, so that the first elements of knowledge are very widely diffused. The higher branches are logic, law, and theology, to which are added the Persian and Arabic languages and literature. Study, in the Mahometan countries, proceeds in a fixed and invariable course; so that, when you know the last book a man has read, or the last subject he has studied, you know all that has gone before it, and all that is still wanting. The taste for poetry is very general, and a considerable number of people in the towns even make the public reading of it a distinct employment. The poets by profession are not to be compared with those of Persia; but a considerable display of genius often appears in the rude verses of the chiefs and warriors, who celebrate their own feelings and adventures. Those of Kooshkaul, a khan who defended his native country against the power of Aurungzebe, display a peculiar degree of poetic fire.

4007. *Afghanistan has a language peculiar to itself,* called Pushtoo. About half the terms, including all those of an abstract import, were traced by Mr. Elphinstone to foreign sources, chiefly the Persian. The rest appear to belong to an unknown root, though it is admitted that of these a careful examination by a profound Oriental scholar might diminish the number.

4008. *The inhabitants of Afghanistan* are formed into two great divisions, — of dwellers in tents, and dwellers in houses. The former, in the western part of the kingdom, are supposed to constitute one half of the population; in the eastern they are fewer, but still very numerous. The Afghans have generally a strong attachment to the pastoral life, and are with difficulty induced to quit it. Contrary to the ideas which prevail in Europe, they hold in disdain a residence in towns, together with the occupations there carried on, and leave them to inferior and foreign races. The most numerous of these are the Taujiks, who have been supposed to amount to 1,500,000, and to be the original people subdued by the Afghans, who regard them with contempt. They inhabit the towns and their vicinity, and carry on those trades which are disdained by the ruling people. The fixed habitations of the lower orders are rudely constructed of unburnt brick, with wooden roofs. The palaces of the great are on the Persian model, though in an inferior style of magnificence; their chief ornaments are Persian pictures and carpets.

4009. *The Afghans are fond of all sorts of boisterous amusements*, particularly those which involve great display of bodily activity. Hunting is as it were the rage over all Afghanistan, and the people pursue it not only in all the known and usual modes, but in others peculiar to the country itself. Sometimes a whole neighbourhood assembled forms a circle, and sweeps together within it all the game belonging to a certain district. In the villages much delight is taken in the *attum*, a hearty and noisy dance, consisting in violent movements, in which both sexes join. They delight in the fighting of quails, cocks, and other animals; and they amuse themselves at marbles, hopping on one foot, and other games considered in Europe as suited only to children.

4010. *The Afghan dress* presents a striking contrast with the Indian attire of light, loose, flying robes, leaving a great part of the body naked. It consists of close tunics and wide mantles, composed, among the lower ranks, of sheepskin or coarse woollen cloth; among the higher, of velvet, fine shawl-cloth, or silk. Boots are almost universally worn, and no one is allowed to appear at court without them. Jewels are chiefly employed to decorate their armour. The favourite dress of the ladies consists of jackets, somewhat similar to those of dragoons, and pantaloons, both composed of velvet, shawlcloth, or silk. Strings of Venetian sequins, chains of gold and silver, and ear-rings, are the most valued ornaments.

4011. *Although the Afghans are a sober* and temperate people, they are enabled to live well, by the extreme cheapness of all provisions, particularly fruit and vegetables. They are also social and hospitable; and even the poorer classes, when they can afford to kill a sheep, invite some neighbours to partake. The dishes are merely the mutton with the broth in which it has been boiled; the drink is butter-milk, or sherbet; and conviviality is chiefly promoted by the use of tobacco. At the tables of the great, rich pilaus, and dishes variously dressed, are presented on trays, after the Persian manner, and ornamented with gold and silver leaf. The Afghans talk a good deal at table, usually in a somewhat grave style, though not without occasional sallies of mirth. One of their favourite amusements consists in walks and collations in the numerous gardens which surround their cities, particularly Cabul, and the views from which are indeed of a peculiarly enchanting description.

SECT. VII. *Local Geography.*

4012. *Afghanistan is divided*, like the ancient kingdom of Israel, almost solely according to the tribes who inhabit it. The Berdooraunees are the principal tribe of the eastern Afghanistan; and though they are much inferior to the Ghiljies and Dooraunees, their country derives some importance from its capital, Peshawer, the recent seat of government. Enclosed between the highest ranges of Hindoo Coosh, the Indus, and Solimaun, their whole territory is peculiarly rugged; yet, as it contains many fertile valleys, and is carefully watered and cultivated, it maintains a great population. The Eusofzies, who occupy the north-east corner of this region, present the most complete specimen of the original Afghaun rudeness. They hold their present lands by conquest, and distribute them in a very singular manner. As each tribe is split into two independent parts, these have portions assigned to them equal in quantity, but often differing in fertility. To atone for this disparity, they cast lots for their share every ten years, and, in case of obtaining a different one from that actually possessed, an immediate exchange takes place. It is said to be effected with much less of disorder and disadvantage to cultivation than could be expected. The Eusofzies are the most independent of the Afghans, and scarcely own any subordination whatever. The mountaineers, in particular, are excessively rude and ignorant: an instance is given of one of them who, seeing a mollah copying the Koran, struck off his head, saying, "You tell us this is the book of God, and yet you make it yourself." The inhabitants of the plains, on the contrary, are debauched and superstitious.

4013. *We shall not dwell on the Turcolaunees, Otmaunkhail, Upper and Lower Mommunds*, small tribes, though each presents some few peculiarities. From the high peak of Suffaid Koh to the Indus extends a range of rugged mountains with narrow valleys, which, being crossed by the great road from Cabul to Peshawer, affords to the *Khyberees*, its rude inhabitants, peculiar opportunities for exercising the predatory habits peculiar to this nation. They employ the most vigilant precautions to prevent a single traveller from escaping. Sentries are stationed at all the leading points; and the very sound of the horses' hoofs echoing along the narrow valleys summons them to their prey.

4014. *The country extending southward* between the range of Solimaun and the Indus is called *Damaun*. The dress here assimilates more closely to that of Hindostan, being composed of white cotton robes, with wide turbans. The people are more simple and less turbulent than the northern tribes; and though robbers, like the rest, are celebrated for their honesty. The Sheraunees are a numerous tribe. They are peculiarly distinguished by having a *Neeka*, or magistrate, whom they believe to be in direct communication with the Deity; wherefore they apprehend that disobedience to his will must be attended with awful and immediate calamities. Though indiscriminate plunderers, they are very faithful to those who purchase an escort. The Vizerees inhabit the immediate ridge of Solimaun; an awful region of rocks, torrents, and pine forests. They have the high features peculiar to mountaineers, are simple in their manners, and are scarcely ever seen out of their own country. Though they make a rule of plundering all who enter it, they allow an easy composition, and faithfully adhere to it; but the tribes whose wanderings alone carry them through this region, being rough and poor like themselves, usually prefer fighting it out.

4015. *Peshawer*, the only large city in this region, was the capital of the kingdom of Cabul, previous to its late dismemberment. It is situated in a very fertile plain, about thirty-five miles broad, bounded by the loftiest ranges of Hindoo Coosh and Solimaun. This city was occupied by Runjeet Sing, ruler of the Seiks, who, however, did not attempt to retain it, but allows it, with the surrounding district, to be held on payment of a tribute by a chief named Mahommed Khan. This prince has an army of only 3000 horse and 2000 foot, but he can rally under his standard a number of the mountaineer tribes. Peshawer, in consequence of this change, has much declined; and, instead of 100,000 inhabitants, contains scarcely 50,000. The city is rudely built, and its few good public edifices are much decayed; but it presents a picturesque aspect from the varied appearance and costume of the inhabitants of the surrounding mountains, mingled with the natives of India, Persia, and Tartary.

4016. *The country of the Ghiljies* occupies the central part of the kingdom of Cabul, and forms an irregular parallelogram of about 180 miles by 85. The whole region is elevated and cold, and in its northern parts is overlooked by those lofty peaks which tower above the plain of Peshawer. Its valleys, however, particularly that of Peshawer, are extremely fertile and beautiful. This proud race, who, during successive ages held sway over Asia, now indignantly endure the supremacy of the Dooraunees, and have even endeavoured to shake it off by recent insurrection. In compensation, however, for the loss of that dominion which they possessed during the early part of the century, they have attained a greater share of domestic independence than they before enjoyed. Their chiefs, being no longer supported by royal influence, are scarcely regarded with any degree of deference, and an almost pure democracy prevails. The military governors, indeed, appointed by the king, successfully exert themselves to collect the revenue, levy the contingents of troops, and, in the immediate neighbourhood of the great cities, maintain a tolerable police; but their power elsewhere does not extend to the prevention of individual feuds, or even warfare between tribes in the remote districts.

4017. *In this territory* is situated Cabul, now the principal city of Afghanistan, and one of the most delightful in the world. Being situated about 6000 feet above the level of the sea, it enjoys a temperate climate, and is surrounded by an extensive plain finely watered by three rivulets. The soil is rather deficient in grain, but produces abundance of forage and a profusion of the most delicious fruits, which are exported to India and other countries. Cabul is a busy bustling city, and its bazaar of 2000 shops is considered almost without a rival in the East. The population is estimated by Mr. Burnes at 60,000. It is governed by Dost Mahommed, brother to the chief of Peshawer, an able and popular prince, and now the most powerful in Afghanistan. He has an army of 9000 well-armed horse, and 2000 infantry.

4018. *In this country is situated Ghizni*, or Ghuznee, the most celebrated of the cities of Cabul; once the proud capital of the East, where Mahmood reigned and Ferdusi sang, but now comprehended within very narrow limits. It does not contain above 1500 houses; its streets are dark and narrow, and its bazaars by no means spacious. Remains, however, though not quite equal to its fame, attest its former grandeur. The most remarkable are two lofty minarets without the present walls, and the tomb of Mahmood, a spacious but not magnificent building, over which mollahs are perpetually employed in reciting the Koran. Bameean, on the northern slope of the mountains, and bordering on Tartary, is a city cut out of the rock, whose cavern abodes are scattered over a surface of eight miles; and it contains some remarkable temples, with colossal idols.

4019. *The western and most extensive portion of the kingdom of Cabul* is that occupied by the Dooraunee tribe. Their territory reaches more than half the length of the kingdom. Being bounded, however, on the north by the mountainous tracts of Paropamisus, occupied by the Eimauks and Hazaurehs, and on the south by the sandy plains of Seistan, the region is narrow, seldom equalling, and never exceeding, 140 miles. Although their political constitution generally resembles that of the other tribes, the Dooraunees are under much greater subordination to the king. He even appoints their *sirdars*, or chiefs, though he is obliged to consider somewhat their inclination, and the candidate's place in his tribe. This appointment, and the offices at court, which are bestowed almost exclusively upon the Dooraunee chiefs (*fig.* 594.), enable them to maintain a very considerable power; though, as their importance with the king depends much on the attachment of their adherents, their sway must be mild and conciliatory. It is sufficient, however, to prevent private war; and the valour of the Dooraunees is displayed chiefly in defence of the monarchy, of which they form the main bulwark. Their population is supposed to be from 800,000 to 1,000,000; the great proportion of whom are shepherds, living under tents, and leading a gay, innocent, pastoral life, with frequent festivals, in which preparations of milk and sherbet form the only regale. The agricultural part of the tribe live in small villages, to each of which is attached the castle of a khan, who seems to hold a rank in society somewhat similar to that of the Scottish laird. At one of the gates is always a building set apart for the reception of strangers.

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DOORAUNEE CHIEF.

4020. *Candahar*, the only place of consequence in the Dooraunee territory, is a very ancient city, the foundation of which is ascribed to Alexander the Great. The antiquity, however, belongs chiefly to the site, upon which new towns have been successively erected by different conquerors and potentates. The present was built, about half a century ago, by Ahmed Shah; who even attempted, but with little success, to give it his own name. It is regular and well built, with four long and broad bazaars; but, like other cities, it is not adorned with those magnificent monuments of architecture which mark the capitals of the great empires. One of the mosques, and the tomb of Ahmed Shah, small but elegant, are its only ornaments. This city, with the surrounding country, is now possessed by Cohun Dil Khan, brother to the chiefs of Cabul and Peshawer, who has an army of 9000 horse; but his government is not popular. Kumran, the only representative of the fallen dynasty of Cabul, has now only a precarious hold of Herat and its territory. Ferra, the ancient Parra, is a large walled town, about midway between Candahar and Herat.

4021. *The mountainous districts* of Paropamisus are inhabited by the Eimauks and Hazaurehs, belonging, perhaps, more properly to Khorassan, or rather to Independent Tartary. The latter, in respect to their general appearance at Peshawer, are described by Mr. Elphinstone as "not more remarkable for their conical caps of skin, with the wool appearing like a fringe round the edge, and for their broad faces and little eyes, than for their want of beard." These features mark them as descended from the Mongols, though it is not very well known how such a race came where they now are. Though subject to the Cabul government, they are in a constant state of petty warfare; each village has a watch-tower to sound the alarm. They are merry, good-humoured, friendly; but irritable and capricious. They scarcely differ from the Eimauks, except that the two tribes have adopted with equal zeal the opposite Mahometan creeds.

4022. *The south-east corner of the kingdom* is occupied by a race called the Caukers, who seem to have few peculiarities. They are rude, but peaceable, and less infected than their neighbours with the predatory spirit. We may conclude our account of the Afghans with noticing the Naussers, a tribe of about 10,000 families, who have no fixed territory or abode whatever. In summer they scatter themselves, and find pasturage in all the high unoccupied tracts throughout the centre of the kingdom. In winter they emigrate to the warm plains of Damaun. To reach these they must cross the ridge of Solimaun, and fight their way through the Vizerees, who have their scouts all on the watch when the period of this grand passage approaches. The Naussers, on their part, appoint an autumn rendezvous on the western side of the Solimaun, all the roads to which are at that season literally choked with the crowds of men, camels, and cattle, hastening to the spot. Having assembled, they set forth, in a close body, with scouts to explore the path, and armed detachments on every side to repel assault. The Vizerees do not attempt any general onset, but merely seize every opportunity of harassing the rear, and cutting off stragglers. The Naussers, though of rude manners, are an honest and peaceable race.

4023. *South of the Dooraunee highlands* lies the province of Seistan, or Seestaun, traversed by the river Helmund, which, at its western extremity, forms the great lake of Zerrah, or Durrah, into which flows also the smaller stream of the Furrah. This country, celebrated in Persian story and song as one of the finest regions of the East, exhibits at present a dismal reverse. With the exception of a narrow belt along the banks of the rivers, it consists entirely of sandy and barren plains, over which a few Afghan and Belooch shepherds are seen driving their flocks. Yet the remains of extensive cities, with superb palaces, which the traveller finds at short distances as he journeys along the Helmund, fully exempt the Persian representations concerning this region from the charge of fable. The cause of its decline is obvious, and, perhaps, beyond human power to remedy. This province is encircled on every side by those immense deserts which stretch from the eastern frontier of Persia. The wind, which blows thence for a great part of the year, brings with it clouds of light and shifting sand, which converts the fields into an arid waste, and gradually buries beneath it gardens, houses, and even villages.

4024. *The original inhabitants of Seistan* are the race already mentioned under the appellation of Taujiks, mixed in the east with a pretty large colony from Beloochistan, and with some other tribes. They are ruled by a number of petty chiefs, who acknowledge a sort of nominal supremacy in one who resides at the capital, called by Elphinstone Jellalabad, and by Kinneir Dooshak. It is a neat city, small but well peopled; and the inhabitants are more polished than those wandering tribes who elsewhere pitch their tents amid the ruins of ancient palaces. The chief claims, truly or falsely, the most august descent in Asia, that from Cyrus; and in the course of the last century his ancestor made an attempt to restore the ancient greatness of his house, and actually conquered a great part of Khorassan. He yielded, however, to the sword of Nadir Shah, and his successor can now with difficulty raise three thousand men. He is subject, moreover, to the king of Cabul, to the extent, at least, of furnishing a tribute and a contingent of troops.

4025. *The lake of Zerrah*, or Durrah, has been much famed, and is the only considerable expanse of water in these countries. It is about ninety miles in length and twenty in breadth; but in the dry season it is shallow, and overgrown with reeds, so as to resemble rather a marsh than a lake. The water is brackish, but it abounds with fish and wildfowl. In the centre is a fortified island, where the nobles of Seistan were wont to seek refuge while their country was invaded. About 100 miles to the west, near the frontier, lies Kubbees, a small city, situated in the midst of a vast desert.

4026. *The southern part of Independent Persia* is generally represented by geographers as forming the Persian province of Mekran, and is equal in extent to the whole of what has now been described. Its districts, however, have no connection with Persia, and very little with each other. The whole is either abandoned to desolation, or divided among a number of small, fierce, independent, predatory tribes. The northern and inland division, separated from the southern and maritime districts by a high range of mountains, is known by the name of Belouchistan. The whole of its western part is composed of a desert of red moving sand, so light and minute as to be almost impalpable, but which is formed, by the action of the wind, into wavelike ridges of a peculiar structure. One side slopes gradually away, but the other rises perpendicularly, like a brick wall, to a considerable height; and this side the traveller, in order to prosecute his route, must often scale with immense labour. The light sand, filling the eyes, nostrils, and mouth, heightens thirst and irritation; while the phenomenon of mirage causing the appearance of a still lake that is perpetually receding, tantalises him with the always disappointed hope of arriving at water. Mr. Kinneir calculates this desert at 400 miles from south to north, and 200 from east to west; but this last dimension must be doubtful, and seems under-rated.

4027. *Eastern Beloochistan* is of a very different character. It consists of a huge mass of rugged and rocky mountains, with intervening valleys, which, however, seldom display that fertile and smiling aspect usual in countries under the tropic, but are in general arid and stony. The streams, when swelled by rain, roll through their beds with such headlong rapidity as quickly to leave them dry, serving as roads or nightly resting-places to the traveller: but the water sometimes rushes down so suddenly as to overwhelm those who have sought this shelter; an accident under which Arrian reports the army of Alexander to have severely suffered. There are patches of good verdure, even capable of cultivation. The best district is the north-eastern land of Cutch Gundava, which affords even a surplus of grain for export. The capital is Kelat, a town of about 4000 houses, supposed to stand on ground 8000 feet above the level of the sea, and, therefore, subject in winter to such intense cold, that the khan and principal chiefs then descend to a lower region. It enjoys, however, a considerable inland trade. It is the residence of a chief, who claims the sovereignty over all Beloochistan, though his real power is nearly confined to the district immediately adjoining. Nooshky, Sarawan, Thalawan, Kharan, are little mud towns, capitals of districts bordering on the desert; but Punjgoor is surrounded by a fertile territory watered by the Baldoo, which, after a considerable course, reaches the Indian Ocean. The Beloche is a brave, hospitable, honourable robber, making *chepaos* or raids of eighty or ninety miles, to burn a village and carry off the inhabitants as slaves, but treating kindly and securing from all harm the stranger who has, or purchases a claim to, his protection. Conjoined with him is the Brahooe, who seems to have been the original possessor, and who, mild, innocent, and pastoral, occupies little villages situated in the bosom of these stupendous mountains.

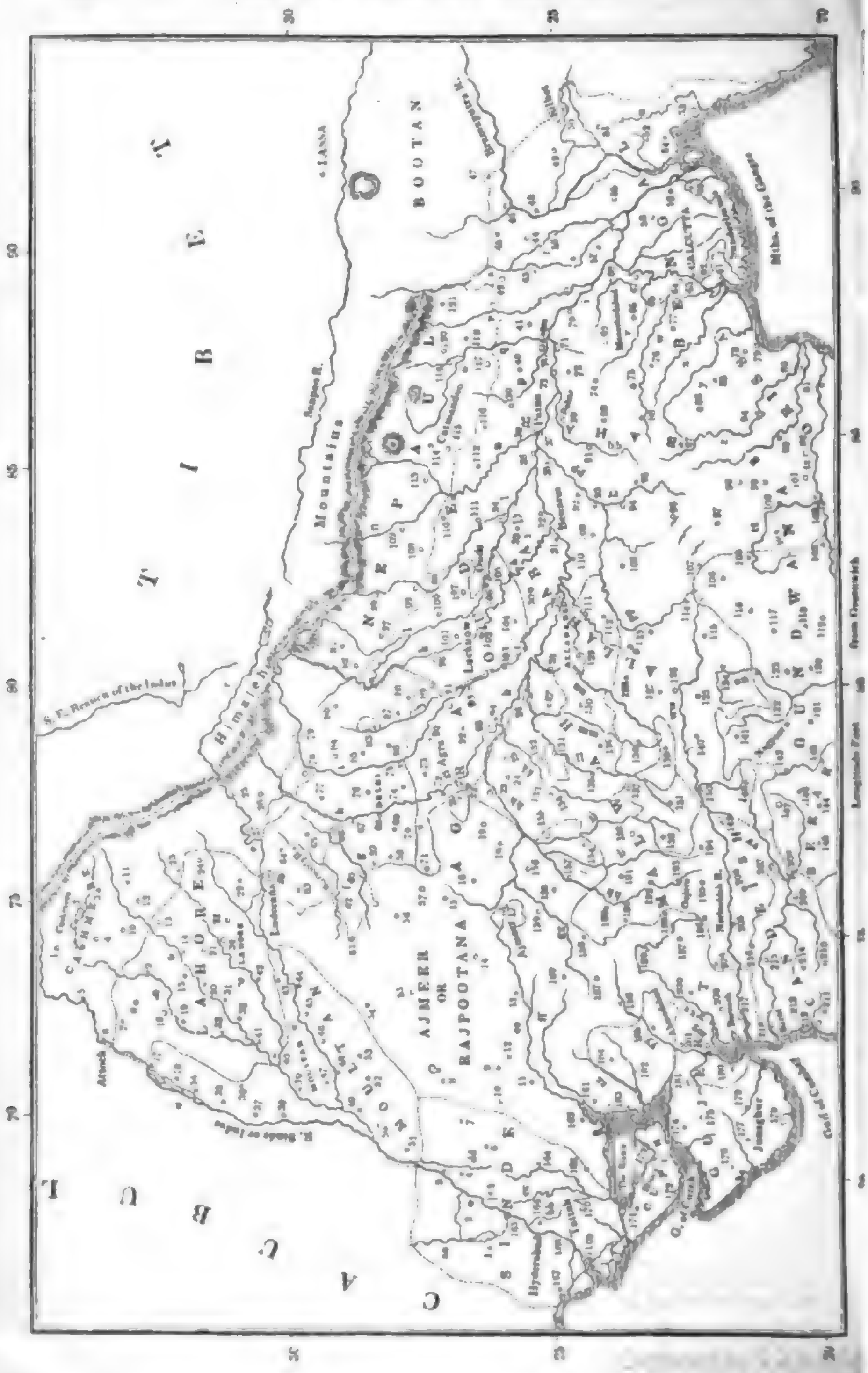
4028. *At the south-eastern corner of Beloochistan* is the province of Lus, the seat of the ancient Oritæ, watered by the Pooralee, a flat and fertile region, containing Bayla, a town of 2000 houses, and Somneany, an inconsiderable fishing-town. The upper tracts of this province, however, are inhabited by the Bezunjas, pre-eminent in their rapacious habits, even above the other Beloches, "who care not for king, khan, God, or the prophet; but murder or plunder every person or thing they can lay their hands on." Buhmiet Khan, the chief of Bayla, however, having pledged his faith to Mr. Pottinger, assured him that "he need not now fear any thing mortal."

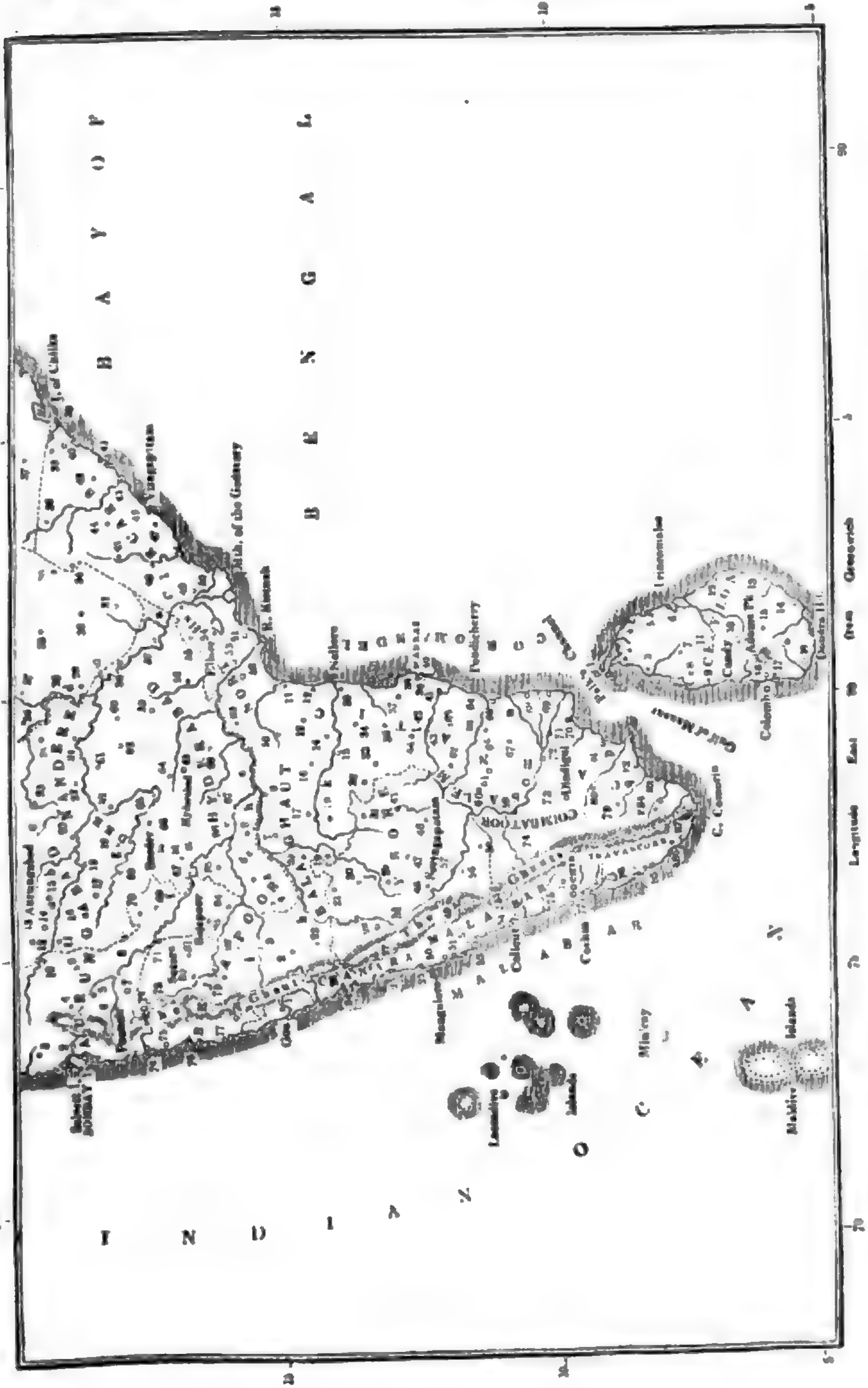
4029. *The territory between the ocean* and the chain of mountains bounding Beloochistan is Mekran Proper, and is very similar to that already described. The mountains, though on a smaller scale, are equally rude and rocky, with arid valleys intervening, traversed by numerous beds of mountain torrents, but occasionally presenting verdant and cultivated spots. Gwutter, Choubar, and Jask are small sea-ports, with some trade, subject or tributary to the Iman of Muscat. Kej, reckoned the capital of Mekran Proper, is a considerable town in a very strong situation, the chief medium between the sea-coast and the interior countries. It is still held by the khan of Kelat, who has scarcely any other hold upon this country. Bunpore is a small fortified town near the frontier of Kerman. This western tract of Mekran is infested by banditti called Loories, of a much baser and more brutal character than the usual predatory hordes of Asia. Unlike them, they have renounced every religious belief, and conceiving that men were born to die, to rot, and be forgotten, not only plunder and murder without scruple, but abandon themselves to every species of depravity. In consequence of this profligacy, scarcely any children are born in the community, and its numbers are recruited almost solely by captives violently carried off from the neighbouring tribes.

Chap. V.

HINDOSTAN.

4030. *The region known to the ancients by the name of India*, to the Arabs by that of Al Hind, and now most commonly by the Persian appellation of Hindostan, has always been the most celebrated country of the East. In every age it has been the peculiar seat of


T I B E T
C A B U L
BOOTAN
NEPAUL
Himaleh Mountains
S. E. Branch of the Indus
AJMEER OR RAJPOOTANA
LAHORE
CASHMERE
Attock
Lucknow
Agra
CALCUTTA
Mths. of the Ganges
Brahmapootra R.
G. of Cutch
Longitude East from Greenwich


B A Y O F
B E N G A L
I N D I A N
O C E A N
Longitude East from Greenwich
Mth. of the Godavery
R. Kistnah
Nellore
Pondicherry
Trincomalee
Candy
Adams Pk.
Colombo
C. Comorin
COIMBATOOR
TRAVANCORE
M A L A B A R
Cochin
Calicut
Mangalore
Goa
Bombay
Aurungabad
Minicoy
Laccadive Islands
Maldive Islands

Oriental pomp, of an early and peculiar civilisation, and of a commerce supported by richer products than that of any other country, ancient or modern.

Sect. I. *General Outline and Aspect.*

4031. *The nominal limits of Hindostan* have varied at different times. In the west, especially, it has sometimes been extended over a great part of Afghanistan, which was often the seat of its ruling potentates. The real Hindostan, however, seems clearly marked both by precise natural boundaries, and by the fixed and deep-seated character of its native population. The boundary on the north, but running in a direction between north-east and south-west, consists of that unbroken and amazing range of mountains, which receives in India the name of Himmaleh or Himalayah, and separates its fine plains from the bleak table-land of Thibet. On the west, it is the Indus, from the point where it bursts through the northern mountains, to that in which it joins the Indian Ocean. Into that ocean, southern Hindostan projects, in the form of a vast triangular peninsula, which presents two opposite coasts, Malabar to the south-west, and Coromandel to the south-east, both terminating in the southern extremity of Cape Comorin. Thence India is prolonged by the large contiguous island of Ceylon. The coast of Coromandel, with the opposite shores of Arracan and Malacca, enclose a large sea, called the Bay of Bengal. Between this bay and the termination of the Himalayah occurs a short interval, forming the most eastern and the least accurately defined boundary of Hindostan. The natural limit here seems to be the channel of the lower Brahmapoutra, though Bengal claims a certain extent of hill and jungle on the other side.

4032. Amid the grand features of nature in this region, *the extended mountain range of Himalayah,* which forms its northern boundary, is pre-eminent. After crossing the Indus, and enclosing the beautiful valley of Cashmere, this range, which, in bounding Afghanistan, under the name of Hindoo Koh, had an almost due easterly course, takes a south-east line,

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References to the Map of Hindostan. — Part 1.

NORTH PART.
1. [illegible]
2. Cashmere
3. [illegible]
4. Peshawur
5. Dera
6. Attock
7. Futtyjunge
8. Bunda
9. Jhylum
10. Rajoor
11. Bauleewall
12. Chinnannee
13. Jummoo
14. Wuzeerabad
15. Khoomb
16. Pindee Dadun Khan
17. Mazer
18. Daood Kot
19. Suilla
20. Julalpoor
21. Eminabad
22. Umritsur
23. Botuuz
24. Nagorrote
25. Rampoor
26. Choupal
27. Belaspoor
28. Loodeana
29. Jullender
30. Lahore
31. Suleree
32. Keera
33. Seehewal
34. Jinderwalee
35. Bukker
36. Maunkaira
37. Leiah
38. Adookegurree
39. Moultan
40. Shoree
41. Trimoo
42. Bhurt
43. Debalpoor
44. Kotalee
45. Chuckoo
46. [illegible]
47. [illegible]
48. Bawulpore
49. Kabe
50. Khangur
51. [illegible]
52. Durrawul
53. Mojgur
54. Anoopghur
55. Bicaneer
56. Chooroo
57. Singanah
58. Dadree
59. Betalee
60. Hansi
61. Gundalee
62. Futtehabad
63. Hodja
64. Sirhind
65. Shahabad
66. Kurnal
67. Paniput
68. Delhi
69. Ferozenugur
70. Tijara
71. Narnaul
72. Muttra
73. Allyghur
74. Koeeil
75. Anoopshehr
76. Merut
77. Seharunpoor
78. Hurdwar
79. Serinagur
80. Almora
81. Dipal
82. Goomortekgur
83. Rampoor
84. Nujeebabad
85. Chandpoor
86. Sambul
87. Bareilly
88. Cutterah
89. Shahjehanpoor
90. [illegible]
91. Furrukhabad
92. Minporee
93. Etawah
94. Shahpoor
95. Kunnugee
96. Khyrabad
97. Bongphil
98. Rugun
99. Beucar
100. Barauck
101. Biswah
102. Lucknow
103. Cawnpoor
104. Bareilly
105. Oude
106. Fyzabad
107. Goondah
108. Kachhi
109. Galkot
110. Naukot
111. Goorackpoor
112. Bettiah
113. Gorkha
114. Catmandoo
115. Mukwanpoor
116. Hatceule
117. [illegible]
118. Vijaypoor
119. Khatang
120. Chayenpoor
121. Sikkim.

SOUTH PART.
1. Drubbeeh
2. Laskham
3. Buckar
4. Khyrpoor
5. [illegible]
6. Bertum
7. Shahghur
8. Jessulmeer
9. Amring
10. Kooer
11. Bezunee
12. Furkoond
13. Joudpoor
14. Nagore
15. Mundallah
16. Jyepoor
17. Ajmeer
18. Manpura
19. Hindoun
20. Bhurtpoor
21. Agra
22. Futtehpoor
23. Dholpoor
24. Gwalior
25. Gohud
26. Kalpee
27. Rahie
28. Bandah
29. Allahabad
30. Pertabghur
31. Benares
32. Ghazypoor
33. Azimghur
34. Gopalpoor
35. Arrah
36. Chuprah
37. Patna
38. Hajypoor
39. Durbungah
40. [illegible]
41. Purneah
42. Sunghegotta
43. Dinagepoor
44. Rungpoor
45. Beyhar
46. Rangamutty
47. Bons
48. Hautchella
49. Laour
50. Silhet
51. Torruff
52. Comillah
53. Islamabad
54. Colunda
55. Puccolee
56. Goragot
57. Nattore
58. Mahmudpoor
59. [illegible]
60. Backergunge
61. Culpee
62. Fort William
63. Calcutta
64. Hoogly
65. Burdwan
66. Soory
67. Plassey
68. Moorshedabad
69. Noony
70. Rajhmahal
71. Baghpoor
72. Curruckpoor
73. Monghir
74. Chackhi
75. Nidghur
76. Rogunauthpoor
77. Bissunpoor
78. Harriorpoor
79. Belasore
80. Jehaujpoor
81. Cuttack
82. Tikripurra
83. Lanjum
84. Puddampoor
85. Contah
86. Singboom
87. Dorwah
88. Ramgur
89. Goomah
90. Bahar
91. Gayah
92. Sasseram
93. Rotasghur
94. Gurwa
95. Palamow
96. Sirgoojah
97. Odeypoor
98. Jushpoor
99. Shahpoor
100. Sumbhulpoor
101. Sumnagur
102. Sohnpoor
103. Byraghur
104. Nurrah
105. Mugdah
106. Ruttunpoor
107. Mahtin
108. Burgowa
109. Bidzeghur
110. Mirzapoor
111. Etamah
112. Goorha
113. Bandougur
114. Anokpoor
115. Ramghur
116. Nowaghur
117. Dhumda
118. Belload
119. Contalla
120. Chickly
121. Girhur
122. Nagpoor
123. Tikeree
124. Heerapoor
125. Dhoona
126. Gurrah
127. Kuttahgee
128. Bennuggur
129. Callinger
130. Chatterpore
131. Jhansee
132. Datteah
133. Nurwur
134. Sheopoury
135. Chundairee
136. Sindwa
137. Seronge
138. Saugor
139. Simereah
140. Chowraghur
141. Sindwarrah
142. Raipoor
143. Rallygaum
144. Karinjah
145. Lakenwaree
146. Omrawuttee
147. Ellichpoor
148. Bettool
149. Hurdah
150. Hoossingabad
151. Bhopaul
152. Shujawulpoor
153. Rajghur
154. Suckutpoor
155. Seepoor
156. Rampoorah
157. Kotah
158. Boondee
159. Tennah
160. Kummulnere
161. Thurraud
162. Ban Kasie
163. Bogaur
164. Wurseah
165. Sehwaun
166. Hyderabad
167. Currachee
168. Tattah
169. Bohaur
170. Raug
171. Jharrah
172. Mandavie
173. Bhooj
174. Morvee
175. Surdhaur
176. Gheerunty
177. Junaghur
178. Diu Fort and Island
179. Amrielly
180. Bhownuggur
181. Wudwaun
182. Puttun
183. [illegible]
184. Pahlanpoor
185. Purrauntee
186. Potch
187. Oodipoor
188. Chittoor
189. Rampoor
190. Mundissoor
191. Purowa
192. Mehidpoor
193. Oojein
194. Oonchood
195. Indore
196. Bhopawur
197. Rittawul
198. Rodam
199. Banswarra
200. Godra
201. Ahmedabad
202. Cambay
203. Baroda
204. Oodeypoor
205. Burwannee
206. Kurgoan
207. Burhaunpoor
208. Idulabad
209. Nusserabad
210. Chandore
211. Futtehpoor
212. Damaun
213. Gundavee
214. Moolheer
215. Nandoorbar
216. Sooltanpoor
217. Baroach
218. Surat.

Rivers.
a Sinde, or Indus
b Jhylum, or Behut
c Chunaub
d Ravee
e Setuleje, or Sutledge
f Sursooty
g Chittang
h Jumnah
i Ganges
j Ram
k Kundowah
l Surgah, or Gogra
m Rapti
n Gunduck, or Gunduki
o San Kosi
p Gogary
q Coosah
r Mahanada
s Attri
t Curruttya
u Chingree
v Adji
w Dummoodah
x Cossie
y Subunreeka
z Coyle
aa Arul
bb Sunkra
cc Purran
dd Nuree
ee Lonee
ff Seetra
gg Banass
hh Chumbul
ii Nerwan.

which it nearly follows till it passes the frontier of Hindostan. The name, which is derived from the Sanscrit term *Hem*, snow, is evidently suggested by that long range of pinnacles, white with eternal snow, that is seen far along the wide plain of central India, which luxuriates in the perpetual summer of the tropics. Although the wonderful distance from which these peaks are descried could not but indicate them to be exceedingly lofty, yet the difficulty of reaching them across a hostile country long prevented any accurate observation. Thirty years ago, their summits were not supposed to rival those of the Cordillera, believed then the most elevated on the globe. It was in 1802 that Colonel Crawfurd, after a residence in Nepal, communicated observations, according to which Chimborazo must yield the palm to Dwalagiri and Chandradabani. Intense curiosity was thus excited, and a series of investigations followed. The missions of Kirkpatrick and Hamilton to Nepal; the expeditions of Hardwicke, Webb, Moorcroft, Fraser, and others to the source of the Ganges, with the application of the improved modern formulæ, at length fully established the fact. Although the height of the chain is every where stupendous, no part of it rivals those amazing peaks which tower on one side over the sources of the Jumna and the Ganges, on the other over those of the Sanpoo and the Indus.

4033. *Central Hindostan*, below its great mountain boundary, consists generally of a vast expanse of plain; but the southern part, composing the great *peninsula* between the Malabar and Coromandel coasts, though it cannot comparatively be called mountainous, is a very *hilly* country. Two great chains extend along the opposite coasts, parallel to each other, or rather diverging, and leaving between them and the sea only a plain of forty or fifty miles in breadth. They rise in few places above 3000 or 4000 feet high; but are very rugged and steep, and the entrance into the interior is only by very narrow and difficult passes. The name of Ghaut, which, through the Teutonic languages, has come to ours in the word *gate*, being applied to these passes, has been gradually extended to the mountains themselves. The most continuous chain is that of the Western Ghauts, which extends, for nearly 1000 miles, from Surat to Cape Comorin. It forms, evidently, the highest land of southern India, since all the great rivers flow across from it to the opposite coast. Though steep and stony, the hills are not broken, but covered generally with a stratum of earth, sustaining stately forests, particularly of bamboo, which is found nowhere else in equal perfection. The Eastern Ghauts seldom rise to the height of 3000 feet. Mr. Hamilton limits their extent to a line of about 300 miles from the Cavery to the Crishna; but, as a low chain runs from that river to the Godavery, which beyond rises again into a lofty barrier, almost closing the passage between the Circars and the interior, there seems little reason why the whole should not be considered as one continuous chain, almost equal in length to the western. The interior, between these two chains, consists chiefly of successive table-lands supported by the opposite Ghauts and by chains crossing from one to the other, diversified also by single precipitous eminences, which are formed into almost impregnable hill forts. One continuous chain, the Vindhya mountains, runs across the broad base of the peninsula, and forms a rugged boundary between it and the great plain of Hindostan Proper. On the west it is connected with a range of bold and lofty hills, which compose the territory of Rajasthan.

4034. *The rivers* of Hindostan form a feature no less important and celebrated than its mountains. The Himalayah, from its lofty magazines of tempests and snow, pours down a world of waters, which, every where

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References to the Map of Hindostan. — Part 2.

NORTH PART.
1. Bombay
2. Callianee
3. Gorah
4. Junner
5. Serroor
6. Poonah
7. Jenooree
8. Hareinda
9. Ahmednuggur
10. Tokah
11. Godavery
12. Aurungabad
13. Amave
14. Jalnah
15. Parlour
16. Bheer
17. Burdaunpoor
18. Oudgheer
19. Keir
20. Nandere
21. Patunguil
22. Neermul
23. Mahoor
24. Poonakullo
25. Moulchaoung
26. Chandah
27. Cowgury
28. Kosapilly
29. Churrah
30. Beerporam
31. Teelah
32. Deoolmurry
33. Colnn
34. Jaghedeerpoor
35. Bustar
36. Currode
37. Durgapuramde
38. Vizianagur
39. Ganjam
40. Borampoor
41. Tarkelly
42. Gundapoorum
43. Cicacole
44. Saloor
45. Nunapoorum
46. Vizagapatam
47. Ankapilly
48. Golconda
49. Rajahmundry
50. Coringa
51. Masulipatam
52. Guntoor
53. Cudapilly
54. Ellore
55. Rangapoor
56. Cummumett
57. Hupperwaram
58. Bommapillee
59. Warangel
60. Ramgherry
61. Mitpully
62. Elgundel
63. Hyderabad
64. Golconda
65. Juggeyettah
66. Beeder
67. Kulburga
68. Sholapoor
69. Tastore
70. Vyrag
71. Punderpoor
72. Satara
73. Pondengur
74. Bancoote, or Fort Victoria
75. Angenweel
76. Jaughur
77. Gherah
78. Nandinary
79. Chiorey
80. Turgaon
81. Nagur
82. Gohauk
83. Bejapoor
84. Talikhote
85. Saughur
86. Mudkal
87. Gunpoor
88. Dewarkonda
89. Machelo.

SOUTH PART.
1. Goa
2. Dorwar
3. Nurgoond
4. Gudjunderghur
5. Morgull
6. Cartel
7. Adonie
8. Rachore
9. Kurnool
10. Cummum
11. Ongole
12. Canvelly
13. Paumoor
14. Budvail
15. Cuddapa
16. Chagulmurry
17. Gooty Droog
18. Anhantapoor
19. Ras Droog
20. Bellary
21. Canecopa
22. Savanoor
23. Unkolah
24. Compta
25. Jaliseram
26. Coondapoor
27. Bednore
28. Shemoga
29. Hoolahull
30. Chittledroog
31. Pennaconda
32. Cudsloor
33. Gurramconda
34. Chittavall
35. Nellore
36. Trippatty
37. Narlapooram
38. Pullicat
39. Madras
40. Fort George
41. Chingleput
42. Arcot
43. Vellore
44. Chittoor
45. Jungumcota
46. Bangalore
47. Cuddalah
48. Chunroypatam
49. Feerapatam
50. Mangalore
51. Nel Seer
52. Yeshy Malay, or Mount Dilly
53. Cananore
54. Calicut
55. Tamberchery
56. Mysore
57. Seringapatam
58. Huntunhully
59. Erode
60. Salem
61. Relloor
62. Trippatoor
63. Chetapett
64. Pondicherry
65. Cuddalore
66. Tiagur
67. Volconda
68. Tranquebar
69. Negapatam
70. Puttucottah
71. Tanjore
72. Trichinopoly
73. Daraporam
74. Coimbatoor
75. Paniany
76. Trichoor
77. Cochin
78. Calecolan
79. Shevacunshy
80. Madura
81. Armencottay
82. Vairalaur
83. Palamcotta
84. Tinnevelly
85. Coulan
86. Trevandar
87. Travancore.

ISLE OF CEYLON.
1. Port Pedro
2. Ponoyn
3. Mantotte
4. Malattivo
5. Cutchavelly
6. Trincomalie
7. Anurajapoora
8. Nalewallge
9. Chilaw
10. Nalande
11. Kandy
12. Batticalo
13. Ogbende
14. Mahagam
15. M'Donald
16. Colombo
17. Caltura
18. Point du Galle.

Rivers.
a Godavery
b Ghurk Poorna
c Pain Gunga
d Pranheeta
e Kistnah
f Beema
g Manjera
h Toongbuddra
i Malpurba
j Hendry
k Pennar
l Palaur
m Punnair
n Colleroon
o Cavery
p Vayguroo
q Vypaerou.

descending its steeps, unite at length in the two great branches of the Indus and the Ganges. These, with their tributaries, even before they reach the plain, present the mass and breadth of great rivers, while they retain the rapidity of mountain torrents.

4035. *The Ganges* holds a pre-eminent place among the rivers of Hindostan, and indeed of Asia; not, however, from the length of its course, which some others surpass, but from its watering the finest plains of this celebrated country. The Ganges has been represented as flowing out of the lake Manasarowara, when, after a long easterly course, it turned to the southward, and penetrated across the Himalayah. Mr Colebrooke, however, considering these reports as very doubtful, sent, in 1808, an expedition to this spot, which has since been very fully explored by successive travellers. They have never, indeed, been able to penetrate into the mass of mountains piled upon mountains, from which the Ganges is first seen descending; but they have traced it till it appears a mere rivulet issuing from under beds of eternal snow. There cannot thus be the least doubt that it rises in the southern steeps of the Himalayah, and not in any point north of that chain. About thirty miles below Serinagur, the *prayaga* or junction takes place between the Bhagirath and the Alacananda, the two original branches of the Ganges; of which the former, though not of so long a course, is generally regarded as the original stream. About five hundred miles below, at Allahabad, it receives the Jumna or Yamuna, almost equal to itself, which has risen in a lofty peak not far to the west of its own source, and, by means of its tributaries, the Chumbull and the Betwah, has drained the southern side of the Vindhya mountains. From this side also it receives the Soane. But its main tributaries are from the north, as it runs parallel to the Himalayah mountains, the Gogra, the Coosy, the Gunduck, poured down from their steeps. After receiving this last stream at Monghir, it may be considered as having reached its greatest magnitude, being from one to three miles broad, and thirty feet deep. It is navigable without interruption to the mountain districts, considerably above Allahabad. The rise occasioned by the rainy season begins in the end of April, and continues to increase until the middle of August, when it reaches in many places thirty-two feet, and all the level districts on its lower course are inundated, sometimes for the breadth of one hundred miles. About 200 miles from the sea, the Ganges ramifies into a delta, of which the numerous branches, in entering the Bay of Bengal, form a labyrinth of channels and creeks called the Sunderbunds. In most of them, particularly those into which the largest branch divides, the force of the current is insufficient to clear away the bar of sand accumulated at the mouth. It is only by the Hoogly branch, which passes by Calcutta, that large vessels can penetrate.

4036. *The Indus, or Sind*, the western limitary stream of India, arises from very imperfectly known sources in the interior of Thibet. Its longest branch appears to be that called the river of Ladauk, which rises near the lake Manasarowara, and flows north-east to the above city, where it is swelled by the Shyook descending in an opposite direction from amid the snows of the mountain-range called the Kuenlun. It seems to have been by mistake that a branch, considered even as the real Indus, was supposed to join it at Draus. After descending from the mountains and passing Attock, where it is first considered an Indian river, the Indus, through all its remaining course, flows almost due north. The Kama here pours into it the mountain streams of Cabul and Caucasus; but its grand accession is about 400 miles farther down, where it receives in one united channel the waters of five streams celebrated in history; the Jelum (Hydaspes), the Chenaub (Acesines), the Rayee (Hydraotes), the Beya (Hyphasis), and the Sutledge (Hysudrus). These drain all the eastern steeps of the Himalayah, and the last mentioned even crosses it from a source in Thibet. The Indus now becomes a river of the first magnitude, about a mile in breadth, and from twelve to thirty feet deep, capable of receiving vessels of considerable burthen. It is estimated by Mr. Burnes to pour into the sea four times as much water as the Ganges. In its lower course it separates into two large branches, ramifying into many smaller ones, which enclose a delta about 70 miles broad, composing the kingdoms of Sinde and Tatta, part of which is extremely fertile, but that nearest to the sea consists of a desert of flat and marshy sand. These branches are so encumbered with sand, as to admit only flat-bottomed boats; but it is supposed that steam-vessels duly constructed might enter and reach as high as Moultan and Lahore.

4037. *The Brahmapoutra*, which forms the eastern limitary river of India, pours a vast body of water into the lower Ganges before its junction with the sea, where the two streams united form a bay with numerous islands. Modern geography has long identified it with the Sanpoo, and consequently assigned to it a long course along the table-plain of Thibet. But this origin is now generally discredited. Recent expeditions have shown it fed by waters descending from the southern side of the high mountains of Assam, though it remains still uncertain whether its principal branch may not come from beyond these ranges.

4038. *The Ganges and the Indus* finally absorb all the waters which descend from the southern face of the Himalayah; and these, flowing either eastward or westward over the vast plain of central India, leave between them a large expanse of arid desert bordering on the Indus.

4039. *All the other waters of India belong to the southern peninsula.* Beginning from the north, the first two that occur flow eastward into the Gulf of Cambay: the Nerbuddah, parallel to the Vindhya chain, and fed by its streams; and the Tuptee, which passes by Surat. There the chain of the western Ghauts begins, whence, as already observed, all the other large rivers flow eastward into the Bay of Bengal. The principal are the Godavery, the Crishna, and the Cavery; all sacred in the eyes of the Hindoo, and truly valuable by their services to irrigation and commerce. Though rivalling the great rivers of Europe, they hold only a secondary place in the geography of Hindostan.

4040. *It is somewhat remarkable* that, in so large a region, with so many mountains and waters, there should not be a *lake*, with the exception of Chilka on the Coromandel coast, which is a mere salt marsh, like the Mareotis or Menzaleh, and a few very small lakes in the territory of Rajpootana. To find this feature on a great scale, we must penetrate its northern barrier into central Asia.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4041. I. *Himalayah.* — The Himalayah mountains may be divided, in a geognostical view, into three different zones. On approaching this colossal range from the plains, a sandstone formation is the first which arrests the attention, and forms the *first or lowest zone or belt.* This rock, which has a clayey basis, and is often in the state of conglomerate, is distinctly stratified, and the strata generally dip to the N.E. under 20° or 25°. It contains layers of coals, said to be of the lignite or brown coal family; which statement, if correct, renders it probable that the sandstone is much more recent than that of the great coal formation of Britain. This sandstone seldom attains an elevation of more than 3500 feet above the level of the sea, or 2500 feet above the plains at its base.

4042. To the sandstone succeeds *the second zone, or zone of slaty rocks.* These are at first *transition* clay slate with greywacke, and limestone enclosing remains of shells and corals; next *primitive* clay slate, which is succeeded by mica slate, in both of which occur talc slate, chlorite slate, beds of quartz rock, often of great magnitude, limestone or marble, potstone, and horneblende slate. The *copper mines* of these mountains are situated in the limestone and potstone districts. Veins of porphyry are observed traversing the mica slate. This zone ranges in height from 1500 to 8000 feet. This tract is remarkable for attaining its greatest elevation on its northern and southern extremities, while between it is of less height; forming, in fact, if the mean surface only be considered, a sort of basin or trough. A peculiarity of geognostical structure accompanying this is the disposition along this lowest level of granite tracts or nuclei, each of comparatively small extent, frequently putting on the appearance of veins, and distributed at intervals along the line from the Kalee to the Sutledge. Generally the granite masses, being in the lowest tract, are themselves not very high; but an exception is found in the Chur mountain, which rises to a height of 12,000 feet, and forms the summit of a very lofty, extensive, and well-defined range. Gneiss is occasionally met with on the borders of these masses of granite, but never extensively; and beyond it again succeeds mica slate.

4043. The *third zone* is that of the Himalayah proper, the snowy ridge itself, and is composed principally of gneiss. It is distinctly stratified, and, like the sandstone, dips to the N.E. It is traversed by veins of granite, some of which are of considerable magnitude: various simple minerals, as garnet, schorl, cyanite, hyacinth, and native gold, occur embedded in it. Dr. Gerard collected fossil shells among strata beyond the region of slates which succeeded to the Himalayah gneiss in going northward. Some of them are said to resemble the *Producta scotica*, found in Scottish *coalfields*; some *pectens*, not unlike those met with in the *York lias*; a *terebratula*, differing but little from that found so abundantly in the *inferior oolite*, near Bath; an ammonite closely resembling the *Ammonites subradiatus* of Sowerby, which is a fossil of the *Bath oolite*: *belemnites* were frequently found, and of all dimensions; *orthoceratites* in a clay ironstone. Tertiary deposits are alleged to occur high among the mountains; and an interesting display of rocks of this class, containing remains of sea-shells and fishes, and mutilated fragments of bones of the genus Anthracotherum, of a kind of musk-deer, a viverra, &c., was discovered near Silhet, in the north-east corner of Bengal, and similar remains in some other points of the same province. Diluvium, with bones of various animals, is also mentioned as occurring in this mountainous region. Hitherto but small quantities of *ore* have been met with in the Himalayahs, and these are of copper, iron, lead, and graphite or black lead: of this latter, many are included under this head.

4044. II. *Middle India.* — This vast tract of country forms an inclined plane, of which the great declivity sinks gradually towards the mouth of the Ganges, while the other inclines towards the Indus. It is almost entirely composed of clays, loams, sands, and gravels, with occasional intermixtures of calcareous concretions named *kunkur*, fossil woods, and animal remains. In this division of India, we may include the *coalfield* of Damoda. This deposit of coal, which occupies both sides of the Ganges, through a considerable tract of country, and rests upon granite, appears to be geognostically the same formation as the coal formation of Britain. In the coal pits, of which there are but three sunk to a depth of ninety feet, there are seven beds of coal; one of them exceeds nine feet in thickness. The coal is said to resemble that of Sunderland, in England; but leaves a larger portion of cinders and ashes. It is now extensively consumed in and about Calcutta.

4045. III. *Peninsular India.* — *Primitive rocks.* A very large portion of the peninsula of India is composed of Plutonian rocks, as of granite, syenite, and trap, the Neptunian strata being much less abundantly distributed. The Neptunian deposits are gneiss, mica slate, clay slate, chlorite slate, talc slate, potstone, quartz rock, and limestone or marble. These deposits are variously upraised, broken, and otherwise changed by vast bodies of Plutonian rocks, of which the most abundant are granite and syenite, two rocks which together form very extensive tracts of country.

4046. *Transition rocks.* These occur abundantly, resting upon the primitive deposits, and frequently covered more or less deeply with secondary formations. The following rocks are mentioned by authors; viz., greywacke, clay slate, quartz rock, and limestone.

4047. *Secondary rocks.* Rocks of this class abound more in the northern than in the southern and middle districts of the peninsula. Old red sandstone occurs in considerable quantity, resting upon transition deposits: this formation in its turn supports mountain limestone, and rocks of the coal formation. These older secondary formations are overlaid, to a greater or less depth, with new red sandstone, and other rocks apparently belonging to the lias and oolitic series. The green sand and chalk deposits have not hitherto been met with. These secondary deposits are variously upraised, broken, and otherwise changed by secondary trap, which extends over vast tracts of country. The great western or Malabar chain of mountains, which commences in Candeish, and terminates at Cape Comorin, is at its northern extremity covered by a part of an extensive overlying trap formation, which extends in this quarter from the seashore of the Northern Concan to a considerable distance eastward, above and beyond the Ghauts, as far as the river Toombuddra and Nagpore. The trap hills are tabular, terraced, separated from each other by ravines, often of vast magnitude, and the whole frequently covered with splendid forests of teak and other trees, forming some of the most beautiful and romantic scenes in India.

4048. *Tertiary rocks.* Tertiary deposits, containing fossil trees erroneously said to be the tamarind tree, occur near Pondicherry; and clays and sands with sea-shells, asserted to be tertiary, are met with near Madras.

4049. *Alluvial rocks.* These occur generally distributed; and, in some places, the diluvium is of great thickness.

4050. *Minerals useful in the arts found in Peninsular India.—Granite and syenite.* These rocks, which occupy a great part of the Carnatic, Malabar, and Mysore, nearly the whole of the Nizam's dominions, and a large part of Bahar, are employed as building stones. *Talc slate* and *potstone* are employed by the natives for the manufacture of various utensils. All the fine plaster with which the walls of the houses are covered in India, and which is so much admired by strangers, is composed of a mixture of fine lime and soapstone rubbed down with water. When the plaster is nearly dry, it is rubbed over with a dry piece of soapstone, which gives it a polish very much resembling that of well polished marble.

4051. *Marbles* are quarried in different parts of the country, but nowhere extensively. The *laterite*, or brick stone, is used as a building stone, for which it is excellently fitted. Most of the handsome Roman catholic churches at Goa are built of it.

4052. *Gems.* The most valuable of all the gems, *the diamond*, occurs in alluvial deposits, as Cudapah, Banaganpelly, &c., in the river district of the Krishna; also in the bed of the river Godavery; at Sumbulpore, in the district of Mahanuddy; and at Pannah, in Bundelcund. *Corundum*, from its coarsest state to its finest, in the form of *Oriental ruby*, occurs in the granite and syenite district: the *spinel ruby* is also a native gem, and the same is the case with *zircon*, which occurs in alluvium in the Ellore district. *Schorlous topaz*, *tourmaline*, and *schorl*, occur in the granite and syenite districts. *Chrysolite* is an inmate of the secondary trap rocks; *precious garnet*, *pyrope garnet*, and *grenatite garnet*, are met with in primitive tracts of country, as also *rock crystal*, and various beautiful *felspars*. *Amethyst* and *catseye*, and many kinds of *carnelian*, *jasper*, and *agate*, are also natives of the peninsula of India. The annual value of carnelian exported from India formerly amounted to 11,000*l*. The secondary trap rocks afford beautiful and splendid specimens of different species of the elegant *zeolite family*. Metalliferous minerals occur but in small quantities. *Gold* and *silver* are but sparingly distributed; *iron* is abundant, but hitherto its ores have not been mined to any considerable extent. There are, at present, *no copper mines* of any importance, although the general use of copper or brass utensils among the natives of India, and the preference given to them before all other kinds of vessels, would seem to show that this metal was mined much more extensively in former times.

Subsect. 2. *Botany.*

4053. *British India*, notwithstanding its vast extent, its varied vegetation, and great importance to our country, must, inasmuch as regards its botany, be passed over in fewer words than we could wish. The present volume would not suffice to contain half of what is known of the useful or curious vegetables with which botanists are now acquainted, through the indefatigable exertions of a few individuals, whose names, nevertheless, deserve to be recorded, even in this brief notice. Only forty years ago, and nothing was ascertained, comparatively speaking (save through the medium of the *Hortus Malabaricus*), of the vegetation of this vast country, extending from near the equator to at least the thirteenth degree of north latitude, and from the sixty-third to the ninety-sixth degree of east longitude. In 1793, Dr. Roxburgh was appointed to the charge of the botanic garden at Calcutta; which includes within its boundaries an area of 300 acres; and this gave rise to the *Hortus Botanicus Calcuttensis* and the splendid *Plants of Coromandel*. Between the years 1820 and 1824, the learned and excellent missionary Dr. Carey edited the two volumes (extending no farther than the class Pentandria and order Monogynia) of *Flora Indica*, from the MSS. of Dr. Roxburgh, Dr. Wallich, and Dr. Jack. For a short period, during the illness and consequent absence of Dr. Roxburgh, Dr. Francis Buchanan Hamilton was appointed to the care of the Calcutta garden. To him succeeded, on his decease, Dr. Wallich, whose assumption of this office forms a new era in the botany of India. This gentleman, a pupil of the celebrated Hornemann of Copenhagen, brought a degree of zeal to the duties of his situation which is rare in any country, and certainly unequalled in a tropical climate. At his suggestion, the Honourable Directors of the East India Company placed the garden establishment upon a footing far surpassing any thing of the kind known in Europe. The spot of ground is no less than five miles in circumference, and upwards of 300 gardeners and labourers are employed in the charge of it. Gardens, in connection with it, have been formed in other remote parts of the Indian possessions; collectors have been sent out to discover new and especially useful plants; and the residents and other gentlemen attached to science were invited to transmit the vegetable productions of their respective districts to Calcutta, both in a living and dried state; and among these, the Honourable Mr. Gardner, long the Company's Resident at Silhet, furnished most extensive and valuable collections.

4054. *In 1820, Dr. Wallich himself undertook a journey to Nepal*, in order to investigate and procure its rich stores for the garden and herbarium. This occupied eighteen months;

at the expiration of which, while descending the plains on his return, he was attacked with fever, that compelled him to make a voyage for the recovery of his health. Even this forced absence was rendered subservient to the cause of science. Dr. Wallich visited Singapore and Penang, and returned to Calcutta, enriched with new treasures. In 1820, Dr. Wallich was engaged in inspecting the vast timber-forests of the western part of Hindostan, and collecting the plants of the kingdom of Oude, &c. His last important excursion was to Ava, immediately after the reduction of the Birman empire. Here an entirely new field was laid open to his view; and when the collections of this vast and fertile country were added to those already deposited in Calcutta, the mass was estimated at 8000 or 9000 species. Of the difficulty of preserving dried plants in an Indian country, few can possibly form an idea, except by actual experience. In addition to the coleopterous insects, which in all climates commit most provoking ravages on these vegetable mummies, the ants are ready in the tropics to devour both the specimens and the paper in which they are preserved. To secure them from these attacks, the only remedy is to have the cabinets insulated, by setting the feet of them in troughs of water. But so rapid is evaporation under an Indian sun, that it was the entire office of a Hindoo, after entering the museum and performing his salaam to Dr. Wallich in a morning, to go the round of the room and replenish these troughs with water as fast as it evaporated, until the cool shadows of evening came on, and relieved him from his tedious and monotonous task.

4055. *With this vast herbarium*, with many seeds and chests of living plants, but with a constitution greatly enfeebled by a residence of twenty years, and incessant mental and bodily fatigue in fulfilling the duties of his important office, Dr. Wallich arrived in England in the autumn of 1828. Here he expressed the generous wish that all the civilised world should benefit as much as possible by his exertions, and that the duplicate specimens, which were exceedingly numerous, should be divided among the principal botanists, who are also invited to take a share in the publication of those genera or families with which they are most conversant. The large apartments of a house in Frith Street scarcely sufficed for the reception of the collections, which, however, began to be rapidly reduced, as the distribution, which was made in different portions, proceeded. In this dispersion, though aided by the most zealous botanists in England, and by M. A. Decandolle from Geneva and Professor Kunth from Berlin, Dr. Wallich's personal labour has been very great, yet he scarcely relaxed for a single day. The entire examination of many species, in order to the formation of a complete catalogue, with numbers corresponding to the specimens distributed, was in itself a work of no ordinary stamp; and this has been executed in lithography, and written with Dr. Wallich's own hand. But his *magnum opus*, and that on which Dr. Wallich's fame as a botanist may alone safely rest, is his *Plantæ Asiaticæ Rariores*; a work which, whether for the beauty or rarity and interest of the subjects, the execution of the plates, or the accuracy of the descriptions, is surpassed by no publication of this or any other period. It is now brought to a conclusion, and hardly possible is it to conceive how Dr. Wallich can have accomplished so laborious a task, amidst all his other important employments.

4056. *Dr. Wight* is another gentleman to whom the botany of India is greatly indebted. To his able charge was intrusted the Company's garden at Madras, so long as this establishment, which, we lament to say, was of short duration, continued: thus giving this gentleman, as it were, the same command over the vegetable productions of the southern peninsula of India which Dr. Wallich enjoyed over those of Hindostan Proper; and no man could have made better use of those advantages. Both during the continuance of the institution and after its abolition, during many long, painful, and most expensive journeys, he made ample collections, and has employed, and still continues to employ, at his own charge, an excellent draughtsman. In the year 1831 he arrived in London with an herbarium of 4000 species, and probably 100,000 specimens of plants of the presidency of Madras, which he is engaged in preparing for publication, and is generously distributing among European botanists, after the example of the Honourable the Directors of the East India Company.

4057. *While these sheets are in the press, another excellent botanist, Mr. Royle, has arrived in London*, from a most interesting district near the northern limit of the British territories in India, namely Schárànpúr, where an institution, similar to that above mentioned, as being in charge of Dr. Wallich, has been taken under the protection of the Honourable East India Company. In the year 1779, Tabita Khan first appropriated the revenues of seven villages for the maintenance of a public garden; an income, however, which was much reduced by the native princes, his successors. The Marquess of Hastings, with the enlightened views of a statesman, determined that what had been intended for the gratification of an Asiatic sensualist should contribute to the advancement of science, at the same time that it was a means of increasing the comforts of the people, and administering to the tastes of the most civilised Europeans.*

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* See an account of the Honourable Company's Botanical Garden at Schárànpúr, by F. Royle, Esq., late superintendent; published in the Journal of the Asiatic Society, February, 1832.

4058. *The situation of Schâranpúr*, in point of latitude, elevation, vicinity to the hills, and the facility of irrigation from the Doab canal, renders it particularly eligible for such a purpose; in short, in latitude 30°, the same parallel which passes through Persia, Arabia, Egypt, and over the southern boundaries of Libya, Barbary, and Morocco, by New Orleans, between Old and New Mexico, and passing through the very centre of China and Thibet. The elevation, too, 1000 feet above the level of the sea, renders the climate particularly favourable for the introduction into India of plants from the more temperate countries. The state of the atmosphere, indeed, for nearly six months in the year, is so similar to that of Europe, that most of the annual plants from that country may be successfully cultivated, while the cold is not sufficiently great, or of long continuance enough, to destroy the more southern plants, with the exception, indeed, of such tropical ones as cannot bear frost.

4059. *The best crops of European and medicinal plants*, Mr. Royle tells us, are obtained from seed sown in November; after which the weather becomes steadily colder till Christmas, when some heavy rains usually fall. During this season the growth of perennial and of herbaceous plants from warm climates is checked; but in March a rapid rise takes place in the mean temperature of the month, and the increase, amounting to 42° of Fahrenheit, affords a powerful stimulus, and rapidly accelerates the vegetation of spring. About the middle of April the hot winds begin to blow, and continue to do so till the beginning of June, when the rainy season commences, and according as it terminates, towards the beginning or close of September, depends the late or early diminution of temperature which ushers in the cold weather.

4060. *The mean temperature of Schâranpúr* throughout the year is about 73° Fahrenheit, and of the months of

January	52°,	May	85°,	September	79°,
February	55°,	June	90°,	October	79°,
March	67°,	July	85°,	November	64°,
April	78°,	August	83°,	December	55°.

4061. *With a zeal that does him the highest credit*, Mr. Royle has introduced to this garden a great number of exotics. From China, the Litchi, Loquat, Wampu, Longan, Flat Peach, and Digitated Citron, the Spiræa corymbosa, Dianthus chinensis, Rosa chinensis, and Althæa rosea. — From America, the Mahogany, Logwood, Sapota, Cherimoja, Ash-leaved Maple, Pimento, and Dahlias. — From Africa and New Holland, Aloes, Pelargonia, Stapelias, Amaryllis, Casuarina, Cajaputi, &c. The Barley of the hills, called ooa, from an elevation of 10,000 feet above the level of the sea, has become perfectly naturalised in Schâranpúr, and a singular species of Wheat from Kanáwar, at an equal elevation, succeeds remarkably well. Fiorin Grass is there seen by the side of the Guinea Grass and Lucerne, Succory and Clover, in a thriving state. Many precious medicinal plants are already cultivated, and it is hoped that many more will be introduced. Among the former may be mentioned Rhubarb; the long-leaved Fir, which yields by distillation a valuable oil of turpentine; Henbane, of which the extract is of a very superior quality; Senna, &c. Among timber trees are the Teak, Saul, Toon, Lissoo, Seriss Maple, Casuarina, Bamboo, Jasmine, and Mulberry. From the Saul tree above mentioned a very excellent resin is produced; while various gums are yielded by several trees, from the lower hills, now naturalised at Schâranpúr. The fine sugar, for which this district is noted, is chiefly refined by the mucilage of two plants, the Kydia calycina and Hibiscus Abelmoschus.

4062. *Our knowledge of the geographical distribution of plants*, too, is considerably extended by the establishment of this garden; for its able superintendent has most successfully explored the country in its vicinity, and, indeed, in the northern provinces of India, especially from the tract of country running along the Ganges and Jumna, from Allahabad up the Sutléj, and from the low range of hills which skirt the Himalayah as well as those of Deyra Dun; again from that part of the Himalayan range extending from the plains to the sources of the Ganges and Jumna, and included between the former river to the east and the Sutléj to the west; from Kanáwar, a place lying along both sides of the Sutléj within the British territories, but beyond the snowy passes of the Himalayah, and likewise from the valley of Cashmere, whence Dr. Royle has received living bulbs of the "Saffron" of commerce, and roots of the true Salep Orchis, or *Misri*. — The number of species collected amount to nearly 4000; namely, of

Dicotyledones	2791	
Monocotyledones	783	
Acotyledones -	279	
		3853

It is to be hoped that ere long Mr. Royle will gratify the botanical world with an account of these interesting plants; and in the mean time, under our next head, we shall offer the result of M. Mirbel's general and very cursory observations on the vegetation of Himalayah and the southern limits of Thibet.

4063. *After all that we have stated* of the labours of the above-mentioned botanists, it cannot admit a doubt but that we shall soon be better acquainted with the plants of British India than we are with those of many countries much nearer home; and it is very gratifying to observe that their attention has been especially devoted to the more useful kinds. Of such, the number in British India is very considerable, and their value might be still greatly increased by British capital and British industry, as is clearly shown in a very sensible anonymous pamphlet lately published, under the title of a "View of the present Trade and Colonisation of India;" where it is rendered equally apparent that to the same cause is to be attributed the absence of the useful plants of other countries similarly situated in regard to soil and climate; while those very countries — witness our possessions in the West Indies, the Spanish, Portuguese, French, English, and Dutch settlements in South America — have introduced and carried to a very high degree of perfection the culture of many of the most important commercial products of the East: so that one would think they were aboriginal to the New World. "What but the exclusion of European settlement hinders, in our Indian dominions, the extensive culture of the peculiar productions of America and even of China? The indigenous products of India have been transferred to America, and there, under the direction of European skill, they far surpass in goodness and quantity those of their original country: witness the Sugar-cane, the Cotton-plant, Coffee, Rice, and even Indigo, until, in its native country, the production of this last fell into the hands of Europeans. Have the Indians retaliated upon the American colonists? Where is our Indian Annatto? Where is our Indian Cocoa; our Indian Vanilla? The hardy plant producing the Annatto (*Bixa Orellana*), introduced from America, is to be found as a garden plant throughout India, but the drug obtained from it is wholly unknown to the Indians as an article of commerce. The plant producing the Cocoa, although cultivated in the Spanish and even in the Dutch East Indies, is unknown in the British possessions. The cochineal insect and the plant (*Cactus cochinnellifer* Bot. Magazine) that it feeds upon, introduced into British India by an ingenious European, have, in rearing and culture, reverted to the hands of nature and the care of the Indians; and Mexican Cochineal, consequently, exceeds it in value by full 500 per cent.

4064. "*India is in a similar predicament* in regard to China. Situated close to that country; in daily close intercourse with it; receiving yearly into our settlements thousands of emigrants from thence; having a population of cheap labourers, by character peculiarly adapted to the tedious manipulation indispensable to the preparation of tea, — an advantage which no other colony enjoys, or is likely for a long time to enjoy; and possessing the same soils, climates, and physical aspects as the most favoured of the tea provinces of that empire, not one pound of tea has ever been grown in our Indian possessions; not one attempt has been made to rear this valuable plant in British India, while such efforts have been frequent in distant and uncongenial European colonies. Owing to the superior skill of the Chinese, both as agriculturists and manufacturers, they are enabled to export a large quantity of sugar, of quality much superior to that of India, though having to contend against the high rents incident to a country fully peopled, and where the price of corn is, probably, not less than threefold as great as in the average of the Indo-British dominions."

4065. *The forests of India* are, it is well known, upon an extensive scale; and little, comparatively speaking, as has yet been ascertained of the species of trees they contain, the indefatigable Dr. Wallich has, chiefly by his own industry, and the various missions in which he was employed in various parts of India, to Nepal and the Himalayah mountains, and in the Birmese territories, together with what are grown in the Calcutta Botanic Garden, collected no less than 456 different species of Indian wood, which he has deposited, with the sanction of the Directors of the Honourable East India Company, in the museum of the *Society of Arts*, in London; and of which an account is given in the forty-eighth volume of the Transactions of that Society. Of these a large proportion are employed by the natives. Among them is the superb Butea frondosa (*fig.* 597.), from Gualpaca: two species of Careya, from Nepal; six species of Chestnut, one of Hornbeam, two Cedrelas, a genus nearly allied to mahogany; a Croton, five cubits in girth; two species of Daphne, D. Gardneri and D. cannabinum, of which the wood, indeed, is not used, but the inner bark is, in Nepal, most extensively manufactured into paper, which possesses the advantages of being strong, not liable to crack, and which is free from the attacks of the white ant; Dipteronitis grandiflora, a stupendous tree, one of those which yields wood, oil, and dammar; five species of Spindle tree; numerous kinds of Fig, but whose wood is usually light and of comparatively little value; an Ash (*Fraxinus floribunda*), whose wood is exactly similar to the Ash of our country; Gmelina arborea, used for turnery-ware of all kinds, and cylinders of which, of a proper size, are turned very thin for drums, other musical instruments are also made of it; Gordonia integrifolia, of which the Birmese have a superstition that one beam in every house should always consist of its wood; three Hibisci, Hopea tinctoria, which grows to an enormous

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BUTEA FRONDOSA

size, of which cannons are made, and which produces a valuable resin or dammar; a Holly, a Walnut, "an exceedingly large tree;" a Juniper, from Himalayah; three species of the beautiful Lagerstrœmia, several of Laurel, a Privet, which constitutes a "timber;" a Magnolia, two kinds of Mulberry, three of Nutmeg, whose wood is extensively used; a large Olive; five species of Pine, natives of Nepal, one of which, Pinus Deodora, yields a fragrant wood; the very large Pine of Tawey (*P. Dammara?*), a tree-fern of Nepal forty-five feet high, Polypodium giganteum; three species of Plum, four species of Pyrus, ten of Oak, of which the Quercus semecarpifolia becomes a very large tree, having a clean trunk eighty to one hundred feet in height, and fourteen to eighteen feet in the girth at five feet from the ground; a Buckthorn, whose wood is very hard and heavy, not unlike English Yew; three Rhododendrons, among them the splendid R. arboreum, of which gun-stocks are made, and which resembles a Plum-tree, a Rubus (or *Bramble*), as thick as a stout man's arm; three Willows, among them the Weeping Willow (*Salix babylonica*), which in Nepal attains an enormous size; Shorea robusta (*fig.* 598.); Saul, or Sole, the staple timber of Hindostan for building purposes, vast quantities of dammar or resin are extracted from it, as well as from Dipterocarpus and Hopea, all of which belong to one family, the Dipterocarpeæ; a Yew; and, lastly, we shall only further mention the Teak (*Tectona grandis*) (*fig.* 599.), of which ships are extensively built, and these are said to be quite equal to those built of oak; the trunk attains an enormous size, and the leaves are of a foot and a half or more long.

598

SHOREA ROBUSTA.

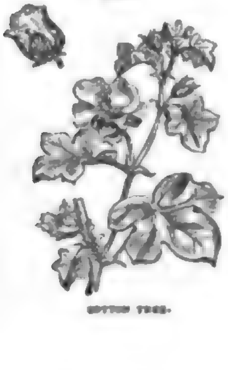
599

TECTONA GRANDIS.

4066. *Notwithstanding the abundance of valuable timber* yielded by our Indian possessions, none is ever exported; and though there is a prodigious extent of forest, neither pot nor pearl ashes have ever been manufactured. Yet America produces no less than 18,479 tons of pot and pearl ashes, worth 430,038*l.*; and England and her colonies form the principal market for them: to the latter, no less than 13,322 tons out of the above-mentioned quantity were exported.

4067. *Cotton* (*Gossypium herbaceum*) (*fig.* 600.) is a native of the East Indies, and extensively cultivated; so that, in 1818, 67,456,411 lbs. were imported into Great Britain; but the quality is very inferior to that of other countries: the best of it in the London markets is worth 3*d.* per lb. less than the best West Indian cotton. It is half the value of Berbice cotton: that from Pernambuco, and the modern Egyptian cotton, are reckoned to be 60 per cent. better: and this inferiority, again, is attributed to the ignorance and prejudices of the Hindoos. It is indeed extraordinary that, admirably as the East Indies are calculated for the growth and exportation of cotton, out of 197,544,880 lbs. the average import of the years 1827 and 1828, the United States furnished - - - 151,834,000
Brazil - - - - 17,754,880
Egypt - - - 6,957,800
The West Indies (our own dependencies) 9,010,560
And the East Indies - - 11,987,040.

600



COTTON TREE.

4068. *Sugar*, the produce of Saccharum officinarum, (*fig.* 601.) is equally a native of the East Indies, and is, in fact, more or less an object of agriculture in every considerable country of the vast regions comprehended under that name, from the 8th degree of south to the 30th degree of north latitude, and from Persia to China, both inclusive. Of all this wide extent, it is universally allowed that no portion is more suitable to its growth than our own possessions. To obtain sugar in abundance, and of the best quality, nothing more is requisite than to remove the idle and pernicious restraints on the settlement of Europeans. But, as matters stand now, of 38,390,536 lbs. of sugar, imported into Great Britain from the East Indies in 1826, no less than 20,859,440 lbs., or more than half of the whole amount, was the produce of the island of Mauritius. "That is to say, the imports into this country from a small island, with an area of 372,528 acres, one eleventh part only of which is under any culture, and one fifteenth only under the culture of the sugar-cane, — the imports from an island with a somewhat precarious climate, and a fertility of soil not very distinguished, — the imports from an island that at the utmost contains a population of no more than 95,000 inhabitants, — and, finally, the imports from an island, of which the British nation had possessed the sovereignty but twelve short years, are greater, in the grand staple of the tropical world, not only than those of all British India, of which we have possessed the sovereignty five times as long, with its area of 600,000 square miles, its population of 83,000,000, its fertile soil and its genial climate, but larger than those of the whole Eastern world put together (the said small island excepted), embracing a population of certainly not less than 300,000,000 people!" And this inequality is not owing to the difference of duty between Mauritius and the other East Indian sugars: this is not the cause that the trade in the one article is stationary, and in the other advancing with an extraordinary rapidity of increase. A new soil, as yet unexhausted by bad husbandry, the introduction of European machinery, and the superintendence of European resident proprietors, are the true causes.

601

SUGAR CANE.

4069. *Indigo*, a staple article of the East Indies, one of the most valuable of its products, and one of the most profitable of cultivation in all Hindostan, is yielded by the Indigofera tinctoria (*fig.* 602.); and it is in that country so lucrative, because an immense extent of land is required to produce but a moderate bulk of the dye; because labour and land are cheaper here than any where else; and because the raising of the plant and its manufacture can be carried on even without the aid of a house. The first step in its cultivation is to render the ground, which should be friable and rich, perfectly free from weeds, and dry, if naturally moist. The seeds are then sown in narrow drills, about a foot apart. The rainy season must be chosen for sowing; otherwise, if the seed is deposited in dry soil, it heats, corrupts, and is lost. The crop, being kept free from weeds, is fit for cutting in about two or three months, and this may be repeated in rainy seasons every six weeks. The plants must not be allowed to come into flower: as the leaves, in that case, become dry and hard, and the indigo produced is of less value; nor must they be cut in dry weather, otherwise they will not spring again. A crop generally lasts two years. Being cut, the herb is first steeped in a vat, till it becomes macerated, and has parted with its colouring matter; then the liquor is let off into another, in which it undergoes the peculiar process of beating, to cause the fecula to separate from the water. This fecula is let off into a third vat, where it remains for some time, and is then strained through cloth bags, and evaporated in shallow wooden boxes, placed in the shade. Before it is perfectly dry, it is cut into small pieces of an inch square; and finally packed into boxes or sewn up in bags for sale. Indigo was not extensively cultivated in India before the British settlements were formed there; its profits were, at first, so considerable, that, as in similar cases, its culture was carried too far, and the market was overglutted with the commodity. The indigo is one of the most precarious of Oriental crops; being liable to be destroyed by hailstorms, which do comparatively little injury to the sugar cane and other plants. European skill and capital have been, in India, especially applied to its management for nearly fifty years. What was manufactured by the natives of India, prior to that time, was trash, unfit for the European market, then almost wholly supplied by South America, which furnished England with about 1,200,000 lbs. weight. There are at present, in Bengal, 309 manufactories of indigo for exportation, of which thirty-seven only are conducted by natives, and these in imitation of the European process. The Indians, however, cannot even imitate us to any advantage, with so many examples before them, and in full possession of all the land, to the complete exclusion of their competitors; for the indigo thus prepared is full 15 per cent. lower in value than that manufactured by Europeans; and as to indigo made by the old native process, it is still wholly unfit for the foreign market; and even when re-manufactured by Europeans, which is sometimes done, it is still, from the deterioration it has undergone in their hands, a very inferior commodity. The average yearly quantity of indigo produced for some time back in the

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INDIGO.

British dominions in India, has ranged from 8,500,000, to 9,000,000 lbs. weight, and in value from 2,700,000*l.* to 3,300,000*l.* The produce of 1828, the greatest ever known, amounted to 12,000,000 lbs. Before Europeans undertook the culture and manufacture of Indian indigo, it was, as already stated, so bad as to be unsaleable in any foreign market. On an average, it is now about twelve and a half per cent. better than South American indigo. In short, about four fifths of the consumption of Europe, Asia, and America is now supplied with *good* Indian Indigo; a commodity which, fifty years ago, had no existence.

4070. *Cajeput oil* is obtained from an East Indian shrub, the Melaleuca Leucadendron, and, in a pure state, is considered one of the best of preservatives of preparations for natural history. It is used externally, and with much success, as a cure for rheumatic affections and pains in the joints. In India, too, it has been employed in the almost hopeless task of curing the cholera morbus. When that disease first broke out in England, and indeed before it actually made its appearance, Cajeput oil was in such demand, that the price rose to a most extravagant height. But when its inefficiency was unfortunately proved, it was soon reduced to its ordinary standard.

4071. *Caoutchouc*, or Indian Rubber, is the inspissated juice, not only of several species of Ficus, but of the Urceola elastica of Dr. Roxburgh, or Elastic Gum Vine. To the same natural order with the latter belongs the Strychnos Nux Vomica (*fig.* 603.) (the *Poison nut* or *Vomic nut*), whose seed is among the most powerful of all vegetable poisons: yet the pulp of the fruit appears to be innocuous, being eaten by birds, &c. Of the same genus is the Cleansing Nut (*Strychnos potatorum*). "The ripe seeds," says Dr. Roxburgh, "are dried and sold in every market to clear muddy water. The natives never drink clear well-water, if they can get pond or river water, which is always more or less impure, according to circumstances. One of the seeds or nuts, as they are generally called, is rubbed very hard, for a minute or two, round the inside of the vessel containing the water, which is generally an unglazed earthen one, and the water left to settle; in a very short time the impurities fall to the bottom, leaving the water clear, and, so far as I have been able to learn, perfectly wholesome."

603

STRYCHNOS NUX VOMICA.

4072. *To the Fig tribe* belongs the famous Banyan of India, commonly called Peepul tree, and constantly planted about the Hindoo temples (*Ficus religiosa*) (*fig.* 604.): —

604

BANYAN TREE.

"Branching so broad and long, that in the ground
The bended twigs take root, and daughters grow
About the mother tree, a pillar'd shade
High over-arch'd, and echoing walks between."

These roots or props occupy such a space of ground, that one growing on the banks of the Nerbuddah covers an almost incredible area. The circumference which now remains (for much has been swept away by the floods of the river) is nearly 2000 feet. The overhanging branches, which have not yet thrown down their props or supports, overshadow a much larger space: 320 large trunks are counted of this singular tree, while the smaller ones exceed 3000; and each of them is continually sending forth branches and pendent roots, to form other trunks, and become the parents of a future progeny. The whole, according to Forbes's *Oriental Memoirs*, has been known to shelter 7000 men beneath its wide-spread shade.

4073. *No less gigantic*, as a grass, than the Banyan as a tree, is the Bamboo (*Arundo Bambos*) (*fig.* 605.), whose jointed stems or culms not unfrequently exceed 100 feet in height with a diameter of a foot near their base. It is of the most rapid growth, clothed, especially at the top, with copious dark green foliage, and literally constitutes forests. It is one of the most extensively useful of all plants, where lightness and durability are required. Houses are built of this cane, and Dr. Patrick Browne assures us that they have been known to endure upwards of 100 years. Besides masts for boats, boxes, cups, baskets, mats, palankeens, and carriages, and a great variety of other utensils and furniture, both domestic and rural, are made of it. Paper is prepared from it, by bruising and steeping in water, when it becomes a paste. It is the common fence for gardens and fields, and is frequently used for water pipes.

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BAMBOO.

606

GINSENG.

4074. *Ginseng* (*Panax Ginseng*) (*fig.* 606.), which constitutes a valuable article of trade in China (though its medicinal properties are grossly exaggerated by that extraordinary people), and the root of a nearly allied species of which (*P. quinquefolia*) has been sold by the Americans in one season (1824) to the amount of 39,064*l.*, might, there is every reason to believe, be collected to great advantage in Nepal; and this has been suggested by Dr. Wallich, who published the species, under the name of Panax tetraphylla, in his splendid work, *Plantæ Asiaticæ Rariores.*

4075. *Sandal wood* (*Santalum album*) (*fig.* 607.), the produce of a well known fragrant tree, is extensively collected in the western part of India, on the coast of Malabar. In some parts it sells at so high a price that the tree is seldom allowed to grow more than a foot in diameter. It is manufactured into musical instruments, small cabinets, boxes, escritoires, and similar articles; as no insect can exist, nor iron rust, as it is said, within its influence. From the dust of this wood the Bramins make the pigment which they employ in giving the frontal mark to their god Vishnu: and oil used in their ceremonies is obtained from the shavings, or at least scented with them.

607

SANDAL WOOD.

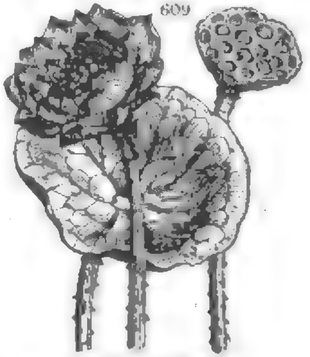
4076. *The Valeriana Jatamansi* (*fig.* 608.) (*Nardostachys Jatamansi* of De Candolle) abounds in the hilly parts of Nepal, and is determined by Sir W. Jones to be the true Spikenard of the ancients, or Indian Nard of commerce, and has been employed as a valuable perfume from the remotest antiquity. It is carried across the desert to Aleppo, where it is used, in substances, mixed with perfume, and worn in small bags, or in the form of essence, and kept in little boxes or phials, like attar of roses.

4077. *Still lakes*, pools, and tanks of water, in various parts of India, abound with many highly curious aquatic plants. Water-lilies of different hues are very common, and one is rendered famous in history, namely, the Cyamus Nelumbo (*fig.* 609.) or Sacred Bean of India, the *κυαμος* of the ancients, whose splendid flowers, of a full rose colour, are embosomed in large peltate leaves of the tenderest green, and which, as well as the flower-stalk, rise considerably above the surface, not floating like the water-lilies of our country. Sola, too, is an aquatic plant, of which an interesting account is given by General Hardwicke, in the *Botanical Miscellany.* "It has very often interested me, and gratified my curiosity," says that gentleman, "to remark to how many useful purposes the Sola is applied by the natives of India. It is the Æschynomene paludosa of Roxburgh. It grows abundantly on the

608

VALERIANA JATAMANSI.

609



SACRED BEAN OF INDIA.

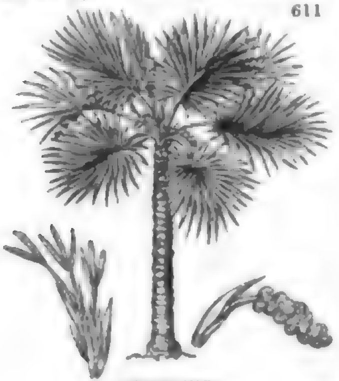
marshy plains of Bengal, and on the borders of *jeels*, or extensive lakes, in every province between Calcutta and Hurdwar. The plant is perennial, of straggling low growth, and seldom exceeds a diameter of two inches and a half in the stem. It is brought to the Calcutta bazaars in great quantities in a green state; and the thickest stems are cut into laminæ, from which the natives form artificial flowers and various fancy ornaments to decorate their shrines at Hindoo festivals. The Indians make hats of it, by cementing together as many layers as will produce the requisite thickness: in this way, any kind of shape may be formed; and when covered with silk or cloth, the hats are strong, and inconceivably light. It is an article of great use to fishermen; it forms floats of the best description to their extensive nets. The slender stems of the plants are bundled into fascines about three feet long; and with one of these under his arm does every fisherman go out to his daily occupation. With his net on his shoulders, he proceeds to work without a boat, and stretches it in the deepest waters and most extensive lakes, supported by this buoyant faggot. I must not forget to give you the native name of the plant, which in Bengalee is Shola, commonly pronounced Sola. Dr. Roxburgh considered the plant as annual, I believe. The foliage, and other parts of the plant, where water is wanting, die down to the roots; but where water is plentiful, the stems remain, and branch out afresh in the proper season."

4078. *Lastly, we shall mention*, among the grandest features of Indian scenery, the Palms, those princes of the vegetable kingdom, which administer to so many of the wants and luxuries of the natives, and which are not confined to the hottest parts of the country; for one species, the Chamærops Martiana of Wallich's *Plantæ Asiaticæ Rariores*, was found by that famous botanist in the valley of Nepal, in lat. 28° N., and at an elevation of 5000 feet above the level of the sea. The south coast of India abounds with the Cocoa-nut (*Cocos nucifera*) (*fig.* 610.), of which the Hindoos celebrate 365 uses that they derive from it. Far superior to this, in the magnitude of its leaves, of which a single one will shelter twelve men, is the Palmyra Palm (*Borassus flabelliformis*) (*fig.* 611.), which sometimes attains to 100 feet, while its trunk yields abundantly the Toddy or Palm wine. The Caryota urens, in the diameter of its stem, which is three feet; and the Betel nut (*Areca Catechu*), in the gracefulness of its trunk and foliage, also excel the cocoa-nut. The fruit of the latter is eaten with the pungent leaf of the Betel pepper already mentioned, whence arises its appellation of Betel-nut Palm. Dr. Roxburgh describes a dwarf palm, under the name of Phœnix farinifera, which yields a farinaceous substance in the heart of the stem or cabbage, similar to the Sago of the shops. This latter substance is the product, it would appear, of two plants, the Sagus farinifera (*fig.* 612.), a native of the peninsula of India, and the Cycas revoluta, a Chinese and Japanese plant.

610

COCOA NUT

611



PALMYRA PALM.

612

SAGUS FARINIFERA

4079. *Himalayah, and the southern boundary of Thibet.*[*] — The chain of the Himalayah mountains, an immense barrier which divides the population, the animals, the vegetation, and the climate of the East Indies and Southern Asia, begins, easterly, not far from the river Barrampooter, or Brahmapoutra, about lat. 28°, and extends in a north-west direction as far as the Indus, lat. 35°. In the south it rises abruptly from the plains of Nepal; to the north, it is nearly on a level with the high ground of Thibet. The highest known mountains belong to this chain: they are situated between the 28th and 32d parallels. Mr. Colebrooke has deduced the following elevations from the observations of Captain Blake; viz., the Peak of Chandragiri, 21,935 feet; that of Swelagar, 25,261 feet; that of Dewalagiri, 28,015 feet; this latter peak exceeding Chimborazo by 6000 feet. Fraser estimates the height at which the snow becomes perpetual on the Himalayah mountains at from 14,000 to 16,000 feet; an elevation which is surprising at a distance of from five to nine degrees from the tropics, but which may be explained by the peculiar conformation of this Asiatic region. While large sheltering chains of mountains, running almost parallel with the equator, and rising like steps, one above another, from the north of Siberia to Nepal, break and arrest the currents of cold air which descend from the hyperborean country; on the other hand, the warm breezes from the vast plains of Hindostan sweep gently upward on the easy slopes of the Himalayah mountains, and reach the higher regions without intermixture or contact with the northern atmosphere; thus causing the Himalayan range to partake of the equatorial zone, in the character of its climate and vegetation.

4080. *The lower plains of Nepal and Boutan* differ little from Hindostan in their vegetation. Warmth and constant moisture keep up a sempiternal verdure; the cultivated spots produce, at the same time, the Mango, the Orange, the Pomegranate, the Peach, the Apple and Pear, the Walnut tree, the Banana, the Bamboo, &c. The Erythrina monosperma and Bombax heptaphyllum are the most common trees in uncultivated spots. The forests of the lower ridges of the Himalayah mountains are composed particularly of Shorea robusta, mixed with Dalbergia, Cedrela, &c. At an elevation of from 2000 to 2500 feet, the Pinus longifolia and Mimosa Catechu grow. At this height, in about 27° 17′ N. lat., Hamilton computes the mean annual temperature at + 23° 3′. In proportion as the ground rises, the species of plants that belong to the plains of Hindostan become rare, and those which are peculiar to the mountains usurp their places. The vegetation imperceptibly assumes the generic character of the productions of the north, while it still presents a number of specific types that are foreign to our country. The Pine Apple, Sugar Cane, Bamboo, and Rice are still cultivated in the valleys, at an elevation of from 3200 to 4400 feet: but beyond 6300 feet nothing but barley, wheat, millet, and the other grain of northern zones, will succeed. The common trees are species of Michelia, Gordonia, Fir and Pine trees, Podocarpus, Chestnut, Oak, Walnut, Laurel, Ilex, &c.

4081. *There is never either frost or snow in Boutan,* except on the high mountains; but at Katmandu (lat. 27° 41′), the capital of Nepal, at an elevation of about 4000 feet, it snows every winter. In that part of the Himalayah range which looks towards Hindostan, and on the southern frontier of Thibet, Fir, Spruce, Juniper, Salix tetrasperma, Birch, &c. attain a great height, when not arrested by the sterility of the soil, the precipitous ledges, and the avalanches of snow. At from 12,000 to 13,000 feet, upon those peaks which shelter the masses of perpetual snow from which the sources of the Ganges take their rise, Captain Hodgson remarked a tree of the family of the Coniferæ, the branches of which, as thick as a man's leg, swept the ground. This tree, which he conceives to be a Pine, and which the Hindoos call Chandan, is perhaps the Abies dumosa of Don, which in that country holds the place which Pinus Pumila does on the higher parts of our mountains. Hodgson found the Chandan in lat. 31° to 32°, on the peak of Chour, and on the snowy mountains of Kounawur, which arise from Thibet. In this region, at a pass about 15,000 feet high, A. and P. Gerard observed, on the 2d of October, under a tent, the thermometer indicating, at noon, + 10°; at 4 o'clock it was zero, and the following morning at sunrise the temperature was 8° 3′. This cannot be considered cold, if we take into consideration the season, the height, and the latitude. The Vine, in a favourable exposure, produces delicious grapes at an elevation of from 8000 to 12,000 feet English. It must be observed that this is owing to the immediate efficacy of the solar radiation, which is the more powerful as the intervening stratum of air is less thick and more rarified. The last villages, the last cultivated fields, are at 13,000 feet: and this is the usual limit of the large Pine forests. At this elevation it is almost needless to say that the harvest pays very inadequately for the labour of cultivation: it consists of some of the Cerealia, Beet root, Millet, &c. A thousand feet higher up, some clumps of Fir, Birch, Gooseberry bushes, Rhododendron, Vaccinium, &c. may yet be seen. Then come the small woody or herbaceous flowering plants that are peculiar to the arctic regions, and the Mosses and Lichens attain to the borders of perpetual snow. The last expiring efforts of vegetation here are scarcely different from what is presented by the summits of the Andes, of Caucasus, the Carpathian and Swiss Alps, the Pyrenees, &c., nor from the productions of the extreme northern regions, and the antarctic districts that are divided from Patagonia by the Straits of Magellan. The larger natural floras, however decidedly pronounced their distinguishing characters may be, when, under the influence of a favourable climate, they display all their richness and variety of form, are insensibly reduced, by the effect of a gradual diminution of annual temperature, to a small number of families and of genera, whose specific types are, every where, if not the same, yet so much alike, that botanists themselves are often tempted to confound them.

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[*] Extracted from the *Géographie Botanique* of M. Mirbel, in the 14th volume of the *Mémoires du Muséum d'Histoire Naturelle.*

4082. *The aspect of the southern boundary of Thibet* is wild and melancholy. High plains, bounded on all sides by chains of mountains, surmounted by enormous peaks that are covered with perpetual snow, often present the traveller with nothing but those saline incrustations and metallic substances which induce an almost absolute sterility. No large vegetable productions can be seen, only a few herbs and shrubs, whose stunted growth denotes the congenial nature of the soil. In some districts the land is rather better, and is either covered with spontaneous forests and verdure, or brought into cultivation by the hands of man. The winters are long and severe; for three whole months, the inhabitants are immured in their villages by the heavy snows; and the summers are scorching, the sides of the mountains reflecting back the sun's rays with extreme force. In valleys that are about 9900 feet high, such as those which intersect the Himalayah chain and the Mount of Cailas to the west, Rice, Wheat, Barley, Mulberries, and Opium Poppies are cultivated. There are also some extensive vineyards, rivalling, in the excellence, size, and flavour of their produce, the grapes of Cabulistan. Apricots, Walnuts, and Apple trees grow in the forests.

4083. *There are certainly* some remarkable discrepancies between the climate of the eastern and western parts of Thibet. The latter, of less elevation, and nearer the tropics, has, like the equatorial zone, its periods of rain and drought; and it is probable that the winter temperature is generally lower there than in Kounawur, though the cold be very severe.

4084. *The Alps of Thibet*, like those of Nepal and Boutan, produce Spruce, Fir, Juniper, Oak, Hazel, Alder, Willow, Birch, Elder, Horsechestnut, Ash, Ilex, Gooseberry, Raspberry, Rhododendron, Vaccinium, &c.

4085. *Himalayah and Thibet* bring us to the western frontier of China, where we meet with the Transition Zone. But what positive information can be given as to the vegetation of a country, which the unalterable manners, and, as it were, the very instinct, of its inhabitants shut out from the rest of the world, even more completely than could be effected by trackless seas, howling deserts, or mountains of greater elevation and asperity than the Alps of the Himalayah?

SUBSECT. 3. *Zoology.*

4086. *The native Zoology* presents a vast field for observation; and although many parts have been explored by Europeans, there still remains entire provinces which have never yet been visited by the naturalist. Our celebrated countryman, Pennant, brought together all the information which was then known; but the revolutions in nomenclature, which more enlarged views of natural science has since occasioned, and the important discoveries since made, have now rendered the "Indian Zoology" of little service to the modern naturalist. It is not a bare list of animals, with their scientific names, that is now wanted, but rather information on the geographic range and the natural economy of each, viewed in reference to the peculiarities of the countries they respectively inhabit. The publication of the voluminous materials, collected by General Hardwicke, during a long residence in British India, will materially illustrate these questions. In the mean time, the following brief notices on the chief peculiarities of Indian zoology will not be uninteresting to the general reader, as tending to illustrate our previous remarks on the distribution of Asiatic animals in general.

4087. *The Quadrupeds which appear to characterise* more particularly the regions of continental India are the following. They are arranged under those divisions of the peninsula where naturalists informs us they are chiefly found: —

1. *Hindostan generally.*

Genetta fasciata. Banded Genett.
Mus giganteus. Gigantic Rat.
Cercocebus radiatus. Radiated Monkey.
Papio apedia. Thumbless Baboon.
Papio niger. Black Baboon.
Rhinoceros indicus. Indian Rhinoceros.
Pteropus pallidus. Mottled Bat.
Ursus malayanus. Malay Bear.
Ursus labiatus. Thick-lipped Bear.
Mangusta Mungos. Indian Ichneumon.
Procyon? albifrons. White-fronted P.
Leo asiaticus. [illegible] Asiatic Lion.
Felis Tigris. Royal Tiger.
Felis venatica. Maneless Hunting Leopard.
Cervus porcinus. Brown Stag.
Raphicerus acuticornis. Sharp-horned Antelope.
Antilope cervicapra. Common Antelope.
Raphicerus subulata. Awl-horned Antelope.
Gerbillus indicus. Indian Gerbil.
Hystrix fasciculata. Pencil-tailed Porcupine.
Hystrix macroura. Long-tailed Indian Porcupine.
Tetracerus Chicara (H. Smith). Chicara Antelope.
Tetracerus quadricornis. Four-horned Antelope.
Nemorhedus Duvaucelii (H. Smith). Duvaucel's Antelope.
Bos Bubalus. Common Buffalo.
Bos Gaurus. Gaur Buffalo.
Bos Gaveus. Gayal Buffalo.

2. *Bengal.*

Cercocebus cynosurus. The Malbrouck.
Nycticebus bengalensis. Slow Lemur.
Nyctinomus bengalensis. Bengal Bat.
Pteropus marginatus. Bordered Bat.
Genetta Bondar. Bondar Genett.
Viverra prehensilis. Prehensile Viverra.
Manis crassicaudata. Short-tailed Manis.
Cervus hippelaphus. Great Rusa.
Cervus Aristotelis. Black Stag.

3. *Pondicherry.*

Pteropus Leschenaultii. Spotted Bat.
Sorex indicus. Indian Shrew.
Lutra Nair. Pondicherry Otter.
Viverra Typus. Common Viverra.
Mus indicus. Indian Rat.
Mus Perchal. Perchal Rat.

4088. *From the foregoing list, it would appear that the carnivorous quadrupeds*, in regard to the number of species, are very small; and that this fact tends to invalidate the position, previously advanced, that the chief peculiarity of Asiatic India, when compared with America, appears to be the abundance of its ferocious quadrupeds. It must, however, be remembered, that numerical quantities must be taken into the account; for it is quite immaterial to the question, whether that abundance is occasioned by number or by species. To illustrate this farther, we may state, that during two years and a half spent in traversing the forests of Brasil, with the sole view of investigating its productions, we never once saw, or procured, a ferocious animal: so thinly do they appear scattered in that empire, or, at least, over such provinces as we visited. Now, the Tigers of India are well known to be so numerous, that it is impossible to enter the woods or jungles without seeing the print of their feet, or incurring the danger of their attack. Even the common people employed in agriculture are frequently alarmed by their appearance, and fall a prey to their ferocity, close to human habitations; neither can the abundance of these terrific animals be traced to a thinness of population, in respect to which the interior of Brasil is much more deficient. If the accounts of Oriental travellers are to be relied upon, the proportion of population between the two regions may be no greater than one to five. The "next neighbour" to a Brasilian of the interior frequently resides at a distance of thirty miles, and often of a two days' journey, particularly in the central province of Matto Grosso, or the "Great Wood."

4089. *A brief notice of the following quadrupeds* will be interesting or instructive: — the Rhinoceros, the Tiger, the Ichneumon, and the Antelope.

4090. *The Indian one-horned Rhinoceros* of the continent (*fig.* 613.) is distinct from that of the islands. Thicker and more unwieldy for his size than the elephant, he exhibits in confinement much of the singular sagacity observed in that gigantic animal. A young one described by M. Cuvier, and which was lately alive in Paris, evinced many such habits. He smelt at every thing, and seemed to prefer sweet fruits, and even sugar itself, to any other food. Like the elephant, he collected and held every thing intended for his mouth with the movable upper lip; and when he ate hay, he formed it first into little bundles, which he placed between his teeth by means of his tongue. The nature of its hide has been much exaggerated by old writers. The whole body is covered with a very thick tuberculous greyish skin, nearly naked, and disposed in irregular folds, under which it was flesh-coloured: over this, particularly on the tail and ears, were scattered a few stiff thick hairs. But it is in a wild state only that the bodily powers of this creature can be fully estimated: and these are frequently displayed in a surprising degree. A few years ago, as Major Smith relates, a hunting party of Europeans, with their native attendants and elephants, met with a herd of seven; apparently led by one, much larger and stronger than the rest. This boldly charged the hunters. The leading elephants, instead of using their tusks as weapons, suddenly wheeled round, and received the thrust of the Rhinoceros's horn on the posteriors: the blow brought them and their riders to the ground. No sooner had they risen than it was repeated, and in this manner did the contest continue, until four of the seven were shot, when the rest retreated. This anecdote shows the tremendous power of the Rhinoceros, sufficient to overcome the active ferocity of the lion and the ponderous strength of the elephant: but this is only exerted in self-defence. The Rhinoceros derives all his food from the vegetable kingdom, and is quiet and peaceable if left to himself.

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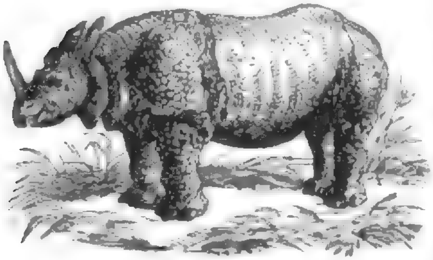

RHINOCEROS.

4091. *The Bengal or Royal Tiger* (*fig.* 614.) is the scourge of Asia and the Indian islands. Equal in size to the Lion, though generally inferior in strength, it wants not courage or ferocity to attack the king of beasts; a temerity which generally proves fatal. Ferocity cannot be more horridly developed than in the Tiger: it may, indeed, be termed a sanguivorous animal, for it will suck the blood of its victim previously to eating it, and will seize on any other that may come in sight; treating it in the same way. Its horrid avidity is such, that, while so engaged, it will almost bury its head and face in the reeking carcase of its prey. According to Marsden, the tigers in Sumatra are so abundant, that whole villages are sometimes depopulated by them. Yet, from a superstitious prejudice, it is with difficulty the natives are prevailed upon, even by large rewards, to use means for their destruction, until revenge for some loss in their own family bursts the shackles of fanaticism under which they habitually sink.

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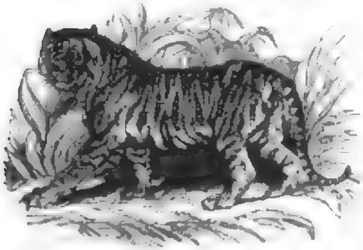

BENGAL TIGER.

4092. *The Indian Ichneumon* has some resemblance to the weasel, and is called by the natives *Mangouste*. Its total length, with the tail, is about two feet. It feeds entirely upon small animals, particularly birds, and, for its size, appears as voracious as the tiger. Although capable of being tamed, and even taking pleasure in the caresses of its master, it becomes extremely ferocious at sight of those little animals which constitute its prey. If within reach of a bird, it will spring forward with a rapidity which the eye cannot follow, seize its victim, break its head, and then devour it with the utmost voracity. This animal lives in holes, or in burrows, near habitations.

4093. *The four-horned Antelopes* (*fig.* 615.) (for there are probably two species) are peculiar to India. That which is named Chickara inhabits the forests and hilly tracts along the western provinces of Bengal, Babar, and Orissa. It is a delicate-shaped, wild, and agile little creature, measuring about twenty inches and a half high from the shoulders. Its general colour is bright bay above, and whitish beneath. The form of the horns is simple; the largest pair being three inches long, and the others only three quarters of an inch.

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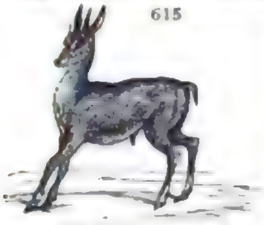

FOUR-HORNED ANTELOPE.

4094. *The Birds*, as we before observed, are numerous; but, however interesting to the scientific naturalist, there are few which demand, in this place, a particular description. The Peacock is the glory of Indian ornithology. The Jungle Cock (*fig.* 616.) is spread over the whole of this peninsula, but is replaced, in the islands, by other species: it is perhaps more beautiful than that domesticated in Europe. The Oriental Pigeons vie with the Parrots in the brilliancy, yet softness, of their tints. There are no less then twenty-one species described as inhabiting the continents of India, and eleven more are peculiar to China, Molucca, and the islands. It is singular that this family, in point of species, is distributed in the two hemispheres in nearly equal proportions; twenty-four being described as American, and thirty-one as Asiatic: most of the latter have the ground colour of their plumage bright green, and principally belong to the genus Ptilonopus *Swains.* The gigantic Cranes have already been noticed, as well as the groups of such smaller birds as are sufficient to indicate the nature of the whole.

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JUNGLE COCK.

4095. *The Peacock* appears to have been introduced into Greece about the time of Alexander. It is without doubt the most superb bird in creation, although a familiar acquaintance with its form takes something from that admiration which it would otherwise excite. It is said to occur in the greatest profusion over the extensive plains of India, where it grows to a much larger size than with us. It appears, nevertheless, to be a shy bird; and domesticated individuals are sometimes of a pure white colour. It has been asserted, that the natives have the following very curious mode of catching these birds. A kind of banner is prepared, lighted by candles, and ornamented with painted figures of Peacocks. This is carried, during the night, and held up to such trees as are known to be their roosting-places. The birds, dazzled by the light, and deceived by the figures, repeatedly stretch out their necks, till they become entangled in a noose, fixed on the banner: the fowler then draws the cord, and secures his game.

4096. *The domesticated animals* may be briefly enumerated. The Asiatic Elephant, long confounded with that of Africa, may be at once recognised by its much smaller ears. Its services appear universal, and it is as essential to the Indian sportsman as a good horse is to an English fox-hunter. Domestication has so far counteracted the instinct of nature, that tame elephants are employed to decoy and catch their wild brethren. The Oxen are all of the humped breed; and the Buffalo is chiefly employed in agriculture. The Asiatic Sheep, in general, observes Major Smith, are partly of the same broad-tailed races as are found in Africa. There is, however, another breed in India, rather high on the legs, with moderate curved horns, and a collar of hair reaching to the shoulders; the tail is more hairy than the body, and reaches below the houghs: this variety is also found in China.

Sect. III. *Historical Geography.*

4097. *The name of India* has always been celebrated in the Western world, not only as a region abounding in rich products, but as an early seat and fountain of civilisation and philosophy. Whatever literary talent or application, however, the Hindoos might possess, none of it was turned to history; of which only some faint traces appear, amid the most extravagant fables. The first authentic notice is afforded by the invasion of Alexander; but that event, so celebrated in Greek history, was a mere partial inroad, producing no lasting effects. Yet the narratives of this expedition are precious, in so far as they show that the Hindoos were then precisely the same people as now; divided into castes, addicted to ascetic superstition, religious suicide, and abstruse philosophy. It does not appear that India was then the seat of any extensive empire; but it was divided among a number of smaller states. The expedition of Seleucus and the embassy of Megasthenes brought to light the existence of a great empire, of which the capital was Palibothra, on the Ganges; but the histories neither of the East nor of the West convey any details of the dynasty which reigned in that mighty metropolis. The interposition of the hostile monarchy of the Parthians cut off all communication between Rome and India, though one embassy from the latter country is said to have reached the court of Augustus.

4098. *The Mahometan conquest* by the Gaznevide dynasty formed the era at which a regular series of authentic history commences for India. The bold and rough population who inhabit the mountains of Afghanistan enabled Mahmoud the Great to unite all the west of India, with Khorassan and great part of Tartary, into one empire. His dynasty, indeed, was subverted by that of Ghori, which was followed by the long series of the Patan emperors. In 1398 they were vanquished by Timour; but it was more than a century afterwards that Baber founded the Mogul empire, which, extended under Akbar and Aurengzebe, displayed a power and splendour scarcely equalled by any monarchy even of Asia. Along with Afghanistan, it included nearly the whole of Hindostan, except some obscure corners and mountain districts; and even all these, more or less, owned its supremacy. The sway of Aurengzebe extended probably over 80,000,000 souls, while his treasure was estimated at 32,000,000*l.*; a sum equal in value to nearly triple the same amount in this quarter of the world.

4099. *The empire of Aurengzebe was soon undermined* by disputed succession and effeminate habits among his descendants; it was shaken by the rise of the Mahratta power, and in 1738 it was overthrown by the successful invasion of Nadir Shah. Nadir carried off all the treasures of Delhi, estimated by the lowest computation at 70,000,000*l.* sterling. Yet he returned to Persia, leaving to the Mogul all the territory west of the Indus; but from that moment the Mogul empire remained the mere shadow of a mighty name. All the tribes which, during its day of power, had taken refuge in the mountains, now descended to dispute its finest provinces; even private adventurers raised themselves into sovereigns. Among those tribes were pre-eminent the Mahrattas, who, from the Vindhya mountains, and the head of the western Ghauts, had already over-run the north of the Deccan, and now penetrated to the imperial provinces of Delhi and Agra; while, in the south, Hyder Ali erected the powerful kingdom of Mysore. A shadow of the Mogul name was preserved only by the policy of rival chiefs, endeavouring each to draw round himself the reverence which that name still commanded. A new power appeared in the field. Ahmed Shah, who had raised himself to the throne of Cabul, entered India, and completely defeated the Mahrattas in the great battle of Panniput. But while these chiefs contended thus fiercely for empire, a new power was rising, beneath which they were all destined to bend.

4100. *The European powers*, in exploring through many dangers the passage by the Cape of Good Hope, had made it their first object to gain access to the splendid commerce of which India had always been the theatre. To carry it on with security, and protect themselves against the violence and extortion of the native powers, fortified factories were perhaps indispensable. This step, once made, soon led to further acquisitions. The Portuguese, under Albuquerque, began a career of conquest, and founded, at Goa, a species of kingdom, which, however, fell soon into decay. The other nations long confined themselves to commercial pursuits. The vast commerce of England was protected, in Bengal by Fort William, in the Carnatic by Fort George, and in the West by Bombay, on the island of Salsette; while the French fixed the chief seat of their power at Pondicherry. The triumphant war of 1756 gave to England a decided pre-eminence in India over the other European powers. About the same time she began to acquire territorial possessions in Hindostan. Her first enterprises were on the side of the Carnatic; but there she was long held in check by the vigour and power of Hyder Ali. In Bengal her military career opened under the darkest auspices. Surajah Doulah, the soubah, invested Fort William with a large army, and, having forced it to surrender, threw the small garrison into that horrid dungeon, named the Black Hole of Calcutta, where the greater part of them perished. Soon after, however, Lord Clive arrived with a reinforcement, and, having taken the field, proved, in the battle of Plassy, how superior a small body of English were to the undisciplined numbers of the East. The soubah was deposed, put to death, and succeeded by his general, Meer Jaffier, who was destined to rule altogether as the vassal of the English East India Company. Not being found sufficiently compliant with the tenure, he was superseded, as were others in succession, until 1765, when the Company assumed to itself, under a nominal reference to the Mogul, the entire sovereignty of Bengal, Bahar, and Orissa. At the same time the victories gained over the Nabob of Oude extended the virtual dominion of Britain nearly to the Jumna. Meantime the Carnatic was a scene of the most bloody and obstinate struggles, especially with Hyder, by whom the British dominion was repeatedly brought to the brink of destruction. Being threatened, however, by the Mahrattas, and vigorously pressed by Sir Eyre Coote, that chieftain at length entered into a treaty of peace. His son, Tippoo, though brave, did not inherit the policy or experience of his father; and, after two obstinate wars, his career was terminated in 1799: Seringapatam was taken, himself killed, his kingdom appropriated by Britain in full sovereignty, or divided among her vassals. Such vast acquisitions, however, placed this country in open rivalry with the Mahrattas, whose power, now completely pre-eminent above that of the Mogul, extended over all the central provinces. In 1803, while the Marquess Wellesley was governor-general, this rivalry broke out into open war. The bold and comprehensive plan of the campaign formed by that statesman, seconded by the military talents of Lake and Sir Arthur Wellesley, who, on the field of Assaye, conspicuously displayed those talents which afterwards made him the first captain of the age, completely broke the power of that formidable confederacy. The Peishwa, its nominal head, was indeed replaced in his supremacy over the military chiefs who had assumed independent power; but an auxiliary force stationed at Poonah, his capital, ensured the administration of every thing according to the mandate of the council at Calcutta. The British, after making a pecuniary provision for the last representative of the Mogul dynasty, took into their immediate sovereignty Agra and Delhi, the once proud capitals of India; and there remained only in the northern and western extremities a few states who were not their subjects, allies, or tributaries. In 1817, a new war was undertaken for the reduction of the Pindarees, a rude lawless tribe, harboured in the recesses of the Vindhya mountains. Though attempting only a flying and predatory warfare, they spread so wide, and caused such desolation, that the Marquess of Hastings conceived their suppression to be indispensable for the tranquillity of India. The opening of the campaign, however, gave occasion for the great Mahratta chief, Holkar, the Peishwa, and the Rajah of Berar to shake off the yoke, on which the contest assumed a very formidable character. The Peishwa was at length vanquished, and obliged to retire upon an annual stipend of 100,000*l.*; while the other two chiefs were reduced to a state of entire vassalage, and the British sway over Hindostan was more firmly established than at any former period. It was still further extended by an unsuccessful attempt at resistance made by the Rajah of Nepal. That prince, however, though humbled, retained his independence; and his territories, with those of the Seiks, in the west, are at present the only parts of India not placed completely under the control of the British.

Sect. IV. *Political Geography.*

4101. *India* has for many successive ages been the theatre of absolute empire, exercised by foreign military potentates. It presents, however, many peculiarities distinguishing it from a mere ordinary despotism. The basis of its population still consists of that remarkable native race who, during a subjection for thousands of years, have retained, quite unaltered, all the features of their original character. They preserve in full force that earliest form, a village constitution, their attachment to which seems only to have been rendered stronger by the absence of every other political right and distinction. The village, considered as a political association, includes all the surrounding territory from which the inhabitants draw their subsistence. Not only the public services, but all trades, with the exception of the simple one of cultivating the ground, are performed by individuals who hold them usually by hereditary succession, and who are paid with a certain portion of the land, and by fixed presents. The principal of these are the *potail*, or head man of the village; the police officers, with servants under them; an officer whose business it is to understand all local rights and boundaries, and to be the arbiter of disputes respecting land; the superintendent of watercourses; the brahmin; the astrologer; the village register; the smith, carpenter, poet, musician, dancing girl. So deep is the principle of this association, and so strong the feeling of the rights connected with it, that it has remained unaffected by all the storms of revolution which have passed over India. Even after the inhabitants of a village have been obliged to flee before the devastation of a successful invading army, they have never failed, on the return of peace, to seek their native spot, and have been allowed, without controversy, to resume their occupancy. "Infant potails," according to Sir John Malcolm, "the second and third in descent from the emigration, have in many cases been carried at the head of these parties. When they reached their villages, every wall of a house, every field, were taken possession of by the owner or cultivator, without dispute or litigation among themselves or government; and in a few days every thing was in progress, as if it had never been disturbed." Such is the strength of this principle of union, that a wise ruler, even the most arbitrary, in levying a revenue or demanding services of any kind, has found it the most expedient method to apply to the heads of the village, and delegate to them the task of collection and apportionment. In rural or hilly districts, the collection of the revenue was confided to a class of officers entitled *zemindars*, who, acquiring by degrees an hereditary tenure, and being merely obliged to pay a certain fixed rent, came to be viewed as proprietors burdened with a high land tax. Being intrusted at the same time to a great extent with the administration of justice and police, and having a force under them for that purpose, they became in a manner the feudal lords of the district. Under them, the immediate cultivators were the *ryots*, who, either by original right or long established usage, held the lands, so long as the rent was paid, in undisturbed tenure, which descended from father to son without alteration.

4102. *The classes now enumerated* belong all to the Hindoo population and, so long as they are permitted to move unmolested in this circle, they quietly behold all the high places occupied by any people, however strange or foreign, with whom rests the power of the sword. They have no idea of political rights or privileges, of a country or nation of their own and in whose glory and prosperity they are interested; they never converse on such subjects, and can scarcely be made to comprehend what they mean. Their only political bond is to a chief who possesses popular qualities, and attaches them by pay and promotion: to him they often manifest signal fidelity, but are strangers to every other public feeling. Despotism is not only established by long precedent, but is rooted in the very habits and minds of the community. Such habits naturally predispose the people of a fertile region, bordered by poor and warlike tribes, to fall into a state of regular and constant subjection to a foreign yoke.

4103. *The power*, as we have seen, which for many centuries ruled over Hindostan, was *Mahometan*. The votaries of Islam, as usual, entered India sword in hand, announcing proscription and desolation against all who should profess a faith opposite to their own; but while by these unlawful instruments they had converted the whole west and centre of Asia, in India their religion never made the slightest impression. The Hindoos opposed to it a quiet and passive, but immovable resistance. The conquerors, finding in them such a fixed determination upon this point, while on every other they were the most submissive and peaceable subjects, allowed their own bigotry to be disarmed. With the exception of Aurengzebe and Tippoo, they have long left the votaries of Brahma in the unmolested possession of their faith, and of the various observances with which it is connected. The Mahometans have been reckoned at nearly 10,000,000, or about a tenth of the population of Hindostan; but in this number we suspect that those of the kingdom of Cabul have been included, and that it is only in the provinces on the western frontier that they enter largely into the mass of population. They do not appear to have employed themselves as cultivators, or in the fabrics of the country. They consisted almost solely of the troops maintained by the Great Mogul, and officers employed by him, who, with their families and posterity, swelled gradually into a numerous people. The residence of the Mogul was rather a great moving camp, than a fixed metropolitan city. Delhi, Agra, or any other places, which his abode caused to rank with the most splendid cities of the East, when deserted by his army and train, sunk into towns of secondary magnitude. The great lords who were once his courtiers, counsellors, and the commanders of the troops, were called *omrahs*, of whom there were four principal. They were supported, not by pay, but by certain portions of land assigned to them, of which they drew the revenues. The provinces were governed also in a military manner by *soubahs*, who, like other despotic viceroys, exercised within their own limits all the authority of the Mogul. In many cases, they came gradually to regard those territories as belonging to them by a sort of hereditary right; and, on the breaking up of the empire, openly erected themselves into independent rulers. The family of Hyder was Mahometan. That dynasty, however, and almost all the others, have been crushed, by the power either of Britain or by the Mahrattas; and there is now scarcely any other sway in India. The Mahometans have become a subject race.

4104. *In contemplating Hindostan as it now exists, the power of Britain* appears entirely predominant. This absolute sway of an island comparatively so small, over an empire of 100,000,000 inhabitants, situated nearly at its antipodes, and accessible only by so vast a circuit of ocean, presents one of the most remarkable phenomena in the history of the world. Yet the subjection is complete, and almost universally peaceable; and the presages of its short continuance, which some entertain, are perhaps chimerical. We have already observed that profoundly passive disposition which prevails among the great body of the nation, so long as no violence is done to their faith, and their ordinary habits are not interfered with. The number of Europeans by whom such vast dominions are held in subjection very little exceeds 30,000. But this number is multiplied by that peculiarity in the character of the Hindoo, which makes it easy to train him into an instrument for holding his own country in subjection. He has scarcely the idea of a country to fight for. "The Asiatic," says Mr. Fraser, "fights for pay and plunder; and whose bread he eats, his cause he will defend against friends, country, and family." Accordingly, the *sepoys* (Indian troops commanded by British officers, and trained after the European manner) are found nearly as efficient as troops entirely British; and, so long as nothing is done to shock their religion and prejudices, they are equally faithful. Their number amounts to upwards of 230,000 infantry and 26,000 cavalry. The purely European troops maintained by the Company do not exceed 8000, but a large body of the king's troops are always employed in India: these at present are about 20,000. The Company doubles the pay of all the king's troops employed within their territories. These forces are variously distributed throughout India; for, besides defending and holding in subjection the territories immediately under British sway, bodies of them are stationed at the capitals of the subsidiary princes, at once to secure and overawe them. The degree of vassalage in which the different states of India are held somewhat varies. The Nizam, or soubah of the Deccan, the king of Oude, the rajahs of Nagpoor, Mysore, Sattara, Travancore, and Cochin, with the representative of the house of Holkar, though they exercise, not without some interference, their internal administration, are entirely under the control of Britain. The Gwickwar in Guzerat, and the numerous petty Rajpoot principalities, are rather friendly allies under her protection. Scindia is still nominally quite independent; but his territories are so enclosed by those of the Company, that, in case of any general movement, he can scarcely act, unless under the dictation of the Company.

4105. *Amid the general conquest and subjugation of India* by Britain, the western provinces alone have never as yet come even into hostile collision with that power. The state with which it is in most immediate contact is that of the Seiks, or Sikhs. This remarkable people began their career as a religious sect, adopting a sort of combination of the Hindoo and Mahometan creeds. Their habits were originally mild, abstracted, and almost philosophic; but persecution, and the treacherous and cruel death inflicted on two of their chiefs, roused their fury, and converted them into a race of savage and desperate warriors. While the Mogul power, however, continued in its vigour, they could only avenge their wrongs by hasty and stolen ravages; after which they sought the recesses of the northern mountains. On the dissolution of the great empire, however, they showed themselves capable of resisting any of the native armies, and were only kept in check by the hardy troops of the king of Cabul. They possess nearly the whole territory of Lahore, or the Punjab, watered by the upper course of the five great rivers which convey to the Indus the waters of the Himalayah; they also possess the northern part of Delhi, as far as the Jumna. Their government forms a species of theocracy, under a body of chiefs uniting the heterogeneous characters of priests, warriors, and statesmen. Of these a grand national council is held at Amritsir, the sacred city of the Seiks, in which, after a number of peculiar religious ceremonies, the national affairs are taken into consideration, and a plan of operations suited to the emergency is formed. Disunion has prevailed among these chiefs, but they are now united under the almost absolute sway of Runjeet Sing, who has also conquered Cashmere and a great part of the kingdom of Cabul, including Peshawer, lately its capital. He has fixed his residence at Lahore, and maintains an army of eighty regiments of infantry equipped in the European manner, and disciplined by French officers, though they are led into the field by the hereditary chiefs or khans. The artillery and cavalry are also respectable, and he is supposed to have accumulated a large treasure.

4106. *Moultan*, composing the lower course of the five rivers, with all the territories along the Indus, including Sinde, its delta, are governed by chiefs formerly tributary to the king of Cabul; but at present subject to Runjeet Sing. This region is separated from Guzerat, and the other fine provinces of central Hindostan, by a vast tract of desert. Yielding, however, some coarse grain and pasture, it supports a certain population, and is occupied by a number of rude chieftains, or petty princes, called Rajpoots, who paid even to Aurengzebe only a slight form of submission. At present they are engaged in almost perpetual contests with each other; but no foreign power seems to interfere with them in the possession of these dreary wastes.

4107. *The following estimate* has been made, in a recent parliamentary paper, of the extent and population of the territories under the immediate administration of the Company: —

	Square miles.	Population.
Presidency of Bengal - - -	220,312	69,710,071
Madras - - -	141,923½	13,508,535
Bombay - - -	59,438¼	6,251,546
	421,673¾	89,470,152

There are, besides, 85,700 square miles in Bengal, and 5550 in Bombay, the population of which has not been ascertained; but, as they consist of rude districts situated on the Upper Nerbuddah and in the Concan, their population is probably not extensive; and British India will not much exceed 90,000,000. Mr. Hamilton has formed, apparently with some care, an estimate of the population of the subject and independent states. The following come under the first head: —

	Population.	
The Nizam - - - -	10,000,000	
The King of Oude - - - -	3,000,000	
The Rajah of Nagpoor - - -	3,000,000	
of Mysore - - -	3,000,000	
of Sattara - - -	1,500,000	
The Gwickwar - - - -	2,000,000	
Travancore and Cochin - - -	1,000,000	
Rajpoot and various minor principalities - -	16,500,000	
		40,000,000

The states that still remain independent of Britain are thus estimated: —

Scindia - - - - - -	4,000,000	
The Seiks - - - - -	3,000,000	
Nepal - - - - - -	2,000,000	
Cashmere and other districts subject to the Seiks -	1,000,000	
Sinde - - - - -	1,000,000	
		11,000,000

4108. It is painful to reflect that the *sway of Britain*, which has extended so widely over Hindostan, was in the first instance decidedly injurious. The observation applies peculiarly to Bengal, which had previously attained a most flourishing state, under the beneficent administration of Aliverdi Khan. The military adventurers, by whom chiefly affairs were at first administered, aimed directly to fulfil the boundless expectations entertained by the Company from the possession of an empire so famed for wealth, and to return laden with riches to their native country. Every mode of arbitrary exaction and extortion was therefore practised. A larger revenue was raised from the country than it had paid to the Mogul in its greatest prosperity. During that dreadful famine in 1770, when a third of the inhabitants are supposed to have perished, and multitudes of the cultivators fled into other districts, the revenue was still forcibly maintained at its former standard by heavy surcharges on those who remained. Under this system, the finest country in the world was in danger of being rapidly reduced to a desert; and large tracts, formerly covered with waving harvests, were converted into jungle, the abode of wild beasts. The breaking up of the native authorities, without any effective substitute, gave a dreadful extension to the system of *decoity*; a species of robbery, unknown at least in the civilised kingdoms of Europe. It is carried on somewhat after the manner of the predatory tribes, who infest the neighbouring regions, on a great scale, and by persons who are not considered as disgraced by it, either in their own estimation or that of others. They exercise this propensity to plunder, not on their immediate neighbours, but in distant *forays*, in which they surprise villages during the night, and employ the most dreadful tortures to procure hidden treasure.

4109. *It is but justice to the Company to observe*, that they appear from the first to have cast an anxious eye on the distressed state of their Indian possessions. Several expedients were tried without success, till, in 1784, Lord Cornwallis went out with full powers, and the foundation was at length laid of an ameliorated system. The leading arrangements were: — A settlement of the landed property was made, first for ten years, but afterwards rendered perpetual; upon payment of which, the zemindars were invested with the absolute property of the lands, having under them the ryots, who, on payment of a fixed rent, were also to maintain their tenures. To secure this property against the encroachments of power, it was rendered unlawful for any European to possess land in India. At the same time, civil and criminal courts on the British model, and administered by British judges, were established; the former in every town, with an appeal to superior tribunals at the cities of Calcutta, Dacca, Patna, and Moorshedabad, and a final resort to a supreme tribunal in the capital. Criminal justice was to be administered by separate judges performing a circuit through the same cities.

4110. *Notwithstanding the excellent intentions* with which this system was formed, and the good general principles on which it is founded, *it has but imperfectly fulfilled the object of restoring the prosperity of British India.* Although the annual payments exacted as land revenue were no longer arbitrary, yet they were fixed too high; and, being enforced with the utmost rigour, and by sales of the property on which the arrear arose, they soon produced the impoverishment or ejection of almost the whole body of the former zemindars. The ryots, being too poor to purchase the forfeited lands, were only exposed under this system to new oppressions. The zemindary and village police, which had, though in a somewhat rough way, generally maintained the country in tranquillity and security, was found to be very disadvantageously supplanted by the system, in itself so excellent, of British jurisprudence. That system, administered by young judges, who came out with little study, and little view but of making a fortune, was found to exhibit faint traces of its native excellence. Even the best lawyers have found it a matter of extreme difficulty to judge Indians, — a people whose language, manners, and whole train of ideas are foreign and opposite to those of Europe. The natives, too, are wofully addicted to perjury, and have been greatly encouraged in it by the facility which this ignorance of their judges affords them of escaping detection. Hence the British tribunals are often completely at a stand in cases where the tact and experience of a native judge would at once have unravelled the truth. The consequence has been, that an arrear of civil cases has accumulated, amounting almost to an absolute denial of justice; while, in the criminal courts, it is often necessary, for want of evidence, to dismiss individuals, of whose guilt the most perfect conviction is entertained. Thus, after a long and profound internal peace, under a strong government, and an administration of justice intended to be strictly equitable, the country has recovered only very imperfectly from the state to which it had been reduced by the original system of spoliation. In fact, the exertions of the Company have of late been employed to restore the original system of police and society; and this object, though difficult, has been effected in some degree, and with favourable results.

4111. *The revenues* of British India amounted, in 1829–30, to 21,600,000*l.*; of which 13,800,000*l.* was from Bengal, 5,400,000*l.* from Madras, and 2,400,000*l.* from Bombay. The charges, however, including 2,000,000*l.* sterling of interest on debt, exceeded the revenue by 602,000*l.* Extensive reductions, however, have since been made; so that, in the estimates for 1830–1, a surplus of 868,000*l.* was contemplated.

Sect. V. *Productive Industry.*

4112. *India* has always been, in a peculiar manner, celebrated for its *fertility*, and for its profusion of magnificent and valuable products. In fact, the tropical countries, wherever water abounds, must surpass the regions under the temperate zone in this respect, were it only from the circumstance of producing more than one crop in the year. The large and copious streams of Hindostan maintain generally throughout that country a perennial abundance. This character, however, is by no means universal. All the west of central India, except where it is watered by the Indus and its tributaries, consists of sand, in which the traveller sinks knee-deep. Sand forms even the basis of all the flat country of Bengal; though inundation and culture have covered it with a thin surface of productive clay. A great part also of the hilly districts, being over-run with that species of rank underwood called jungle, is unfit for any useful product. Although the Hindoos, too, have ever been an agricultural people, and remarkable for their industry, nothing can be more imperfect than the instruments, or the skill, with which they conduct that important art. The cultivators, for security under an imperfect police, or from mere custom, live in large villages, having each a small spot, on the tillage of which they occupy themselves, in conjunction with the labours of the loom and with other employments. Holding their lands by no tenure except that of usage, they never think of expending capital in their improvement, and could not, probably, with safety, show themselves possessed of property. Their plough, in comparison with ours, does not deserve the name. Rudely constructed, at the cost of less than half a crown, it cannot penetrate beyond two or three inches deep, and has no contrivance for turning over the soil. It is drawn, not by horses, but by oxen and buffaloes, sometimes yoked together. The ground, after being scratched in several directions by this instrument, followed by the rough branch of a tree as a substitute for the harrow, is considered fit for receiving the seed. Manure is employed only in some rare cases, and consists merely of ashes and decayed vegetables. Cow-dung is not only scarce, but is accounted holy: it is also employed as fuel, and is even plastered on the walls by way of ornament. There is no idea of any rotation of crops, except the succession to be raised within the year; and this is conducted on a principle of raising the utmost possible quantity, until the ground is completely exhausted. It is then abandoned to a state not of fallow, but of *lay*, and the cattle are pastured upon it, until by continued rest it has regained its fertility. This rude system of husbandry resembles that which was practised in Europe during the early ages. It is not supposed that even in Bengal more than one acre in three is under actual tillage. The cultivators are poor in the extreme, their annual rents on an average not exceeding four pounds; and, instead of possessing any capital, they are usually sunk in debt.

4113. *Notwithstanding all these deficiencies*, nature is bountiful, and the products of India are copious. Rice is the article upon which the whole region rests its main dependence; it is raised on every spot where irrigation can be procured. The periods of sowing and reaping vary, and produce a corresponding variety in the quality. Only one crop is raised in the year; but with another of millet or pulse on the same field. In some of the western Mahratta districts, it is necessary to substitute *d'hourra*, the arid and coarse grain of Nubia. Wheat and barley are fitted only for those tracts which, from their more elevated site, approximate to the temperate climates.

4114. *Hindostan has other highly valuable products.* The most important, perhaps, is cotton, the material of the great national manufacture. It is chiefly raised in the inland and somewhat dry tracts of Agra and the Deccan. Mirzapour, in the province of Agra, is the general market for cotton, the price of which varies from 1*l.* 13*s.* to 2*l.* 4*s.* 6*d.* per cwt. It is not equal in quality to the American. Silk is also a very ancient staple of India, particularly of Bengal, though not to the same extent as in China; and the Italian silk is now decidedly superior to both. There is also a wild species brought in from the eastern wooded tracts of Assam and Silhet, which is useful from its cheapness. The continent of India does not produce those more delicate spices which distinguish the islands; but pepper, so extensively used in Europe, grows in the greatest perfection and abundance on the high wooded mountains that rise above the coast of Malabar. Sugar was plentiful in Hindostan before it was known in Europe. The interior of Bengal might yield it to any extent, and at much less expense than that raised in the West Indies; but, from the defective mode of preparation, it is of very inferior quality, and is in that form called clayed, which is not suited to the European taste. *Opium*, that favourite though pernicious luxury of the East, is the staple of the interior province of Bahar, and is raised of still superior quality in Malwa. It is a precarious crop; and the British rendered it still worse by monopolising, and then using compulsory measures to make the farmers grow it; but by recent regulations these restrictions have been in a great measure removed. *Indigo* has been an early product of India, of which it bears the name: but that of Mexico obtained the preference in Europe, until within the last twenty years, when, by the vigorous exertions of some active individuals, it has been so much improved, that it is imported now to a large annual amount. It is cultivated by the ryots upon advances made by the British; but the cleaning and preparing it for use are entirely performed by Europeans, and with machinery of their erection. The average produce of Bengal and Oude, the latter of which is of considerably inferior quality, is estimated at 9,000,000 lbs. *Coffee* has become an article of considerable importance; and in the last year (1831), 3,000,000 lbs. were imported into Britain from Malabar. *Saltpetre* is produced more abundantly in Bahar than in any other known country. Its formation takes place chiefly during the hot winds, and seems to be connected with that phenomenon.

4115. *Besides these luxuries* destined for exportation, there are *others*, extensively consumed in the interior. The nut of the areca, combined with the leaf of the betel, is one universally used in India, which has never found its way into Europe. The customs of the country cause a vast consumption of vegetable oils, which are supplied from the sesamum, also from lint, mustard seed, and the cocoa nut. Woods of various kinds grow luxuriantly on the lower declivities of the Indian hills. The canes, composing the thick jungle or underwood which abounds in marshy grounds, are not only used as in Europe, but are much employed in building. The teak has been found unrivalled for ship-building; but though it flourishes on the hills of Malabar, it does not attain such perfection there as in Java and the Eastern peninsula. Malabar furnishes also a large supply of sandal-wood, of the species called red-wood, as well as others used for dyeing, or for ornamental furniture.

4116. *The following estimate* of the produce of the British Bengal territory, including Benares, Bahar, and part of Orissa, was made, seemingly with great diligence and attention, by Colonel Colebrooke. To appreciate the extreme cheapness of Indian produce, we must observe, that the maund consists of eighty lbs., or within a trifle of an English bushel.

	£
Rice, wheat, and barley, 150,000,000 maunds at 1*s.* 6*d.* per maund	11,300,000
Millet, 60,000,000 maunds, at 1*s.* per maund	3,000,000
Pulse, 90,000,000 maunds, at 1*s.* 3*d.* per maund	5,625,000
Seeds	4,038,000
Sugar, tobacco, cotton, opium, and other articles	9,000,000
	£32,913,000

The space on which these products are raised is estimated to contain 160,000 square miles, and 30,000,000 souls. Hindostan, taken altogether, may be quadruple as to extent and population, but not quite so as to wealth. We may, therefore, conjecture its entire produce at about 100,000,000*l.*; but it must be remarked, that the same articles would be considered very cheap in England at six times the prices above stated.

4117. *It is not, however, for the natural products alone*, but, in an especial degree, for *manufactures*, that the commerce of India has been so much prized in the Western world. Cotton, her native material, though not possessing any peculiar original beauty, has, by the skill of her artisans, been worked up into forms of dress the most elegant that human industry has ever produced. That of muslins, ingenious and delicate beyond all others, is appropriate and peculiar to Bengal, in whose eastern district of Dacca it is fabricated in a perfection elsewhere unrivalled. Though especially adapted, as it were, for the climate of India, so general has been its attraction, that this delicate fabric has become the staple of Scotland and the north of England. There, by the employment of machinery and the division of labour, it is produced much cheaper, and, in some instances, even of finer texture; but the muslin of India, richer, softer, and more durable, still maintains its reputation. The same superiority is preserved by the calicoes, ginghams, and chintzes, which form the staple manufactures of Coromandel, and particularly of the Circars. Though nearly driven out of the European market by cheap and successful imitations, they are still preferred over the East, where the curious consider themselves able to distinguish by the touch, and even by the smell, these genuine products of the Indian loom. The central and western provinces are not so eminent in manufactures, with the exception of Guzerat, where, especially in Surat and its neighbourhood, they are cheap, good, and of great variety, yet do not attain the same high excellence as in Eastern India.

4118. *Silk*, though holding only a secondary place as an Indian manufacture, is still ancient and considerable. Its main seats are the great cities of Moorshedabad and Benares, with their neighbouring districts: at Surat, also, the quantity manufactured is considerable. Taffetas, brocades, and embroidered gauzes, are its prevailing forms.

4119. *Woollen manufactures* are not suited to the climate of that tropical plain of which Hindostan chiefly consists. In the upper regions, however, which form the slope of the Himalayah, they are made in large quantities, though coarse, and for home consumption. Cashmere alone collects that fine wool, peculiar to the goats which feed on the table-land of Thibet; and from this material are manufactured those exquisitely beautiful shawls which Europe has striven to rival, but unsuccessfully, except in cheapness. The shawl manufacture of Cashmere has suffered peculiarly by the revolutions of that country; and the looms employed in it have been reduced from 40,000 to 16,000.

4120. *The commerce* of India has always possessed, in the eyes of Europeans, a dazzling and indeed illusive splendour, derived from its remoteness, and the brilliant character of some of its articles. It possesses by no means the magnitude or importance which these circumstances have led men to ascribe to it. Besides, though, both in ancient and modern times, it has afforded a grand impulse to trade and enterprise, the Indians have never been a trading nation. They never carried any of their own precious products into other countries; but, disdainfully, as it were, granted them to those who came to seek them from the farthest extremities of the globe. With equal disdain, they rejected almost every article which was offered in exchange, and would accept nothing but treasure in its most solid and palpable form. The course of Indian trade was hence a constant theme of regret to those politicians who considered the benefit of this intercourse as dependent solely on what was called a favourable balance, and who viewed India as a gulf in which all the treasures of the West were buried. Modern enquiries have fully shown that this by no means prevented the trade with India from being highly beneficial; though the limited export, no doubt, rendered it less so than it otherwise would have been. Yet the importance of Indian commerce has always been, and is, grossly exaggerated.

4121. *The mining operations* of India are confined to one object, of so brilliant a character however, as to throw a lustre on this and on all the Oriental regions. It produces the finest diamonds in the world; for those of Brazil, though of greater size, are inferior in hardness and brilliancy. The Indian diamonds occur chiefly in a high and rugged tract, inhabited by tribes almost independent, and extending from Golconda across the interior of Orissa. The principal mines are described by Tavernier as situated at Raolconda, Color, and Sumbulpoor. In the first of these places, the diamonds occur in narrow veins traversing the rock, and mixed with the sand and earth which fill their cavities; at Color they are found in the soil of a plain which stretches along the foot of some high mountains; while at Sumbulpoor they are mixed with the sand of the river Gouel, which falls into the Mahanuddy. The diamonds at this last place are exquisitely fine, but small when compared with those at Color, which yielded to Shah Jehan the famous stone, weighing upwards of 700 carats. Tavernier found at this mine alone 60,000 persons employed; but the importance of the working appears to have since diminished, either from the exhaustion of the mines, or the diminution of the demand among the native princes. The sands of the rivers of this tract yield also some gold dust, but not in sufficient quantity to become a national object. The diamonds of Panna, in the district of Bundelcund, are celebrated, though not of such fine quality as those already described. India produces some iron, lead, and tin, though not in sufficient quantities for home consumption. Zinc is in particular abundance; and the same may in some degree be said of these products of calcareous countries, marble, sal-gem, alabaster, common salt both in rocks and plains covered with this mineral; but the great masses of rock salt are to the west of the Indus. Saltpetre has been already noticed.

4122. *The mode of conducting British commerce* with India has always, till very recently, been by means of exclusive companies; and the only competition was between these rival associations. About the middle of the seventeenth century, they were combined into "the United Company of Merchants trading to the East Indies;" by whom, from that time, all the concerns of government and trade were administered. Between 1770 and 1784, the Company were obliged to yield a great share of their political power, which is now jointly exercised by the Board of Control. But no material breach was made in their exclusive privileges as traders till 1813, when the intercourse with Hindostan was thrown generally open to British subjects, with only some restrictions as to the tonnage of the vessels and the ports from which they were to proceed; and even these have been in a great measure removed. Under the liberty thus granted, the private trade has increased astonishingly, and has almost driven that of the Company out of the field. In 1829, the exports by the Company amounted to 434,000*l.*, by private traders to 3,665,000*l.* The imports by the Company were 1,593,000*l.*, by private traders, 4,624,000*l.* The imports into Britain were, in 1829, chiefly cotton piece goods, 289,000 pieces; cotton, 24,920,000 lbs.; indigo, 5,980,000 lbs.; pepper, 2,000,000 lbs.; raw silk, 2,126,000 lbs.; silk manufactures, 96,000 pieces bandanas; 17,000 crape shawls; 4500 pieces taffetas; sugar, 497,000 cwts.; turmeric, 1,100,000 lbs.; rice, 192,000 cwts. and 62,000 bushels; borax, 153,000 lbs. The chief exports from Britain were, cotton manufactures, value 1,450,000*l.*; cotton twist, 203,000*l.*; woollens, 372,000*l.*; linens, 30,000*l.*; copper, 403,000*l.*; iron, 195,000*l.*; spelter, 46,000*l.*; machinery, 68,000*l.*; stationery, 80,000*l.*; books, 34,000*l.*; leather, and saddlery, 33,000*l.*; medicines, 22,000*l.*; guns and pistols, 51,000*l.*; lead and shot, 20,000*l.*; wines, 162,000*l.*; beer, 95,000*l.*; carriages, 19,000*l.*; provisions, 39,000*l.*

Sect. VI. *Civil and Social State.*

4123. In surveying the political state of Hindostan, an estimate has already been given of *its population*, by which it amounts to about 140,000,000. Of this vast multitude, nine tenths are still believed to consist of that native original race who, though subject to a foreign power during so many ages, have remained always unmixed, and have retained unaltered their ancient habits and institutions. This people, who have attained a considerable degree of civilisation, though in a form quite different from the European nations, present a highly interesting subject of contemplation.

4124. *In their external form, the Hindoos,* though, by the action of the climate, rendered as black as the negro, have otherwise nothing of the negro aspect. Neither do they exhibit the broad and flat visage, nor the other distinctive marks, of the Mongol race who people China and Eastern Tartary. Their form belongs to that variety termed, by Blumenbach, the Caucasian, and which includes also the people of Europe. Even from them they are distinguished by a peculiar delicacy and exility of shape, suggesting the idea of a refined and even effeminate people. The races, however, bred to war, who inhabit the mountains and the western tracts, are of a bodily constitution much more hardy and athletic.

4125. *The manners of the Hindoos,* still more than their persons, bespeak peculiar refinement. They are described as in a remarkable degree polished, graceful, and engaging; and, in the whole intercourse of society, a politeness and urbanity reigns, much beyond what is observed in European circles. The impression made by them upon a stranger is that of a benevolent and amiable people. Those gentlemen, however, who have of late communicated the results of more intimate inspection, present a much less favourable picture. That outward politeness, it is said, soon resolves itself into the smooth and interested servility which men acquire in courts, and under despotic governments, by habitual intercourse with those on whom they are dependent. It is entirely prompted, therefore, by self-interest, which forms the basis of the Hindoo character, and is cherished without regard to any feelings of honour and dignity. These are entirely broken down by the influence of that despotism which, according to Mr. Grant, "is not only the principle of the government of Hindostan, but an original, irreversible, and fundamental principle in the very frame of society." In such a government, where men are excluded from the pursuits of ambition, and checked at least in any public or lively amusements, selfishness turns almost entirely into avarice; and this is described as quite the ruling passion in the breast of the Hindoo. It appears to be indulged with an almost total disregard of the principles of honour or honesty; the grossest breaches of which are so common, as to cause no surprise, and scarcely any indignation, even in those who suffer by them. In the same light do they regard that deliberate and systematic violation of truth, which seems rooted in the Indian character. "It is the business of all," says Sir John Shore, "from the ryot to the dewan, to conceal and deceive; the simplest matters of fact are designedly covered with a veil which no human understanding can penetrate." This extends even to a form of guilt, from which the religious, or rather the superstitious, habits of the nation might have been expected to secure them. Perjury, the most deliberate and complete, marks every deposition made before an Indian court of justice. What involves the tribunals in particular perplexity is, that even those who mean well, and have truth to tell or to attest, think not that they do enough, unless they enforce it by false additional particulars; and it would thus be impossible for courts of justice to carry on their investigations, if they should reject evidence because it was combined with the most palpable falsehoods and perjuries. On a close inspection, too, much disappears of the mildness and quietude which are so conspicuous on the surface of the Hindoo character. Deadly feuds reign in the interior of villages; and, between those who have no motive to be on ceremony or on terms of courtesy with each other, violent wordy altercations often take place, seldom, however, proceeding to blows. In particular, the already mentioned prevalence of *decoity,* and the dreadful cruelties with which it is accompanied, go far to strip the Hindoo character of its fame for gentleness. Similar habits of violence are general among the predatory tribes of the West: but these indeed may be considered as differing in almost every point from the proper Hindoo character.

4126. *After all, the Hindoo certainly possesses some good qualities;* and, perhaps, the late very unfavourable pictures are drawn chiefly from the populace of great cities, and from men otherwise placed in situations trying to human virtue. It is admitted that, in fidelity to a master or chief from whom they have received treatment at all kind, they are surpassed, and indeed equalled, by very few nations. Their religion enjoins, and it is admitted that they perform, very remarkable acts of beneficence; and to assert that these proceed merely from a mercenary view of purchasing heaven, would be to judge with rather a scanty measure of charity. The habits of Hindoo life are pre-eminently domestic. Respect for old age is carried to a great height; and, when parents are no longer capable of labour, they are supported by their children, and, never allowed to become a burden on the public. Marriage is held as a perfectly indispensable part of life, without which a man would not be considered as possessing a regular place in society, or as qualified for exercising any important function. His marriage, and his marriage festival, are regarded as the most critical and splendid eras in the history of a Hindoo. Yet the wife, when obtained, is the object of very slight respect or regard. She is considered wholly unfit to be the companion of her husband, or even to be spoken to; and indeed care is taken to render her so. It is deemed disgraceful for her ever to open a book, to be able even to read a syllable, or to know any thing of what is passing in the world. She is regarded merely as a sort of privileged slave, created only to obey and reverence her husband, and bound to view him with the most reverential awe. She is generally, however, faithful to him; and her attachment is manifested in an extraordinary and cruelly superstitious manner, by the sacrifice of herself on his funeral pile. Although a variety of motives may co-operate, this sacrifice would scarcely have become so prevalent, had not the principle of conjugal attachment been generally strong in the nation. Polygamy does not widely prevail; and dissolute manners, though strangely combined in many instances with religious observances, do not seem to be otherwise so general as in most parts of Europe.

4127. *The religion of India,* such as it is, reigns with unrivalled sway, and forms the basis of all its laws and institutions. It is not merely the object of internal meditation or occasional observance, but the guide in all the actions, outward and inward, small and great, of human life. This, however, which, in an enlightened and rational sense, might be considered as marking a peculiar excellence, is combined, in the vulgar at least, with habits of gross ignorance and mean superstition. Yet the Hindoo system fails not to comprise some very lofty elements; but these, being chiefly confined to the sacred books, which are inaccessible to the vulgar, have little influence on the general ideas of the nation.

4128. *The Hindoo mythology* is a system so vast and multifarious, that to introduce even a sketch would, within our limits, be scarcely possible. It is founded on the grand and philosophical idea of an immense all-pervading mind, from which the universe derived its existence. To this Nature, which is called the Bramh, or Brimh, they ascribe the most exalted attributes of power, wisdom, and beneficence. This being, however, is not represented as the active ruler of the universe, but as fixed in sublime and perpetual repose. He did not even, strictly speaking, create finite natures, but emitted them, as it were, out of his own substance, into which those which are most perfect will again be absorbed. Thus sprung the Hindoo triad, Brahma, Vishnu, and Siva, the supreme objects of popular worship. Brahma, though the highest in dignity, and manifesting even the qualities of the source from which he emanates, is comparatively little regarded, has no temples raised, and no national worship paid to him. Vishnu is the most active member of the triad. His nine fulfilled incarnations, and his tenth expected one, are prominent epochs in Hindoo mythology. On these occasions he appeared sometimes as a man, sometimes as a boar, a lion, or a tortoise, to deliver oracles, to destroy giants, and deliver the earth from the evils that oppressed it. In two of them he appeared as Rama and as Krishna, names which have almost superseded his own; and under the last appellation, by his extravagant amorous adventures, he has afforded ample theme to the luxuriant fancy of the Hindoo poets. As Vishnu is called the preserver and saviour, so Siva bears the title of the destroyer, and in that character has a numerous class of peculiar worshippers. He is usually represented under a form calculated to inspire terror, of gigantic size, naked, riding on a bull, his eyes inflamed, and serpents hanging from his ears like jewels. Wars with the gods and extermination of giants form the leading events of his history, which, as well as his worship, comprises some peculiarly indecent adventures and observances.

4129. *Among inferior deities,* the first place is held by Indra, bearing the lofty title of "king of heaven." This high place is maintained only by perpetual contests with the Asuras and Raksasas, the giants and Titans of India. He is even liable to be ejected by Bramins skilled in mighty magic, or by a king who can sacrifice an hundred horses that have never felt the rein. Other objects of worship are Kartikeya, god of war; Surya, the sun; Pavana, the god of the winds; Varuna, of the waters; Yama, the holy king who judges the dead, — a green man in red garments, and of terrible aspect, who keeps his court in the deepest mountain recesses, and at the hour of death extorts shrieks of terror from the guilty Hindoo. Juggernaut, or Juggannatha, considered an earthly deity, is distinguished by crowded pilgrimages, and by the frightful character of the worship paid to him. The rivers of India are also accounted divinities, particularly the Ganges, which is supposed to descend from heaven, and the affusion of its waters to purify from all sin. That the lowest forms of superstition may not be wanting, the worship of animals is extremely prevalent. The cow, above all, is held in deep and general reverence, and by many families one is even kept for the mere purpose of worshipping it. Next ranks the monkey, whose exploits are largely celebrated in the sacred books. It is considered a pious disposal of money to expend large sums on the marriage of monkeys.

4130. *The religious observances* of the Hindoos do not tend to give a higher idea of their wisdom than the creed on which they are founded. India is covered with temples, but those recently erected display nothing of that art, or even of that magnitude, which astonish us in those of Egypt and Greece. A temple may be built for twenty pounds; and the largest does not cost more than one hundred, or contain above three apartments. The rich seek to distinguish themselves by planting a number together: one pious lady has covered a plain near Burdwan with no fewer than 108 temples. Every temple must have its image, made of gold or silver, or, in default of these, of iron, brass, lead, or tin, sometimes even only of clay and pottery. The deity is manufactured by the workers in these metals and materials, and without the display of any skill in the art of sculpture: after its completion, the

Brahmins, by sundry ceremonies and invocations, are supposed to infuse the spiritual character. The person who builds the temple makes a grant for the support of its servants, among whom, besides Brahmins, it is necessary, in many parts of India, that there should be a certain number of courtesans; a truly singular instance of depravity in a people among whom female virtue is otherwise respected. The religious festivals are often prolonged for several days, with music, dancing, revelry, and various excesses which are proscribed by Hindoo manners on all other occasions. The rage for pilgrimage is universal, and is in itself, indeed, rather the most venial form of superstition, since it affords considerable opportunities both of information and commerce. The great periodical festivals at Hurdwar and Juggernaut attract millions, but are often accompanied with considerable sacrifice of human life. The bloody scenes at Juggernaut are well known: in these the frantic victims of superstition throw themselves under the wheels of the car (*fig.* 617.) in which that idol is drawn furiously along, and fondly imagine that they thus secure a happy futurity. Another mode of religious suicide is by drowning in holy waters, particularly those of the Ganges, and at the island of Sagur. Parents sacrifice their children to the Ganges, or to any power whom they wish to propitiate; but this savage practice was prohibited by the Marquess Wellesley, and his order has been obeyed without resistance or murmur. It is not known from what motive a race of Rajpoots, in the west, have been induced to immolate all their female children. The number of these victims has been estimated at nearly 20,000; and the effects of the benevolent exertions of Colonel Walker for the suppression of this horrid practice, which were, at least in a great measure, successful, have not been permanent. Religious feeling, however, certainly enters into that fatal sacrifice by which the Indian widows are induced, and sometimes even compelled, to sacrifice themselves on the funeral pile of their husbands. This practice also was, in 1829, prohibited by a proclamation of Lord William Bentinck; a measure applauded by all the enlightened Hindoos, though it has excited considerable discontent among the bigoted adherents of the ancient superstition.

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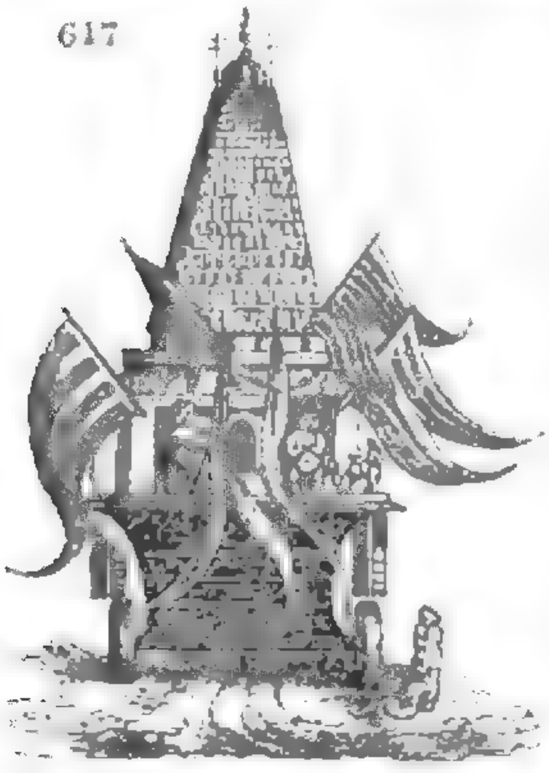

INDIAN CAR.

4131. *The various forms of penance and self-infliction* form another mode of propitiating the favour of the Deity, and of obtaining with the vulgar the character of sanctity. These, always more or less prevalent among superstitious nations, are carried by the Hindoos to an extent elsewhere unparalleled. The Indian Yogues, or fakers, bury themselves in the depth of woods, allow their hair and their nails to grow, and their persons to be covered with filth, till they almost cease to present any vestige of humanity. Others remain for years fixed in one painful position, with the arm raised above the head, till the limbs become shrivelled or distorted. Instances have been given of persons who buried themselves under ground, leaving only a narrow tube by which they might breathe, and by which food might be introduced. A long course of such austerities is imagined to invest them not only with the highest character of sanctity, but even with power over the invisible world; and stories are related of mortals who have thus ejected potent deities from their place in the sky. A more obvious advantage is derived from the admiration of the multitude, who lavish not only homage but gifts on these uncouth devotees: and, as a certain period is supposed to complete the merit of the penance, they obtain time to enjoy its fruits, and often abandon themselves to every species of licentious indulgence.

4132. *The ideas of a future state* present also a strong and peculiar character under the Hindoo mythology. The human mind being considered an emanation from the Bramh, or supreme mind, they have adopted, to account for its pre-existence, the doctrine of the metempsychosis, or transmigration of souls, which is diffused over the whole East. Under this system, the souls of all animals are supposed to be those of men thus degraded, in punishment of their sins, but capable, after many ages, of regaining their pristine condition. In a cow, or a dog, they recognise, perhaps, a deceased friend or ancestor; and are thus led to treat them with a tenderness characteristic of the nation. This weakness they often carry to a ridiculous height, keeping hospitals for aged and even noxious creatures. Their creeds afford also, for the reward of the good, a variety of heavens, glittering with gold and precious stones, watered by crystal streams, and affording in abundance pleasures not always of the purest nature. The places of future punishment are in like manner multiplied, and filled with various species of torture; such as being burnt with hot irons, dragged through thorns, bitten by snakes, or thrown into vessels of liquid fire. The deeds, according to which these rewards or punishments are awarded, compose the moral code of the Hindoo. As it includes all the elementary principles of human duty, it has, no doubt, to a great extent, a salutary influence. Too great a proportion, however, of the actions to which merit is attached, consists merely of outward idle ceremonies and absurd penances; and, in particular, the bestowing of gifts upon Brahmins, is a duty diligently inculcated by these reverend instructors.

4133. Religion has evidently been the main agent in causing that *distribution into castes* which forms the most prominent feature in Hindoo society. In all half-civilised communities, aristocratic distinctions are carried to an extreme height; but nowhere is the distinction between man and man rendered so broad and so monstrous as by this institution. In Egypt, and other ancient countries, a similar distinction appears to have existed, but was never so strong nor so permanent. A greater variety are enumerated by the Greek writers, as existing in their time among the Hindoos; but at present there appear to be only four prominent castes: the Brahmins, or priests; Cshatryas, or military class; the Vaisyas, or merchants; and the Sudras, or labourers. The functions and station of all these are fixed by their birth in the most decided manner.

4134. *The Brahmins* hold, beyond all comparison, the first place in point of dignity, and are regarded by the other classes with profound and spontaneous veneration. Yet no established provision is made by the public for supplying them with even the means of subsistence. Their ordinary dependence is upon alms; and to this mode of support they have given such a lustre, that over all India he who receives alms is considered as ranking higher than he who bestows them. This situation, at once powerful and dependent, is not favourable to the character of the Brahmins, who are led to employ their influence over a superstitious people entirely to the furtherance of their private views. The bestowal of copious gifts upon a Brahmin, and his consequent benediction, are represented as effacing every sin, and securing the most ample blessings. His curse is the forerunner of the most dreadful evils: it has even been represented as sufficient to strike its victim dead on the spot. At marriages, funerals, and on other great festal occasions, the rich Hindoos strive to distinguish themselves by large donations to Brahmins, of cloth, cows, rice, gold, and whatever is esteemed most valuable. Their influence is augmented by the use of *mantras*, or mighty words, deemed to have power even over invisible creatures, as well as by the discernment of the lucky and unlucky times and modes for doing all things. A prince or great man thus reckons it indispensable to keep near him some eminent Brahmins to be his guides in all the actions and emergencies of life.

4135. *The Cshatryas*, though inferior to the Brahmins, rank high in public estimation. The name signifies "sons of kings," and implies a boast of their descent from the ancient Rajahs. In their persons, they are handsome, tall, and athletic; but they are generally destitute of principle; and many of them practise the trade of robbery on a great scale.

4136. *The Vaisyas*, or mercantile class, are numerous in the cities, particularly of the coast, where they bear the title of Banians. Though their character is often disgraced by deceit and low cunning, some of them maintain a high character for mercantile talent and probity, and accumulate immense fortunes. In the interior their situation is more equivocal; they are found acting in various capacities, and many even serve as mercenaries in the Mahratta armies, or in the British service.

4137. *The Sudras* include the ryots, or cultivators of the ground, and also most of those engaged in handicraft trades. Though generally ranked below the Vaisyas, they do not altogether admit their inferiority: many of them acquire considerable wealth, and maintain a respectable place in society. There are, moreover, a number of small detached classes formed by the mixture of the four primary ones, and called the *Burrensunker*, by whom most of the handicraft trades are exercised.

4138. *A class of outcast beings* yet remains, whom Hindoo society excludes, and to whom it denies the most common rights of humanity. These consist of those persons who, from a neglect or violation of any of those minute observances which are necessary to preserve caste, have been expelled from any of the four classes above mentioned. From that moment the individual is deserted by his nearest relations, is excluded from all the charities and social connections of life; he forfeits even his property, and is commonly forced to flee into distant exile. The Pariahs in the south form a class of hereditary outcasts. No human beings exist in a more lost and deplorable state. It is contamination to enter their house, or eat any victuals prepared by Pariahs; nay, some consider themselves polluted by their very touch. They are confined in the towns to separate quarters, and employed in the rudest and most disgusting labour. In this degraded condition, it is but too natural that they should lose all sense of character, and, by filth, intoxication, and other excesses, justify, in some degree, the contempt in which they are held.

4139. This strictness and uniformity of the Indian system does not wholly prevent the rise of *sectarian distinctions*. The Vishnuvites and Sivites, without an absolute separation, have each adopted a train of opposite worship and observances. Contrary to the toleration generally prevalent in India, they engage in violent quarrels, which often come to blows, on the merits of their respective systems. The Vishnuvites lead a wandering, irregular life, like gipsies. The *Jains* are entire separatists. Instead of one supreme being, they worship mortals exalted into deities; but their habits of life are strict and austere. The Boodhists, or followers of Boodh, profess a creed somewhat similar, but with a much more entire separation. Originating in or near India, they have been almost expelled from that country, but have obtained the supreme religious sway in Thibet, Tartary, and the whole east of Asia. We shall therefore have opportunities to treat of them more particularly.

4140. *The literature of Hindostan* rests, like its social state, almost entirely upon its religion. To all the books which it owns as valuable or classical, a divine origin is ascribed. The four Vedas, the grand basis of Hindoo learning, are believed to have issued simultaneously from the mouth of Brahma, though they are strangely enough supposed to have required the labours of Vyasa, a learned Brahmin, to bring them into a state fit for perusal. They consist in a great measure of invocations or addresses to the multifarious deities worshipped throughout India, many of which, when duly repeated, are supposed to have the power of charms, calling down good on the worshipper and his friends, and the most dreadful evils upon his enemies. They contain also precepts for the conduct of life, various in character and merit; with a full exposition of the national creed respecting the origin of the gods, the creation of the world, a future state, and the transmigration of souls. They are illustrated by the Sastras and other most extensive glosses and comments; all of which, like the original, are supposed to be the result of inspiration. This primary fountain of Indian knowledge is carefully shut, unless to Brahmins: none of any other class must throw his eyes on these sacred pages, or even understand the language in which they are written. Second to them are the Puranas, which, like the Vedas, are composed almost entirely in verse; and the ten Puranas contain nearly half a million of stanzas. They form a strange and heterogeneous medley of sound precept, useful doctrine, wild fable, and directions for puerile observances. The narrative part relates rather to the gods than to men; but these superior natures are exhibited as conforming very ill to the duties which are inculcated upon mortals; bloody wars and licentious amours forming the exploits most frequently recorded. Below the Puranas in celebrity and sanctity are the Mahabarat and Ramayana, two great epics, or rather wild metrical romances, similar in strain to the Puranas; for, though the basis be narrative, they abound in precept; and though they profess to detail the adventures of human heroes, the actors and the events are almost wholly supernatural.

4141. In this enumeration, which includes all the serious literature of Hindostan, *one capital defect* must be obvious: *history* finds in it no place. Their wild legends are plausibly supposed to have a foundation in the story of some celebrated early kings or conquerors; but it is impossible, through the mist of fable, even to conjecture any thing precise respecting their real existence. The Iliad and Odyssey are, in comparison, plain and authentic chronicles. Every thing in the shape of history that India possesses is due to her Mahometan conquerors. The geography of the Hindoos, in like manner, is a mere poetical, or rather puerile, delineation, in which they arrange the features of the globe in fancied symmetry, describe it as containing mountains of gold, silver, and gems, seas of milk, clarified butter, curds, and spirits. Their chronology, like that of the Greeks, is divided into four ages, of which three are fabulous, and the first consists of nearly 2,000,000 years!

4142. *In the mathematical sciences,* the Hindoos possess a considerable share of genuine merit. Algebra, in particular, had advanced farther with them than, till very lately, among the nations of Europe; since they had made a considerable progress in the indeterminate analysis. Their astronomy has been famed, but with less reason; for its tables, which have been supposed to indicate observations commencing at 3100 A. C., are now proved to have been calculated at a period much more recent. Even the skill by which they were produced is now extinct; and the most learned Brahmin of the present day can with difficulty attain a knowledge of the period of eclipses, to be employed by him for the purposes of divination.

4143. *In the lighter and more elegant branches of literature,* India displays greater excellence. The fables of Pilpai, interspersed with moral maxims, possess the highest merit of which that species of composition can boast, and have been translated into all languages. The dramatic literature of the nation is very extensive, being little less voluminous than ours; and, though defective in plot, and destitute of the varied merits which characterise the works of a Shakspeare, a Racine, and a Molière, presents many passages distinguished for sweetness, pathos, and humour. Love, too, forms a copious theme; and the amatory poets of India are eminent, though none of them has attained the fame of Hafiz. These compositions, however, want the genuine language of passion: they are distinguished by splendid imagery, but empty profession; there is something about them stately, sophisticated, and gravely extravagant. It may be observed, with regard to these and to all the other branches of Indian literature, that their productions are ancient; the language in which they are written is dead; and we know few Hindoo authors of the present day who are at all distinguished. The Brahmins, who alone ought to be learned, are now almost wholly illiterate. The only tincture of literature and thought appears to exist among some of the higher inhabitants of the great cities, who have derived it chiefly from intercourse with Europeans, and particularly with the missionaries. Among these, Rammohun Roy is the most distinguished.

4144. *Considering the Hindoos as a refined and wealthy people*, it seems surprising that their *architectural monuments* should at present be of so humble a character. Even their temples, on which a superstitious people might have been expected to spare neither cost nor art, are immensely numerous, indeed, but both small in size and rude in structure. This character does not apply to the ancient religious edifices. The pagoda of Tanjore, and the mighty excavations of Ellora and Elephanta, present features which may rival the most splendid of those found in other Oriental empires. Temples erected even in the small Rajpoot principalities display a beauty rivalling those of ancient Egypt and even of Greece. Colonel Tod conceives, indeed, that Hindoo art has undergone a progressive degeneracy; and the more ancient the specimens are, they are always the more valuable. Since the sway of Mahometan nations was established in India, all the finest structures have been reared by them, and in their own peculiar style. The mosques and tombs constructed by Akbar, Shah Jehan, and Aurengzebe rank with the most splendid specimens of Saracenic art. The palaces are also magnificent, yet built in a light and airy style, rather resembling pavilions. They are contrived for the admission of air from every point of the compass: they have spacious halls, long galleries, projecting roofs, and terraces open to the sky, with accommodation for sleeping there when the weather permits. They enclose shaded courts, gardens full of trees, marble baths, jets d'eau, arbours; every thing which can prevent the heat from being painfully felt. The great display of wealth is in the furniture, particularly in the fabrics of silk and cotton ornamented with gold, which are either spread on the floor and seats, or hung round the walls. The throne of the Mogul was estimated at 4,000,000*l.* sterling, made up by diamonds and other jewels, received in gifts during a long succession of ages. Meantime, the habitations of the ordinary class are of the humblest description, rudely composed of canes and earth, and roofed with thatch. Irregular collections of these hovels, like clusters of villages crowded together, form the main composition of the greatest Mogul capitals, the splendour of which consists wholly in a few great streets or squares, formed by the houses of the grandees.

4145. *The vestments* of the Hindoos are suited to the climate, and composed of the manufactures of the country; they consist of long flowing robes of cotton, both loose and light (*fig.* 618.). In some of the higher regions only, coarse woollens of home manufacture are preferred. The clothes worn by the higher ranks do not differ much, unless in their superior fineness; but the rank of the wearer is indicated by a profusion of jewels, embroidery, and gilding, the display of which caused the Mogul court in its glory to be regarded as without a parallel in the world. The fallen princes and soubahs, who have risen upon its ruins, console themselves by maintaining as much of this parade as their reduced revenues will support.

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WOMAN OF DISTINCTION.

4146. *In regard to diet*, the Hindoos practise abstemiousness more than any other nation; and this from feelings not merely of duty, but of pride. The man who consumes, or even tastes, animal food or spirituous liquors, is considered by all the higher castes as an impure and degraded being, who must be thrust out from among them, and doomed to mingle with the vilest of his race. Rice and water suffice for the food of the purest classes, and scarcely any who have the slightest pretension to caste will admit within their lips a morsel of beef. The scruple diminishes as we descend; but it is only among the outcast classes that intemperance is found to prevail. The Mahometans, though by no means so scrupulous, are yet temperate. Their chief luxury is fruit, the best of which, being brought from the mountainous regions round India, is seen only at the tables of the great.

Sect. VII. *Local Geography.*

4147. *In surveying that vast field which the local geography of India* opens, we shall reduce it into four subdivisions: the Bengal provinces, including the former seats of Mogul empire; the western provinces; central India; the south of India; and, lastly, the countries on the Himalayah.

Subsect. 1. *Bengal Provinces.*

4148. In pursuing the local survey of Hindostan, it will be expedient to begin with *Bengal*, the most fertile province, and, since it became the seat of the power which rules over Hindostan, the centre of political influence. The Bengal *presidency*, the greatest of the three into which British India is divided, comprises much more than the mere province of that name. It is a great empire, extending over all the fine regions watered by the Ganges and the Jumna, and comprising the provinces, or rather kingdoms, of Bengal, Bahar, Benares, Oude, Allahabad, Agra, Delhi, and Orissa. These territories, according to estimates made with some care, were supposed to contain about 220,000 square miles, and 40,000,000 inhabitants. Within this presidency are forty inferior courts, stationed at the principal towns, six courts of appeal, and one supreme court at Calcutta.

4149. *Bengal Proper* consists of a vast alluvial plain, intersected by the lower courses of the Ganges and Brahmapoutra, with their numerous branches. These, during the rainy season, which lasts from June to September, inundate the whole country, and convert it into a sea, extending for hundreds of miles in every direction. The whole region is then navigable, and boats are seen sailing through the cornfields, in which the ears of rice appear above the water. The soil consists entirely of sand and clay, not a rock or even a stone, being found for 400 miles up the Ganges. Fields thus profusely irrigated produce immense crops of rice, of which Bengal is the chief granary. The sugar-cane also flourishes; but the other Indian products are not so copious as in the upper provinces. The mango, that most delicious of Oriental fruits, grows here in perfection; but other fruits and culinary vegetables are watery and insipid. A great trade is carried on, up and down the Ganges, in boats of various form and dimension, the navigation of which is supposed to employ nearly 300,000 men. The main staple of their trade is the conveyance of rice from the country districts to the great cities, and salt from the coast to the interior.

4150. *Nearly the whole sea-coast of Bengal* consists of the Sunderbunds, extending for about 180 miles. The Ganges, in entering the sea by eight large mouths, divides itself into a labyrinth of streams and creeks, through which boats make a difficult and perilous passage amid conflicting tides and eddies. The lands intersected by these numerous channels, being inundated by the water, which is every where salt, have never been brought under any regular culture. They form a vast desert, overgrown with thick forests, whence Calcutta is supplied with wood for firing, and for the building of boats. These extensive marshes afford also the opportunity of producing, by mere solar evaporation, large quantities of excellent salt, for which there is a constant demand in the upper districts of India. The Ganges appears, in the course of ages, to have experienced successive alterations in the main channels by which it is entered. The only one at present navigable for large vessels is the most westerly, called the Hoogly, but which by no means transmits the main body of its waters.

4151. On the Hoogly branch is situated *Calcutta* (*fig.* 619.), which, from a few straggling cottages in a wooded marsh, has been raised by Britain to be the capital of India. In 1696, the English were allowed by Aurengzebe to establish a factory, and in the following year to secure it by a fort. In 1757, it had not above seventy English houses, when it was taken and destroyed by Surajah Dowlah. Lord Clive, having become master of Bengal, made Calcutta the capital, and founded a fort, which has cost about 2,000,000*l.*, and is very strong, though requiring at least 10,000 troops for its defence. Calcutta has from that time been perpetually increasing, and is supposed to contain 500,000 inhabitants; while, within a radius of twenty miles, there are upwards of 2,000,000. The situation was originally very unhealthy, being in the midst of forests and swamps; and, though these have been in a great measure cleared away, it still suffers by the damp breezes from the Sunderbunds. The English town, or suburb, called Chouringee, consists of 4300 houses. Though built only of brick, it is elegant, and even superb: the houses are handsome, covered with fine plaster, called chunam, each being detached, and surrounded by a wall. Strangers ascending the river are particularly struck by the number of elegant villas, with which all the environs are studded. The Black Town, comprising much the greater part of Calcutta, consists, as in other parts of India, of miserable cottages of mud and bamboo. The government house is a very splendid and costly structure; and considerable state is maintained, though not to that degree which can rival the parade of Asiatic courts. A college was founded by the Marquess Wellesley, which boasted many illustrious members, but has of late been much reduced. The allowances to all the servants of government are liberal; and though their aim, in going out, has generally been to return with an independent fortune, they indulge in a hospitable, splendid, and expensive style of living. Large dinner parties, in preference to public amusements, form the favourite recreation.

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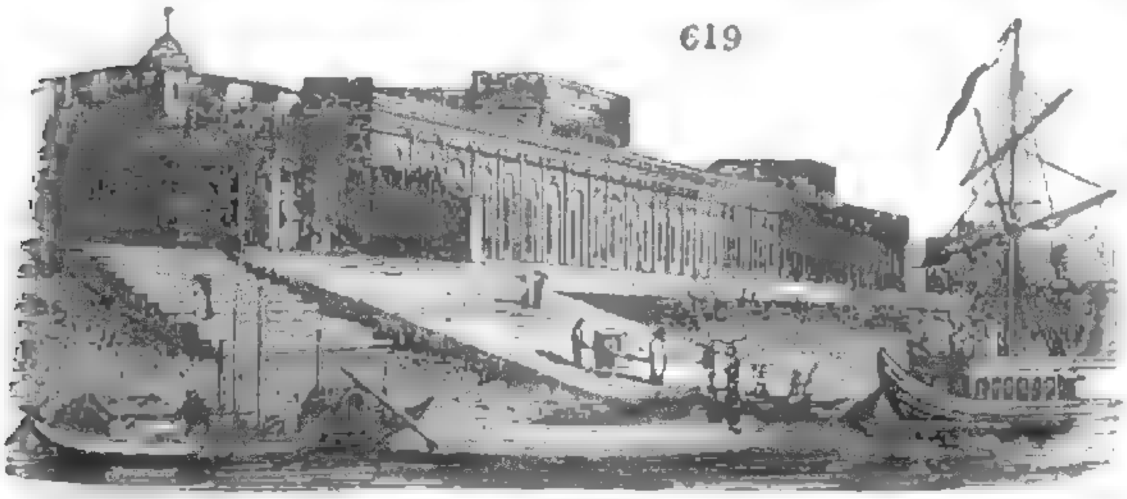

CALCUTTA

4152. Calcutta, on the west, touches almost immediately on the frontier of the province of Orissa; but, before ascending into the interior, we must take a view of *Chittagong*, the most easterly district, situated beyond the estuary of the Brahmapoutra, and touching almost immediately on the Birman frontier. A large part of it consists of mountain and woodland tracts, through which roam large herds of wild elephants; but other tracts are very well adapted for cultivation; and the result of enquiries made by the Marquess Wellesley gave reason for computing its inhabitants at 1,200,000. The agricultural population are called Choomeas: they live, in a peaceable manner, under a rajah who pays a tribute to government; but the interior is occupied by the Kookies or Lunctas, who live almost the life of savages; have their villages on the top of high hills, surprise their enemies in the night, massacre the males, and carry off the women and children as slaves. Islamabad, the capital, is an ancient city, on a navigable river, with a tolerable harbour; and attempts have been made to render it the emporium of Bengal; but the difficulty of communication with it has always secured the preference to the western ports.

4153. *Returning to Calcutta, and ascending the Hoogly branch*, we come first to *Serampore*, a neat thriving little town, at which is a Danish settlement. This place is interesting as the seat of the Baptist missionaries, who have distinguished themselves by such learned and extensive labours in the pious task of translating the Scriptures into all the languages of India, and even of China. About twenty miles above Calcutta is *Chandernagore*, noted as the capital of the settlements belonging to the French in Bengal. It surrendered, however, to Lord Clive; and, though restored, has never regained any importance. Six miles higher is Hoogly, for several centuries the port of Bengal, and the seat first of the Portuguese, and afterwards of the British and Dutch factories. It ranked at one time among the greatest Indian emporia; but, on the rise of Calcutta, gradually lost its splendour, though it is still populous and considerable.

4154. About 120 miles above Calcutta, and on the same branch, occurs *Moorshedabad*, made, in 1704, the capital of Bengal, and still the residence of the Nabob, who, being allowed a handsome pension by the British government, lives in considerable state. This city, and the contiguous one of Cossimbuzar, also large and populous, situated on an island in the Ganges, form the main seat of the silk manufacture, which is nowhere else in India carried to equal perfection. The fabrics are chiefly taffetas, satins, carpets, and knitted stockings.

4155. *To the west of the line* up the river, are the districts of *Burdwan* and *Birbhoom*, the former of which is reckoned nearly the most fertile in India. Though only seventy-three miles long and forty-five broad, it maintains a population of 2,000,000; and the rajah, as zemindar, pays a revenue of 400,000*l.* It is entirely agricultural, and contains no town of importance.

4156. To the east of this line, also between the Ganges and the Megna or Lower Brahmapoutra, is *Dacca*, a very fine and interesting district. Wholly intersected by these rivers and their branches, it is liable to extensive inundations, which often alter the boundaries of fields, and convert many into jungle, while to others they communicate extreme fertility. Dacca is the chief seat of the muslin manufacture, and its fabrics of this description are the finest and most beautiful in the whole world. Of late, however, the demand has so much diminished, that the hereditary skill by which this beautiful art is preserved is in danger of being lost. Cotton quilts, dimities, and cloths are also manufactured. Dacca was the capital of Bengal in the reign of Jehangire, and is still a very large city. It contains 150,000 inhabitants, displays no particular splendour, but is the seat of a great trade.

4157. We return to the Ganges; and, joining its main stream, soon discover the remains of *Rajemahl*, the residence of the soubahs of Bengal under Aurengzebe, and celebrated even in the East for its magnificence. Marble halls and deserted courts mark the departed grandeur of the palace of Sultan Shujah. A little to the north, on a river which falls into the Ganges, is *Maulda*, a thriving place, with considerable manufactures of silk, and of mixed silk and cotton. A few miles from Maulda, along a branch of the Ganges now dried up, extend for many miles the remains of *Gour*, which, in the thirteenth century, the Mahometan conquerors established as a proud capital of India. The materials appear to have been carried away to form modern cities; a great part of the present site consists of jungle, the abode of tigers; but wherever cultivation takes place, the brick-dust in the soil indicates ancient habitation. A diligent search has recently discovered the remains of a considerable number of mosques and palaces. One minaret (*fig.* 620.), represented by Mr. Daniel, displays the traces of peculiar magnificence.

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MINARET AT GOUR.

4158. *Upper Bengal* presents a considerably different aspect from the lower province. The climate is cooler; and wheat and barley are raised, in preference to rice. The northern tracts are hilly and irregular, inhabited by a race of short, stout, rough mountaineers, who sometimes annoy the inhabitants of the plains, but who display an honesty and veracity very superior to that of Hindoos in general. The Ganges, which had hitherto spread its waters so wide over the plain, is now confined between granite rocks, which at Sicrygolly approximate so closely, that attempts were made to defend the passage by a fortification, now abandoned to decay. On emerging from this narrow pass, we enter another district.

4159. *Bahar*, though properly a distinct province, is often almost identified with Bengal. The territory is fertile and beautiful; not so copiously inundated, but still well watered by the Ganges and numerous tributaries, particularly the Soane, from the Vindhya chain, and the Gunduck from the Snowy Mountains. In preference to rice, it yields very fine wheat; but opium and saltpetre, both excellent and in large quantity, form its characteristic products. It abounds also in all the manufactures of India, though none of them attain the same unrivalled excellence as at Dacca and Moorshedabad.

4160. *The Ganges is still the line* upon which *the great cities* are situated. *Monghir*, capital of a fine district of the same name, is a considerable and ancient town, commanding a peculiarly admirable view along the banks of the Ganges. It was the frequent residence of Sultan Shujah, and Cossim Ali Khan, who bestowed great pains in erecting a very strong fort for its defence. To this erection the British government have ceased to attach much importance, since their dominions were extended so far to the westward as to render Monghir no longer a frontier station. Somewhat lower down is Boglipoor, a neat manufacturing town, which sometimes gives name to the district.

4161. *The city of Bahar* stands at some distance from the river; and, though the ancient capital, and even a royal residence, has now fallen much into decay. The chief city of the province, and one of the greatest in India, is *Patna*, extending about four miles along the river. It has been supposed to be the ancient Palibothra; at all events, it is of considerable antiquity, and was the residence of the soubahs of Bahar before its government was merged into that of Bengal. There are a number of mosques and temples; but the only part of the city which can be considered handsome is the suburb of Bankipoor, occupied by the British residents. The prosperity of Patna is founded on the fertility and high cultivation of the district in which it is situated, and on its importance as the emporium for the staple products of opium and saltpetre. Dinapoor, in the vicinity of Patna, forms a fine military station. Gaya, about fifty miles south of that city, and on a tributary of the Ganges, is one of the holy cities of the Hindoos, and the scene of a most crowded pilgrimage. About forty miles above Patna, the Ganges receives the Gogra, the second of its tributaries in magnitude; and, soon after passing Buxar, a strong fortress, now dismantled, we quit Bahar.

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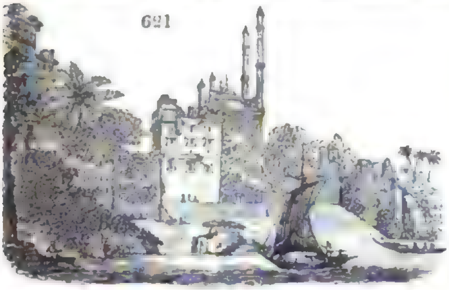
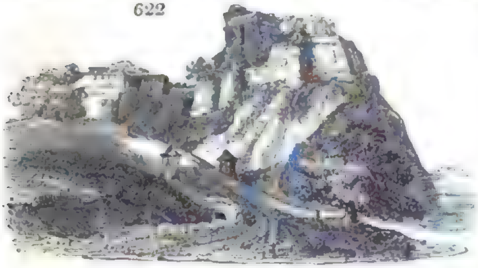


BENARES.

622



CHUNARGHUR.

4162. *Allahabad*, the next province, is very extensive, reaching farther north and south of the river than along its banks: the latter portion, however, is by much the finest. The first district which occurs is that of Benares, considered sometimes as a separate province, and even occasionally annexed to Oude. It is supposed, with the single exception of Burdwan, to be the richest and most cultivated district of all India, and, within a narrow compass, contains a population of 3,000,000. Its chief ornament, however, is the city of *Benares* (*fig.* 621.), which is universally accounted by the Hindoos to be ancient and holy beyond all others. It may be said to form the grand depository of the religion and learning of this vast country. Its sacred character, which is supposed to ensure the salvation of all who die within its precincts, cannot fail, in a nation devoted to pilgrimage, of rendering Benares a scene of extensive and crowded resort. Its own population, long supposed to exceed 500,000, has been found by a late census not to be more than 200,000; but it is augmented, at solemn seasons, by pilgrims to a much greater number. Benares, in fact, presents a more lofty and imposing aspect than any other Indian city. Its houses, instead of being a mere collection of mud and straw huts, are most of them built of brick, and some of them five or six stories high; so that they make a very magnificent appearance, especially from the opposite side of the river. Partly, however, with a view to coolness, the streets are very narrow, with small windows, and terraced roofs. Benares contains also temples and mosques in vast numbers; though, as in the case of other modern Hindoo structures, not on a scale commensurate with the grandeur of the country and city. The greatest of them was levelled to the ground by Aurengzebe, who in its stead erected a mosque, which now forms the principal ornament of Benares. Chunarghur (*fig.* 622.), near Benares, is one of the strongest of the Indian hill forts, and has been converted by the British into a great military station. It was anciently a town of great importance, and contains a mosque, the entrance to which has been delineated by Mr. Daniel, as one of the finest examples of this species of architecture (*fig.* 623.).

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ENTRANCE TO A MOSQUE AT CHUNARGHUR.

4163. *The next division of the province*, in ascending the river, is that of *Allahabad Proper*. It is highly productive, more in wheat than in rice; for, though traversed by the parallel streams of the Jumna and Ganges, it is little inundated, and the water, so essential to the growth of rice, requires to be conveyed by laborious processes over the fields. The city is extensive, but not distinguished by any peculiar magnificence or ornament. Its chief feature consists in the fortified palace (*fig.* 624.), begun by the emperor Akbar, on which upwards of 12,000,000 rupees are supposed to have been expended. It is of surprising extent, having one side on the Jumna, and the other near the Ganges, which rivers here unite. It was considered by the Hindoos as impregnable; but, not being found proof against cannon, the English have fortified it in the European manner, and have made it a grand military depôt for the upper provinces. The Hindoos regard with religious veneration all junctions of rivers, particularly with the sacred stream of the Ganges. This junction, therefore, of the Ganges with its greatest tributary becomes, without dispute, the holiest spot in all Hindostan. Accordingly, it attracts hosts of pilgrims of whom many endeavour to secure a happy futurity by seeking death in its hallowed stream. The most approved mode has been, for the devotee to cut off his own head, and allow it to drop in, as an offering to the Gangetic deity. Not far from Allahabad is Mirzapore, one of the greatest inland trading towns of India, a great mart for cotton and spun silk, and the seat of very considerable manufactures.

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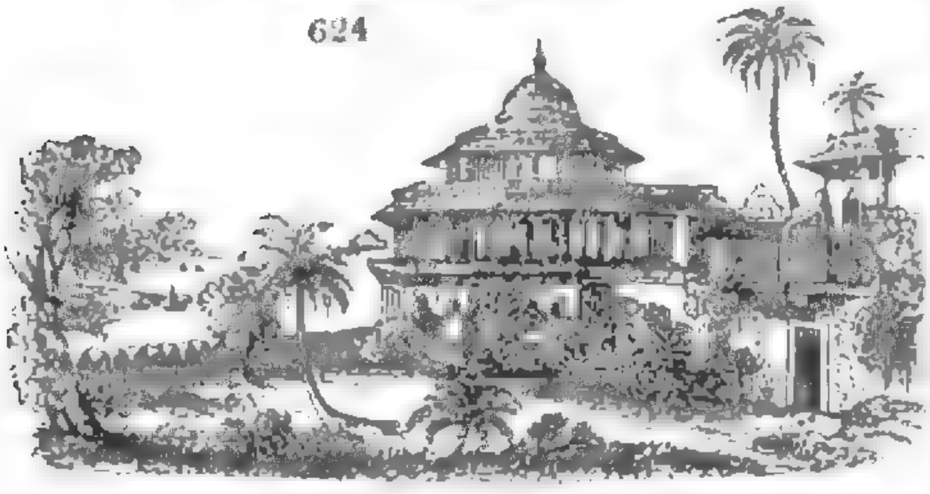

FORTIFIED PALACE AT ALLAHABAD.

4164. *The other districts of Allahabad* extend chiefly south-west from the Jumna towards the Vindhya mountains and the head of the Nerbuddah. This territory is of great extent, but, being hilly and often arid, is by no means so productive as the tract watered by the two rivers. It is a very strong country, the hills generally presenting that form of precipitous sides, with a table-land at top, which renders them, as natural fortifications, stronger than any which can be made by art. To the greater part of this district is given the name of Bundelcund, the chief city of which is Callinger, the strongest fortress of the character we have just described, and the rival of Gwalior. It was long held by an independent rajah, even against the Mogul; but in 1810, by prodigious efforts of valour, and after one severe repulse, the British became masters of it. Cawnpoor, on the Ganges, has become highly important as a military station. Bundelcund is distinguished by the diamond mines of Pannah, which, though not in any respect equal to those of Golconda, are of great value. In the time of Akbar, their annual produce was estimated at eight lacs of rupees; but it is now much diminished.

4165. *The province or kingdom of Oude* extends north from Allahabad, near whose eastern frontier the Ganges, as already mentioned, receives the Gogra or Sarayu, which is its greatest tributary next to the Jumna; and forms a broad and copious stream descending from the Himalayah. Its course had previously watered the plain of Oude, a rich territory, the lower districts of which are not inferior to those of Bahar and Benares, on which they border; and the upper, though not equal, by no means barren. By the treaty of 1801, a large and valuable portion was ceded to the British; the nabob retains the rest, and continues to reside, in diminished splendour, at Lucknow. This city, while the nabobs of Oude were in full power, ranked with the most splendid in India. Sujah ul Dowla, who had a peculiar architectural taste, embellished it with a number of mosques and palaces, with varied ornaments and gilded domes, which have a very brilliant effect. The population has been reckoned at 300,000, but is probably diminished. Oude, the earlier capital, is in ruins; but Fayzabad, which succeeded it as such, is still a populous city.

4166. Proceeding up *the parallel streams* of the Ganges and Jumna, we find the space between them, and for some distance westward, occupied by *the province of Agra*. This extensive territory presents sensible indications of its approach to the great mountain territory of India. The climate, unless when hot winds blow, is cool, and even actually cold; and the rivers, less ample, and confined within higher banks, administer sparingly the boon of moisture. It derives its chief lustre from containing Agra, one of the great Mogul capitals. This it owed to Akbar, who, from a village converted it into one of the greatest cities of Asia. It completely shared, however, the fall of the dynasty, and the greater part of it is now in ruins. Yet the eye may still range over a vast extent of country, covered with the remains of ancient magnificence. The houses, like those of Benares, are high, and the streets narrow. The vicinity is adorned by the palace of Akbar, and still more by the Taje Mahal (*fig.* 825.), erected by Shah Jehan, in memory of his sultana; which is reckoned the finest tomb in the world. It is composed entirely of white marble, inlaid with precious stones, and is said to have cost 750,000*l*. Agra, since its capture by General Lake in 1803, has remained in the possession of the British, and is become the seat of one of their grand courts of justice and revenue.

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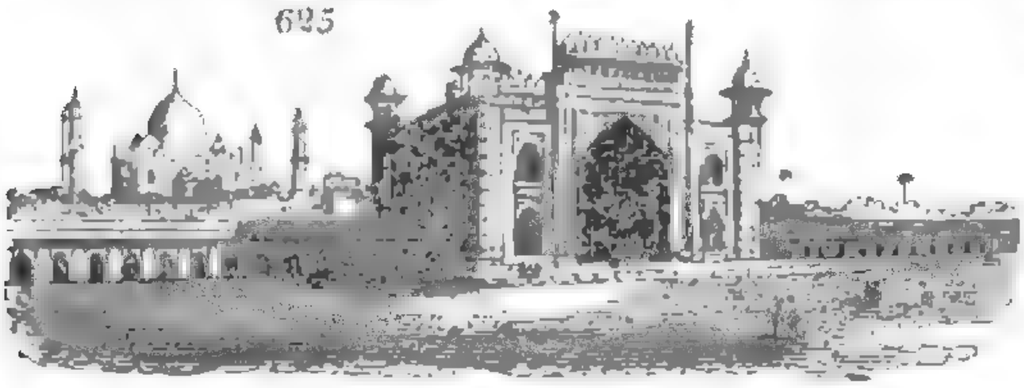

GATE TO THE TAJE MAHAL.

4167. *Secundra and Muttra* are two ancient and remarkable cities, situated on the Jumna a little above Agra. The former, now in ruins, is only distinguished as containing the splendid and ornamented tomb of Akbar (*fig.* 626.), composed entirely of white marble. Muttra is one of the most ancient and venerated Hindoo cities, considered by Heber as almost resembling Benares. It is still a considerable place, and important as a military station.

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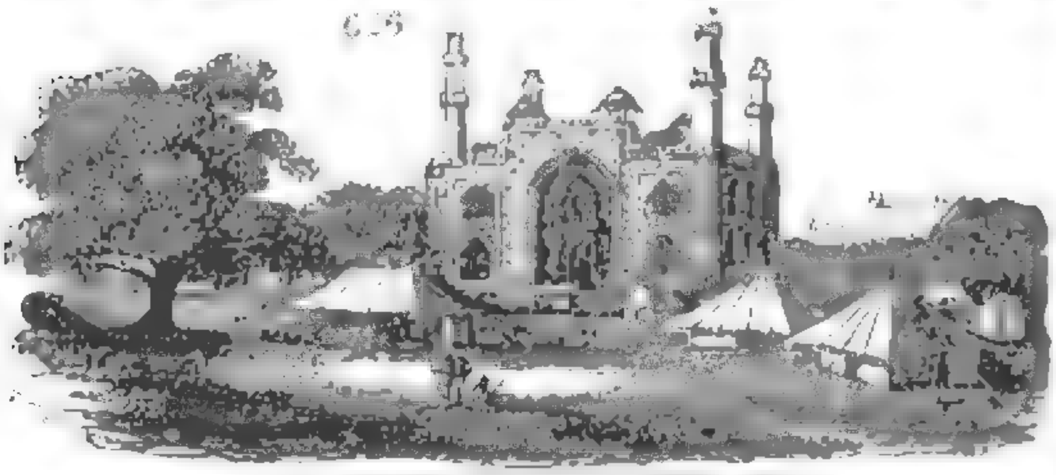

GATE TO MAUSOLEUM OF THE EMPEROR AKBAR.

4168. *The finest and most fertile part of the province of Agra is the Doab*, or the country between the rivers; and it is in the immediate occupation of the British government. Within this district are the remains of Kanoge, now a poor village, situated to the west of the Ganges, but whose brick walls, extending for six miles, attest the ancient grandeur of a capital which, eight centuries ago, ranked superior to any other in northern Hindostan. A Hindoo temple, and the mausoleum of two Mahometan saints, still display magnificence; and a number of ancient coins have been dug up on the spot. Furruckabad, capital of a small district of the same name, is a thriving commercial city.

4169. *Agra, west of the Jumna*, is divided into two parts by the tributary stream of the Chumbul, flowing eastward from the vicinity of Oojein. The northern part is held by a number of rajahs, whom fear or policy maintains in a dependent alliance with Britain. They belong chiefly to the warlike tribe of the Jauts, who, in the seventeenth century, migrated from the banks of the Lower Indus, and, availing themselves of the distracted state of the empire, seized a number of the strongest places in the district. The capital of their most powerful chief is Bhurtpore, perhaps the most formidable of all the mountain fortresses of India. Its siege in 1805 cost the British army a greater loss than it had sustained in any three pitched battles; and the rajah, at the close of it, was able to secure very favourable terms. In 1825, however, it yielded to the British arms. The province to the south of the Chumbul was allowed by the treaty of 1805 to be annexed to the territories of Scindia. It contains also a number of hill forts, among which is pre-eminent Gwalior (*fig.* 627.) which, for natural strength, has scarcely, perhaps, its equal in the world. It consists of a table plain a mile and a half long, and less than a quarter broad; and, being surrounded on all sides by a precipitous face of rock, was supposed impregnable, till, in 1780, it was carried by escalade by Major Popham; and again, in 1804, so formidable a breach was effected by Colonel White, as to cause its surrender. Lord Cornwallis afterwards ceded it to Scindia, the Mahratta chief, who has made it his capital; an act of his lordship which has been considered more generous than politic. Gohud is also an important place, though not of the same military strength. Its rajah acted for some time an important part in Indian politics; but he is now almost entirely dependent upon Scindia.

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GWALIOR.

4170. Continuing to ascend *in a north-westerly direction* up the great rivers, and approaching to their mountain sources, we find *Delhi*, raised latterly to high distinction as the chief seat of Mogul empire. This province is ruder, and less susceptible of culture, than any of those hitherto named. Few parts of it enjoy the benefit of inundation, except the banks of the Cunggar; while artificial irrigation and agricultural improvement have been almost annihilated by the desolating ravages, first of Nadir Shah, and subsequently of the Afghans and Mahrattas. The central district of the province between the two rivers is held by the British in immediate sovereignty; and, notwithstanding some defects of administration, it is sensibly recovering, and its population is increasing. On the banks of the Jumna, near the northern frontier, is found, mouldering in decay, the city of Delhi. It was, in early times, a great Hindoo metropolis, under the name of Indraput; but Shah Jehan, in the middle of the seventeenth century, made it the chief seat of Mogul dominion, and such it afterwards continued. Here, in 1806, died Shah Allum, the last of that mighty dynasty who could be said to enjoy any portion of real empire. His son Akbar is still allowed by the British to bear that great name, and to receive a considerable proportion of the revenues of the province, which enables him to live in some splendour. What remains of Delhi is still rather a handsome city; the streets, though narrow, contain many good houses, built of brick, and partly of stone. It contains some manufactures of cotton cloth, and is the rendezvous of the caravans which maintain the communication of India with Cabul and Cashmere. The palace of Shah Jehan, with its gardens, a mile in circumference, bears still a most magnificent aspect, particularly its gateway; but a long range of those belonging to the great chiefs and omrahs of the empire, adorned with gilded mosques, pavilions, and tombs, now present only one vast scene of ruin and desolation.

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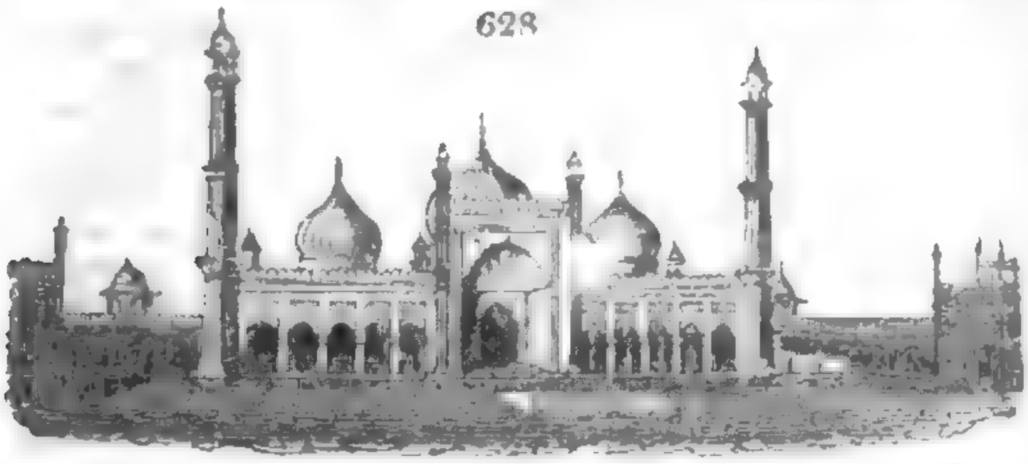

JUMNA MUSJEED, AT DELHI.

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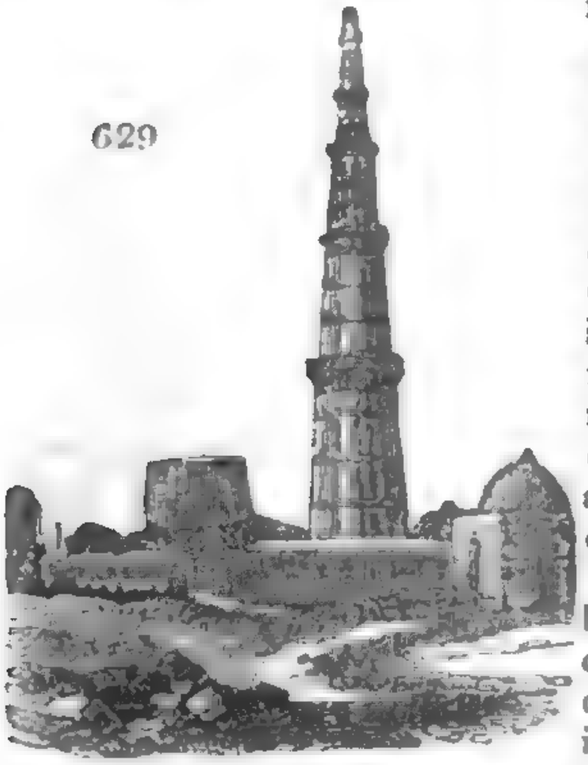

CUTTUB MINAR.

4171. *Delhi* contains the most splendid modern edifices by which any part of the empire is adorned. The mosque called the Jumna Musjeed (*fig.* 628.), erected by a daughter of Aurengzebe, of red stone inlaid with marble, is considered decidedly the finest structure in India dedicated to Moslem worship. The Cuttub Minar (*fig.* 629.), reared by one of the Patan emperors named Altumsh, is 242 feet high, and considered Bishop Heber the finest tower he ever saw. It rises in five stages, the three lowest of wh are of fine red granite, the fourth of white marble. The summit commands a most ext sive prospect.

4172. *In the northern part of the province of Delhi,* to the east, are the large and inc trious towns of Bareilly, Meerut, Shahjehanpoor, and Rampoor. The two former pos importance as military stations, and the barracks at Meerut are very extensive. A la Christian church has recently been erected there.

4173. *The north-western part* is composed of the district of Sirhind, which is now chiefly possessed by Seiks. Though traversed by the sacred stream of the Sereswattee, it is for the most part arid and bar It has been further desolated by the hostile operations of the Seiks, and has also suffered from the ravage the Persian and Tartar conquerors, having been the regular track by which they penetrated into Hindos The city of Sirhind, celebrated, under Sultan Feroze, in the fourteenth century, as a gay and flourisl capital, is now in a state of total ruin. The most flourishing place in the district is now Patiala; but a gre historical celebrity belongs to Carnoul and Panniput, one the scene of the victory of Nadir, the other of of Ahmed Shah, which broke the power of the Mahrattas.

Subsect. 2. *Western Provinces.*

4174. As it is intended to treat separately of the territory situated along and within great range of the northern mountains, we shall proceed direct from Delhi to *the provi on the western frontier.* This range by no means presents the luxuriant and fertile aspec those watered by the Ganges and its tributaries. It consists of a vast plain of sand, wh uniformity is only broken in the north by the Punjab, or the region of the five rivers, wh descending across it from the Himalayah, enter the Indus by one united channel.

4175. *Lahore,* the chief of the western provinces, includes the greater part of the Punjab, with a consi able extent of mountainous territory to the north. This last is by no means unproductive; the earth wa down by the rains being formed into terraces by parapets of stone. Thus, all the kinds of grain peculi the temperate climates are raised in abundance, and even large forests of firs grow on the higher acclivi The finer and more beautiful part of Lahore, however, is that situated on the rivers, where the plains covered with the richest tropical productions, and, in the days of their prosperity, were regarded as al the garden of India. But the ravages of the Persian and Afghan conquerors, and the rude sway of the Se have reduced culture and industry to a low ebb; but it has of late begun to revive. Very fine salt and gem are found on the banks of the Indus, which, at Attock, is crossed by a range principally composed of mineral.

4176. *Lahore* has now entirely fallen into the possession of the *Seiks,* who, from a religious sect, have come a great political body; and, as such, have been already described. Besides Lahore, they occupy, as been seen, the north-west of Delhi, and the greater part of Moultan; and are the most important na state now existing. The Mahometans, formerly the ruling people, are kept by them in a completely sul and degraded state, and are allowed even a scanty measure of religious toleration. The disunion of the Se and their rude habits, are unfavourable to industry and commerce, which would have required a protec hand to enable them to emerge from the effects of long civil contest, and of the repeated passag desolating armies from Persia and Afghanistan. Although, therefore, the Seik chiefs are beginning to their error, and are endeavouring to afford encouragement to trade, the country has lost much of its anc fertility and beauty, and does not contain a population adequate to its extent.

4177. *Lahore, the nominal capital* of this province, was one of the most beautiful cities of India, wl under the early Mogul princes, it was made an intermediate residence between Cabul and the inte Akbar, Jehangire, and Ferokshere successively contributed to its embellishment. The mausoleur Jehangire, only surpassed by the Taje Mahal at Agra, is still nearly entire; and there are ample remai the palace adorned in the highest style of Eastern magnificence. Its terraced roof, covered with a terre of the richest flowers, suggests the idea of the hanging gardens of Babylon. All, however, went ra to ruin, under the multiplied desolations which Lahore has suffered; though its situation, on the fe banks of a fine river, and on the high road from India to Persia, must always secure to it a certain degr population and wealth. Recently, also, Runjeet Sing, the supreme Seik chief, has made it his capital.

4178. The importance of Lahore is, in a great measure, shared by *Amritsir,* the holy city of the Seiks, the rendezvous of their *gurumata,* or great national council. The object of attraction here is a tan pond, formed by Guru Govind, an early chief and saint, who gave it the name of the "pool of immortali and taught, that those who bathed in its waters were purified from all sin. This belief has led to an imm concourse of the sect, whose contributions support a large temple, built in the midst of the water, with acalies or priests attached to it. Amritsir is an open town; but it contains the strong fort of Govind Gar in which Runjeet Sing keeps his treasure and arsenal. It is eight miles in circumference, well built of br but without any structures of peculiar magnificence. It forms the centre of a considerable caravan t with Cashmere; and, from the security found there amid recent revolutions, it has been chosen as a resid by the chief monied men in this part of India.

4179. To the south of Lahore is *Moultan,* an appellation which Mr. Elphinstone reduces within very nar limits, by confining it to the district immediately dependent on the city of that name, and excluding tho Bahawulpoor and Leia; but we shall adhere to the original Hindoo idea, which comprehends under Mou all the lower course of the five rivers after their union into two great channels, and thence westward to Indus. These rivers roll through a desert; but the partial inundation, and the conveyance of the water the fields by Persian waterworks, diffuse fertility to a considerable distance on each side of their banks. T immediate vicinity, indeed, is in some places covered with mud so soft, that it cannot bear the tread horse. Wheat and cotton are the most valuable products. Agriculture, however, with its essential pro of irrigation, exhibits visible marks of decay, consequent upon the successive conquests and inroads to w the land has been exposed. The whole of this province, lately tributary to the king of Cabul, is now u the dominion of Runjeet Sing, chief of the Seiks. *Moultan* is a fine city, about four miles in circumfere and surrounded by a very handsome wall. It contains a temple of great antiquity, highly venerated, and object of crowded pilgrimage from all parts of India. There are also several very beautiful tombs, cov with high cupolas of glazed and painted tiles. It is distinguished by manufactures of silks and carpets, latter in imitation of those of Persia, but of inferior excellence.

4180. Beyond the river Gharra, which forms the eastern boundary of Moultan Proper, stretches *the dis of Bahawulpoor,* governed by Bahawul Khaun. Near the river it is very fertile; but, in receding, it p into almost complete desert, of which the greater part of this extensive tract consists. It extends also s occupying a considerable reach of the banks of the Indus. Bahawul Khaun, the most powerful chief in tract, raises a revenue of 1,500,000 rupees. He maintains a well-appointed army of 10,000 men, and h cannon foundery, which supplies him with good and well-mounted guns. The city of Bahawulpoor extensive as Moultan, but not so populous; a great part of its area being occupied in gardens. The houses are built chiefly of unburnt brick. It is remarkable for the manufacture of *loongees*, or silken girdles, and of turbans.

4181. *The western part of Moultan*, between the Acesines and the Indus, composes the district of Leia. Every thing here begins to assume an Afghan aspect. The mighty snow-covered mountains of that country appear in the distance; the higher ranks of the people affect the Persian language and manners; and the farm-yards and agricultural economy display that superior neatness, and those almost European modes of management, which characterise the countries beyond the Indus. The territory at all remote from the river is little better than a desert. The chief raises a revenue of 500,000 rupees. His armed force consists of two regiments of musketry, and 5000 cavalry. Leia being a poor village, the residence of the rajah is at Bukhur, a flourishing little town near the Indus.

4182. *The population* of the whole province of Moultan is properly neither Hindoo nor Afghan. It consists of Jauts, the race whom we have noticed in the western parts of Agra, and of colonists from Beloochistan: these people are all Mahometans. There is an intermixture of Hindoos, which is greater in the more easterly tracts, but nowhere composes the leading race. Camels are extensively employed for the purpose of travelling over the vast bordering deserts.

4183. *The lower Indus*, after receiving by one channel the united waters of the five rivers of the Punjab, flows for a great space through a region which, beyond its immediate banks, is almost entirely desert. Its character, however, changes when separating into two branches, of which the westerly is the largest: it forms a delta similar, though on a smaller scale, to that of Egypt. This delta, with a considerable extent of territory on each side, forms the kingdom of *Sinde*, which was highly flourishing while it was maintained in a pacific posture under the sway of the Mogul. Its alluvial and inundated territory was kept in high cultivation, and yielded abundant crops of rice, sugar, indigo, and cotton. Tatta, the ancient Pattala, situated on the eastern branch, was then one of the greatest of Oriental emporia. Enjoying a free navigation for large vessels up the Indus as far as Lahore, it became the grand medium by which the products of Western India and Afghanistan were exchanged for those of Malabar and Coromandel, and for European goods. One of the chief materials of trade was afforded by its own manufactures of cotton cloth, which, even in the time of Nadir, are said to have employed 40,000 weavers. Amid the breaking up of the Mogul empire, however, an opportunity was given to the chiefs of a warlike and barbarous race, called Talporee, who occupied the neighbouring deserts of Beloochistan, to seize upon the government. The king of Cabul at one time undertook to drive them out; but found the task so difficult, that he ultimately consented to accept a tribute, which, however, was paid only scantily, when extorted by the appearance of an Afghan force upon the frontier, and has now entirely ceased. The rapacious chiefs who now tyrannise over Sinde, strangers to all arts of good government, seek only to extract from the country the utmost present advantage to themselves. In racking the land rents, they have broken up all the old tenures of the husbandman, and deprived him of all permanent interest in the ground. Protection being no longer afforded to commerce and property, the European nations have withdrawn the important factories which they maintained at Tatta; and, of the fleets which formerly navigated the Indus, only small boats are seen ascending and descending. The *Ameers* have increased the desolation, by converting large tracts of the finest land into jungle, with the view of affording the amusement of hunting. To their other violences they add a spirit of bigotry, which impels them to relentless persecution against all who profess the Hindoo religion. The consequence of this misgovernment has been, that the revenue, which amounted at one time to eighty lacs of rupees, sank in 1813 to sixty, and was found by Mr. Burnes, in 1827, not to exceed forty. Yet the Ameers are supposed to have amassed a considerable treasure. They are particularly rich in jewels, which they studiously collect, and obtain, often at easy rates, amid the vicissitudes of the Cabul monarchy, from its fallen chiefs. Their collection of muskets and sabres ornamented with gems is supposed to be the most extensive in the world.

4184. *Tatta*, from the causes now enumerated, has two thirds of its area in ruins, and does not contain above 20,000 inhabitants. The streets are narrow and dirty, and the ordinary habitations, as usual in India, are only cottages of canes and mud. The old English factory is still the best house in the place. On a mountain, at the distance of a mile, are an amazing number of tombs, some of them very splendid; but the mosques and pagodas are in a great measure going to ruin. The decay of Tatta is hastened by the transference of the seat of government to *Hydrabad*. This place is situated higher up, about two miles from the Indus, on a branch called the Fulalee, by which it is formed into an island. There are some manufactures of arms and leather; but, instead of rivalling the former greatness of Tatta, it scarcely equals the present magnitude of that city.

4185. *The sea-coast of the Indian delta*, in consequence of frequent inundation by the salt water, presents a desert of flat and marshy sand, nearly similar to that part of Egypt which immediately borders on the Mediterranean. Somewhat west from the river is *Corachie*, the only sea-port of Sinde, and which, from that circumstance, still retains some commercial importance. It contains a population of about 8000 people, among whom the Hindoos are the most active and industrious.

4186. In making a circuit of the Ganges, and down the Indus, we have left an intermediate space of great extent, not traversed by these rivers or by any of their tributaries. This forms *the province of Ajmeer, or Agimere*, a rude, mountainous tract, which has scarcely been subdued by any of the conquerors of Hindostan. It is the native seat of that remarkable military race called *Rajpoots*, who present, both in figure and character, a complete contrast to the other Hindoos. They are tall, vigorous, and athletic; all their habits are rude, and their only trade is war. Although their territory approached at several points to within less than a hundred miles of the great Mogul capitals of Delhi and Agra, they never ranked even as regular tributaries of that empire. It was by pensions only that they were induced to join as auxiliaries in war. The Rajpoot chiefs, enjoying thus a succession of hereditary power, unbroken by foreign invasion, boast of a long line of ancestry, and are considered of higher birth than any other Hindoo rulers. Even the Mahratta chiefs, though far superior in power, conceived it an honour to form family alliances with them. They are by no means a degraded and enslaved race, like most other Hindoos; they have *rahtores*, or nobles, of different grades, who owe to the sovereign merely fealty and military service, and are nearly as independent as the chieftains in feudal Europe. Though turbulent and violent, they are considered by Tod as imbued with sentiments of honour, fidelity, and generosity, scarcely known among the inhabitants of the plain. They do not hold the female sex in that degraded state too general over India. The Rajpoot ladies are well informed, and regarded with somewhat of that romantic gallantry which prevailed in Europe during the middle ages. Yet they are guilty of a dreadful enormity, that of infanticide; many of the female children being murdered in the moment of birth: but this is said to be prompted by a preposterous pride, on account of the difficulty of procuring marriages suitable to their dignity, and even by a consideration of the enormous expense which it is supposed necessary to incur in the nuptial festival. Such is the extravagant display made on these occasions, that a year's income of the state is considered as a moderate amount. The only populous and powerful tract of this province is that reaching from Agra to Guzerat, on the western bank of the Chumbul. The country here does not present the same flat and sandy character as elsewhere: it is traversed by the long mountain chain of the Aravulli, on each side of which extend fine and fruitful valleys. It thus unites great military strength with considerable fertility.

4187. *Ajmeer*, the capital of this province, being near the frontier of Agra, is not held by its native chiefs. It was an occasional residence of the Mogul emperors. For 600 years it has been a favourite resort of Mahometan pilgrimage, as it contains the tomb of a great saint, who is venerated even by the Hindoos. Eleven hundred attendant priests are maintained by the contributions of the pilgrims. The city has still a handsome palace, which was erected by the emperor Shah Jehan; but in other respects it is poor and in decay. The fort, built at the extremity of a range of hills, is of no great strength, but within it is an ancient temple, which Colonel Tod considers as one of the most perfect monuments of Hindoo architecture. The surrounding country is flat and sandy.

4188. *The principal Rajpoot chiefs* are those of Marwar, Mewar, and Jyepore or Jyenagur. The first is the most powerful: the rajah's territories extend along the western border of the Aravulli, passing gradually into the desert. His capital is Joudpoor. His chiefs are brave and daring, and he is considered at present one of the chief native powers of India. He may be regarded as almost independent, though owning the supremacy of Britain. Mewar is a fine and beautiful valley, extending along the eastern side of the Aravulli. Its Rana, as he is called, is accounted the most noble of all these chiefs. His power, however, is inferior to that of the Marwar rajah; and a great part of his dominions, being contiguous to Malwa, the main seat of the Mahrattas, has been exposed to dreadful devastations from them. His capital of Oodipoor, however, is of peculiar natural strength; being enclosed, as well as several hundred surrounding villages, within an amphitheatre of hills, which can only be entered by one deep and dangerous defile. The palace of Oodipoor, on the borders of a beautiful lake, is peculiarly splendid; and that of Jugmundar, on an island in another lake, presents almost a magic scene. Chittore, once the capital, though now in decay, contains extraordinary monuments of ancient grandeur. The great column of victory, 122 feet high, and covered all over with exquisite sculpture, representing the principal objects of the native mythology, has been considered the most perfect specimen of Hindoo art. Jyenagur is the most westerly and the most fertile of these principalities. It is even supposed that, with a better government than it has yet enjoyed, it might yield a revenue of 120 lacs of rupees, about 1,500,000*l*. sterling. The capital, of the same name, is a handsome city, considered the most regularly built of any in Hindostan. The fortified palace of Umeer, built by one of the rajahs, is considered by Heber not inferior to Windsor.

4189. *The principalities now described* are all arranged along the frontier of the central provinces of Malwa and Agra. As we recede thence towards the Indus, we enter a vast and trackless desert of sand, which gives to this part of India an aspect resembling that of Arabia and Africa. Mr. Elphinstone, in his route from Delhi to Cabul, had an opportunity of observing it. The country of the Shekbawuttee, a rude predatory tribe, commencing 100 miles from the first-mentioned capital, was interspersed with cultivated spots, and the sands were sprinkled with tufts of long grass, and of a green plant called *phoke;* and there were towns of considerable magnitude. In the next territory of Bikaneer, verdure was found only on detached spots, like the African oases. The traveller, however, was always refreshed with fine watermelons, the most juicy of fruits, which grew with their roots in the sand. The last hundred miles, between Pujul and Bahawulpore, presented a total absence of water or habitation. The ground was a flat of hard clay, which sounded under the feet like a board. Yet this most desolate portion of Ajmeer contains two chiefs of considerable power, those of Bikaneer and of Jesselmere. Bikaneer is populous, and its walls and towers present the aspect of a great and magnificent city in the midst of a wilderness. The dominions of the rajah of Jesselmere have been still less explored, it being only known that he reigns over a vast extent of desert, thinly interspersed with inhabited tracts; and that the population, composed almost wholly of native Hindoos, have never been subject to the Mogul, even in the greatest height of his power.

4190. To the south of the mountainous and desert tracts of Ajmeer, and forming, as it were, its sea-coast, is the province of *Cutch*, extending from the Indus to the gulf of that name. The sterility here is but partially mitigated, though considerable numbers of horses and cattle are reared, and cotton forms an article of export. The inhabitants consist of a Rajpoot tribe called Jharejahs, subject to chiefs who boast of never having been conquered. Their habits are predatory, and they take advantage of their extensive sea-coast to carry on a system of piracy, for which considerable scope is afforded by the commerce of Malabar. It is remarkable, that the population, though purely native, were converted, without conquest or compulsion, to the Mahometan religion. They practise infanticide to an excess beyond any other tribe, the whole of the female children having long been sacrificed, because peculiar circumstances of situation and taste preclude them altogether from the possibility of obtaining suitable marriages for their daughters. The British government, in a late treaty by which they extended their protection to the chiefs of this district, exacted a stipulation that they should discontinue this criminal system; but Mr. Burnes suspects, from the small number of female children that make their appearance, that it is still extensively practised in the interior of palaces and castles.

4191. On reaching the eastern shore of the Gulf of Cutch, we find ourselves in the province of *Guzerat*, which is peculiarly distinguished for the variety both of its aspect and population. It has districts as fertile and highly cultivated, and commercial emporia as flourishing, as any in India or in the world. Yet other tracts present the same rude and arid aspect, and are filled with the same wild and predatory races, as the desert provinces adjoining. The Gulf of Cambay, by which it is deeply indented, affords very large scope both for commerce and piracy. This situation has produced an unexampled variety of castes and races. Among these, a number who, under the names of Bheels, Callies, Coolees, and Grassias, occupy the ruder tracts in the interior, despise all approach to civilisation, and subsist chiefly by preying on their more opulent neighbours. The unfrequented shores, also, of the gulfs of Cambay and Cutch contain the holds of many desperate pirates. Guzerat has received the remnants of that oppressed and injured race the Magians, or ancient fire-worshippers of Persia, bearing still the appellation of Parsees. They are a peaceable, industrious, well-disposed people, to whom the province is indebted for much of its commercial prosperity. Surat numbers from 17,000 to 18,000, among whom are some of its richest merchants. They still retain their ancient reverence for fire, manifested by a peculiar reluctance to extinguish it; and also the strange custom of exposing their dead in handsome open tombs, to be devoured by birds of prey, with which their cemeteries are always crowded. They are divided into two classes, the *mobids* and *behdeen*, clergy and laity, who are allowed only under narrow restrictions to intermarry with each other. The female sex are more on a level with the male than in other Oriental countries, and are distinguished by propriety of conduct. The religious sect called the Jains are also very numerous in Guzerat.

4192. *The pride of Guzerat is in its cities.* Surat, at the first arrival of Europeans, was the greatest emporium of India, and at present it ranks scarcely second to Calcutta. The population is usually, though perhaps with some exaggeration, rated at 600,000. It has suffered by the desolation which has overtaken many of the neighbouring districts, and by the British having established the chief seat of their commerce at Bombay. It still, however, carries on extensive manufactures of silks, brocades, and fine cotton stuffs; while it exports also the fabrics of other parts of Guzerat, and even the shawls of Cashmere. At the same time, by the Taptee, Nerbuddah, and the Gulf of Cambay, it introduces foreign commodities of every description into central and western India. It contains many houses handsomely built of stone, but intermixed with those wretched cottages of reeds and mud which form every where the habitation of the ordinary Hindoos. Surat contains many very opulent merchants, chiefly Banians and Parsees. The former carry to a great extent all the peculiarities of their religion, and manifest in a peculiar degree their tenderness for animal life, by erecting hospitals for birds, monkeys, and other animals accounted sacred. Ahmedabad, the political capital of Guzerat, now included within the British territory, and Cambay, its port, at the head of the gulf of the same name, are still flourishing cities, though much decayed since the time when the former was the seat of an independent government. It still, however, remains a gay city, and sends round the neighbouring districts a tribe of itinerant poets, minstrels, and musicians. Baroach, which, under the ancient name of Barygaza, was the chief emporium of this coast, is described by Heber as poor and dilapidated, though situated in a delightful country, and carrying on still some trade in cotton. Baroda, now the capital of the Gwickwar, the principal native chief, is still large and flourishing. Dwaraca, an ancient and sacred city, and Puttun Sumnaut, whose temple, the richest in India, was destroyed in the eleventh century by Mahmoud the Gaznevide, are now chiefly remarkable for the crowds of pilgrims which they attract. Diu, situated on an island off this coast, has lost all the importance it possessed at the time when it was conquered by the Portuguese.

Subsect. 3. *Central India; with the Deccan.*

4193. On leaving Guzerat, we ascend into *the high and strong centre of India,* the seat of its powerful and refractory tribes, who never fully owned the supremacy of the Mogul, and maintain, even in face of the still more overwhelming power of Britain, a remnant of independence. This character applies peculiarly to the province of Malwa, or, as it has been called, Central India. It occupies that elevated table-land over which the Nerbuddah flows during the greater part of its course, and, being placed at the base of the great southern peninsula, separates Hindostan Proper from what is called the Deccan. According to Sir John Malcolm, this table-land is "in general open, and highly cultivated, varied with small conical and table-crowned hills and low ridges, watered by numerous rivers and small streams, and favoured with a rich productive soil, and a mild climate, alike conducive to the health of man and to the liberal supply of his wants and luxuries." Though considerably above the general level of India, it seldom attains a greater elevation than 2000 feet above the sea. The climate is mild, and the soil, though generally of little depth, is not surpassed in fertility by any part of the empire. The most striking natural feature is the chain of the Vindhya mountains, which, extending from east to west, separates what is reckoned Malwa Proper from Nemaur, or the Valley of the Nerbuddah. The declivity on the Malwa side is small, but on the other is an abrupt and considerable ascent. The Nerbuddah rises near the western extremity of these mountains, in the district of Gundwana, close to the same spot which gives rise to the Soane. Its course is almost due west, parallel to the Vindhya mountains, of which it receives all the southern waters; and continues altogether for about 700 miles. It is not, however, navigable even for boats above 100 miles from its mouth, the upper course being completely obstructed by rocks and shallows.

4194. *The history of Malwa* has been eventful, its strong position having rendered it often the seat of powerful, and even conquering governments. The exploits of Vicramaditya, one of its early Hindoo kings, are much celebrated in Hindoo lore, though in a very indistinct and fabulous manner. Even after the Mahometan invasion, Malwa had Moslem rulers, among whom Mohammed Khiljee was pre-eminent; by him it was raised to a great height of power. As soon, however, as the Mahrattas, amid the decline of Mogul sway, began to pour in from the Deccan, rearing the standard of Hindoo independence, they were received with open arms in Malwa, which had always remained strongly attached to native ideas and institutions. This province soon became the seat of the most powerful chiefs, who thence spread their conquests over Hindostan. In the course of these struggles, a complete ascendency was gained by the houses of Scindia and Holkar, the founders of which rose from the lowest stations. Setting out in the character of officers of the Peishwa, the acknowledged head of the Mahratta government, they soon became his masters, and were only prevented from entirely crushing his power by the interference of Britain. As soon as her armies came into the field, the pride of these chiefs was humbled; they were confined to the provinces of Malwa and Candeish, and reduced to a tributary and dependent state. In 1817, however, when the bands of robbers, organised under the name of Pindarees, placed the British government in alarm, the Mahratta states manifested a general disposition to seize the opportunity of reasserting their independence. Among the chiefs of Malwa, however, only the Holkar family openly declared themselves. As they were completely defeated in the battle of Mehidpoor, and all their principal fortresse taken, Britain then dictated the terms of a peace, which established a subsidiary force i Malwa, and placed the capital and the heir of the house within her tutelage. Scindia, o account of some very suspicious movements made by him, was also obliged to receive British garrison within his strong fort of Asseerghur. His force now consists of abou 20,000 foot and 10,000 horse, while that of Holkar is reduced to less than 5000.

4195. *The population of Malwa* has not been accurately ascertained, unless in regard to the territories (Holkar. These, including the domain of some dependent chiefs, were found to contain in Malwa Prope 634,732; in Nemaur, 129,161. A comparison with the extent, gave ninety-eight to the square mile; whic might, it was supposed, apply with tolerable accuracy to the whole region. A remarkably small proportio profess the Mahometan faith; in some of the towns, not a twentieth. Those in the country are chief converted Hindoos, who, as they still cling to their original rites, are not held in any esteem by the orthodo Mussulman. The country, previous to its conquest by the British, was entirely over-run by profession robbers, acting under hereditary princes. Besides the Bheels on the Guzerat frontier, who boast of a ancient and venerable origin, both to themselves and their calling, there is a numerous class called Grassia consisting of small chiefs, who have been driven out by more powerful neighbours, but who, musterin round them a few followers, endeavour to maintain by plunder a portion of their former state. With them the British mediated an agreement that they should relinquish this turbulent system, on receiving a revenu or compensation from the lands on which they had any claim.

4196. *Trade and every branch of industry* had sunk to a very low state, in consequence of the continue system of predatory warfare of which Malwa had been the theatre. A caravan of merchants resembled military expedition, requiring the escort of a large body of troops; and even this precaution did not ensur its safety. The territories of the different chiefs, also, are so crossed and intermixed with each other, as t cause an exaction of hostages, tolls, and customs, almost at every step. These evils have been in some degre counteracted by a remarkably bold system of insurance, which undertakes to cover all these hardships an charges. The insurers maintain a large body of troops: and, by an understanding with the princes an those concerned in levying the duties, they make very considerable profits. The staple article of export i opium, to the extent of 6500 maunds, of which the price has lately been upwards of 60*l.* per maund; bu this is ascribed to casual circumstances; and the future average is not expected to exceed 25*l.* Cloths o superior quality, produced at Chanderee and other places, have also been in request all over India; an though their fabric has been interrupted by recent anarchy, it is now expected to revive. Nemaur pro duces a valuable breed of black cattle. The principal imports are silks, chintzes, and other fine manufacture with British woollens; which last, however, are used not as apparel, but for trappings and ornaments. These being all articles of luxury, have been materially diminished by the poverty of the country; but may augment if it shall continue to enjoy the blessings of peace.

4197. *Among the cities of Malwa*, the most ancient, and still the most important, is Oojein. It is situate about seventy miles north of the Nerbuddah, on the Sepra, a small river tributary to the Chumbul. Oojei holds a high rank among the sacred cities of the Puranas; and the Hindoo geographers have even fixed on i as their first meridian. Under the name of Ozene, it is mentioned as a great interior capital by Ptolemy an the author of the Periplus. The modern town stands at some distance from the old site, which was over whelmed by a change in the channel of the river. Of late years it derived great additional lustre from bein chosen by Scindia for his capital; and its circuit of six miles was filled with a crowded population; but he ha now quitted it for Gwalior. A large proportion consists of Mahometans, who have built four handsom mosques. *Indore*, the capital of the Holkars, is a modern place, raised from a village by the Princess Ali Bhye, the most illustrious ruler of that race. As a capital, it is still not of very great magnitude. *Dhar*, th ancient Dharanuggur, is a place of very great antiquity, and appears at one period to have been a mos flourishing capital. Though not occupying above a fourth of its former site, it is still the residence of a independent rajah, Rumchunder Picar, who reigns over a very fertile district, yielding him a revenue o 125,000 rupees. Nemaur, a rich pastoral district, composed of the valley of the Nerbuddah, has for its capit *Mheysir*, pleasantly situated on the right bank of the river, and raised to its present rank by Alia Bhye, wh made it her residence, and adorned it with a number of beautiful temples. In the district of *Harrowti* bordering on Ajmeer, *Kotah* has been raised by its present rajah, Salim Singh, to be one of the most opulen and beautiful cities of Malwa. The conduct of this prince, at once prudent and vigorous, has rescued hi and his people from all the calamities and wars which have lately desolated central India, and has converte his little principality into the most effective and flourishing of its states. He maintains a well discipline army of 25,000 men, and enjoys a revenue of 4,700,000 rupees. Near Kotah, at Barolli and Jhalrapatun Colonel Tod discovered temples, which, in the beautiful profusion of sculptured ornaments, surpass thos found in any other part of India. Jhalrapatun has become a great seat of inland trade. Bhopal, a tow situated on a lake upon the immediate frontier of Gundwana, is the capital of a rajah, who reigns over a uneven, jungly, but in many places fertile tract. This prince, after suffering severely from an unequal con test with Scindia, has had his power and territory augmented by the friendship of Britain. He now maintain an army of 6000 troops, with 180 guns, and draws a revenue of 900,000 rupees. *Rath* is the name given to wild, hilly, and wooded district bordering on Guzerat. It is occupied by Bheels, and a number of pett predatory princes, who has each his little capital; but it contains no city of magnitude. *Bagur* and *Kant* are districts of similar character, continued along the frontier of Ajmeer. This range of territory conceal many beautiful valleys, and presents also numerous monuments of antiquity, of which the most remarkabl are the excavated temples near the town of Baug, in Rath. A few remains, covered with jungle an crumbling to pieces, alone survive of the glory of *Mandoo*, which, raised by Mahommed Khiljee, during th period of the greatest prosperity of Malwa, attained a magnificence never equalled by any other capital o central India. Like Babylon, it seems to have been rather a fortified district than a mere city; being thirty seven miles in circumference, and enclosing 12,650 acres. It occupied the crest of the Vindhya mountain and was enclosed on all sides by a rugged natural ravine, which a strong interior wall rendered almost ina cessible to Indian attack. Nothing is left of this noble city but a small fort, frequented by religious mend cants, and some fragments of tombs and palaces, sufficient, however, to attest its departed grandeur. Th ancient city of Woon, in Malwa, is distinguished by some very splendid architectural remains.

4198. *After passing the Nerbuddah* commences the division of India called *the Deccan*, a large expanse o territory, filling all the broadest part of that triangular peninsula which has its vertex at Cape Comori while its base is formed by the Nerbuddah, and by a line continued from that river to the mouths of th Ganges. This region, with the exception of the sea-coast, from which it is separated by the Ghauts, com poses a table-land of some elevation, though inferior to Malwa on one side, and to Mysore on the othe It thus enjoys a happier climate, and displays more brilliant vegetation, than can be attained without inu dation, on the level plains of the tropic. The Deccan is watered by two rivers, second, indeed, to those o Hindostan Proper, but still great and sacred streams: the *Kistna* and the *Godavery*, which both rise in th Western Ghauts, and flow across the entire breadth of the peninsula. The former, bearing the name of on of the most popular Hindoo deities, has a course of about 650 miles, the latter of about 850. The Decca separated from Hindostan Proper by a considerable space, and by strong natural barriers, was never reduc by foreign invaders to nearly the same entire subjection. The Mogul empire, in its greatest energy, scarce held Viziapoor and Golconda as more than tributaries. As soon as the strength of that empire was shake the Mahrattas severed from it the principal Deccanee provinces, and pursued beyond those boundaries the career of conquest and ravage.

4199. ***Candeish, or Khandeish***, a long narrow province, extending along the southern bank of the Nerbuddah, is, perhaps, the strongest military country in the world. It is entirely studded with that species of fortress, seemingly formed by nature to be absolutely impregnable. Solitary hills, composed of surrounding perpendicular walls of rock, with a plain on their summit, require only slight artificial defences to become impregnable alike to sap, artillery, and assault; and yield only to the influence of panic or famine. In the last campaign, before the war of sieges began, the spirit of the confederacy was entirely broken by the total rout of the Holkar forces at Mehidpore; and the different killedars or governors sought little more than to make a decent show of resistance. Though Candeish has a surface thus diversified, it is not, generally, a mountainous territory; many parts of it are capable of high cultivation, and, notwithstanding the late scenes of war and devastation, are rendered surprisingly productive. Besides the bounding stream of the Nerbuddah, this province is traversed by the Taptee or Tuptee, which, falling into the sea at Surat, after a course of 500 miles, would afford, in peaceable times, ample facilities for commerce.

4200. *The most important among the forts of Candeish*, and the centre of the strength of Scindia, is ***Asseerghur***. A perpendicular rock, of the kind common in this part of India, rises above its surrounding bed of small hills. On one side, indeed, it is almost accessible; and there it is defended by two retaining walls, which form, however, an imperfect substitute for the natural rocky barrier. In the last war, neither the supplies nor the defences were found to answer expectation. The vicinity consists of wild ravine and jungle, dreadfully infested with tigers. *Malligawm* is on the frontier of Aurungabad, to which some consider it as belonging; but the narrator of the late Indian campaign considers it as the key of Candeish, and reports an Indian proverb, "Get but possession of Malligawm, and you have Candeish by the nose." It is a solitary hill, in the midst of a rich, extensive, and completely level plain; but its strength seems less due to natural position, than to its lofty walls, the succession of exterior works, and of six strong gateways, which bar the approach. It stood a month's hard siege by the British in the last campaign. If Malligawm owes so much to art, nature has done all for the splendid fortress of Unkie Tunkie. A more complete specimen of natural fortification seems scarcely to exist. On every side the perpendicular wall rises to the height of 150 to 200 feet, enclosing on the top a level plain of a mile in circuit. The ascent is by flights of steps cut in the solid rock, secured by the strongest possible gateways. It has copious magazines, granaries, armouries, all hewn out of the rock, and thus setting bombardment at defiance. It was only, therefore, through the determination of the rajah to abandon a sinking cause, that the attack of the British, on the 5th of April, 1818, was immediately successful, and their flag was seen "waving on the lofty and beautiful battlements of Unkie." Trimbuck, on a larger scale, is a tremendous and wonderful hill fort, impregnable to any army or artillery, however numerous. It measures ten miles round its base, and about four round its upper surface. The ascent is by a flight of 200 almost perpendicular steps; but it is impossible, without danger, to look back on the perilous steep of 600 or 700 feet beneath. From the top of this hill descends, falling drop by drop, the rill which forms the source of the great Godavery. In crossing the Tuptee, our troops almost unexpectedly came upon *Talnair*, which defends its passage, and owes its chief strength to the being surrounded on all sides either by the river or a deep ravine. Boorhanpoor, formerly the capital of Candeish, is still a large city, strengthened by a fort which, however, has never made any formidable resistance. The city is distinguished chiefly by being the head-quarters of a Mahometan sect called Bohrahs, whose habits are very commercial, and of whom 6000 reside in Surat.

4201. Directly south from Candeish, and forming the western part of the Deccan, stretch the large provinces of *Aurungabad* and *Bejapoor*, containing the original seats of Mahratta power. They present a great similarity in their general aspect; the surface being rugged, irregular, and among the western Ghauts even mountainous. These provinces are watered by the upper streams of the Kistna and the Godavery, not yet become rivers of the first magnitude. The soil is in some parts dry and rugged, but in many is capable of the highest culture. It supports, accordingly, a population which, though not supposed equal to what it is capable of maintaining, is estimated, in Aurungabad at 6,000,000, and in Bejapoor at 7,000,000. These two provinces are strong in a military sense; containing many natural fortresses, though neither so numerous nor so complete as those of Candeish. They have never been subject, for any length of time, to the general government of Hindostan. Even after the reduction of the native governments, Adil Shah, in 1489, founded the kingdom of *Bejapoor*, or, as it was called in Europe, *Viziapoor*, which held high sway over the Deccan, till the year 1689, when it yielded to the arms of Aurengzebe. Scarcely, however, had this conquest been completed, when the Mahratta power arose, which disputed the conquests of that emperor, and soon drove his feeble successors from all this part of India. Poonah then became the residence of the Peishwa, and the chief nominal seat of Mahratta sovereignty; though the success of the rebel houses of Scindia and Holkar transferred the real seat of that power to the more northern provinces.

4202. ***Poonah***, thus become metropolitan among the Mahratta cities, is, however, by no means the most splendid. None of its sovereigns possessed that peaceful wealth which could enable them to indulge the Oriental taste for costly architecture. It seems to have been originally destined rather for a camp than a city; and in the great assemblages of the Mahratta confederacy, nearly 500,000 have mustered in and around it. The fixed population does not exceed 100,000. It resembles a huge village rather than a city; the houses are irregularly built, chiefly of slight brick walls, by which even the palace is entirely enclosed. For resisting the violent rains, these structures depend chiefly on interior timber frames: they are painted with innumerable representations of the Hindoo Pantheon. The markets are plentifully supplied with provisions of every kind. Poonah is now included in the British territory, and attached to the presidency of Bombay. Sattarah, a hill fort, about fifty miles to the south, after being long the state prison of the hereditary rajahs, became the nominal capital, since Britain deposed the Peishwa, and restored the ancient head of the confederacy to some degree of power; but, as this sway is limited, Sattarah will not probably rise to the rank of a great city.

4203. *A very different degree of magnificence* is perceptible in the remains of the ancient capital of *Viziapoor*. The fort is, perhaps, the largest in the world, being eight miles in circumference, and containing numerous gardens, mosques, and palaces. The great mosque of Adil Shah, which cost 700,000*l*., and occupied 6500 men for thirty-seven years, is still in tolerable preservation. The fort with the city, separated from it by a large plain, now presents a district covered by ruins, interspersed with several detached towns, the population of which has not been estimated. *Aurungabad* and *Dowlatabad* form two great ancient capitals, almost contiguous to each other. The latter, originally called Deoghur, is the most ancient; and in the fourteenth century Mahomet III. made extraordinary efforts to render it the general capital of Hindostan. It is very strongly situated on the side of a hill, and, being well fortified, is considered as the key of the Deccan. Till the Mogul conquest, it gave name to the province, but Aurengzebe conferred the former appellation (Aurungabad) on the neighbouring village of Gurka, which he soon made the capital of the Deccan. Both cities are still populous, and contain vestiges of ancient grandeur. At present, they form part of the dominions of the

Nizam. Ahmednaggur, once the capital of another powerful dynasty, and still a considerable city, is now included in the British territory.

4204. Near Dowlatabad are found the wonders of *Ellora*, perhaps the most extensive and surprising monument of ancient Hindoo architecture. They consist of an entire hill, excavated into a range of highly sculptured and ornamented temples. "The number and magnificence of the subterraneous temples," says Mr. Erskine; "the extent and loftiness of some, the endless diversity of sculpture in others, the variety of curious foliage, of minute tracery, highly wrought pillars, rich mythological designs, sacred shrines and colossal statues, astonish but distract the mind." It appeared truly wonderful "that such prodigious efforts of labour and skill should remain, from times certainly not barbarous, without a trace to tell us the hand by which they were designed, or the populous and powerful nation by which they were completed." The courts of Indra, of Juggernauth, of Parasu Rama, the Doomar Leyna, or nuptial palace, are the names given to several of these grand excavations. But the greatest admiration has been excited by the one called *Keylas*, or paradise, consisting of a conical edifice separated from the rest, and hewn out of the solid rock, 100 feet high, and upwards of 500 feet in circumference, and entirely covered with mythological sculptures.

4205. *The interior of the Deccan*, to the eastward, comprising the provinces of *Hydrabad*, *Nandere*, *Beeder*, and the greater part of *Berar*, composes a large surviving fragment of the Mogul empire, under the government of the Nizam. This officer, at first a mere viceroy, took advantage, like others, of the downfall of the empire, to assume independence. Having connected himself by alliance with Britain, he was enriched with the spoils of the Mahratta empire, and finally obtained a territory extending upwards of 400 miles in length by 200 in breadth, and containing more than 8,000,000 inhabitants. Though allowed, however, to carry on the internal government, he is kept in a state of entire dependence as to all his foreign relations; and a subsidiary, or, more properly, a ruling force is constantly stationed in his capital. So irksome, it is suspected, does the Nizam feel this protection, that he was strongly inclined, in the last war, to join the Mahratta confederacy; but, if he entertained any such intention, the rapid success of the British arms deterred him from open hostilities. The whole of this territory is a table-land, diversified by hills considerably less lofty than those of the Western Deccan. It has many fertile spots, particularly in the small province of Nandere, extending along the Godavery, and in the most southerly one of Beeder. It benefits little by its exemption from foreign internal sway, being one of the most oppressed and misgoverned districts in India, without wealth or population adequate to its natural resources. It has no flourishing manufactures, and the import of European goods is not supposed to exceed the annual value of 25,000*l.*

4206. *Hydrabad*, capital of the province of the same name, may be considered also the present capital of the Deccan, the removal of the Nizam thither from Aurungabad having attracted to it a population of about 120,000. It is seven miles in circumference, surrounded by a wall, not sufficiently strong, however, to convert it into a military position. Though not a fine city, Hydrabad contains some handsome mosques; and the Nizam maintains, on a smaller scale, a semblance of Mogul pomp. He has large magazines filled to the ceiling with fine cloths, watches, porcelain, and other ornamental articles presented to him by European embassies.

4207. *About six miles from Hydrabad is Golconda*, formerly the capital of a kingdom which has a splendid name in Europe, from its diamond mines in the subject district in Gundwana. It is situated on a high rock, so strong by nature and art that it is believed by the natives to be impregnable. No European has ever been admitted. The vicinity is adorned with a number of splendid tombs. Warangol, about fifty miles from Hydrabad, presents only the ruins of the ancient metropolis of Telingana, when that name, now only applied to a language, designated a large extent of eastern and central India. *Nandere* and *Beeder*, capitals of their respective provinces, are both fortified towns, but not of remarkable extent. Of Beeder it has been remarked, that in its vicinity are spoken the three languages of the east, west, and south; the Telinga, the Mahratta, and Canara. The most northerly part of the territories of the Nizam consists of that largest part of Berar, of which *Ellichpoor* is the capital. This province is high, rude, and in general imperfectly cultivated, though its bullocks are reckoned the best in Hindostan.

4208. *The eastern portion of Berar*, with the greater part of the rugged border province of *Gundwana*, forms the domain of the rajah of Nagpoor, or of Berar, chief of what are called the Eastern Mahrattas. Ragojee Bhoonslah, the founder of this dynasty, boasts a higher descent than the Peishwa, though he began his career only as an officer under that personage. In 1803, he joined Scindia against Britain; but the signal successes gained by General Wellesley obliged him to consent to a treaty, by which he ceded the district of Cuttack in Orissa, and a great part of Berar. In 1817, the rajah, Appa Sahib, at the commencement of the campaign, lulled the British into security by lavish professions of fidelity; but on the 27th of November the Arabs in his service made a sudden attack on their corps stationed at Nagpoor, and it was not without great loss that they were repulsed, and obliged to quit the place. The rajah then offered a semblance of submission; but soon after seized an opportunity of escaping, and joining the enemy. The issue of the campaign converted him into an exile and a fugitive. The British placed on the throne his son, a youth; but arranged that all affairs should be carried on by a regency, the leading member of which was their own resident. *Nagpoor*, chief among the cities of the rajah, raised from a village by Ragojee Bhoonslah, contains about 80,000 inhabitants, but is meanly built, and possesses no great strength as a fortress. The bulwark of the territory is considered to be Gawilghur, in Berar. This stronghold, consisting of an outer and an inner fort, is built on a high rocky hill, and was regarded by the natives as impregnable, till 1803, when it yielded in a few days to the army of General Wellesley.

4209. *Gundwana*, with a few exceptions, is the poorest and rudest province of Hindostan. It is mountainous, ill-watered, covered with jungle, and thinly inhabited; it was consequently almost neglected by the Mogul potentates, and left to the Goands, its almost savage native possessors. When the Mahrattas however established a government at Nagpoor, they took possession of all the parts that were at all valuable or cultivated, and the Goands were driven into the highest and most inaccessible tracts, from whence they descend only for the purposes of plunder.

4210. *Orissa*, to the east of Gundwana, occupies the whole sea-coast of the Deccan, from the Carnatic to Bengal. The interior, traversed by a portion of the great chain of the Ghauts, is still more rugged than Gundwana: it is marshy, covered with jungle, and infested by a dangerous malady called the hill fever. The Oureas, a tribe of fierce and rude natives, inhabit these wild recesses, and render themselves formidable to the Mahrattas; but the influence of British law has converted them into peaceable subjects. The three great rivers, the Mahanuddy, Godavery, and Kistna, discharge themselves into the sea; the first at the northern, and the two latter at the southern extremity of this province.

4211. *The Circars, comprising that part of Orissa* which is situated between the Ghauts and the sea, is of quite a different character from the interior regions now described: it is indeed one of the most valuable districts in Hindostan; equal to the Carnatic in fertility, and superior in manufacturing industry. It is remarkable, also, as being the first territory of any considerable extent which came under the dominion of the East India Company. The French, in 1759, having been driven from Masulipatam, Lord Clive obtained from the Mogul the grant of the territory; and the Nizam, though then in actual possession, was not in a condition to dispute the transaction. The internal government has not been materially altered, the villages being ruled according to their ancient institutions; but the power of the zemindar, who, at the first occupation, could assemble 41,000 troops, has been greatly broken. Calicoes and chintzes are the staple manufacture, the finest of which are produced on the island of Nagur, forming the delta of the Godavery. These manufactures are exported to Europe and various parts of the East, but particularly to Persia, where the demand for them is most extensive. The Circars are five in number; Guntoor, Condapilly, Ellore, Rajamundry, and Cicacole: Masulipatam has lately been considered as forming a sixth.

4212. *The important trade of this district* centres almost entirely in *Masulipatam*, a large sea-port, with the best harbour in the whole coast from Cape Comorin. More than half of its exports are to Bassora, the rest chiefly to Madras, which it supplies with a considerable quantity of grain.

4213. *Cuttack*, traversed by the lower Mahanuddy, forms an extensive district, connecting the Circars with Bengal. It is in many parts fertile, with some flourishing manufactures; and it supports a population of 1,200,000 people. Cuttack, the capital, situated on a broad channel of the Mahanuddy, is a town of importance. But the most remarkable district and place is in the holy land of Juggernaut, which comprises a circuit of fifteen miles, and has already been described as the strange and horrible scene of Indian fanaticism and idolatry.

4214. *In surveying the Western Deccan,* we purposely reserved *the coast*, which displays a character quite different from the interior. It contains one grand feature, *Bombay* (*fig.* 630.), the western capital of British India. This city is situated on a small island connected by an artificial causeway with the larger one of Salsette. It commands a beautiful view over a bay, diversified with rocky islets, and crowned by a background of lofty and picturesque hills. Tanna, in Salsette, was the original settlement of the Portuguese. Attracted by the fine harbour of Bombay, they erected a small fort there; but none of their establishments on this coast were allowed to rival Goa. In 1661, Bombay was ceded to Charles II., as part of Queen Catherine's portion; two or three years after, a settlement was established, and in 1686 the chief seat of English trade was transferred thither from Surat. Since that time, Bombay, notwithstanding considerable vicissitudes, has continued on the whole in a state of constant increase, and has become the great emporium of western India, with a population of 220,000. Of these, about 8000 are Parsees, the most wealthy of the inhabitants, and by whom its prosperity is mainly supported. There are also Jews, Mahometans, and Portuguese in considerable numbers; but the Hindoos comprise three fourths of the whole. The presidency of Bombay is not of the same extent with those on the eastern side of the empire, being closely hemmed in by the great holds of Mahratta power in the Deccan. It includes, however, Surat, Baroach, and the finest districts of Guzerat; and thus comprehends a population of about 2,500,000. Bombay has a governor and council, subordinate to the supreme government at Calcutta. It contains also a court of judicature, administered by a single judge, with the title of Recorder. The number of civil servants in the establishment amounted, in 1811, to seventy-four, and the appointments of the whole civil service to 174,238*l.* A literary society has been established at Bombay, chiefly with a view of exploring the learning, history, and antiquities of India. The commerce direct with Britain is not so extensive as that of the other two presidencies, the adjacent territory affording few of the staple Indian commodities. The exports, not exceeding 200,000*l.*, consist chiefly of miscellaneous articles, collected from different parts of India. The Concan and Guzerat supply it with grain and provisions, and the latter with fine manufactures, which are re-exported to every part of the East. Pepper and other spices are drawn from Canara, and raw silk in large quantity from Bengal. The communication with China is extensive, that empire furnishing many articles suited to the consumption of the natives, and receiving a large supply of opium. The intercourse with Cutch, Sinde, and the Persian Gulf is also considerable. The total imports, in 1811-12, amounted to 16,970,000 rupees, and the exports to 14,550,000.

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BOMBAY.

4215. *The vicinity of Bombay* is distinguished by the most ancient and remarkable of the religious structures formed by the Hindoos. The most celebrated is that of Elephanta (*fig.* 631.), on a small adjoining island of the same name. It is situated about three quarters of a mile up the side of a mountain, from the rocks of which it is entirely excavated. The entry is by four rows of massive columns, forming three magnificent avenues. The interior is 220 feet long by 150 broad, but little more than fifteen feet in height. The most remarkable object consists in three colossal heads, which have been supposed to be those of the Hindoo Trinity; but it seems now agreed that they are only different representations of Siva.

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ELEPHANTA.

4216. The *caves of Kenneri*, on the larger island of Salsette; and those of Carli, on the opposite shore of the continent, present phenomena almost equally striking. The mountain of Kenneri, according to Mr. Forbes, appears to have had a city hewn in its rocky sides (*fig.* 632.), capable of containing many thousand inhabitants. There are tanks, terraces, flights of steps; every thing that could conduce to their accommodation: yet the ground is now never trodden by a human footstep, except that of the curious traveller. There is a cavern-temple, the interior (*fig.* 633.) of which, though less spacious than that of Elephanta, is loftier, and adorned with more numerous ranges of columns. The cave-temple at Carli is on a still greater scale than that of Kenneri.

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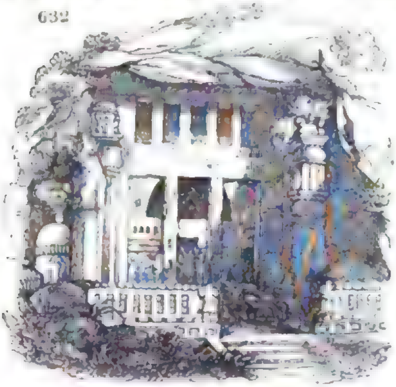

EXCAVATED MOUNTAIN OF KENNERI.

4217. The coast extending south from Bombay is called *Concan*. It consists of a stripe of territory about forty miles in breadth, sloping down from the Ghauts to the sea. Though uniform in its general character, it is broken into a number of little bays and harbours, while the rising grounds behind afford an extensive prospect over the sea. These advantages, in a maritime district, which forms a great commercial thoroughfare between flourishing states, caused it to be frequented at an early period by predatory adventurers, and it then acquired the appellation of the "coast of the pirates," which has ever since been strictly applicable. Towards the close of the seventeenth century, Angria, a piratical chief, established there an extensive power, which yielded, however, in 1756, to the united arms of the British and the Mahrattas. The territory was at first annexed to that of the Poonah Mahrattas; but it is now, with the exception of a small portion, subject to the Rajah of Colapoor, and almost wholly under British control.

4218. *Goa*, at the southern extremity of the Concan, having been captured by the Portuguese in 1510, became their principal settlement, and was long the European capital of India. Even in its present utter decay, it retains traces of its early magnificence. The cathedral, and the convent of the Augustines, are superior to any other specimens of European, and perhaps of native, architecture in India. It retains an air of gloomy monastic grandeur. A territory of forty miles in length, and twenty in breadth, is still dependent upon it; but the settlement seems almost entirely abandoned by the government at home.

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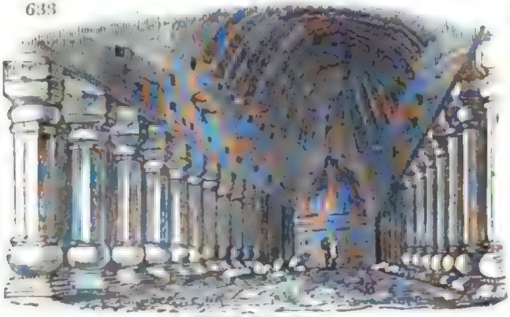

INTERIOR OF TEMPLE.

Subsect. 4. *The South of India.*

4219. *In passing the confines of Viziapoor* and the Concan, we leave all that ever constituted part of the Mogul empire, or at least was regularly apportioned among its provinces. *The south of India*, reaching from this point to Cape Comorin, is divided into a number of little kingdoms, always independent, until they were absorbed under the dominion of Britain.

4220. We shall begin with the maritime tract of *Malabar*. This name properly belongs to a small kingdom, of which the capital, Calicut, was found by the first Portuguese navigators to be the seat of a most ample dominion, under a sovereign called the Zamorin. Hence Malabar has extended its name to the whole of the tract in question, and has even been applied loosely to all the western coast of the peninsula, as far as the Gulf of Cambay. Considered as the coast reaching from the Concan to Cape Comorin, it forms a region 500 miles in length, thirty or forty in breadth, interposed between the Indian Ocean and the almost continuous chain of the Western Ghauts. This position supplies it with copious moisture. Its surface, rugged, rocky, and irregular, may be rendered highly productive with careful cultivation, which is generally bestowed. It yields very large crops of rice, forming an article of export to Bombay and the northern coasts. But the staple of its European commerce is pepper, produced in greater abundance and perfection than in any other part of the globe. It produces, also, very copiously, the noted Indian luxury of the betel leaf and areca nut; likewise ginger, cardamoms, and several other spices. The upper districts abound with fine timber, particularly the teak, so pre-eminently valuable for ship-building; also sandal, sapan, and other dyeing and ornamental woods. The region does not contain any fine or flourishing manufactures; but with its grain, timber, and spices, purchases the fine cottons of Guzerat.

4221. *Social life throughout Malabar*, presents a varied and often very peculiar aspect. The original structure of Hindoo society has not been altered by foreign conquests, though varied by some casual migrations; but it has assumed within itself some forms decidedly in contrast with those which it elsewhere exhibits. The tyrannical prejudices of *caste* are carried to a more violent and inhuman pitch than even in the rest of India. If a cultivator (*tiar*) or fisherman (*mucua*) presume to touch one of the *nairs*, or military class, the *nair* is considered fully justified in killing him on the spot. The same fate befalls the *paria* who ventures even to look him in the face, and does not, on seeing him at a distance, instantly take flight. This last race are all slaves; a condition not common in the rest of Hindostan. But there is another class of sufferers, whom a barbarous pride has stripped beyond any other of the most common rights of humanity. The *niadis* are excluded from all human intercourse, forced to wander in unfrequented places, without any means of support, except the alms of passengers. These they endeavour to attract, by standing at a little distance from the public road, and "howling like hungry dogs," till the charitable wayfarer lays on the ground some donation, which, after his departure, they hastily carry off.

4222. *While these unhappy races* are kept in the lowest misery, the *nairs, or nobles,* revel in extravagant pomp and gaiety. This remarkable body are, in the Hindoo system, classed as *sudras*, though they rank immediately under the *brahmins*, the intermediate classes being here wanting. Indeed, they are manifestly equal in dignity with the *cshatryas* of North-western Hindostan. Their most peculiar but least honourable characteristic consists in the arrangements with regard to the *nair* females. For them a system of the most shameless profligacy is marked out, and enforced even by sacred sanctions. They are married at ten years of age, and have an aliment transmitted to them by their husband, whom they must not, however, see, or hold any intercourse with: a single instance of such connection would be considered scandalous. They reside with their mother, and, after her death, with their brother; and they are allowed, and regard it an honour, to attract as many lovers as possible, provided they be of equal or superior rank. It is thus considered a ridiculous question to ask a *nair* who is his father. The only real parentage rests with the brother of the wife, whose children are considered as belonging to him, and to whom all his property and titles are transmitted.

4223. *A striking peculiarity, on the Malabar coast,* consists in the early *colonies of Christians and Jews,* which still form a considerable part of its population. So numerous are the former, as to give Malabar, in many quarters, the appearance of a Christian country: they are computed, on the whole, at from 100,000 to 150,000. They derive from a somewhat doubtful tradition the title of Christians of St. Thomas; yet their origin really does not appear to be much later than the apostolic age. Their original form of worship was simple and primitive; but the Portuguese, who, at an early period became masters of this coast, considering such worship as heresy, began a violent persecution, by which these poor people were at length obliged to admit into their churches saints and images, to embrace the doctrines of purgatory and transubstantiation, and to treat the marriage of priests as unlawful. They could not, however, be induced to hear the service read in Latin: the Portuguese were obliged to concede this point, and allow the use of the Syriac. A sort of Syro-Roman church was thus formed; but Dr. Claudius Buchanan, on penetrating into the interior of Travancore, discovered a body of these Christians in their original simplicity. The intelligence of the people, the virtuous liberty of the female sex, and the whole aspect of society, seemed to indicate a protestant country. They were poor, having suffered much from the Portuguese, but now enjoy almost entire toleration.

4224. *The Jews of Malabar,* who amount to about 30,000, are divided into *White* and *Black*, forming quite distinct classes; the white considering the other as comparatively low and impure. They are supposed to have arrived not very long after the destruction of Jerusalem; and in 490 obtained the gift of the city of Cranganore; but, having incurred the hostility of a neighbouring potentate, this settlement was broken up and dispersed. The black Jews have been supposed by some to be Hindoo converts; but Dr. Buchanan rather imagines them to be of an earlier race, who emigrated at the time of the Babylonish captivity. Both tribes have Hebrew manuscripts of the Old Testament, which appear to be preserved in a state of tolerable purity.

4225. *In surveying this coast in detail,* we begin with *Canara*, which extends along the sea about 200 miles. The northern part is very hilly, and produces chiefly teak wood; but the southern, called by the natives Tulava, is well cultivated, and exports large quantities of rice. The former contains about 7000, the latter about 80,000 houses; and we may reckon about five inhabitants to each house. Hindoos of that peculiar sect called the Jains abound in the country. There are also a considerable number of Christians; but the sea-coast is chiefly possessed by a class of Mahometans called Moplays, apparently emigrants from Arabia. Through their means, Hyder and Tippoo were complete masters of Canara, and the latter carried on a violent persecution against the professors of all other religions. After his fall, however, Canara, in 1799, was annexed to the British dominion, and toleration was restored.

4226. *The principal city of Canara is Mangalore,* long a flourishing emporium. It suffered in the war between the Mysore sovereigns and the British government. Being taken by the British in 1733, it was defended with extraordinary valour against the whole force of Tippoo. In the following year, it was surrendered by treaty to that prince, who then dismantled the fortifications. Since coming under British dominion, Mangalore has flourished, and carries on a very great export of rice. It is situated on a peninsula formed by a very beautiful arm of the sea, and on the bank of a considerable river. The port will not admit vessels drawing more than ten feet water; but the anchorage at the mouth of the river is good. Onore, Carwar, and Barcelore were deprived, by the devastations of Tippoo, of the great trade they once possessed, but are reviving under British auspices.

4227. *Proceeding southwards*, the next district is that of *Malabar Proper*, which occupies about 200 miles of coast, and contains upwards of 600,000 inhabitants. The soil immediately along the shore is poor and sandy; but in the interior it consists of hills, the sides of which are formed into terraces, with fertile valleys interposed. Pepper, abundantly raised in the hill-forests of this country, forms the staple of a very extensive foreign trade. Calicut, which first gave to De Gama an idea of the splendour of Indian cities, was the residence of the Zamorin, whose empire then extended wide along Malabar. Its power was materially broken by unsuccessful contest with the Portuguese; and, towards the close of the last century, was finally destroyed by the invasions of Hyder and Tippoo. In the struggle which terminated in the downfall of the latter, Britain derived some aid from the native chiefs, who in return were invested with the internal jurisdiction of the country, subject to the payment of a regular tribute. Between powers placed in so delicate a relation, dissensions were not long of arising; and conflicts ensued, which terminated in favour of the British, who assumed the uncontrolled dominion of this country, its territory being annexed to the Madras presidency. The Zamorin, like the Mogul, is now a stipendiary of our Indian government.

4228. *Calicut*, the once proud capital of Malabar, was entirely destroyed by Tippoo; but, as soon as British ascendency permitted, the inhabitants, animated by that local attachment which is strong in India, hastened to return. It is now supposed to contain from 20,000 to 30,000 inhabitants, and has an improving trade. The most remarkable modern city, however, has been Cananore, the seat of a great female potentate called the Biby; and, from its almost impregnable position, regarded as the main hold of the Moplays or Mahometans of Malabar. The Biby is still allowed to administer Cananore and the fine country in its immediate vicinity. She carries on also considerable mercantile transactions with Bengal and Arabia, and includes in her sovereignty the Laccadives, an archipelago of low shoaly islets, facing the coast of Malabar, at the distance of from seventy-five to 150 miles. They, however, produce nothing but betel and plantains, and are inhabited by poor Moplay fishermen. Tellichery, long the principal English settlement and seat of trade, still contains many rich merchants, and a polished society: but since the capture, in 1793, of Mahé, then the principal French settlement, the preference has been given to that place, which has the advantage of a particularly fine situation.

4229. *South of Malabar Proper* is the small province of *Cochin*, which presents the same general aspect as the rest of the coast, and particularly abounds in teak timber, though the finest trees have now been cut, without any care to renew them. The Jewish and Christian colonies are particularly numerous in this territory. Cochin, the capital, was the first point at which the Portuguese were allowed to erect a fort. In 1663, it was taken by the Dutch, and was rendered by them one of the most flourishing cities of India. The rajah has maintained his independence better than most Hindoo princes. He was merely tributary to Tippoo, and is allowed even by Britain to carry on the internal affairs of his state, though under payment of a heavy tribute. Cochin still enjoys a considerable trade. Ten miles to the north is Cranganore, which the Portuguese have made the seat of a bishop's see, holding authority over eighty-nine churches.

4230. *The extended line of coast* from Cochin to Cape Comorin is filled by the dominions of the Rajah of *Travancore*. They contain a population of about 2,000,000, and possess all the advantages peculiar to the Malabar coast. The inland districts, in particular, are remarkable for fertility and beauty. They exhibit a varied scene, consisting of hills clothed with lofty forests; and of winding streams, with valleys clad in perpetual verdure. The woods are perfumed with numberless aromatic plants. Besides the staple article of pepper, Travancore yields ginger, turmeric, and inferior species of nutmeg and cinnamon. The rajah, like that of Cochin, conducts the internal affairs of his dominions, but on a footing completely subject and tributary to the Company. An attempt made in 1809 to shake off this yoke only riveted his chains the closer. *Travancore*, the ancient capital, is situated somewhat up the country, in a soil of white sand; but it is much decayed since the rajah removed to a new palace, built on the European model, at Trivandapatam. Trivander, Coulan, Anjengo, and Coleshy, afford convenient havens for trade, though the strong currents which run along the coast render navigation difficult.

4231. *At the extreme point of the territory of Travancore is situated Cape Comorin*, the southern boundary of India; a bold and commanding feature, which presents to the ocean a lofty hill covered with the most brilliant verdure; but the rocks scattered along the shore render it necessary for the navigator to keep at a distance.

4232. After turning Cape Comorin, we find ourselves in that extensive territory, to which Europeans have given the name of *Carnatic*. It stretches about 500 miles along the coast, as far as Montapilly, thus stopping somewhat short of the great natural boundary of the Kistna. It is divided into two parts by the chain of the Eastern Ghauts, running, like the Western, parallel to the coast. One of these divisions is called the Carnatic *above*, and the other the Carnatic *below*, the Ghauts; but the former is better known, and will be described, under the title of Mysore; and the territory on the coast will be here considered as the proper Carnatic. It is called also the coast of Coromandel; and, though in its general structure similar to Malabar, presents some marked differences. The mountains are distant from the sea fifty, seventy, or a hundred miles; and, instead of being clothed with vast and majestic woods, are in most places naked and rocky. The region is watered by several great rivers, rising in the western Ghauts, and running across the whole peninsula, among which the Cavery stands pre-eminent. Upon the whole, however, instead of numberless torrents dashing down the sides of the hills, and requiring only to be confined and guided, this tract contains large arid plains, to which the industrious husbandman can with difficulty, by canals and tanks, convey the necessary moisture. The Ghauts, also, from their great altitude, intercept the heavy rains which the monsoon brings on the western coast; and there are only occasional showers, from May to June, to fertilise the ground and cool the intensity of the heat. Hence the Carnatic, in seasons of drought, is subject to severer famines than any other part of India. Yet, though there are many barren tracts, the country, on the whole, is highly cultivated, and very productive.

4233. *The population* of the Carnatic is estimated at 5,000,000; of which a peculiarly large proportion consists of native Hindoos. The tide of Mahometan conquest did not reach it before the fourteenth century; nor was the subjection nearly complete until the reign of Aurengzebe. A race of Mogul viceroys was then established at Arcot, who, on the fall of the empire, set up an independent power. Pressed, however, by the overwhelming force of the sovereigns of Mysore, they were forced to implore British aid. The Company readily interposed, and, after a long and desperate struggle, subverted the throne of Hyder and Tippoo. The Nabob, however, then found, that he was entirely at the mercy of his defenders; and his attempts to extricate himself from this dependence afforded them ground for proceeding to farther extremities. On the death of the reigning Nabob in 1801, his successor was compelled to sign a treaty by which the sovereignty of all his territories was transferred to the Company: and there was reserved to himself only from two to three lacs of pagodas, and a portion of household lands. The country was then divided into eight districts or collectorships, administered by British officers. Arcot and its immediate vicinity is chiefly peopled by Mussulmans; and on the southern part of the coast there are emigrants from Arabia, though not in nearly so great numbers as on the Malabar coast. The rest of the population is Hindoo, and the customs and religion of this native race have been preserved here in unusual purity. The pagodas are extremely numerous, and rival in splendour those of the sacred cities of Benares and Allahabad. The Brahmins, not generally oppressed, as elsewhere under Mahometan ascendency, had intrusted to them most of the civil employments in the state and revenue. Another class, almost peculiar to this district, is that of the Polygars. Originally district officers of the British government, they took advantage of its periods of weakness, and erected castles, from which, like too many of the baronial chiefs in the feudal ages, they plundered and oppressed the surrounding country. Government were often obliged to purchase their orderly behaviour by giving them an independent power and jurisdiction. There is no class whose subjection proved so expensive to Britain. The Carnatic is much more of a manufacturing country than Malabar; yet it does not produce those fine fabrics which distinguish Bengal and the Circars. Piece goods, blue cloths, chintzes, &c., all of a coarser kind, are its principal product.

4234. *Our detailed survey of the Carnatic* must begin with *Madras*, now its capital, and that of the British possessions on the eastern coast. The choice, as in many other countries, has not been so happy as that made by the French; Pondicherry being every way a finer and more convenient station. Madras has no harbour; but a mere road, through which runs a strong current, and which is often exposed to dangerous winds. On the beach breaks so strong and continual a surf, that only a peculiar species of large light boats, the thin planks of which are sewed together with the tough grass of the country, can, by the dexterous management of the natives, be rowed across it. For the conveyance, also, of letters and messages, they employ what is called a *catamaran*, consisting merely of two planks fastened together, with which they encounter the roughest seas with wonderful address, and, when swept off by the waves, regain it by swimming. The sums, however, now invested in the various edifices of Madras as the capital of the presidency, are so great, that to transfer the seat of government to another place would be out of the question. Fort St. George, planned by Mr. Robins, a celebrated engineer, and placed at a small distance from the sea, is a strong and handsome fortress, not nearly on so great a scale as Fort William at Calcutta, but more advantageously situated, and defensible by a smaller number of men. The public offices and storehouses form a range of handsome buildings along the beach, their upper stories being adorned by colonnades resting on arched bases. With this exception, European Madras is merely an assemblage of country houses situated in the midst of gardens, and scattered over an extent of several miles. The houses consist usually only of one story, and are of a light and elegant structure, having porticoes and verandas supported by columns covered with that fine polished composition of shell limestone called *chunam*. The diligent hand of art has covered with verdure a somewhat arid and ungrateful soil; but fruits and flowers are still raised with some difficulty. The mode of living is nearly the same as at Calcutta, but on a more limited scale. The morning, from nine to eleven, is spent in calling and visiting; at two, a substantial meal, called *tiffin*, is taken; at five, when the air becomes more cool, the family usually drive out; and at seven or eight, a late dinner concludes the day. The Black Town is extensive, and the scene which it presents, of minarets and pagodas mixed with trees and gardens, is striking from a distance; but the interior, like that of most Asiatic towns, consists of poor bamboo cottages thatched with leaves. There are, however, some great native merchants, who have splendid mansions in the Oriental style. The commerce of Madras is not so extensive as that of the other two presidencies; piece goods from the Circars and the southern Carnatic forming the only considerable article.

4235. *In the vicinity of Madras is the district of Chingleput*, originally obtained as a jaghire from the Mogul, and still kept up as a distinct collectorship. Though the soil be generally dry, it is made by industry to yield tolerable crops of rice. The town of Chingleput is somewhat inland, and not of much importance. About thirty-five miles to the south of Madras is *Mahabalipoor*, or the city of the Great Bali, called also the Seven Pagodas. It consists of a range of sculptured edifices representing the exploits of Bali, Krishna, and other chiefs celebrated in the Mahabarat. It is sacred to Vishnu, a colossal image of whom is found in the principal temple. The monuments, though not on the same gigantic scale as in some other parts of India, are said to be very beautifully executed. In the interior of the country is Tripatti, one of the most crowded scenes of Hindoo pilgrimage; the ceremonies of which, however, Europeans, it is said, have never been admitted to view.

4236. Proceeding southwards, we arrive at *Pondicherry*, the seat of *French empire* in India. This empire, founded in 1749 by M. Dupleix, presented for some time a brilliant aspect, and, seconded by native alliances, threatened to subvert the foundations of the British power in the East. Although the French were, however, skilful in their negotiations with the native powers, their intolerant spirit led them to refuse to the people the free exercise of their religion, which must have rendered it next to impossible for them to hold any large territorial possessions. In fact, towards the close of the war of 1756, Pondicherry fell into the hands of the British; and, though restored by subsequent treaties, never, on the renewal of war, made any effectual resistance. Pondicherry was raised by the French from a village to be the handsomest European city in India. It contained many fine houses in the European style; and the high culture of the vicinity, the numerous canals crossed by neatly constructed bridges, the roads planted with trees, and partly adorned by statues, gave to the surrounding district the appearance of a great garden. The inhabitants have suffered much by repeated hostilities, and, being unfavourably situated for trade, have been unable to retrieve their affairs. In this last respect, Pondicherry is surpassed by *Cuddalore*, a well-built town, at the mouth of a considerable river. In war, it has followed the fortunes of Pondicherry; though its capture in 1783 was not effected without very great loss on the part of the British.

4237. *The kingdom of Tanjore* is an important territory, consisting of the delta of the Cavery, a large river, which, rising in the western Ghauts on the borders of Malabar, traverses Mysore, and falls into the sea, after a course of 400 miles. The Hindoos attach to its stream a peculiarly sacred character. At Trichinopoly, about 100 miles above the sea, it separates into two great branches, one retaining the original name, and another called Coleroon. Numerous channels derived from these convert the region into a delta, not surpassed by any part of Egypt or Bengal in culture and fertility. Art has been industriously employed to improve these natural advantages. Immense mounds have been erected, to prevent the tendency shown by the two channels at one place to reunite; and artificial canals convey to every quarter the benefits of irrigation. The chief produce consists of rice, grain, cocoa nuts, and indigo, which are largely exported. The population introduced by Mogul conquest has never reached Tanjore and the only Mahometans consist of a few refugees from Arabia. This country, therefore, has retained, almost entire, the ancient religion, constitution, and manners of India. It is particularly distinguished by the splendour of its pagodas and other edifices destined to religious worship. Tanjore was governed by an independent rajah until 1799, when the British took advantage of their ascendency to oblige him to resign the administration, accepting a revenue of a lack of rupees (10,000*l.*), with other allowances, somewhat exceeding that amount. He was also permitted, in time of peace only, to keep possession of the strong fortresses by which his capital is defended.

4238. *The city of Tanjore* may be considered as the native capital of Southern India, and the rival of Benares in learning, splendour, and antiquity. Its pagoda is greatly celebrated, rising from the ground by twelve successive stages, and considered the finest specimen of that species of structure existing in India (*fig.* 634.). A college is also attached to it. The place is six miles in circumference, and contains two large and strong forts, the smallest of which is about a mile in circumference, surrounded with a broad and deep ditch, cut in the solid rock. In one of these forts is the pagoda, and in the other the palace of the rajah, who is allowed at present to garrison both.

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PAGODA AT TANJORE.

4239. *Trichinopoly* is a large and strong city, farther up the Cavery, and distinguished by being the residence of Mohammed Ali and his son, who, under British auspices, reigned over the Carnatic. The siege of Trichinopoly, in 1755, is celebrated in Indian history for the gallant defence made by British officers against the French and their Indian allies, which terminated in a great part of the former being obliged to surrender. Opposite to Trichinopoly is the large island of Seringham, formed by the two branches of the river. It contains a pagoda pre-eminent in magnitude and sanctity, being about four miles in circumference, and surrounded by seven successive inclosures. The innermost shrine has never been violated by any hostile power. It is visited by crowds of penitents from all parts of Hindostan, who, in return for the pardon of their sins, bestow copious gifts; and the Brahmins attached to the temple are thus maintained in a state of luxurious ease.

4240. *Among the sea-ports* by which the commerce of the kingdom of Tanjore is carried on, we may mention Negapatam, at the mouth of the Cavery, once the chief factory of the Dutch on this coast, and made by them a very strong and commercial place: but it has declined in both these respects since it came under the power of Britain, and is now chiefly used as a place of refreshment. At the mouth of one of the deltaic branches is Tranquebar, which the steady and prudent conduct of the Danish government converted from a small village to a thriving mart of trade, now containing from 15,000 to 20,000 souls. It is also the seat of a very active mission, to which the public is indebted for some important memoirs relative to India. Devicotta, at the mouth of the Coleroon, is a considerable British factory, though the approach to the fort is somewhat dangerous.

4241. *The districts of Madura, Dindigul, and Tinnevelly*, added to Travancore on the opposite coast, constitute the extreme south of India. They are inferior to Tanjore in natural fertility, and still more in cultivation. They are less copiously watered, and a great part of their surface is covered with jungle, the rude retreat of Polygars, whose incursions disturbed all the pursuits of peaceful industry. It is reviving, however, under British protection. Cotton forms the staple product, particularly of Tinnevelly; and a considerable quantity of coarse manufactures is transmitted to Madras. The capitals of the same name are not of particular magnitude or importance, and in their situation and structure strength was mainly studied; but since the country has attained a more settled state, their fortifications have fallen into decay. Madura is a very ancient city, and is regarded by the Hindoos as peculiarly sacred. It has a pagoda or temple much more than commensurate to the greatness of the city, and one of the most splendid in southern India (*fig.* 635.).

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HINDOO TEMPLE AT MADURA.

4242. *The northern part of the Carnatic* still remains to be mentioned: it is generally inferior to the southern, and yields no remarkable product, either of land or manufacture. Arcot, nearly in a direct line inland from Madras, was raised to high importance by the Mogul government, who, attracted by its salubrity, made it their capital. It is situated, however, in a barren country, and surrounded by naked granite hills. Pullicate, a sea-port, after enjoying for a long time high prosperity as the chief seat of Dutch commerce on the Coromandel coast, has declined greatly since it came under the power of the British. In the most southerly quarter, Nelloor, on the navigable river Pennar, and Ongole, once a strong fortress, are now chiefly distinguished by a considerable trade in salt.

4243. *The high table-land of Mysore,* rising between the two coasts of southern India which have now been surveyed, is bounded on each side by the chains of the Ghauts. Its general level is about 3000 feet above the sea, and it is diversified by many hills, branching out, sometimes in clusters, from the boundary chains. This elevation, and the coolness which it maintains, renders Mysore the most agreeable and healthful country of India. The western Ghauts break the force of those tremendous floods which are dashed against them from the Indian Ocean, at the same time allowing enough to pass for fertilising the territory. It is accordingly well fitted for yielding all the fruits and agricultural products of India, combined with some which belong to the southern temperate climates. The natives cultivate the territory with imperfect instruments and skill, but with considerable care, and with great attention to the means of irrigation and to the collection of manure. Rice is considered the most important object of culture, and is raised wherever a sufficient supply of water can be procured; but no attempt is made to produce two crops in the year. On the more arid grounds, *raggy,* a coarser grain, is cultivated for the food of the lower orders. Sugar, betel-leaf, opium, and the cocoa-nut palm, are also considerable articles. Iron ore abounds, but it is impure, and is worked by the natives in a very slovenly manner.

4244. *Mysore,* at the conclusion of the last century, was a very powerful *kingdom,* and a most formidable enemy of Britain. Hyder, the son of a Mahometan emigrant officer from the Punjab, began by distinguishing himself in the service of the rajah, and ended by deposing him. He conquered, or rendered tributary, Canara, Calicut, and the other countries on the Malabar coast. On that of Coromandel, he had a harder struggle to maintain. By joining the French, however, he gained several important advantages; and, though repeatedly defeated in the field by Sir Eyre Coote, was always, by his superior cavalry, enabled to keep the field. At the same time he carried on with activity the internal administration; protected property, and promoted the prosperity of his subjects. His son, Tippoo Saib, inherited his courage, without any of his prudence or policy. He ruined his subjects by arbitrary exactions, and used the most intolerant means for converting to Mahometanism a people almost universally attached to the Hindoo creed. He was engaged in almost constant war with Britain; and, in the partial successes which he obtained, treated with the greatest cruelty the captives of that nation who fell into his hands. He was utterly unable, however, in the long run, to resist the mass of disciplined troops which this country brought against him. In 1792 he was completely humbled by Marquess Cornwallis, and stripped of half his dominions. In 1799, having engaged in intrigues with France, he involved himself in a war, the issue of which was still more disastrous. His capital was carried by storm, and he himself killed, fighting sword in hand. A young prince, descended from the ancient dynasty of the country, was invested with the sovereignty of part of his dominions, but allowed to reign entirely as the vassal of Britain.

4245. *Among the cities,* our attention is first arrested by *Seringapatam* (*fig.* 636.), long the celebrated bulwark of Mysore, and the centre of its power. It is situated at the upper end of an island formed by the Cavery, here a large and rapid river, and is properly called Sri Ranga Patam, *or the city of Sri Ranga*, an appellation of Vishnu. Tippoo transferred hither the seat of government from Bangalore, the favourite residence of Hyder; but he did not display much skill either in strengthening or embellishing the place. Naked rock and dirty mud walls are the predominant features of the island: and the citadel forms an immense, unfinished, unsightly, and injudicious mass of building. The streets are narrow and confused, most of the houses mean, and even those of the chiefs not proportionate to their wealth, as Tippoo would allow no property in houses. Having no manufactures, it was almost entirely supported by the court and camp, the residence of which may have raised the population in its days of splendour to about 150,000. It did not appear to Dr. Buchanan to exceed 32,000.

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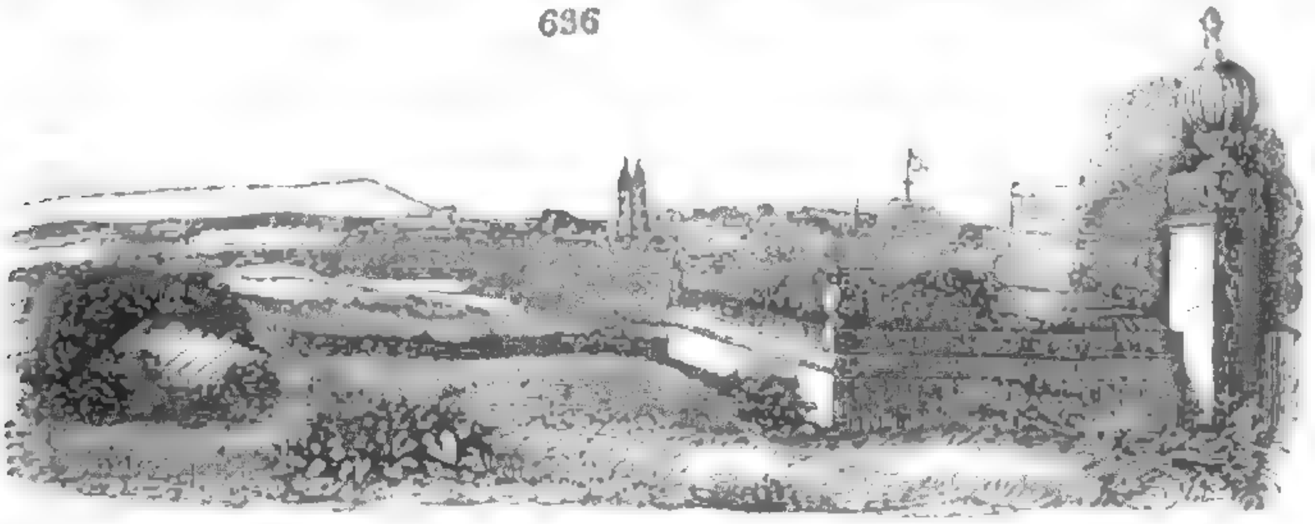

SERINGAPATAM.

4246 *Bangalore* (*fig.* 637.) was founded by Hyder, and rendered by him a place of considerable trade, consisting chiefly in the export of betel, pepper, and sandal wood. It manufactures also a considerable quantity of cloth for internal use. Neglected and oppressed, it has recovered its prosperity under the protection afforded by the reigning dynasty. The fortifications, upon Indian principles, are accounted strong, but proved inadequate to resist the attack of British troops; a circumstance which disgusted Tippoo with the place; though he was unable, as we have seen, to establish another of greater strength. Bangalore, though a royal residence, contains no trace of any splendid building, except the *mahal*, or palace, which, only composed of mud, displays in its halls and courts a certain spacious magnificence and superficial ornament. The accommodations, however, are in many respects imperfect and inconvenient. The gardens appear to have been laid out with very great care. They are divided into square plots, each of which, according to the

Mussulman fashion, has some plant or flower allotted to it, with which it is exclusively filled. The great and difficult operation is to water these gardens; and Tippoo, in the machinery for this purpose, employed such masses of masonry as to leave nothing but holes, as it were, through which the trees grow. The vine, the cypress, even the apple and peach, have been here cultivated with success. The town of *Mysore*, about nine miles from Seringapatam, had been the seat of the native dynasty, but was neglected under the Mahometan sovereigns. Since their downfall, both the fort and palace have been rebuilt, and, the rajah having made it his capital, a new and increasing city has been formed around them.

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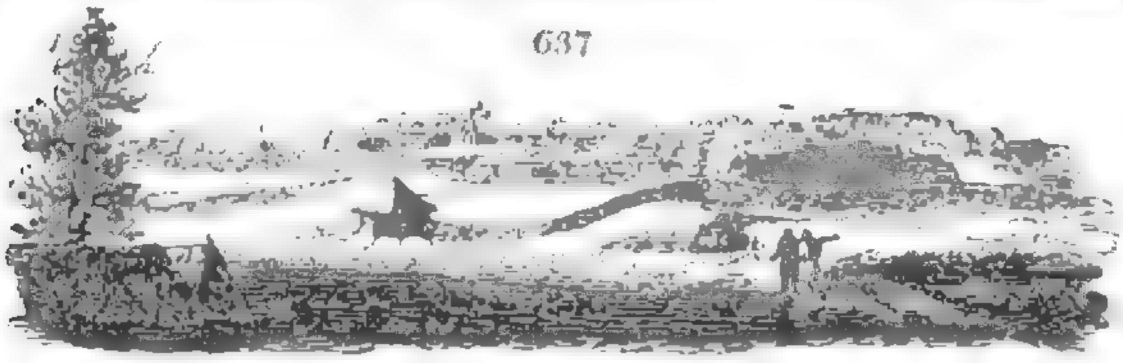


BANGALORE.

4247. *The Nhilgerries*, a mountain range, on the southern extremity of Mysore, comprise the most elevated tract in that region, and even in Southern India, rising, at some points, to upwards of 8000 feet. At this height, the climate becomes so temperate, that the Nhilgerries have lately been employed as a sanatory station for those whose constitutions have been impaired by the intense heats of the plains below. Here the invalid enjoys cool and refreshing breezes, with a rich and romantic scenery of hills, lakes, and waterfalls. This high region is inhabited by the Tudas, a simple and manly race of shepherds, speaking a peculiar language, and almost entire strangers to the mythology and manners of the rest of India.

Subsect. 5. *Countries on the Himalayah.*

4248. In order to complete the survey of the continent of India, we have still to contemplate *the Himalayah*, a region but loosely appended to it, and marked by characters essentially different from the rest. The luxuriant plains of that region are girt, along their whole northern boundary, by this belt of mountains, the most awful and inaccessible in any part of the globe. On the other side, they sink into the lofty table-land of Thibet; but as they face India, and descend by successive stages to the level of Delhi and Bengal, they exhibit every variety of climate, from the snows of the Arctic circle to the burning plains of the tropic. In this descent, kingdoms lie along their sides, which, in regard both to man and nature, present a rude and northerly aspect, rather European than Indian.

4249. *Of these kingdoms*, the most important is Nepal; but, for the sake of method, we shall begin with the eastern one of *Boutan*, or *Bootan*. This territory rises above Bengal, and is separated by the snowy pinnacles from Thibet, the territory of the Grand Lama. Its aspect is rugged and lofty in an almost unequalled degree, often presenting scenes the most grand and awful; hills clothed to the summit with large and lofty trees, deep and dark glens, and the tops of lofty mountains lost in the clouds. Their sides are diversified by abrupt precipices, deep dells, and cascades that often dash from an amazing height. Near its northern frontier towers the sovereign peak of Chumularee, covered with eternal snow, and seen at a great distance from the plain of Bengal, though it does not appear very lofty from the mountain table-land on which it rests. Beyond this point the traveller begins to descend, and soon enters Thibet. On the Indian side, so steep has been the acclivity, that from Ghassa, where perpetual winter reigns, may be seen Punakha, where the rays of a vertical sun cannot be faced without danger. As the traveller ascends, vegetation continually changes its character. He is soon gratified with the view of European fruits, the peach, the apple, the pear, and the apricot; nor is it long before homelier plants, docks, nettles, primroses, and rosebushes, remind him of England. Strawberries, despised by the natives, spontaneously cover the fields. By-and-by the pine and fir, characteristic of northern latitudes, supplant trees of richer foliage. At length even these disappear, and the ground shows only a few stunted shrubs and scanty herbage; but the appearance of the Thibetian peak now marks the approach to a different region. Boutan is separated from Bengal by a tract of wild and marshy forest, about twenty miles in breadth. The excess of heat and moisture here produces a rank luxuriance of wood and jungle, generating an atmosphere truly fatal to the human constitution. A British detachment, stationed here in 1772, was almost entirely cut off; and even the natives, whom habit enables to endure the climate, are a sickly, diminutive, and stunted race.

4250. *The Boutcas* are an entirely different people from those of India, and bear all the characteristics of a Mongol race. They have black hair, small eyes, a broad flat triangular face. Their weapons are chiefly bows and arrows, which they tip with poison, and shoot with dexterity; but though the timid Hindoos fly before them at the first onset, in their contests with each other they do not display any remarkable prowess. Their battle, as viewed by Major Turner, was carried on by hiding themselves beneath bushes, thence occasionally starting up, making a hasty discharge, and replacing themselves under covert. Their industry struggles with most meritorious energy against the rugged surface on which it has to operate. Almost every favourable spot, coated with the smallest portion of soil, is cleared and adapted to cultivation, by being shelved into horizontal beds; not a slope or narrow slip of land remains unimproved. Many of the loftiest mountains bear on their summits and on their sides populous villages amidst orchards and other plantations. The most extravagant traits of rude nature and laborious art are every where presented. The irrigation of the fields is the object of peculiar attention, and water is conveyed by a very simple and useful species of aqueduct, composed of the hollowed branches of trees joined together. Considerable art is often necessary in the construction of bridges over rapid torrents and deep ravines; timber is the usual material, but occasionally iron chains are employed. Their palaces and monasteries are often handsome and spacious; but, having no chimneys,the fire, which is often required, must be made in the middle of the open room, which is soon enveloped in smoke. They are vigorous and healthy, with exception of the prevalence of the *goître*, that universal scourge of such situations. The climate imposes the necessity of a very different dress from that of India, and renders general the wearing of woollen cloth and even of furs. The people have none of the Hindoo scruples relative to animal food and spirituous liquors; but their favourite refreshment is tea, not infused, but beaten up into a mess with water, flour, salt, and butter, in a manner by no means suited to an European palate. Their religion is that of Boodh, or of the Lama, and is exactly similar to that which we shall find existing on a greater scale in Thibet.

4251. *Tassisudon*, the residence of the Rajah of Boutan, is situated in a very fertile valley, or rather glen, three miles in length, and surrounded by finely wooded mountains. The citadel in the centre is very lofty, the rajah residing near the top, in a palace accessible only by several lofty stairs or ladders. In this palace are accommodated 1500 gylongs, or monks of Boodh; and in its neighbourhood is a large manufactory of brass gods and religious implements. *Ghassa*, a western capital, is situated amid a range of mountains covered with snow. *Wandipore*, capital of another province, is reckoned a very strong place, and contains numerous convents of monks. *Buxadewar* is a strong fort, commanding the pass from Hindostan into Boutan. *Moorichom*, a small village on a lofty hill, is only mentioned for the beauty of its situation, and the industry displayed in the cultivation of the surrounding fields.

4252. *From the eastern frontier of Boutan* westward to the Sutledge and the frontier of the Punjab stretches an expanse of varied mountain territory, which the conquests of the house of *Gorkha* have united into one great kingdom; but, from the theatre of the first conquest, and from the fertility and populousness of its divisions, it receives the name of *Nepal*. Like Boutan, it consists of a series of tracts, changing their character as they rise from the level of the British frontier on the plain of Hindostan. It is girt with a belt of wild and wooded territory, called the Tarryani, which, both from the rank excess of moisture, and from having been the theatre of frequent hostilities, has been almost abandoned by men, and has become the haunt of beasts of prey. These circumstances have, as usual, generated a pestilential air, which renders it at certain seasons destructive to any army acting within its limits. Above the plain rises a range of low hills, watered by numerous streams descending from the mountains behind, and separated by broad valleys similar to the straths of Scotland. Yet, though this district might be rendered very productive, it is greatly neglected, and is covered with an almost uninterrupted forest, composed of a vast variety of trees, among which the most valuable is a species of cinnamon, and the mimosa, out of which caoutchouc, or Indian rubber, is extracted. Above these hilly tracts towers a region decidedly mountainous, which comprises Nepal Proper, and all the most important districts of this territory. The mountains are here arranged in long steep ridges, with narrow valleys interspersed; a structure which renders travelling across them very laborious. The level even of the valleys is supposed to be 4000 feet above that of the plain of Hindostan. Where they present any extent of soil, they are exceedingly productive, the supply of water being ample, and the temperature corresponding to that of the south of Europe. Great agricultural industry is here displayed, and the sides of the mountains are formed into terraces, by which the supply of water may be increased or diminished almost at pleasure; so that the crops are surer than in almost any other part of the world. The woods are particularly magnificent, and flowers of every form and tint cover the fields. No fruits, however, except the orange and pine apple, come to perfection; and both here and in Boutan, vegetables are scanty and defective. Above this mountain region, towers another, called Kuchar, of more awful height, and almost inaccessible, consisting of the loftiest and most rugged steeps of the higher Himalayah. It contains immense rocks, broken into the most tremendous precipices, and shooting up into sharp pinnacles, which are either perpendicular, or covered with perpetual snow. A little scanty herbage, and occasional cultivation, is still found in the steep and narrow glens, till the highest ridge is approached, where the whole region is subject to perpetual winter. The Kuchar is about thirty or forty miles in breadth, and communicates only by tremendous defiles formed by mountain torrents, and overhung by immense precipices, with the table-land of Thibet on the other side of the mountains.

4253. A considerable portion of *mineral wealth* is included in this mountain region. Copper, iron, and lead are produced in abundance, and of excellent quality. The copper, being more rare in the East than in Europe, affords a very handsome profit. Sulphur and lead are found in every part, and particularly in the Kuchar; but the former is avoided, on account of the deleterious quality of the arsenic with which it is combined; while the lead mines are rendered of little value by the impolitic system of rendering them a government monopoly. The quality of the iron is represented to be such, that weapons are produced from it without the necessity of forming it into steel. Rumour has assigned to Nepal metals which occupy a more brilliant place in the estimation of mankind: but the gold thence transmitted appears to come almost entirely from beyond the mountains, and the small quantity of silver ore existing in lead or galena cannot be extracted by the skill of the natives. The valley of Nepal does not contain even a stone; and, rather than incur the expense of transporting the excellent building materials found in the neighbouring mountains, the natives use bricks, for which clay of admirable quality is found in the country.

4254. *The population* of Nepal is singularly aggregated of various classes and descriptions of people. Placed on the brink of two great divisions of the human race, the Hindoo and the Tartar, they have received successive colonies from both. The Newars, who form the basis of the population, are doubtfully traced to either class; but Dr. Hamilton, the latest and most accurate observer, regards them as decidedly Mongol, considerably altered by Hindoo mixture. These Newars are a peaceable diligent race, on whose exertions mainly depends the prosperity of the country, though they are liable to severe exactions from the military government established by the ruder tribes. The Brahmins, at a period prior to any known records, penetrated in great numbers into Nepal, where their superior knowledge soon enabled them to act a leading part. They have now absorbed most of the civil departments of the government, and effected the complete conversion of the people. In this operation, the principal difficulty consisted in persuading these hardy and hungry mountaineers to abstain from using as food the animals with which their pastures abounded. The whole nation is still suspected of a deep hankering after the flesh-pots, and every pretence is seized for an occasional trespass; but, generally speaking, the exclusion of beef as an article of diet is now complete. In every other outward observance, the Nepalese surpass the zeal of their Hindoo teachers. Colonel Kirkpatrick found almost as many temples as houses, and as many idols as inhabitants. The number of these, indeed, seem much more conspicuous than their richness or ornament. The chief shrine, that of Sumbhoonah, overlooking from a height the valley of Nepal, could only be entered by a high ladder; and, when looked into, presented rather the aspect of a poor kitchen than that of a magnificent temple. This shrine is dedicated to Boodh, and dependent on the rajah of Boutan. We are sorry to learn that no corresponding purity of life and conduct attends this extreme devotion of the inhabitants of Nepal.

4255. *This whole territory is subject to the military government of the rajahs of Gorkha*, originally masters only of a small territory of that name, to the east of Nepal, among the heights of the Upper Himalayah. It was tenanted, however, by the Magars; a bold and warlike race, who were an overmatch for the industrious people of the valleys. In 1761, Pritwi Narayan, partly by marriage and partly by conquest, obtained possession of Nepal Proper. He then employed its ample resources in extending his dominion over that large territory subject to the Chaubisi, or Twenty-four Rajahs, and other surrounding districts. The career of conquest was pursued by his successors. Sikim, the most easterly of the present Nepalese dominions, was conquered in 1788; but it was not until the commencement of the present century that the accession of Garhawal, in which Serinagur is situated, extended the empire to its western limit beyond the Jumna. The government, however, having involved itself in war with Britain, and being completely vanquished, has been obliged to cede these western conquests. Nepal is now bounded on the west by the Kali, leaving Kemaoon, Garhawal, and the banks of the Sutledge entirely under British protection. In the chief government, only some institutions remain, which temper the entire despotism of the sovereign. Much regard is paid to birth, and, on occasions of great emergency, a kind of assembly of notables is held, in which men who have neither office nor connection with the government are allowed to speak their sentiments with great freedom; and, though the court is in no degree controlled by these assemblies, which are supposed by Dr. Hamilton to be employed merely as a means of allowing the discontents of the nation to evaporate, they doubtless afford an opportunity for public opinion to declare itself. The three chief ranks are the *chauterija*, or counsellor; the *karije*, or man of business; and the *sirdar*, or military commander. The individual appointed to any of these ranks holds it for life, and communicates the title to his brothers. The chauterija, who is nearest relation to the king, is officially prime minister, even though he should be only a minor; but, of course, the authority, in many such cases, must be merely nominal. In the classification of the people, however, the principal distinction is between those of pure and sacred Hindoo birth, and those who, under the brand of *Khas*, or infidel, excite in the mind of the Nepalese the idea of every thing that is impure and base. The character of the former is supported by abstinence from animal food and strong liquors, by strict cleanliness, and by a certain degree of refinement of manners. The khas, on the contrary, are distinguished by a secret partiality to the religion of the Lama, an eager longing after beef, and generally by ruder and more uninstructed habits. The reigning dynasty, however, though their own origin is dubious, have zealously adopted the Hindoo cause, and have prohibited, under the strictest penalties, all killing of cows for food; so that the hungriest of the impure tribes dare only feast on those which have died a natural death.

4256. In treating the details of this territory, we shall begin with *Sikim*, the most easterly district, immediately bordering on Boutan. It is the abode of the Lapchas, "a set of vigorous barbarians, about one half of whom have been deluded by the monkish austerities and superior learning of the Lamas." They are chiefly armed with swords and with bows, from which they shoot poisoned arrows. It was with considerable difficulty that they were subjected to the Gorkha kingdom, and compelled to renounce beef, pork, strong liquors, and sundry similar abominations, in which they delighted. Indeed, there still remains a corner, to the extreme east, which retains its independence and ancient customs. Two great rivers traverse this territory, and descend into Bengal; the Tista, on the east, supposed to come from the domain of Lassa and to cross the Snowy Mountains; and on the west the Kankayi.

4257. West from Sikim, *the Kiratas* inhabit a territory of considerable extent, between the Kankayi and the great river Koosi. They are a warlike and enterprising people, and in the days of their independence could muster an army of 90,000 men. Like the Sikimites, they are much addicted to the worship of the Lama and to the eating of animal food; and though the early conquest made by the Hindoos was strenuously employed in suppressing these propensities, they were never completely put down till the late ascendency of the Gorkha dynasty. Still the Kiratas are understood to feel their changed worship and spare diet as a severe privation, and their very name sounds impure in the ears of a genuine Hindoo. The narrow valleys into which this territory is divided form a number of districts with towns of some magnitude, such as Vizaypur, Chayanpur, Khatany, and Dalka; but none of these plains are of great extent, nor are any of the cities of considerable magnitude.

4258. On crossing the Koosi, we find, between two lofty ridges, *the Valley of Nepal Proper*, the finest and most fertile, Cashmere excepted, of any which the mountain world of India contains. The principal valley is about twenty-two miles from east to west, and twenty from north to south. Its aspect is delightful, being every where finely wooded, well cultivated, and surrounded by a varied amphitheatre of hills above which tower lofty peaks of eternal snow. The entirely alluvial character of its soil strongly indicates that it was once a lake, the limits of which may almost be traced, and which is even mentioned in the early traditions of the nation. The multitude of streams, however, by which it must have been fed, now unite in that of the Gandaki, which forces a passage through the hills into the Tarryani, and ultimately reaches the Ganges.

The inhabitants of the valley are chiefly the Newars, already described, and the Parbatiyas or mountaineers, few of whom can be induced to take up their abode in the cities. The chief of these are Kathmandu, or Catmandoo, the present capital, Zalita Patan, and Bhatgang. The number of houses has been stated at 18,000 in the first, 24,000 in the second, and 12,000 in the third; but Dr. Hamilton does not conceive that the whole number of people can exceed these numbers, unless it be to a small extent in Kathmandu. These towns are neatly built with brick, and the palaces, though possessing no high architectural character, are yet more spacious than could be expected from the narrow territories of the princes by whom they were erected. Colonel Kirkpatrick, on conjectural data, in which Dr. Hamilton seems to acquiesce, estimates the entire population of the valley at about 500,000.

4259. The river Trisul Ganga separates Nepal Proper from *the country of the Chaubisi, or the Twenty-four Rajahs;* an extensive territory, traversed from west to east by the great river Gandaki, which appears to rise from beyond the Himalayah. These rajahs occupied each his own little valley, under a sort of feudal dependence on the chief of Yumila, once the most powerful of northern India. These states, however, are chiefly distinguished as containing among their number the original seat of the Gorkhali dynasty, who now hold undisputed empire over all these mountains. Gorkha is a valley much inferior in extent to Nepal, but with a warmer climate, and a soil of considerable fertility. The cultivators consists of Brahmins, but the fighting race are the Magars. Pritwi Narayan introduced the use of matchlocks, which, though neither good nor well managed, gave his troops a great superiority over the other mountaineers, who had no weapons but the sword and the arrow. Although the dynasty have now settled in the rich valley of Nepal, their followers still pride themselves in the title of Gorkhalis. Gorkha, the capital, is a considerable town of 2000 houses. Previous to the entire ascendency of this dynasty, the rajahs of Palpa were considered the most powerful of the twenty-four, and were at the head of a numerous confederacy.

4260. West from the Chaubisi occurs another cluster of *twenty-two, called the Baisi Rajahs.* Of these, previous to the Gorkha conquest, by far the most distinguished was Yumila, forming the most northerly district, and extending along the foot of the highest mountains. It contains a valley almost equal in extent to that of Nepal, overtopped on all sides with snowy peaks, but fertile in grain, though not suited to rice or the sugar-cane. It supplies, however, the neighbouring countries with salt, from a place called Mukhola. The capital is Chinachin, which has not been visited by any European; but is described as a large straggling town. The chief of Yumila is a Rajpoot, and was long acknowledged as supreme lord over all the mountain chiefs towards the west. His power, however, was not quite equal to that exercised by the emperors of Germany over the members of that confederacy. Each chief sent him an annual embassy with presents; he bestowed the mark of royalty on each heir, at his succession; and he had a right to interpose in keeping the stronger from overpowering the weaker. The reigning chief, however, had not the foresight to interpose in defending any of his neighbours against the spreading power of Gorkha, but allowed it to increase, till it eventually overwhelmed himself.

4261. *The western boundary* of Yumila and of the Baisi Rajahs is formed by the Kali, which is considered as dividing the mountain territory of India into two great portions, and which, since the last treaty, forms the western boundary of the Nepal dominions. On crossing to its western side, we enter the region of Hindoo purity, where the veneration for the Lama and the hankering after beef, for which the eastern tribes are regarded with such disgust and horror by every pure worshipper, no longer prevail.

4262. *The first district, Kemaoon, or Kuman,* though mountainous, is covered with fine verdure and extensive forests, and in many places yields large crops of summer rice. The inhabitants consist chiefly of Rajpoots, with a mixture of Sudras and Brahmins; the impure races having been either expelled or converted. In consequence of the last war, it is now *subject to Britain.* Almora, the capital, is a town of 1000 houses, irregularly scattered over the top of a high ridge of mountains, and carries on a considerable trade.

4263. To the west of Kemaoon is the territory now called *Garhawal,* but much better known under that of *Serinagur.* It is in an especial sense the holy land of the Himalayah, containing the source of the Ganges, and five *prayagas,* or junctions of its tributary streams. Thence it derives sufficient claims, according to Indian ideas, to be considered as a place of the loftiest sanctity. Indeed, the awful scene which it every where presents, of rugged rocks, deep glens, and mountain rising over mountain, could not fail to excite the deepest emotions in the pilgrims by whom it was visited. Serinagur presents none of those deep and fertile valleys which enable the countries to the east to support a large population. The places capable of culture consist almost solely of small ridges, or table-lands, at the top of the mountains. The roads are often cut along the sides of high perpendicular rocks, and the torrents are passed by bridges of rope stretched across. On the largest of these table-lands, about a mile and a half square, Serinagur is built, from the mere impossibility, it would seem, of finding another spot which would afford sufficient space. Various vicissitudes, however, and particularly the invasion of the Gorkhalis, and the system of misrule which they established, entirely deprived Serinagur of the slender measure of prosperity which it ever enjoyed, and it is now a scene of extreme poverty. It is still, however, a considerable thoroughfare for those devoted pilgrims who, after frequenting the fair of Hurdwar, venture to visit the thrice-sacred spot where the infant Ganges descends from the snowy steeps of Himalayah. The journey is attended with great difficulty and peril, and a considerable number perish on the road. The first town above Serinagur is Josimath, the winter residence of the high-priest of the Ganges, which contains numerous temples. It lies on the Alacananda, one of the two branches which concur to form the Ganges. On tracing it upwards, is found Manah, a village containing 14,000 or 15,000 inhabitants; the chief practicable entrance into which is across the mountain passes by this place. On the opposite side of the river is Bhadrinath, the seat of that famed sanctuary which is frequented by crowds of Hindoo pilgrims. It is built in the form of a cone, roofed with copper, and having a spire surmounted with a golden ball at the top. Only an imperfect view is allowed of the inner sanctuary, in which is seated the image of Bhadrinath, a figure of black stone, about three feet high, covered with a rich drapery of gold and silver brocade. A silver salver is handed round to receive the offerings, which are expected to be liberal. There are also several cold and hot springs, each of which has a sanctifying virtue, to be purchased by the penitent with a portion of his earthly goods. Such transactions would render these shrines very rich, were it not that the chiefs, in their extreme need, have often eyed them as a source of pecuniary relief; and though the sanctity of the place may prevent them from absolute plunder, yet, by borrowing or exchange, of which they can dictate the terms, they have dissipated a large portion of these holy treasures.

4264. About thirty miles west from Bhadrinath is *Gangoutri*, a village near the head of the Bhagirati, considered the main and proper head of the Ganges. A few miles above, it is seen flowing with a moderate current, fifteen or twenty yards broad, and about waist deep. Higher up, it flows beneath beds of snow, so deep that even its sound is not heard. At length is perceived a wall of rock, from an angle of which, called by the Hindoos the Cow's Mouth, on account of its rude resemblance to that orifice, issues the Ganges. "Nothing," according to Mr. Fraser, "can surpass the grandeur of the scene which is here presented. The bare and peaked cliffs shoot to the skies; their ruins lie in wild chaotic masses at their feet, and scantier wood imperfectly relieves their nakedness; even the dark pine more rarely roots itself in the deep chasms which time has worn. Thus, on all sides is the prospect closed, except in front to the eastward, where, from a mass of bare spires, four huge, lofty, snowy peaks arise: these are the peaks of Roodroo Himalayah. There could be no finer finishing, no grander close, to such a scene."

4265. *At a small distance*, and from the same stupendous ridge which contains the source of the greatest river of India, is found that of its main tributary, the Jumna. The glen, near Bunderpouch, through which its infant course passes, is described to be rugged and gloomy beyond description. "It looks like the ruins of nature, and appears," as it is said to be, "impracticable and impenetrable. Little is to be seen, except dark rock; wood only fringes the lower parts and the water's edge; perhaps, the spots and streaks of snow, contrasting with the general blackness of the scene, heighten the appearance of desolation. No living thing is seen; no motion but that of the waters; no sound but their roar."

4266. *The territory of Sirmore*, and that of the Twelve Lordships, extending along the Sutledge, subject to a number of independent rajahs till over-run by the Gorkhas, have now been restored to those chiefs, under the protection of Britain. The valley of the Sutledge presents little cultivation: the mountains are brown, barren, steep, and rocky; the bed of the river narrow and arid. In the territory of Joobul, however, the mountains are covered with the most magnificent forests; pines, hollies, oaks, sycamore, and yew, of the most varied forms, and often of gigantic size. The cultivation is very great, and the perpendicular sides of the mountains have been most laboriously fitted for it; so that districts naturally barren are even enabled to export grain. The inhabitants appeared to Mr. Fraser every way superior in external accommodation to the Scotch highlanders; but their character was by no means regarded in so favourable a light, combining the rude habits and violent feuds of a barbarous race with the cringing and abject spirit of an Asiatic despotism. West from the Sutledge, the territory along the head of the Punjab is occupied by a number of independent rajahs, engaged in frequent hostilities with each other. Among the principal are Bischur, Sirmore, Joobul, Kahlare, Hindoor. These territories occupy the deep mountain valleys of the Sutledge, overhung by brown heathy steeps, of the Tonse, and of the Pahur, which flows through a more smiling valley. The capitals are small towns, built often in stages on the steep sides of rocky mountains. Such is the situation of Rampore, capital of Bischur, on a high bank above the Sutledge. Nahn, the capital of Sirmore, occupies so rugged a steep, that its streets consist of steps cut in the rock. Notwithstanding the barrenness of the surrounding country, the commerce with Thibet and Tartary enables these mountain capitals to attain some little wealth and importance.

4267. *After scaling the mighty boundary wall of western India*, the traveller looks down on its northern side into Cashmere, an extended valley, which nature has lavishly adorned with all the attributes of a terrestrial paradise. It is enclosed on every side within tremendous steeps, which separate it, to the north from Thibet, and to the west from Cabul and Candahar. Numberless rivulets, descending from these heights, diffuse on all sides verdure and fertility, and render the whole country, as it were, an evergreen garden. Rice, wheat, barley; the grain and the fruits both of the tropical and temperate climates, are produced in equal abundance and perfection. The plane tree nowhere spreads such a pomp of foliage. But the peculiar boast of Cashmere is its rose, a favourite theme of Eastern poetry, whose tints and perfume are said to be alike unrivalled. The numerous streams unite in the Jelum, which, after forming several small lakes, rolls westward, forces the mountain barrier, and finally joins the Chunab.

4268. *The Cashmerians* are a Hindoo race, differing in several respects from those by whom they are surrounded. They are active, industrious, and, at the same time, witty and ingenious, with a taste for poetry and the sciences. On the other hand, they are represented as volatile, treacherous, extravagantly addicted to pleasure, rapacious in acquiring money, lavish in spending it. The beauty of the females is much famed in the Eastern world, and seemingly not without reason, though greatly enhanced by contrast with the dark complexions of India, and the deformed visages of the Tartar races. A sad reverse has befallen their country, since the time when it was the favourite residence of the Mogul, who, viewing it as the paradise of the Indies, repaired thither whenever he wished an interval of recreation, and bestowed his cares and wealth in lavishly adorning it. On the fall of that power, Cashmere was subdued by the Afghans, and placed under the rule of governors who have cruelly tyrannised over it, and stripped it of a large portion of its former prosperity. Since their kingdom was broken up, this country has been disputed between one of the branches of its royal family and Runjeet Sing, in whose power it now is. The revenue is reckoned at 500,000*l.*

4269. *The Cashmerians are a manufacturing nation.* They work skilfully in wood, make the best paper in the East, and excel in cutlery and lackered ware. But the grand branch of industry consists in their shawls, from the wool of the goat of Thibet, which are in general request all over the world. The natives complain that the tyranny of the Afghans has made deep inroads on this branch of industry, and has reduced the number of looms from 40,000 to 16,000. This work seems to be conducted upon a more extended scale than is usual in India, one merchant often employing a great number of looms. Three men work at each loom; and a year is sometimes spent in making a single shawl. In the best and most elaborate kinds, it is considered enough if they execute an inch and a half in the day. Of course, the ordinary shawls are made with much greater expedition.

4270. *The city of Cashmere,* called anciently Serinagur, is the largest in the Afghan dominions, containing from 150,000 to 200,000 people. It extends three miles along the banks of the Jelum, in a situation, the beauty of which has been widely celebrated, particularly its lake, studded with numberless islands, green with gardens and groves, and having its banks environed with villas and ornamented grounds.

4271. **Ceylon**, an extensive, somewhat wild, but beautiful island, forms a close appendage to India, lying to the east of its southern extremity, whence it is separated by the Straits of Manaar. It is nearly 300 miles in length, and 160 in its greatest breadth. The territory, along the western coast, is occupied by a somewhat extensive plain; beyond which, ranges, first of hills, and then of mountains, rise successively behind each other, and with their rugged surface cover a great extent of the island. They do not, however, rise to any very lofty height; since Adam's Peak (the most elevated) is only 6152 feet above the sea. These steeps are generally covered with extensive forests and dense underwood, which give to a great part of the island the character of jungle.

4272. *The history of Ceylon* is scarcely at all known previous to the arrival of the Portuguese in 1505, at which time they found the native sovereign defending himself with difficulty against the attack of the Arabs. They at first merely exacted a tribute, but soon engaged in a series of warfare, which ended in driving the natives from Colombo and most of the other stations on the coast, and obliging them to take refuge in the interior. They settled in considerable numbers; and a pretty large body of their posterity, mingled with the natives, still survive. Ceylon, however, shared the lot of their other Indian possessions; and, in the course of the seventeenth century, after a series of bloody struggles, was wrested from them by the Dutch. It remained in their possession, with the exception of a short occupation of Trincomalee by the British in 1782, till 1796, when an English expedition entirely subdued it; and by the peace of Amiens it was finally ceded to that power. In 1815 the British beat the king of Candy, occupied his capital in the mountainous interior of the country, and thus became entire masters of this fine island. It has been made a royal colony, not subject to the rule of the East India Company.

4273. *The produce and wealth of Ceylon* are not in proportion to its natural capacities. Much of its surface, indeed, is mountainous and craggy; and there are large sandy tracts along the coast. Rice, though almost the only object of native culture, is not raised in sufficient quantity for the support of the inhabitants. The most peculiar product is cinnamon, one of the most delicate of spices, and for which there exists an extensive demand in Europe. It is a species of laurel, from four to ten feet high, with numerous branches, and with a light porous wood. It grows spontaneously over a great part of the island; but that reared in gardens in the vicinity of Colombo is considered the best. The bark, which is the valuable part, is taken off when the plant is three years old, and requires no preparation except being spread out to dry. The cocoa nut tree is also in great abundance; and its fruit, as well as *coir*, a species of rope manufactured from its husk, are staple exports. A great quantity of arrack is distilled from its juice. Animals, chiefly wild, are abundant; but the only valuable one is the elephant, which, in Ceylon, is considered of better quality than in any other country in the world: it is not, indeed, so tall as on the Continent, but peculiarly active, hardy, and docile. No elephants are reared in a tame state; but they are easily caught in pits prepared for the purpose, and are tamed in eight or ten days. An uncommon variety of precious minerals are found in Ceylon; the ruby, the amethyst, the topaz, and even the diamond: but none of them are of fine quality. There are mines of lead, iron, tin, and quicksilver; but little wrought. A very extensive pearl fishery is carried on in the Straits of Manaar, about fifteen miles from the shore; but chiefly by boats from the coast of India. In 1804 it was leased for 120,000*l.*; but since that time has declined; and in 1828 its amount was only 30,612*l.* A species of conch shells called chanks, much used by the Hindoos for rings and other ornaments, is fished in the Straits of Manaar. Mr. M'Culloch gives the value of the exports in 1825, at — Cinnamon, 114,418*l.*; arrack, 21,500*l.*; coir, 10,000*l.*; cocoa nuts, 7561*l.*; chank shells, 8219*l.*; timber, 12,100*l.*; jaggery, 4,946*l.* coffee, 13,883*l.* The trade has been much fettered by impolitic restrictions, both the produce and sale of cinnamon being made a monopoly of the government; but a more liberal system has recently been adopted.

4274. *The population of Ceylon* was estimated at about a million and a half, till, in 1814, a census of all the part of it then in possession of Britain gave only 496,000; and another, in 1825, of the whole island, exhibited only 754,000. These enumerations were probably somewhat defective, and the numbers are supposed to have since increased, and to amount now to about 900,000. The natives, called Cingalese, appear to partake of the character of those of Hindostan, Birmah, Siam, and the Oriental islands, with all of whom they hold intercourse. They are a fine and handsome race, and in their manners polished and courteous; but they are indolent, and very little advanced in the arts and sciences. As in all countries bordering on India, the religion of Boodh is established. The Siamese are even said to look to Ceylon as the quarter from which they received that faith; but this sacred character is probably an illusion derived from distance and mystery. It is remarkable that, here, as in Thibet and some other Boodhist countries, the unnatural custom of the plurality of husbands prevails; and it is said to be accompanied, to a certain extent, with the crime of infanticide. The rugged jungly tracts of the interior are inhabited by a savage race called the Beddahs, who subsist by hunting, and sleep under trees, which they climb like monkeys: some of them, however, are employed in exchanging ivory, honey, and wax, for cloth, iron, and knives. The Portuguese and Dutch inhabitants retain their European customs, considerably modified by the adoption of those of the natives. No such modification has taken place in the case of the English, who consist chiefly of king's troops stationed at the chief towns.

4275. *Of the towns and sea-ports of Ceylon,* Colombo, on the west coast, is the seat both of government and of almost all the foreign trade. It owes this advantage to its situation in the midst of the most fertile and productive territory in the island. Its accommodation for shipping consists merely of a roadstead, tenable only during four months of the year. The place is well built, with broad and regular streets, and contains about 50,000 inhabitants, who include an uncommon variety of Asiatic races. The fort is spacious, surrounded with a broad and deep ditch. Trincomalee, on the south-east, is situated amid a mountain territory that is singularly grand and beautiful, but very unfruitful. It has, however, the advantage of containing the finest harbour in those seas. The value of this is greatly heightened by there not being, on the whole coast of Coromandel, a safe roadstead; so that all vessels driven from their stations on that coast seek shelter at Trincomalee. The town however, being supported only by this resort, is small and poor; though the late establishment of a naval arsenal promises to give it greater importance. Point de Galle, at the southern extremity, has a spacious and generally secure harbour, in a beautiful and healthy situation. The native population is numerous; but there are few European settlers. At Bellegam, in the vicinity, is a large temple of Boodh, with a colossal statue of that divinity. Candy, the interior capital, is only a large straggling village, surrounded by wooded hills that echo continually with the cries of birds and wild animals. It contains an extensive though not lofty palace of the king, and several Boodhist temples painted with gaudy colours. The British government has constructed an excellent road to this place from the coast.

Chap. VII.

INDO-CHINESE COUNTRIES.

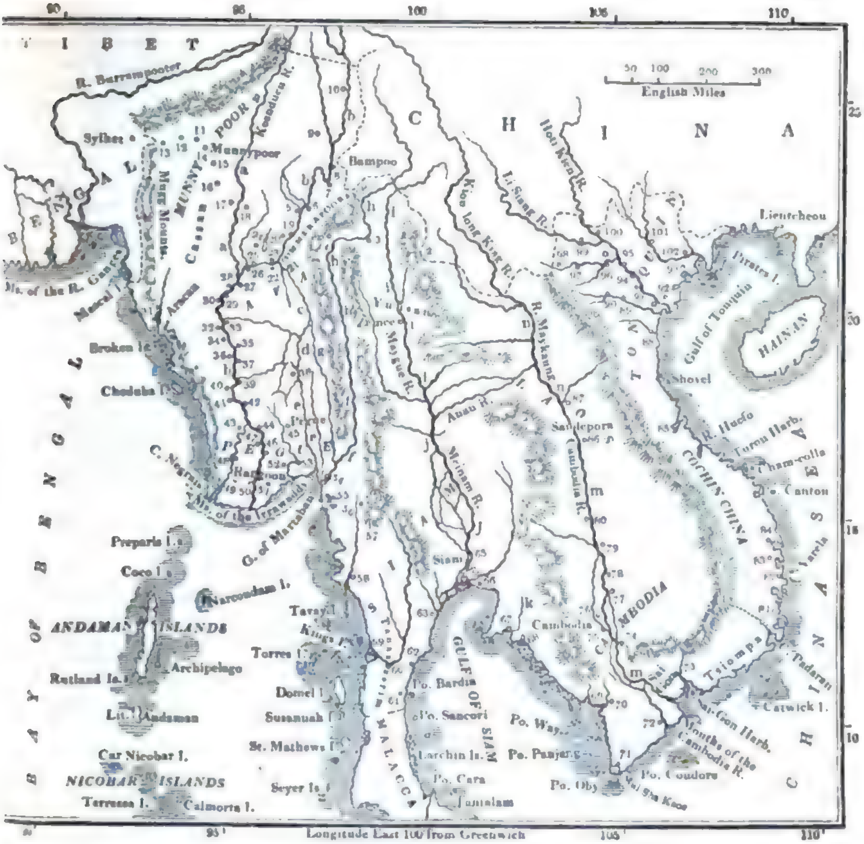
4276. *The Indo-Chinese countries* compose that extensive region situated between India and China, and partaking, under some modifications, the physical and political character of both. This region has had little share in the great transactions of which Asia has been the theatre; yet it comprises a number of extensive and important kingdoms, some of which have been alternately united and separated; Ava, Arracan, Pegu, Siam, Cochin-China, Cambodia, Tsiompa, Laos, and Tonquin.

Sect. I. *General Outline and Aspect.*

4277. *The Indo-Chinese region* consists of an extensive maritime territory, throwing out wide peninsular tracts into the Indian sea; separated by various seas, straits, and sounds from its large islands. From Hindostan, on the east, it is divided by the Bay of Bengal; while, on the north, a range of imperfectly known boundaries, chiefly of a mountainous character, separates it from China and Thibet. The main body of this territory may be described as situated between 9° and 23° of north latitude, 92° and 109° of east longitude; but these limits do not include the long peninsula of Malaya, which stretches southward to within less than two degrees of the equator. We shall thus have a square space of about 1000 miles in each direction, and containing probably about 1,000,000 square miles.

4278. *The surface of this great territory,* according to the general view taken by Captain Low, is formed by a series of mountain ranges running from north to south, and forming

MAP OF INDO-CHINESE COUNTRIES.



References to the Map of Indo-Chinese Countries.

1. Zemee
2. Monglier
3. Kiaintoun
4. Chiboo
5. Labenagoo
6. Tagoung
7. Quantong
8. Bampoo
9. Moguang
10. Palendnam
11. Luckhumry
12. Cougong
13. Conickpoor
14. Munnypoor
15. Tummezoo
16. Pansha
17. Birma
18. Malac
19. Keoummeoum
20. Mouchaboo
21. Ummerapoora
22. Ava
23. Chagaing
24. Maydoob
25. Moowah
26. Sendaht
27. Sekaygahdo
28. Neulay
29. Pagahm Mew
30. Lawnyoeach
31. Arracan
32. Waymaroop
33. Taynangheoun
34. Meulah
35. Laypadoh
36. Meembah
37. Meeaday
38. Tonghe
39. Peeaye Mew
40. Podangmew
41. Treezau
42. Yeagaun
43. Tombay
44. Zaloon
45. Pegu
46. Yangain
47. Denoobew
48. Persaim
49. Cosmin
50. Maro
51. Chinabuckeer
52. Rangoon
53. Syriam
54. Martaban
55. Yemylo
56. Keintubbien
57. Three Pagodas
58. Tavoy
59. Mergui
60. Tenasserim
61. Bardia
62. Cin
63. Cham
64. Bankok
65. Siam
66. Pakenham
67. Chantibond
68. Manscape
69. Athene
70. Pontiame
71. Camoa
72. Basac
73. Saigong
74. Balbamont
75. Ponomping
76. Cambodia
77. Sombok
78. Sombokbut
79. Boatiang
80. Columpi
81. Nhiatrang
82. Phuyen
83. Yuan Dei
84. Quinhone
85. Toanhoa
86. Sandepora
87. Melaung
88. Kehoa
89. Konke
90. Tarkoan
91. Kianroungeja
92. Domea
93. Kikeu
94. Kesho
95. Bodego
96. Kemoak
97. Fotkey
98. Donho
99. Kaza
100. Kesnoe
101. Shinten
102. Ketos.

Rivers.

a Keenduen
b Irawaddy
c Panlaung
d Paunlaun
e Sittong
f Moutama
g Mobia
h Thaubnayn
i Maygue
j Meinam
k Chantibond
l Oubequame
m Cambodia
n Maykaung
o Hoti Kien.

branches from the mighty chain of Himalayah, which crosses Asia from west to east. Between each of these ranges intervenes a broad valley, in general of extreme fertility, and watered by a large river descending from the mountain frontier of China and Thibet. These valleys either form, or have formed, separate kingdoms; and, though conquest occasionally unites several under one head, the boundary of hill and jungle within which each is enclosed affords to it, usually at no very distant period, an opportunity of shaking off the yoke. The mountains have hitherto been very little observed, being covered with extensive forests entangled with thick underwood, and filled with wild beasts. Those which form the northern frontier of Assam are exceedingly lofty, falling little short of the Himalayah, of which they are a continuation. Elsewhere they do not appear to be of the first rank in point of elevation: Mr. Crawfurd conceives that the highest of the central range which borders on Siam does not exceed 5000 feet. The rivers are of greater importance. The Menam, which waters Siam, and is called by the natives the mother of waters, appears to rise among the mountains of Yunan. To the twentieth degree of latitude it is navigable only for canoes: but, on reaching Yuthia, the old capital, it becomes a noble and navigable stream; and, after a course of about 800 miles, enters the Gulf of Siam by three channels, the most easterly admitting vessels of the first magnitude. The Irawaddy, or river of Ava, appears a stream of nearly equal importance, and is navigable several hundred miles for large boats. Its upper course is still involved in mystery; and M. Klaproth has recently discovered some grounds for believing that it is identical with the Sanpoo, or river of Thibet, hitherto regarded as the head of the Brahmapoutra. The Mekon or Donnai, in Cambodia, is also a noble river, which passes through Yunan, and is navigable in 22° or 23° north latitude, twenty days' sail above its mouth. The other rivers are numerous, and many of them fall into the sea; but a greater number are tributaries to the three main trunks already mentioned. The country is broken by several large bays, particularly those of Siam, Martaban, and Turon; but it contains no lakes of any importance.

Sect. II. *Natural Geography.*

4279. There are no materials on which we can attempt a botanical or geological delineation of this territory.

4280. *The Zoology* also of these immense and luxuriant regions is scarcely known; we can therefore merely notice a few of those extraordinary animals which appear natives of these unexplored countries.

4281. *The Quadrupeds* more peculiar to Malacca are the following: —

Simia Satyrus.	The Orang Outang.
Hylobates Lar.	Large Gibbon.
Hylobates variegatus.	Little Gibbon.
Hylobates leuciscus.	Silvery Gibbon.
Cervus malaccensis.	Malacca Stag.

4282. *The manners of the Orang Outang* (or more properly *Orang Utan*) (*fig.* 639.), so well known for its remote resemblance to the human form, long remained enveloped in fable, until given by Dr. Abel, who brought a living one to England, and who had seen many others. The fables of early voyagers, and of some later naturalists, of this gigantic ape walking erect, waging war with clubs, &c., are now exploded. The height of the adult animal is uncertain; those brought to Europe, being young, have not exceeded three or four French feet; the great toes have but one joint, and no nail. The hair is reddish brown, but there is none on the face, or on the palms of the hands and feet. It is perfectly incapable, says Dr. Abel, of walking in an erect posture: this is betrayed in his whole external conformation, which is precisely that adapted for climbing trees and living among the branches. The Orang Outang has none of the grimaces and antics of other monkeys, nor does it possess their proneness to mischief. Gravity, approaching to melancholy, and mildness are often expressed in its countenance, and seem to be its natural disposition. The specimen in question was mild under injuries, and soon became strongly attached to those who treated him kindly. M. Cuvier has been induced to think that the *Orang Outang* is no other than the young of the Pongo, a much larger ape, inhabiting the interior of Borneo. Dr. Harewood, however, has recently adduced very strong arguments to show that the Pongo is a distinct species.

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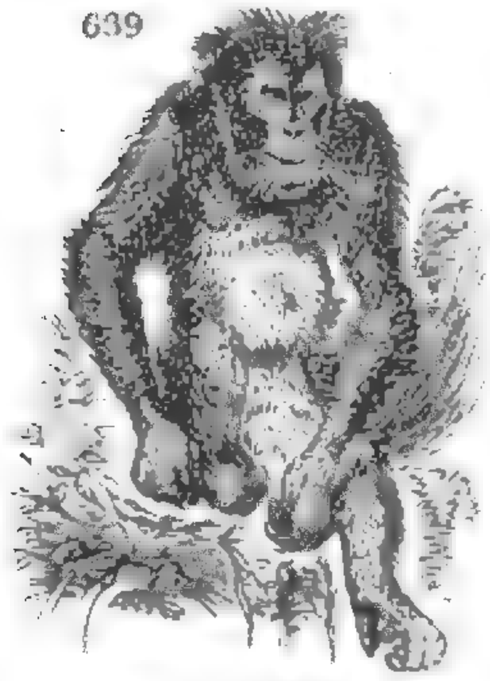

ORANG OUTANG.

4283. *The Gibbon Apes* are distinguished from all others by the enormous length of the arms, or more properly the fore-feet; these nearly touching the ground when the animal is placed erect. The species most generally known is the Black-handed Gibbon (*Hylobates Lar.* Ill.); its size is much inferior to that of the Orang Outang, as the largest specimens do not exceed four feet. The disposition of these apes is naturally gentle, gay, and even frolicsome, and they receive their food, in confinement, without greediness or impatience.

4284. *The few Birds* that have been brought from Malacca are splendid and curious; but

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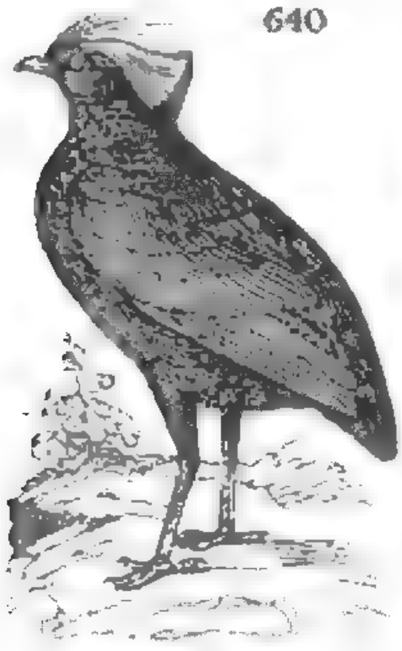

CROWNED PHEASANT.

it is impossible to conjecture how many others, unknown even by name, lie hidden from the naturalist in the vast and unexplored forests. Malacca seems to abound with snow-white Cockatoos, splendid red Lories, and many-coloured Parrots and Parrakeets. It is in this peninsula that the gigantic Argus Pheasant, and the Cryptonyx, two of the most striking gallinaceous birds of Asia, are found.

4285. *The gigantic Argus Pheasant* is more than six feet and a half long: the two middle tail feathers alone being nearly four feet, elegantly marked by numerous snow-white dots, on a chestnut ground: the whole plumage is variegated with spots resembling eyes, and the quill feathers are blue. In its wild state, it has a great antipathy to light, being very dull during the day, but active as night approaches. It is found also in Sumatra; but is so difficult to be kept alive, that it seldom survives in captivity more than a month: hence this beautiful bird has never been brought to Europe but as skins.

4286. *The Crowned Pheasant* (*Cryptonyx coronatus* T.) (*fig.* 640.) is a much smaller bird, but equally difficult to rear. It inhabits the deep forests both of Malacca and Java, and is distinguished by an erect chestnut crest of feathers, having their webs disunited.

SECT. III. *Historical Geography.*

4287. *The knowledge of the ancients respecting this extremity of Asia* was neither extensive nor accurate, and scarcely reached the shores east of the Ganges. There, indeed, Ptolemy exhibits the Golden Chersonese, the Great Bay, the coast of Sinæ, and the city of Thinæ; features which are found by Gosselin in the mouths of the Irawaddy, the Gulf of Martaban, the coast and city of Tenasserim. Others, however, suppose the Sinæ to be the Chinese, and infer that the knowledge of the Romans reached to the coasts of that celebrated empire. It is at all events certain that the ideas of the ancients respecting all this range of coast were extremely confused and imperfect.

4288. *The information also of the moderns respecting this portion of Asia* was long extremely defective. Marco Polo and Oderic of Portenau were the first who gave some vague ideas respecting it. The Portuguese, amid their wide career of conquest and settlement, did not attempt to comprehend any portion of it except the detached peninsula of Malacca, on which they formed a settlement. The French, however, sent to Siam a mission, partly religious and partly political, and through which Loubere obtained some important information respecting that great monarchy. But it is by their political relations with British India that these countries have become, though still imperfectly, somewhat better known in Europe.

4289. *Ava, or the Birman empire,* has been subject to the most remarkable revolutions of any of these kingdoms. It comprised three that are naturally and originally independent, — Ava or Burma, Arracan, and Pegu; but each struggling for, and alternately gaining, the ascendency. Pegu, at the first arrival of the Portuguese, was found the ruling state, and its court displayed considerable pomp. About the middle of the sixteenth century, the Birmans rebelled against this authority, and not only established their own independence, but subdued their former masters. This supremacy continued till about the middle of the eighteenth century, when the Peguese, having obtained arms and officers from the Dutch and Portuguese, turned them against the Birmans, gained successive victories, and finally reduced the capital, making prisoner Dweepdee, the last of a long line of Birman kings. A reaction, however, in no long time arose among this naturally brave and energetic people. Alompra, a man of humble birth, collected a band of his countrymen, and carried on for some time a desultory and guerrilla warfare. His forces gradually increasing, he suddenly attacked and took Ava, and succeeded in raising a general insurrection against the king of Pegu. A powerful army sent by that prince was totally defeated; and Alompra, following up his success, invaded Pegu, and gained a series of victories which made him master of the capital, and extinguished the Tallieu or Pegu dynasty. His successor, Shemburen, subdued a revolt of this nation, defeated the Chinese in a great battle, and gained possession of Siam, but was unable to retain any part of that monarchy, except the provinces of Mergui and Tenasserim, on the western coast of Malacca. His brother, Minderagee Praw, who afterwards ascended the throne, succeeded in annexing Arracan to the empire. The Birman dominion thus became extremely powerful, as, besides these three great kingdoms, its influence was established over the territories of Cachar, Cassay, and others bordering on Bengal, through which it came in contact with the British territory. Two proud and powerful states were not likely to be long in proximity without some collision. A series of misunderstandings at length produced open rupture; and all the disposable force of British India was in 1826 embarked for the invasion of the Birman empire. The court of Ava, long accustomed to vanquish and domineer over all its neighbours, could not be induced to view with apprehension one which had not even a royal name at its head. A very short conflict was necessary to impress on them the superiority of the British arms: yet sickness, the natural obstacles of the country, and the difficulty of transporting provisions and stores, long paralysed the active efforts of the invaders; but when at last they began to move upon the capital, all efforts to prevent their advance were completely baffled; and the Birman government, after repeated defeats, seeing no chance of preserving the seat of government from foreign occupation, signed a humiliating treaty, paying a large sum for the expenses of the war, and ceding the important acquisitions of Arracan, Mergui, Tavoy, and Tenasserim, which are now comprehended within the wide limits of the British Indian empire.

4290. *Siam*, consisting of a single great valley at the head of a wide gulf, and enclosed by two ranges of mountains, which, if not very lofty, are steep and encumbered, has maintained a more stable character than any other of this cluster of kingdoms. It was indeed subdued by the Birmans in the height of their power; but on this, as on other occasions, the strong national feeling of the Siamese impelled them to rise on the invader, who, entangled in difficult passes, and attacked by contagious diseases, was ultimately obliged to quit his hold of the country.

4291. *Cochin-China, Cambodia, and Tonquin* form three great countries to the east of Siam, to which those of Laos and Tsiompa may almost rank as mere appendages. Of these countries, little more than the name was known to Europe until about half a century ago, when they were brought into notice by an interesting revolution. In 1774, Caung Shung, the young king, was dethroned and driven from his capital by a triumvirate of usurpers, who assumed the supreme sway. The prince took refuge in a desert island, where he lived for several years in the utmost distress. But Adran, a French missionary, who had aided him in effecting his escape, continued to support his cause, and spared no efforts to replace the young monarch on the throne of his ancestors. He even went over to solicit assistance in France; but the disturbed state of that country, in consequence of the revolution, prevented him from meeting with much success. Yet he procured some aid in arms and officers for Caung Shung, who, having landed in 1790 on the continent, was welcomed by his subjects, and by their aid soon replaced on the throne. The circumstances under which his restoration had been achieved led him to form a strong attachment to Europeans, and a desire to introduce those improvements, especially in the military art, by which they were so much distinguished above his own subjects. Having organised a standing army tolerably armed, and disciplined in the European manner, and a fleet of three hundred gun-boats, with a frigate, he acquired a force with which no power in this part of Asia could cope. He was thus enabled to conquer first Tonquin, a kingdom greater and more populous than his own, and afterwards Cambodia, and thus to become master of all that great range of territory which extends between the gulfs of Siam and Tonquin.

Sect. IV. *Political Geography.*

4292. *The government of all these kingdoms* is of the same simple structure as that of Eastern countries in general. In principle, at least, it is a pure despotism; in which no constitutional check on the authority of the monarch is recognised. The state officers, called in Ava *woongees, woondosks,* and *attawoons,* compose a sort of council of state, but entirely subject to the monarch, and removable at his pleasure. The great lords hold certain portions of land or fiefs, in virtue of which they are bound to the performance of military service. They occupy these only as grants from the crown, resumable at pleasure, and which are judged to cease and to require renewal at the accession of each monarch; but, in fact, unless upon signal ground of displeasure, it is not customary to remove them. The nobles, especially in Siam, show the most profound submission, and approach the throne in the most abject manner, lying prostrate on their faces, and creeping on the ground. The king has many pompous titles, but that of *shoe,* or golden, is the one most valued, and which must be applied to him on every occasion: — "a sound has reached the golden ears; a suitor has arrived at the golden feet; a smell has saluted the golden nostrils." The king appears in public only on state occasions, surrounded by his nobles, in a sitting posture. The costume of the king of Cochin-China (*fig.* 641.) is very peculiar and extremely splendid.

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KING OF COCHIN-CHINA.

4293. *The laws of these kingdoms* are chiefly borrowed from Hindostan and China: they are well combined, executed with strictness, and a rigid police is maintained. The Birman laws are of Hindoo origin, and are supposed to have been transmitted from Ceylon by way of Arracan. The code is called the Dirma Sastra, and is one of the many commentaries on Menu: it is replete with sound morality, and inculcates severe and salutary lessons, even to the monarch, on the high duties of his station. With the exception of trial by ordeal and imprecation, which is admitted by the superstitious ideas of the East, it is the most judicious and practical of all the Hindoo systems. Civil cases are first tried in the courts of the *maywoons* or viceroys, from which lies an appeal, though an expensive one, to the *lotoo,* or supreme tribunal, composed of the council of state, which reports upon them to the king. Thus, however, the judicial power is entirely under the control of the executive, and all offences which are supposed to affect the safety or prerogative of the sovereign are punished with disproportionate rigour. In Cochin-China all the branches of administration are executed by mandarins of different classes, according to the Chinese model; but the political system is by no means reduced to the same regular form as in that great empire.

4294. *The military strength of these kingdoms* consists almost entirely of a feudal militia, for which all males of a certain age are enrolled, and may be called upon to serve under the chiefs of their respective districts. Their arms are mostly swords, lances, and cross-bows; though they have collected a considerable number of fire-arms; but these, being chiefly the muskets condemned in the English arsenals, cannot, by the most anxious exertions of art and skill, be brought into a serviceable state. The only exception is in Cochin-China, where the European officers in the king's service have effected considerable improvements. But the most efficient part of the establishment consists in the war boats, destined to act on the great rivers which form the main channels of communication in all these kingdoms. Those of the Birmans are constructed out of the solid trunk of the teak tree, and some of them are from eighty to a hundred feet long, though only about eight feet broad. The excavation is effected partly by fire and partly by cutting implements. Every town in the vicinity of the river, besides its quota of men, is obliged, when called upon, to furnish a certain number of these boats, of which it is supposed that the king can muster 500. They carry from fifty to sixty rowers, each provided with a sword and lance, besides whom there are usually thirty soldiers armed with muskets; while on the prow, which is flat, a piece of ordnance, weighing from six to twelve pounds, is mounted. On coming in view of the enemy, they draw up in a line, with their prows in front, sing a war song, push on with impetuous rapidity, and immediately attempt to grapple, when a desperate struggle takes place. The larger boats also seek to run down the smaller, which the latter elude with great dexterity. Gilded barges (*fig.* 642.) can be used only by princes of the blood and persons of the very highest rank, and they are often very highly ornamented. The naval arsenal, also, of the Cochin-Chinese appeared to Mr. White very deserving of admiration; and the skill of their shipwrights is much superior to that of the Birmans. He saw one teak plank 109 feet long, and has even seen trees of this description which would make a natural mainmast for a ship of war. The state barges are richly decorated with gilding and carved work, and with floating pennons and streamers. On land, the Birmans and Siamese trust chiefly to their stockades, which they throw up with surprising skill and expedition, and which sometimes resisted even the most impetuous attacks of a British force. In general, however, none of these troops can stand the charge of a disciplined army, but, as soon as their defences are penetrated, they take to flight with precipitation. In Cochin-China only a regular army has been organised and trained in the European manner: this force, in 1800, was estimated at 140,000 men; but Mr. Crawfurd does not imagine it at present to exceed 50,000, of whom the royal guards amount to 30,000.

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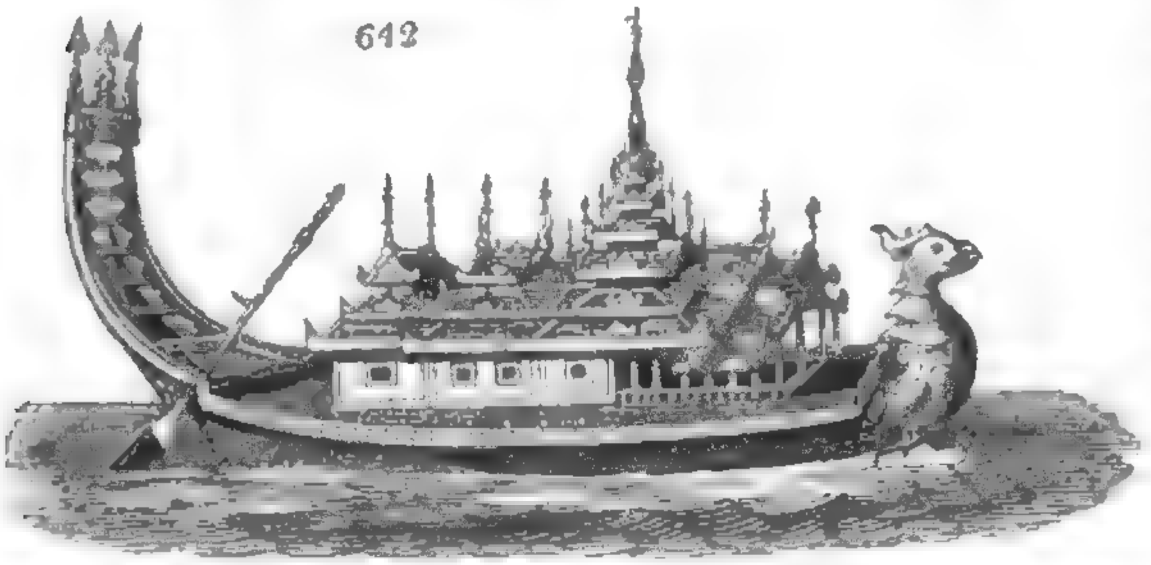

ROYAL GOLDEN BARGE.

4295. *The revenue of the sovereign*, in these kingdoms, consists of a land tax, or rather rent; for the whole country, according to the idea prevalent in the East, is esteemed the property of the monarch. This tax is levied in the form of a proportion of the produce, which in Birmah amounts to a tenth, and is paid in kind. The other source, derived from foreign commerce, is levied partly in the form of customs, but more frequently in the ruinous and unproductive one of royal monopoly. This, in Siam, extends to every branch of foreign trade, and in Cochin-China to those which are supposed most productive. From these various sources, however imperfectly administered, money is continually entering the royal coffers, and little or none ever goes out, for services are paid by grants of land, villages, customs, &c., by which the grantee is enabled to make out an income for himself. The Eastern kings are thus enabled to effect a favourite object of their ambition, in the accumulation of treasures, believed in several instances to be immense. The vague reports which Major Symes heard respecting the ample resources of the king of Ava seem confirmed by the promptitude with which he paid the large tribute exacted by Britain as the price of peace. Mr. Crawfurd was informed that the treasure of the king of Cochin-China amounted in gold to 7,140,000 dollars, independent of what might exist in the form of silver.

Sect. V. *Productive Industry.*

4296. *The productive capacities of this region* are very ample. It yields all the grand staples of tropical produce. The valleys of its great rivers, which possess the expanse of plains, are watered, and, at periodical intervals, extensively inundated, by numerous streams of various magnitude, flowing down from the mountain ridges, to swell the great rivers; and by these means copious moisture, which, under this climate, almost alone suffices to secure an ample vegetation, is constantly supplied. The principal culture consists of rice, the food of all these nations; sugar of fine quality, pepper, preferable to that of the Malay countries, and cotton. The sides of the great ranges of hills are covered with luxuriant timber of various species and great value. There are large forests of teak, a wood now found to be preferable, from its strength and durability, to any other, for the purposes of ship-building. Large boats, as already observed, are often cut out from a single tree, and a great quantity is now produced for the supply of the naval arsenals of British India. Even the fir is found on the tops of the upper mountains, and in Major Symes's opinion might be employed with advantage in masts, for which teak is too heavy. The woods abound also with ornamental trees, canes, rattan, &c., and with others yielding rich gums, which serve for varnish and other purposes. Stick lac and gamboge are among the chief articles of export. From other shrubs are obtained the areca nut and betel leaf, that universal article of luxury and ceremony in all Indian countries, but which has never made its way into Europe. Cardamoms are a spice for which a large market is found in China, and there is some cinnamon in Cambodia; but in general these regions are not productive of the finer spices.

4297. *Cultivation* is very generally diffused, and is conducted in the East on the Indian model, and in the west on the Chinese; but it is not practised in the same perfection, or with the same patient industry, as by either of these nations. The sugar and pepper of Siam are chiefly raised by Chinese settlers. Domestic animals are little used in cultivation, and in Ava the Brahminical principle prevents them from being made articles of food. Animals are tamed chiefly for conveyance or pomp; and for these purposes the elephant, here found in greater perfection, and more highly prized, than in any other country in the world, is chiefly employed.

4298. *Manufactures* exist only on a limited scale, and in a rude form; the raw materials which the country affords being worked up mostly by the family itself for domestic use. Those brilliant and beautiful fabrics which are the boast of China and Hindostan are not produced here, and the quantity used is imported from those countries, especially from the latter. The only fabrication on which much study is bestowed is that of idols, which are fashioned out of a fine species of marble found in the country, and generally gilded; but none are accounted sacred except those constructed at Chagaing.

4299. *The commerce of these countries* is also limited. They produce in abundance all the conveniences and necessaries of life, without any of those peculiar products, as the finer spices and the finer manufactures, which attract traders from the most distant parts of the globe. Their chief intercourse is with China, and consists in the exchange of their raw produce, rice, cotton, timber, ornamental woods, varnishes, or some species of the fine manufactures of that great empire. The cotton and other products of the Birman empire are carried up the Irawaddy to a great *jee*, or market, in the frontier province of Yunan. Britain takes of teak timber to the amount of about 200,000*l.*; in return for which, some British manufactures are received. The trade of Siam and Cochin-China is chiefly carried on by Chinese junks coming to the port of Bankok in the former country, and those of Turon, Hué, and Saigong, in the latter. Mr. Crawfurd reckons that about 116 junks come annually to Cochin-China, carrying 20,000 tons; and somewhat more than double that number to Siam. There is also some trade with the rising British settlement at Singapore; but these governments have declined all overtures for arranging a regular commercial intercourse.

4300. *Some fishery is pursued on the coast of Cochin-China*, and dried fish forms one of the exports of China. On these shores is also collected a large quantity of gelatinous birds' nests, and of the substance called sea slug, tripang, or *biche de mer*, for which there exists an extraordinary demand in the Chinese market.

Sect. VI. *Civil and Social State.*

4301. *The population* of all this range of kingdoms is a question of extreme uncertainty. Major Symes was informed that the number of cities, towns and villages in the Birman empire amounted to 8000; and this, allowing an average of 1800 to each, would give 14,400,000. This, too, is exclusive of Arracan; so that, altogether, he imagines 17,000,000 to be rather under than above the real amount. This very conjectural calculation, however, appears to Captain Cox over-rated; and his estimate of 8,000,000 is generally esteemed to be nearer the truth. Captain Franklin even reduces it to 5,000,000, and Captain Canning to 4,000,000. Mr. Crawfurd allows 2,730,000 for the entire population of the kingdom of Siam, of which the proper Siamese are supposed to amount to 1,260,000; the Chinese settlers, 440,000; the inhabitants of the part of Laos subject to Siam, 840,000; the Malay dependencies, 190,000. This is upon an estimated superficial extent of 190,000 square miles. The same intelligent observer estimates Cochin-China, Cambodia, and Tonquin to contain 98,000 square miles; and, supposing them to be as fully peopled as the neighbouring provinces of China, they would have 5,194,000.

4302. *The people by whom all this territory is inhabited* present several peculiarities of external form. Mr. Crawfurd even apprehends them to be radically distinct from any other Asiatic race. Their persons are short, robust, active, but devoid of the grace and flexibility peculiar to the Hindoo. Their face, flat, with high cheek-bones, presents the form of a lozenge, and never suggests any idea of beauty. The hair is abundant, black, lank, and coarse; but the beard is scanty, and universally plucked out, which gives them an effeminate appearance. They have a gloomy, churlish, sullen air; a slow, sluggish, and ungraceful gait; but this last part of the description seems nearly confined to the Siamese. Upon the whole, though they borrow the outward forms of life from the Chinese and Hindoos, they are not schooled into that mechanical routine of observance which is so firmly established in those countries. Much greater freedom prevails in the intercourse of society; they are quick, lively, and stirring. The Birmans appear to be an active and intelligent people, possessing in this respect a decided superiority over the Hindoos. The Siamese are said to be sluggish and indolent, destitute of courage, candour, and good faith; and so imbued with national pride, that foreign residents cannot obtain a servant to perform for them the most menial offices. They esteem the lowest Siamese to be superior to the greatest subject of any other nation. They are, however, peaceable, temperate, and obedient to the laws.

4303. *The religion of these countries,* like all others in the East of Asia, is derived from Hindostan; yet, like the rest also, it consists not in the Brahminical doctrine, but in the rival system of Boodh. The name, however, most venerated in all the countries beyond the Ganges is Gaudma, or Goutama; either another appellation of Boodh, or that of one of his most popular disciples. The construction of temples and images of Gaudma forms the grand operation to which the art and industry of all these nations is directed. Frugal and indolent in every thing else, they spare neither cost nor labour on this object. Major Symes considers the grand *kioum*, or monastery (*fig.* 643.), the residence of the *seredaw*, or head of the Birman church, as perhaps the most magnificent structure in the universe. Mr. Crawfurd observes that the monarchs here erect none of the public works which are common in other countries of Asia, — neither bridges, wells, tanks, nor caravanseras; but bestow all their treasures upon temples. The principal one, at Bankok, was said, in 1795, to have cost 58,180*l*. The temples, which serve also as monasteries, contain a large space for worship, a depository for the images of Gaudma, a library, and dwellings for the monks or clergy. The materials are by no means very solid, consisting chiefly of brick or mortar: it is on the timber of which the gates and the interior are composed that the expenditure is lavished. These are painted, varnished, gilded, and carved in the most profuse and laborious manner. The principal temple in Ava is about 600 feet in length, and the interior is adorned with upwards of 200 pillars, fifty or sixty feet high, and entirely covered with gold leaf. But the most remarkable of all these edifices is that at Pegu, called Shoemadoo Praw, or the temple of the Golden Supreme (*fig.* 644.). It is raised on two successive terraces, the lower of which is ten feet above the ground, and the upper twenty feet above the lower. The building is pyramidal, composed of brick or mortar, and rises to

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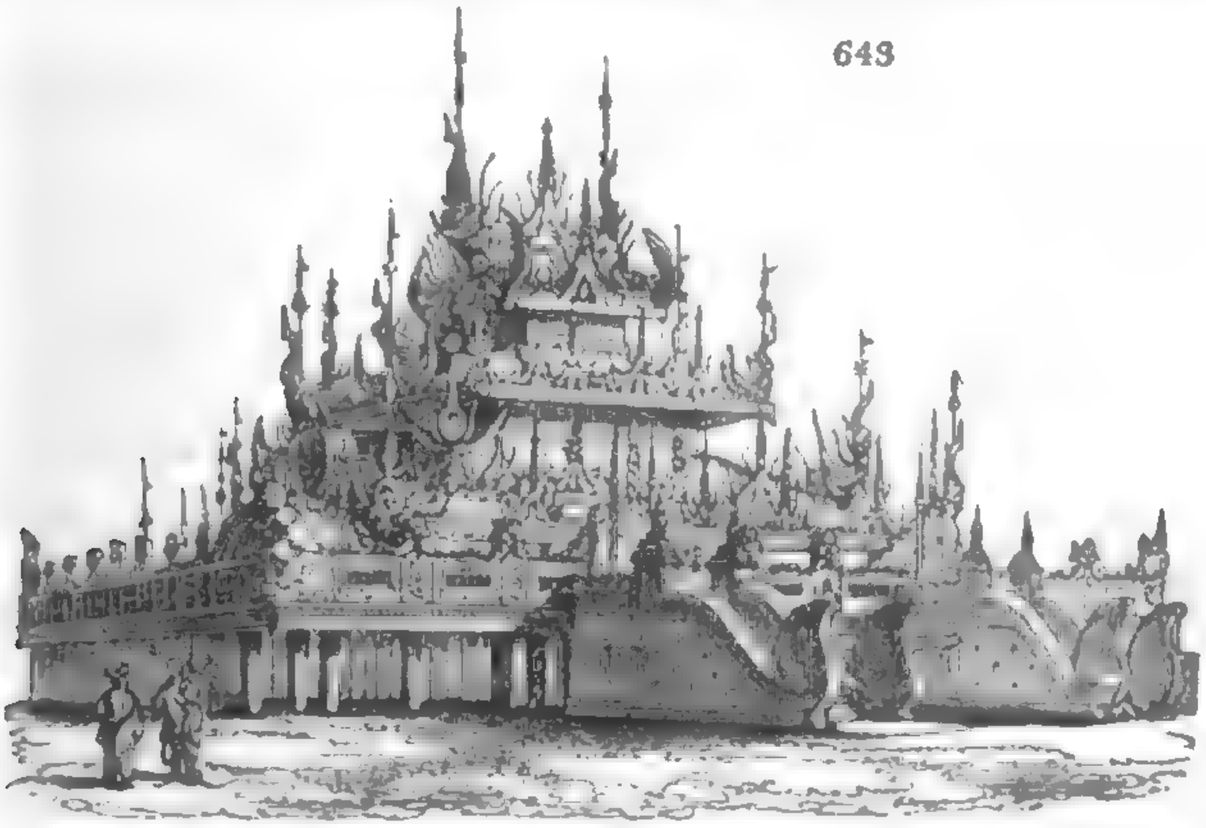

GRAND KIOUM, OR MONASTERY.

the height of 361 feet, without excavation or aperture of any kind; but it diminishes very rapidly as it ascends, so that its form has been compared to that of a large speaking-trumpet. The whole is covered with a *tee*, or umbrella, fifty six feet in circumference, the placing of which forms a high religious ceremony, and gives to the temple its sacred character.

4304. *The framing of the images of Gaudma* ranks as principal of the few fine manufactures established in these kingdoms. The chief seat in Ava is Kycock Zeit, a place in the district of Chagaing. The material is a valuable marble found in the neighbourhood, and each image is formed of one single block, and then gilded entirely over. Some of these images, designed for the great temples, are of gigantic dimensions. That of old Ava has a head eight feet in diameter, and measures ten feet across the breast; the hands are upwards of five feet long, and the entire height is twenty-four feet; yet the whole is described as consisting of a single block of marble. An image in the great temple of Siam is said to be still more stupendous. Peculiar sanctity was attached to the Arracan Gaudma, which, however, was only ten feet high, made of burnished brass, as were the gigantic images of Rakuss, the Hindoo demon, which were also among the spoils brought from that conquered territory. The marble in these images is polished by a peculiar process, which gives it a lustre superior to that which can be bestowed by European artists, and the gold leaf is laid on with great skill. There are about thirty or forty yards crowded with workmen, who are employed in making images of various dimensions and prices. One, somewhat above the human size, might be purchased for twelve or thirteen pounds; while for poor or frugal devotees there were little Gaudmas which could be had for about half a guinea.

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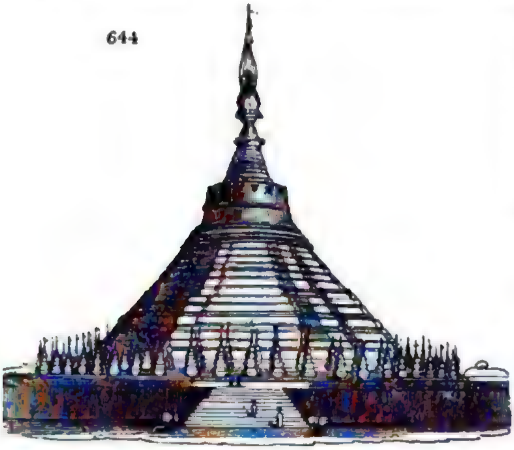

TEMPLE OF THE GOLDEN SUPREME.

4305. *The priests of this religion*, as in all the other branches of the worship of Boodh, are monks residing in the temples, and living in a state of celibacy. In Ava they are called *rhahaans*, in Siam, *talapoins;* but in the latter country, at least, as we are informed by Mr. Crawfurd, they are bound by no vows, and may quit the order whenever they please; and it is so common to assume and leave the profession, that almost every man has been a *talapoin* for some part of his life, even if only for a few days. Great part of their time is spent in insignificant and even absurd ceremonies; yet their ministration is useful in several respects. They instruct the children in reading, and so diligently, that few in the Birman territory are ignorant in this respect.

4306. *Literature* is by no means unknown or neglected in the Indo-Chinese countries. The Birman language is a compound of the ancient Pali with the Sanscrit, the Tartar, and the Chinese. The difficulty occasioned by this complication is greatly increased by the mode of writing, in which, according to Mr. Judson, " the words are not fairly divided and distinguished, as in western writing, by breaks and points and capitals, but run together in one continuous line, a sentence or paragraph seeming to the eye but one long word; and, instead of clear characters on paper, we find only obscure scratching on dried palm leaves strung together, and called a book." In the royal library, however, the writing is beautiful, on thin leaves of ivory, and the margins ornamented with flowers of gold. The books are kept in gilded and japanned chests. The contents of each are written on the lid in gold letters. The bulk of the works were said to be on divinity; but history, music, medicine, painting, and romance had also their separate treatises. The library appeared very large, and is suspected by Major Symes to be more numerous than that of any monarch from the Danube to the borders of China. The literary character of Siam does not seem so eminent. The talapoins consider it inconsistent with their profession to cultivate any branch of learning except theology. Even medicine is neglected, and the physicians are chiefly adventurers from China. The Siamese have, however, songs, romances, and a metrical chronicle of the country, in 400 cantos, which requires six weeks to recite. With the literature of the more western nations we are little acquainted, but it appears to derive its origin from the Chinese.

4307. *The customs of these countries allow to the female sex* a much greater measure of liberty than in almost any other country of the East. They are neither immured nor veiled, nor withdrawn from the company and conversation of the other sex. This freedom, however, is not accompanied with any disposition to allow them that place in the scale of society which justly belongs to them. They are treated as the mere slaves of the stronger sex; all the laborious duties are devolved upon them, and they manage most of the transactions of buying and selling. Their conduct, at least in Ava, is said to be generally correct, unless as respects a very singular arrangement, into which they are ready to enter with any stranger who comes to reside in the country, even for the shortest period. An unmarried female is then leased out to him, and during that time resides with him as his wife, manages his household, and assists him in carrying on his traffic; but on his departure she must not accompany him, but returns, without any discredit, to her relations, by whom it is probable the arrangement was made. It seems to be connected with the idea of the female being the property of her male relations; and the same traffic is carried on in Cochin-China to a still more scandalous extent. Funerals in all these countries are celebrated with much pomp, and the bodies of the great lie for some time in state: in Ava they are embalmed, while those of ordinary subjects are committed to the funeral pile. Mr. Crawfurd mentions an odious custom prevalent in Siam, of cutting off pieces of the flesh and feeding birds with them. In Cochin-China a great festival is held on these occasions, which continues for ten or twelve days, and is celebrated with indecent mirth and hilarity.

4308. *The fine arts are not neglected in this region.* The architecture of the temples is an object of great attention, but they are ornamented rather by the profuse expenditure of paint and gilding, than by tasteful or august forms. They do not, as Mr. Crawfurd observes, possess the solemn grandeur which befits an edifice of this description, and they possess a richness and brilliancy at variance with its character. Vocal music meets with considerable admiration. The females have fine voices, and sing with sweetness, though to very simple tunes, resembling, perhaps, the Chinese. They were unable to follow or relish the varied stream of harmony which flows through an Italian opera. These people are fond of dramatic entertainments; but they have no regular theatres as in Europe. The performers either go to private houses, or perform in public, trusting for remuneration to the voluntary donations of the spectators.

4309. *The habitations in these countries* are of slight materials, but commodious. Bamboos fixed in the ground, and tied horizontally with stripes of rattan, compose the outline, and serve as the supports of the building. Covered with mats they form the walls, and with grass the roof. A spacious mansion can be built in a day, and a tolerable one in four hours. When Major Symes proceeded in his embassy, he had a house erected for him in every place where he was to make any stay. Yet these slight structures are found sufficiently comfortable; and even, if they should be unable to withstand the fury of the elements, their fall is attended with no danger, since the ruin of the whole fabric would not crush a lap-dog. The devastation occasioned by fire, however extensive, is regarded with equal coolness. In the cities of Siam, the houses, built almost entirely along the river, are generally floating upon it, being fastened to the bank by the bamboo rafts. Even the comparatively small number built on shore are raised by posts above the swampy surface of the ground. Mr. Finlayson describes the houses of Cochin-China as built chiefly with mud, and roofed with tiles, and as being large and commodious. About one half consists of an open hall, where they receive visiters and transact business. In the back part of the hall is placed an altar, and other emblems of religion; and the private apartments are disposed in recesses behind. According to Mr. White, they are furnished with hanging chambers, into which air is admitted by wooden gratings, and which are ascended by ladders; but the dwellings of the poor are miserable, and the want of glass must occasion always a great diminution of comfort.

4310. *The dress in these countries* exhibits the same contrast as in the rest of the East; that of the poor slight and scanty, that of the rich peculiarly splendid. The attire of the ordinary Birman females is merely a loose robe or sheet, tucked under the arm, which scarcely serves the purposes of decency; and the working classes are usually naked to the middle. The Birman nobles wear a long robe of silk or velvet, with a mantle and a cap of the same material, which are often richly flowered and embroidered with gold. The attire and all the ornamental articles indicate the rank of the owner, and must on no account be assumed by an inferior class. The use of gold, in ear-rings, large quills and masses, and as the material for the betel box, spitting-pot, and drinking-cup, designates a nobleman of the first rank. The Cochin-Chinese are better clothed than most Eastern nations, being generally covered from head to foot with substantial silk garments.

4311. *For purposes of food*, the more western nations, whose institutions are Hindoo, proscribe the use of animals, though various modes are employed for eluding this prohibition. The Birmans esteem it enough that they do not eat any tame animals, and consider that whatever comes under the denomination of game is lawful provision for the table. Within this range they include lizards, reptiles, and many objects viewed with disgust by

Europeans. The Siamese have contrived to lull their consciences still more easily. They hold it a crime to put any animal to death: but, this sin once committed, and its effects irretrievable, they consider it as a venial offence merely to partake of the flesh. The most scrupulous satisfy themselves with an assertion that the animal has been killed by accident. The more Eastern people, whose habits are Chinese, labour under no such scruples, but, without the same necessity, follow the usage of that nation, in welcoming as food whatever they can take,—rats, mice, worms, frogs. They even feast on the flesh of the cayman or alligator; and a species of white maggot, found in palm buds, is considered as a delicacy fit for the royal table. The entrails of animals and other refuse thrown overboard from the English ships is eagerly collected and eaten by the Cochin-Chinese, whom Mr. White even accuses of having a predilection for filth. In Tonquin the flesh of the dog is said to be eaten, and considered as a great delicacy.

Sect. VII. *Local Geography.*

4312. *The countries between India and China* may be divided into the British territories ceded in consequence of the late successful war; the kingdom of Ava, or the Birman empire; the kingdom of Siam; and the empire of Anam or Cochin-China, comprehending, as already mentioned, Cambodia and Tonquin.

4313. *The territories ceded to Britain* consist of Assam, with some appended territory, the former kingdom of Arracan, the provinces of Yeh, Tavoy, Mergui, and Martaban, extending along the western coast of the Malayan peninsula, and of Malacca itself.

4314. *Assam* is an extensive, somewhat rude territory, to the north of Ava, and the east of Bengal, the possession of which was desired, less from its intrinsic value, than as a barrier to the British possessions. It is bordered on the north by very lofty ranges of mountains, continued from the Himalayah, and watered by upwards of sixty rivers, of which the principal is the broad channel of the Brahmapoutra, which is supposed by some to take its rise among the mountains of Assam. A great part of its surface, thus profusely watered, possesses a luxuriant fertility; yet the rudeness of the inhabitants renders the gifts of nature fruitless, so that nine tenths of its surface consist of desert and jungle. A considerable quantity of gold, however, is found in the sands of its rivers, and, combined with elephants' teeth and coarse silk, affords a certain value for exportation.

4315. *Assam has several rude appendages;* on the east the country of the Garrows, an almost savage race, wildly gay, yet ferocious in war, and even accused of cannibalism; the territory of the Kookies, or Lunctas, also a wild tribe of hunters and warriors; Gentiah, the country of the Kosayah, represented as offering human sacrifices. To the south it has Cachar, a country nearly similar to itself, though somewhat more populous; and south of Cachar, Cassay or Mechley; the people of which are milder and more industrious than any of the above, and bear a greater resemblance to the Hindoos. While attached to Ava, they in a great measure supplied the empire with muskets, and formed the best horsemen in its armies. Munnipore, the capital, was nearly destroyed by the Birmans in the last war.

4316. *Arracan* reaches along nearly the whole eastern coast of the Bay of Bengal, an extent of about 500 miles. The interior is closely bounded by a high mountain range, called Anopectomiein, which consists in a great measure of pestilential marsh and jungle. The plain, however, between the mountains and the sea, the breadth of which varies from ten to one hundred miles, is extremely fertile in rice and other tropical productions. The cultivation, however, being imperfect, it is not supposed to contain more than 100,000 or 120,000 inhabitants. Arracan, the capital, at the mouth of the river of the same name, which forms here a noble expanse of water, is a large city, and the seat of some considerable trade. A new and improving station has been formed by the British at Akyab. By means of boats, betel and other productions of Ava are conveyed down the river, and exported to Bengal. The other chief exports are rice, bullion, salt, bees' wax, and elephants' teeth. Cheduba, a large and very fertile island, Ramree and Sandowy, form districts of Arracan. The worship of Boodh, under the name of Gaudma, is fully established in Arracan; and the Arracan image of that revered being has been mentioned as possessing peculiar sanctity. There are, also, a considerable number of Mahometans, who have been attracted by motives of trade. The native Arracanese are often called, in Bengal, Mug or Mughs, from the term *mogo*, which they apply with peculiar reverence to their priests and great men. Arracan maintained for a very long period an independent existence; yet was subdued without much difficulty by the Birmans, and is now transferred to Britain. Extension of empire was not on this side an object; but the navigation of the bay is thus secured against piracy, and considerable commercial facilities are obtained. The revenues of Arracan, according to the estimate of 1830–31, would amount to 410,000 rupees; the expenses to 190,000.

4317. *The Malayan provinces* extend along the eastern coast of that peninsula, where it continues to border on the Bay of Bengal, and have been long a debateable ground between the Birman and Siamese empires. Their population is thus estimated:—Yeh, 3000;

Tavoy, 15,000; Mergui, 8000; Martaban, 24,000: in all, 50,000. They are not distinguished for fertility, the plain along the sea-coast being soon encroached upon by the range of bleak mountains which stretches along the whole interior of this peninsula; but they possess the finest and most salubrious climate to be found, not only in this empire, but in any part of the East Indies. The sick, in the late war, who were sent thither from Rangoon, experienced a rapid recovery. By means of this coast, also, an opening is afforded into the finest interior provinces both of Ava and Siam. Amherst Town, recently founded on the river Saluen, which forms the boundary between this territory and the Birman empire, will, it is expected, become the seat of an important commerce. The revenue of these provinces, according to the estimate of 1830–31, would be 307,000 rupees; the expenses, 100,000.

4318. *Malacca*, though by the treaty of 1814 it was restored to the Dutch, was, in 1825, ceded to England, in exchange for her possessions in Sumatra. It was one of the earliest settlements of the Portuguese, and continued for a long time to be a great emporium of the trade of the Oriental islands, as well as a place of refreshment for vessels bound to China; but since Prince of Wales's Island and Singapore, under the protecting sway of Britain, have risen to their present importance, the port of Malacca is much less frequented. It has, however, a safe roadstead, a salubrious climate, cooled by a succession of sea and land breezes, with some industry and cultivation, carried on chiefly by Chinese. The population of the town is stated at 4790; that of the country at 33,800. The imports, in 1827–8, amounted to about 134,000*l.*; the exports to 104,000*l.*

4319. *The Birman empire* is formed into two important *divisions*; — *Pegu*, once its rival, but now its subject kingdom, which comprises all the sea-coast and the mouths of the rivers; *Ava* or Birmah, occupying the upper valley of the Irawaddy, and the present seat of the ruling power. Pegu is a sort of delta, entirely traversed by the alluvial branches of the Irawaddy, Pegu, and Saluen rivers. Its valleys are of extreme fertility, and particularly productive of rice; so that it serves as a sort of granary to the empire. It has also spacious forests, abounding in teak, which requires a soil at once moist and rich. Ava consists of a plain of less extent, closely hemmed in by mountains, and by no means of equal fertility; but it is also well cultivated, abounds in timber, and its brave and hardy inhabitants have generally held in their hands the supremacy over both nations.

4320. *Rangoon*, the grand emporium of the empire, is situated on one of the branches of the river of Pegu, and extends for about a mile along the water. It is not so well built as the capital, and, indeed, to the members of the late expedition, it appeared little better than a huge assemblage of wooden huts. The custom-house is the only edifice in the town that is built of brick. The population, however, is estimated by Major Symes, from the number of houses, which is 5000, not to fall short of 30,000. It is composed in a great measure of foreigners from all the countries of the East, and of all religions, who have been encouraged to settle here by the liberal policy of the Birman government. The exchange presents a motley and confused assemblage of Mahometans, Parsees, Armenians, and all the commercial tribes of the East. The chief ornament of Rangoon is the great temple of Shoe Dagon, or Dagoung, which, though not quite so elevated as the Shoemadoo of Pegu, is as highly ornamented, and contains in its precincts 1500 rhahaans and other religious persons employed in the service of Gaudma.

4321. *Pegu*, the ancient capital, was reduced, after the conquest, to a state of complete desolation. Alompra rased every dwelling to the ground, demolished the walls, which from their fragments appear to have been thirty feet high and forty feet broad, and spared only the praws, or temples. For some time, the only object was to terrify the Peguese into submission by the most severe examples. The present king, adopting a milder policy, has made it his main object to conciliate his Pegu subjects. For this purpose nothing was so grateful as to allow them to rear again their fallen capital. The scattered inhabitants have been invited to return, and new settlers have been encouraged by liberal grants. The residence of the maywoon or viceroy has also been removed thither from Rangoon. Possessing, however, neither the splendour of a royal capital, nor a commodious site for extensive trade, Pegu has attracted only a small proportion of its former crowded population. Major Symes does not suppose it at present to contain more than 5000 or 6000.

4322. *Many important places* occur, in ascending the river, before we arrive at the capitals of Ava. Meyahoun is an ancient Pegu city, the splendour of which is marked by numerous gilded spires and spacious convents. The surrounding country is so fertile, especially in rice, as to render it almost a granary of the kingdom; and large depôts of grain are maintained here by the sovereign. Prome, the ancient frontier of Ava and Pegu, and at one time a residence of the Pegu kings, carries on a great trade in timber, and is said to be somewhat more populous than Rangoon, but contains no edifices of remarkable splendour. A continued succession of towns and villages, among which Meeaday is the most important, continues till we arrive at Pegassin, or Paghan. This city, the ancient and splendid capital of Birmah, at a time when a higher taste in architecture appears to have prevailed than at present, abounds with magnificent remains of temples and royal edifices.

4323. *The capitals of Ava* are situated nearly at the termination of the plain of the Irawaddy, after it has taken an easterly direction, and begun to be contracted by the upper mountains. The original capital, bearing the national name of Ava, or Aungwa, was quitted by Alompra for Ummerapoora, and exhibited to Major Symes that aspect of desolation which always covers an Asiatic capital from the moment it ceases to be the residence of the court. The slight wooden materials of which the palaces of the grandees consist were easily transported to the new metropolis. The walls were mouldering in decay; ivy was clinging to their sides; thorns, bamboos, and a few plantains, allowed to grow unmolested, covered the greater part of its site. Only the temples were left untouched, and were sinking under the silent operation of time. Sailing upwards about twenty miles, through a continued succession of houses and villages, the traveller was cheered by the majestic spires and turrets of the new capital, rising amid a wide expanse of water, which, when the river is high, surrounds it like a lake. The principal part of Ummerapoora is the fort, or rather fortified city, more than a mile square, and within whose precincts are contained all that is splendid and that belongs to the court in Ava. The magnificence of the palace consists chiefly in its halls, adorned with gilded pillars, and white silk umbrellas bespangled with gold, while the enclosing walls are merely of brick. But the temples are most profusely ornamented without, as well as within; and their lofty spires or *piasaths*, richly gilded or burnished, make a magnificent appearance. Captain Franklin estimated the inhabitants at 175,000 from the official number of 25,000 houses, allowing seven to each house; but as the houses had been enumerated with a view to taxation, the number was probably under-rated. But it is finally to be stated, that what Ummerapoora lately was, Ava now again is. In 1824, the seat of empire was transferred back to the old capital, which soon doubtless became the centre of Birman splendour; and the majestic edifices of Ummerapoora are now mouldering in ruin.

4324. *The interior details of Siam* are known only to a very limited extent. The early capital, Yuthia, was abandoned after the Birman conquest, when Piatac, a chief of Chinese origin, reared again the standard of Siamese independence. He then transferred the capital to Bankok, farther down the river, and more favourably situated for trade. Bankok may be regarded almost as a city floating in the water. The houses are little more than large wooden boxes, of an oblong form, extremely neat, and thatched with palm leaves. They extend in rows eight or ten feet from the bank, to which they are fastened by long bamboos. They are divided into several small apartments, the most central of which is assigned to the household gods; while in front of many is raised a platform on which is spread rice, fruit, and other articles, forming a species of floating bazaar. These habitations, though diminutive, are said to be tolerably comfortable, and can, of course, be moved with the utmost facility from one place to another. Each house has a boat belonging to it, which is almost the only vehicle for moving through the city; and the habit of continual rowing gives to the arms both of men and women a disproportionate size. These floating mansions are chiefly inhabited by Chinese, who appear to form the majority of the inhabitants of Bankok, and monopolise almost every department of trade and industry. The chief trades are those of blacksmith, tinsmith, and currier, which, by a singular conjunction, are in the hands of the same person. The tin vessels are highly polished, and the leather, dyed red, is used, not for shoes, but for pillows and mattresses. The Chinese, from these occupations, derive a very handsome livelihood, and live plentifully and grossly, on pork, oil, and fat; consuming more value in food in a week than the Siamese does, or can afford to do, in two or three months. The shore, meantime, is covered with numerous palaces and gilded temples (*fig.* 645.), and with the habitations of the grandees, raised by posts above the ground, which is yet so swampy as to render it scarcely possible to walk or drive through the streets. The travelling is chiefly along the river, in richly gilded and ornamented barges.

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SPIRE AT WATANAKA.

4325. *Chantibond* forms the most eastern district of Siam, and is in some respects superior to the flat and alluvial plain which immediately borders the river. Situated on the slope of the mountains which separate Siam from Cambodia, it forms a hilly and romantic region, covered with noble forests, and abounding in valuable aromatic plants. Pepper is the most important object of cultivation, being produced to the annual amount of 20,000 peculs, and capable of almost indefinite augmentation. Cardamoms, though not equal to those of Cambodia, are produced for the Chinese market. The forests contain some very fine odoriferous woods. The population has been supposed to amount to nearly a million, the most numerous and industrious part of which is Chinese.

4326. *The coasts and rivers of Cochin-China and Cambodia* are of different aspect: they are not bordered by the same vast extent of fertile and alluvial territory. Almost the whole coast of Cochin-China is composed of steep cliffs, which, from their rugged forms, and the sharp pinnacles in which they terminate, appear to consist of granite, and between which and the sea there is scarcely a level interval. From their coves, indeed, are seen issuing fleets of boats, which give the idea of industry and plenty; but a nearer inspection shows them to be miserable in the extreme. These little barks are composed chiefly of split rattan, with bamboos for masts, the bark of trees for tackling, and mats for sails. They form the whole habitation of their occupants, whose entire property is embarked in them, and who have no food except the fish which can be drawn from the waters. The great rivers which traverse these two countries, though they descend from fertile and smiling valleys of the most romantic aspect, are hemmed in at a short distance by mountains of the same peaked and rugged character as those which border the coast. Although, therefore, these rivers are as ample as those of Siam, the valleys include not nearly the same extent of fertile and productive land.

4327. *Hué, the capital of Cochin-China,* is situated on the river, about ten miles above its entrance into the fine bay of Turon. The scenery of this stream appeared to Mr. Finlayson the most beautiful and interesting he had seen in Asia. A fertile valley, covered with the cocoa nut, the banana, the sugar-cane, and elegant hedges of bamboo, is bounded by the lofty mountains already described. The view of numerous and apparently comfortable villages enlivens the scene. Hué consists of a large quadrangular fort, or rather fortified city, which constitutes one of the most complete and remarkable military structures in Asia. Each side is about a mile and a half in length, the rampart about thirty feet high, cased with brick and mortar. It is built in the regular European style, with bastions, a glacis 200 feet broad, and a ditch. An hundred thousand men were constantly employed in the works, during the period of their construction, and 1200 cannon were mounted on the walls. It is supposed that 40,000 troops would be required to garrison the place. Here also the king keeps his fleet of galleys.

4328. *Saigong, the capital of Cambodia,* is situated near the mouth of the noble river of Donnai. It consists of two closely contiguous parts, called Saigong Proper and Bengeh. The latter is fortified, and is the residence of the viceroy; but Saigong Proper is the chief theatre of trade, and conducts entirely that of the fine valley in which it is situated. The united city is described by Mr. Finlayson as very large; each of its parts appeared to him equal to the capital of Siam: and Mr. White reports, from official documents, the population of the whole to amount to 180,000, of whom 10,000 are Chinese. The markets are plentifully supplied with native products and those of the neighbouring countries. The manufactured articles are chiefly of the latter description, and scarcely any European goods are to be seen. There is a superb naval arsenal formed under European direction, and which, from the very fine timber of the country, has produced 150 galleys of the most beautiful construction.

4329. *Tonquin,* of the three kingdoms now subject to the sway of Cochin-China, is the largest, most fruitful, and most valuable. Its character is still more decidedly Chinese than that of the others; and, indeed, it was only in the fourteenth century that it separated from that empire, retaining all its forms and institutions. Both the English and Dutch have attempted to open an intercourse with Tonquin, where fine and cheap silks, lacquered ware, and some gold, may be obtained; but the arbitrary exactions of the mandarins, and the little demand for foreign cloths, in consequence of costumes fixed by law being worn by all the orders, rendered it a losing traffic, and it has been almost wholly abandoned. Ke-cho, situated about twenty miles from the mouth of the great river of Tonquin, has been said by one traveller to contain only 40,000 inhabitants; but Mr. Crawfurd understood, what is indeed probable, that it is larger than any city either of Cochin-China or Cambodia; in which case the above estimate must be greatly under the truth. We want the information of some recent and intelligent traveller respecting Tonquin.

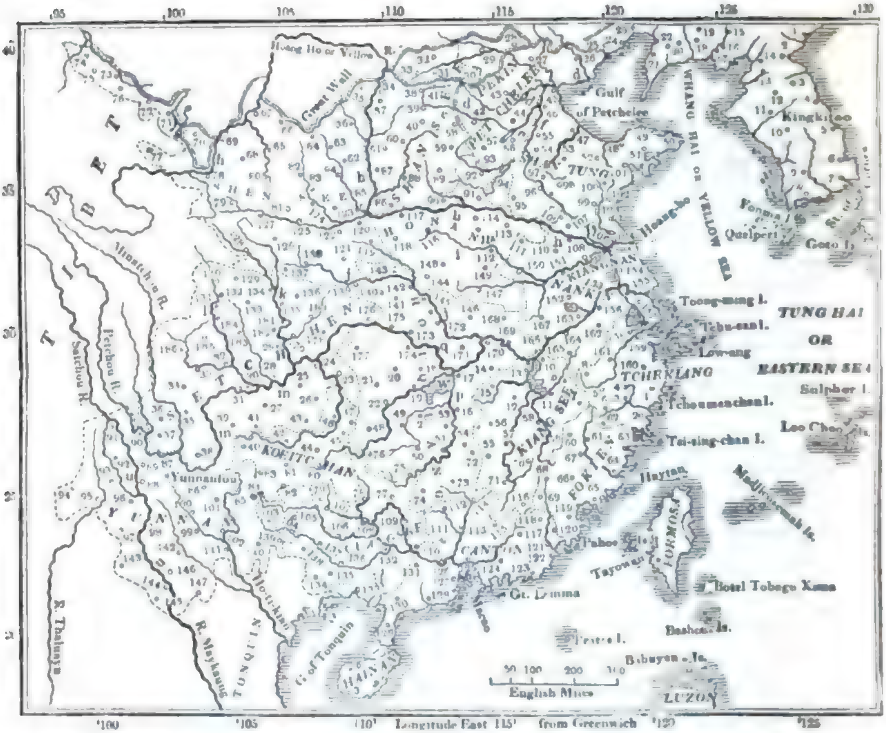
Chap. VIII.

CHINA.

4330. *This vast empire,* containing the greatest amount of population, and, perhaps, also of wealth, united under one government, occupies a large portion of the south-east of Asia.

MAP OF CHINA.

Fig. 646.



References to the Map of China.

NORTH PART.
1. Peytcim
2. Longsing
3. Ouentchuen
4. Siangyang
5. Pinghay
6. Yeugi
7. Kitchang
8. Yoping
9. Sining
10. Tchingay
11. Kingkitao
12. Conchan
13. Tchengtchun
14. Yuchin
15. Taipi
16. Sotcheou
17. Evtjou
18. Tamsan
19. Ouelie
20. Sicouyuen
21. Yomnimkien
22. Caitcheou
23. Kingtcheou
24. Ningyuen
25. Pimsanim
26. Youppingfou
27. Pekin
28. Youkingtcheou
29. Paougantcheou
30. Yutcheou
31. Yngtcheou
32. Taitongfou
33. Soutcheou
34. Paotecheou
35. Couchan
36. Souitetcheou
37. Hinghien
38. Taitcheou
39. Hintcheou
40. Taiyuenfou
41. Pankihien
42. Tchingtingfou
43. Paotingfou
44. Tchingtcheou
45. Paybo
46. Tsangtcheou
47. Pintcheou
48. Laitcheoufou
49. Tengtcheoufou
50. Sinchanso
51. Kiotcheou
52. Tcintcheoufou
53. Tsinanfou
54. Caotangtcheou
55. Tetcheou
56. Payhou
57. Chuntefou
58. Pingtingtcheou
59. Leaotrheou
60. Fuentcheoufou
61. Cheleouhien
62. Yeunganfou
63. Paouganhien
64. Tsinpiening
65. Pingloso
66. Tingpiening
67. Lingtcheou
68. Singanpoi
69. Yungnganpou
70. Yougtaitching
71. Youngnginpou
72. Yangtchangoei
73. Kantcheou
74. Tchinchouipou
75. Hongtchouipou
76. Nancoutching
77. Silling
78. Lantcheou
79. Kongtchangfou
80. Kouyuentcheou
81. Longtcheou
82. Kingyangfou
83. Ningtcheou
84. Foutcheou
85. Tongtcheou
86. Kialtcheou
87. Kitcheou
88. Pinyangfou
89. Lounganfou
90. Hoaikingfou
91. Onekiunfou
92. Tchangtefou
93. Setcheou
94. Taymingfou
95. Tsaotcheou
96. Tsingintchoo
97. Tongpintcheou
98. Yentchoofou
99. Ytcheou
100. Lutcheou
101. Coamihien
102. Tahintching
103. Haitcheou
104. Nganlong Hien
105. Hoinganfou
106. Kieou Pitcheou
107. Licoy
108. Peoutcheou
109. Satishou
110. Sieoutcheou
111. Potcheou
112. Changchoufhien
113. Taitcheou
114. Tchingtcheou
115. Kutcheou
116. Ysanghien
117. Tchentchou
118. Louchihien
119. Changtcheou
120. Hontcheou
121. Tchinnganhien
122. Singanfou
123. Yaotcheou
124. Pingtcheou
125. Fongtsiangfou
126. Oeitcheou
127. Tsintcheou
128. Kialtcheou
129. Longuganfou
130. Pingpaning
131. Hoeitcheou
132. Mientcheou
133. Tsetonghien
134. Tchaohoahien
135. Paokingfou
136. Patcheou
137. Ningkiang-
tcheou
138. Haitchongfou
139. Hingngantcheou
140. Tchouchanhien
141. Fanghien
142. Koutchinghien
143. Yuenyangfou
144. Tengtcheou
145. Siangyangfou
146. Tenganfou
147. Senyangtcheou
148. Nanyangfou
149. Yunnhingfou
150. Hingtcheou
151. Fongyangfou
152. Liutcheoufou
153. Nanking
154. Keoyeoutchou
155. Tchangtchoofou
156. Tapingfou
157. Soutcheoufou
158. Hangtcheoufou
159. Ningpofou
160. Sintcheouhien
161. Yentcheoufou
162. Nhingkoufou
163. Vouhouitcheou
164. Tchitcheoufou
165. Kimenhien
166. Ngankingfou
167. Yuchanhien
168. Matchinghien
169. Hoangtcheoufou
170. Outchang
171. Mienyangtchou
172. Nganlofou
173. Yintcheou
174. Ytonhien
175. Kouetcheou
176. Koeitcheoufou
177. Chetcheououee
178. Leangchanhien
179. Kouangngan-
tcheou
180. Tatcheou
181. Pantcheou
182. Chunkingfou
183. Kientcheou
184. Hantcheou
185. Yatcheou
186. Mosinien.

SOUTH PART.
1. Taitchoufou
2. Ouentcheoufou
3. Tchutcheoufou
4. Kinghoafou
5. Kiutcheoufou
6. Langsuienhien
7. Kouangsinfou
8. Kaihoahien
9. Kintechin
10. Houkeouhien
11. Yaotcheoufou
12. Chouitcheoufou
13. Nanchangfou
14. Tongchanhien
15. Nhingtcheou
16. Tchangchafou
17. Youheoufou
18. Tongtcheou
19. Tchangtefou
20. Kieoukioue
21. Tongtchuense
22. Tchangtcheou-
fou
23. Pongchouihien
24. Peitcheou
25. Kikianghien
26. Tchingantcheou
27. Touoneikou
28. Tcheliroutcheou
29. Hotcheou
30. Souitcheoufou
31. Mahoufou
32. Kiatingtcheou
33. Tchaikingfou
34. Ningpanouei
35. Hochiso
36. Lankuton
37. Yongpefou
38. Hiangtcheoupou
39. Oumongfou
40. Oueiningfou
41. Tchinhingfou
42. Kienstcheou
43. Tsungfou
44. Pingyurnfou
45. Tchiyuenfou
46. Senanfou
47. Tonginfou
48. Yuentcheou
49. Soukise
50. Paokingfou
51. Hengtcheoufou
52. Nganhoahien
53. Siangtanhien
54. Yeouhien
55. Yongnhinghien
56. Yuentcheoufou
57. Kinganfou
58. Foutcheoufou
59. Kientchangfou
60. Chaooufou
61. Kiennhingfou
62. Kingyuenhien
63. Fouuhingtcheou
64. Foutcheoufou
65. Siuentcheoufou
66. Yongnganhien
67. Yenpengfou
68. Tingtcheoufou
69. Oupinghien
70. Nhingtou
71. Kantcheoufou
72. Tchaintcheou
73. Tchingtcheou
74. Taotcheou
75. Tsuentcheou
76. Tsintcheou
77. Yongningtcheou
78. Hoaiguenhien
79. Nantantcheou
80. Touyuenfou
81. Tingtantcheou
82. Kiangse
83. Pogantcheou
84. Lopingtcheou
85. Louleangtcheou
86. Yunnanfou
87. Yaonganfou
88. Monghoafou
89. Talifou
90. Likingfou
91. Hosiain
92. Yanlongtcheou
93. Yongtchangfou
94. Santafou
95. Vangesuen
96. Chinningfou
97. Mungsem
98. Tchinyuentcheou-
fou
99. Yuenkiangfou
100. Sinpinghien
101. Tchingkiangfou
102. Linganfou
103. Kouangnanfou
104. Setchingfou
105. Natitcheou
106. Ngantintcheou
107. Hotchitcheou
108. Lieoutcheoufou
109. Pinglofou
110. Outcheou
111. Quangninghien
112. Tientcheou
113. Yutchien
114. Chaotcheoufou
115. Lienpingtcheou
116. Tchanghing
117. Tchangtohien
118. Tchinpinhien
119. Chantcheoufou
120. Jaopin
121. Tchaotcheou
122. Hayman City
123. Hiechetchin
124. Hoeitcheoufou
125. Canton
126. Tchaokingfou
127. Sinhoethien
128. Kangkianghien
129. Loutcheoufou
130. Hoatcheou
131. Lotingcheou
132. Sintcheoufou
133. Kintcheou
134. Taipingfou
135. Sinningtcheou
136. Nanningfou
137. Tiencheou.

Sect. I. *General Outline and Aspect.*

4331. *China* composes a broad expanse, nearly square, two sides of which are bounded by sea and two by land. The sea is the great Pacific Ocean, which, however, does not here present a well-defined outline, but is broken into great gulfs. Of these, the chief is denominated the Sea of China, enclosed by Borneo, the Philippines, and Formosa; and the Yellow Sea, bounded by Tartary and Corea. The interior boundary consists of a range of thinly peopled tracts, occupied only by wandering and barbarous tribes, Mandshur Tartars, Mongols, Kalkas, Eluths, and the eastern tribes of Great Thibet. These regions have usually given rulers to China; but at present the empire, or, at least, its reigning dynasty, comprehends within its sway upwards of 1000 miles in every direction of these rude territories. It holds them, however, as tributaries only, or under loose military occupation, and without any attempt to impose on them the police, the laws, or the general character of China itself. At the same time, the whole of this vast frontier is guarded with equal care against the approach of foreigners. Communication is left open at two solitary points: only one, the port of Canton to the maritime nations of Europe; the other, Maimatchin, on the Siberian frontier, to the subjects of Russia. The south-western angle alone touches upon civilised territories, partly the Birman empire, partly Tonquin, now included in the empire of Anam, or Cochin-China.

4332. *China Proper*, now exclusively under consideration, may be generally stated as *extending* from 20° to 41° of north latitude, and from 101° to 122° of east longitude. This makes 1260 geographical miles in length, by 1050 miles in breadth. According to an official statement presented to Lord Macartney, and which might probably approach the truth, the superficial extent amounted to 1,298,000 square miles, or about eight times the dimensions of France. Of this vast surface, the greater part consists of a level plain, alluvial, and sometimes marshy, but in general capable of the highest cultivation, which it actually receives.

4333. Close observers, however, have traced considerable *chains of mountains* traversing the empire. Of these, the most important seems to be that which runs through the southern provinces, and forms a continuation, though on a much lower scale, of the Great Himalayah. In Yunan, on the eastern frontier, where it first enters the empire, its ridges, which appear to be very steep and lofty, nourish bands of lawless and predatory tribes. But in the eastern provinces, their pinnacles seldom rise above 3000 or 4000 feet; and, being covered with noble forests, crowned with pagodas, and with cities along their sides, they give to the country a magnificent aspect, without interrupting its culture and populousness. The ground also rises rapidly as it approaches the northern frontier, which is formed or crossed by mountains of considerable height, and over which that stupendous bulwark, the Great Wall, has been carried with incredible labour. These chains also, according to Chinese maps, which form here our only authority, penetrate at different points into the interior provinces.

4334. The pride of China, and the exuberant source of her wealth and fertility, consist in the *mighty rivers* by which, through its entire breadth, the empire is traversed. The two great twin streams of the Hoang-ho, or Yellow River, and the Kian-ku, or Yang-tse-kiang, rise from distant and almost unknown sources in the heart of Tartary. The former, as it enters China, is bent by the frontier mountains into a northerly course, which it follows for several hundred miles, until it reaches the desert depths of northern Tartary. Fortunately for China, it then again bends, and, after making a circuit, flows, opposite and parallel to its former course, into the interior of the empire, and fertilises several of the finest provinces in its progress westward to the Yellow Sea. Its banks here are entirely alluvial, and the quantity of mud and earth brought down with it give its waters the appearance of diluted clay. According to Mr. Barrow, it pours into the sea, every hour, 2000 feet of solid earth, sufficient in seventy days to accumulate an island of a mile in circumference; and, in fact, the depth of the Yellow Sea has been observed very sensibly to diminish. The Yang-tse-kiang rises in Thibet, very near to the Hoang-ho; but in approaching China it takes a great contrary bend to the south, till it is at one point about 1000 miles distant from the other. Then, bending northward, it approximates to the Hoang-ho, and, after watering all the great central provinces, reaches the sea by an estuary scarcely 100 miles distant from it. The two rivers appear each to flow upwards of 2000 miles; but the Yang-tse-kiang is rendered the noblest, both by the magnitude of its stream, and by the superb cities with which its banks

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References to the Map of China — continued.

138. Tchiunganfou
139. Tonfontcheou
140. Kouehoufou
141. Nakengse
142. Nacoull
143. Mongtien
144. Tcheiitchuenfouse
145. Mongpan
146. Suenouelse
147. Mongpin

ISLE OF HAINAN.

1. Kiongtcheoufou
2. Ouantcheou
3. Tsiaotcheou
4. Hopoe

Rivers, &c.

a Lan, R.
b Sanho, R.
c Yunnleam Canal
d Tsan ho, R.
e Hou-to-ho, R.
f Eu-ho, R.
g Grand Canal
h Hoang-ho, or Yellow River
i Hoai-ho, R.
j Han-kiang, R.
k Kialing-kiang, R.
l He-choui-Ho, R.
m Lincha-kiang, R.
n Ou-kiang, R.
o Youn-kiang, R.
p Heng-kiang, R.
q Yan-gtse-kiang, R.
r Kan-kiang, R.
s Posoi-kiang, R.
t Mo-ti-kian, R.
u Lon-tsan Ho, R.
w Tongting Lake.
x Poyang Lake.

are adorned. It is called by the Chinese "the first-born of Ocean," and appears to be without a rival, unless among the waters of the New World. Both have great and numerous tributaries, which serve important purposes of commerce and irrigation. The Peiho, or river of Pekin, the Kan-kiang, and the river of Canton, afford also valuable means of internal communication.

4335. *Of lakes,* China comprises in its central region the Tongting, about 300 miles in circumference, and covered with a numerous population who subsist by fishing; the Poyang, surrounded by picturesque and finely wooded hills, and by considerable cities; with several others of less magnitude; but these, on the whole, do not cover any very great proportion of her vast surface.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4336. *The Geology of China* is unknown. A few facts, in regard to its minerals, occur incidentally in books of travels and works on the statistics of that vast empire. Rubies, corundum, topaz, tourmaline, lapis lazuli, jasper, agate, jade, marble, porphyry, granite, syenite, are enumerated among the precious and ornamental minerals. Earthy felspar or kaolin, an important ingredient in the manufacture of porcelain, occurs abundantly in some parts of China; and beds of coal are described as extending through considerable tracts in the northern parts of the country. *Gold* is obtained from the sand of rivers in the provinces of Se-tchuen, and Yunan, near the frontiers of Thibet. *Silver* in the native state, and also combined with sulphur, antimony, and lead, or as ores, occur in considerable abundance; but no mines of silver of importance are mentioned. No gold or silver money is coined. The *tutenague* is a white metallic substance, of which the Chinese make vessels and chandeliers. The *copper pyrites,* or yellow copper ore, of Yunan and other provinces, is used for making small coin, which is current throughout the whole empire. The *pa-kfong,* another ore of copper, is also extensively worked. *Lead* and *tin,* it is said, occur much less abundantly than copper: that which is exported from Canton comes from Thibet and Japan. Mines of *mercury* abound in Yunan. *Realgar,* or native sulphuret of arsenic, is employed by the Chinese, in blocks, for making pagodas and vases.

Subsect. 2. *Botany.*

4337. *China,* situated between the 21st and 42d degrees of latitude, and the most easterly longitude of any part of the Old World, possesses a temperature which will appear very low, by comparison with that of the corresponding western countries that are washed by the Atlantic Ocean.

4338. *From this circumstance,* and from a reference to the notes relative to the vegetation of China which are scattered in the writings of travellers, we shall admit that the Equatorial Flora of China does not extend beyond the 27th parallel, even under the most favourable circumstances. If this idea be entirely correct, the chain of the Milin mountains, which runs from west to east for upwards of 1000 miles, and then turns abruptly to north-east when within a short distance of the sea, dividing from the rest of the empire the southern provinces of Yunan, Koang-si, Canton, and the eastern province of Fo-kien, marks the termination of the Equatorial and the commencement of the Transition Zone.

4339. *With regard to temperature,* M. de Humboldt, on grounds unknown to us, states the mean of Canton to be + 22·9°. He observes that the thermometer sometimes sinks to zero, and that, by the power of radiation, frost sometimes forms on the terraces of the houses. The latter assertion is confirmed by the remarks of Lord Macartney and of Krusenstern. The English embassy, arriving in Canton in December, 1793, found that a fire in the chimney was by no means unwelcome, and thirteen years afterwards, in the same month, Krusenstern saw that ice was selling in the streets. These colds are instantaneous; and do not prevent the vegetation from being entirely equatorial.

4340. *Among the most remarkable families* of plants in the southern provinces, we shall enumerate the Palms, the Laurel, and Caper tribes, the Menispermeæ, Malvaceæ, Bombaceæ, Camellias, Ternströmiaceæ, Aurantiaceæ, Sapindaceæ, Magnoliaceæ, Terebinthaceæ, Rhamneæ, Leguminosæ, Myrtaceæ, &c. The cultivator grows together, the Banana, Guava, Orange, Papaw, Cocoa, Litchi, Tea, Sugar-cane, Peach, Apricot, Vine, Pomegranate, and Chestnut; but the latter seldom produce good fruit. This combination of the trees of India and Asia Minor may also be observed on the western coast of the Isle of Formosa, between the 22d and 25th degrees of latitude.

4341. *Few of the vegetables* of the Equatorial Zone are seen beyond the Milin mountains. The northern side of these mountains, sometimes rocky and barren, in other places overshadowed with large forests of Oak, Hornbeam, and Poplar, are subject to long and severe winters, during which the valleys are covered with snow. Between these mountains' (lat. 25° to 27°) and the Yellow River (lat. 35°), vegetation presents all the peculiarities of the Transition Zone. Various species of Orange, Lemon, Tea, Sugar-cane, Rice, and Pomegranate, the Black and White Mulberries, the Vine, Walnut, Chestnut, Peach, Apricot, and Fig, are grown on the same spot; but neither the Palms, Banana, Guava, Papaw, nor any other species which requires the steady and continued heat of the equatorial regions. The plains produce a species of Bambusa, the Phyllanthus Niruri, the Pride of India (*Melia Azedarach*) (*fig.* 647.), and Stillingia sebifera (*fig.* 648.), which yields a kind of wax that is manufactured into candles by the Chinese, the Thea chinensis, several Camellias, among them the Sasanqua (from which they extract an oil of very inferior quality to that of Olea europæa, which is unknown to them), the Olea fragrans, Sophora japonica, Sterculia platanifolia, Ailanthus glandulosa, Vitex incisa, some Clerodendrons, Mimosas, Neriums, and Rhamni, the Horsechestnut, the Abies orientalis and Pinus Massoniana, probably also Pinus longifolia and P. Pinea (for we surmise this latter to be the fir tree, from the large cones of which, the Chinese were seen, by Staunton to collect, and eat eagerly the kernels), different kinds of Juniper and Cypress, the Cunninghamia lanceolata (*fig.* 649.), Podocarpus macrophylla, Thuja orientalis, Sallows, &c.

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MELIA AZEDARACH.

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STILLINGIA SEBIFERA.

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CUNNINGHAMIA LANCEOLATA.

4342. *On the lovely banks* of the Yang-tse-kiang, or Blue River, and of the southern streams which swell its waters, the Camphor tree, the Styllingia sebifera, the Chestnut and Bamboo (that giant of the Grass tribe), grow together, with the Pines, Thuja, and Cypress, whose dark hues and uniform aspect contrast strikingly with the rich, brilliant, and varied vegetation which surrounds them. The Nelumbo, or Sacred Bean of India (*Cyamus Nelumbo*), displays its superb flowers on this river. The Bamboo forms forests in Tche-kiang (lat. 29° to 30°,) and with the Pine follows the boundaries of Kiang-si (lat. 24° to 30°), and of Kiang-nan (lat. 25° to 30°). The whole zone abounds with Coniferæ, and the mountains are adorned with Pines, or, at least, with large trees bearing so close an affinity with them, that a botanist alone could point out the difference. In Kiang-si, whole hills are covered with Camellia Sasanqua (*fig.* 650.); while those which encircle the town of Thong-kiang (lat. 29°) are crowned with Orange trees. This tree, with the Lemon, is still seen at Koue-te-fou (lat. 34° 30′), on the right bank of the Yellow River. Every where the Tea plant grows in the hedges. Staunton, the editor of Macartney's Travels, assigns lat. 30° as the northern limit of this shrub; but he is in error: it grows much farther. The leaves are gathered at Tchang-tchou-fou, in lat. 32°, and, if Linnæus be correct, also at Pekin; which does not seem improbable, though there is no positive confirmation of the statement, since Kæmpfer avers that it is found in the vicinity of Jeddo, in the Japanese island of Niphon, where the temperature in winter must be very low. Supposing the fact to be correct as stated by Linnæus, it will afford an additional proof of what the influence of summer heat can effect in fortifying against the cold of winter. The Sugar cane has not been traced farther north than lat. 29° or 30°; which is in Se-tchuen, a western province, bounded by the mountains of Thibet, and probably colder than the maritime districts in the same latitude; which induces the belief that the Sugar-cane is probably cultivated more to the north, in Tche-kiang and Kiang-nan. In the more northerly parts of China, winter displays many of its characteristics in the course of the seasons. In lat. 30°, near the port of Hing-pe, Styllingia sebifera sheds its leaves in November. A degree and a half north of this place, at the mouth of the Blue River, winter prevails for a fortnight, during which snow falls nightly, and melts at the first rays of the sun. Bouvet, an eye-witness, relates that in February, 1688, at seventy-five miles from the sea, in lat. 34°, the snow fell, and the Hoang-ho, or Yellow River, was obstructed

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CAMELLIA SASANQUA.

with ice, the latter having probably been brought by the water from a higher part of the country. It seems incontestable that in Pe-tche-li, which does not extend beyond lat. 42°, but which rises gradually from the Hoang-ho and the Yellow Sea to the Great Wall, the rivers are frozen from the end of November to the middle of March; and that, at Pekin (in lat. 39° 54′), the winters are very severe, though the Oleander, the Vitex Negundo, and the Sacred Bean of India grow in its environs.

4343. *The above-stated facts* warrant the taking of the Yellow River and the Hoü-ho River as the line of separation between the Transition and the Temperate Zones.

4344. *After the above extended remarks*, from the laborious Mirbel, on the general vegetation of China, it cannot be supposed that we shall enter at large upon the few interesting species which are familiar to us, either from their use or their beauty, whence they have recommended themselves to general culture in our green-houses and conservatories; among which will rank pre-eminent the Camellias, with the almost unlimited variations of C. japonica (*fig.* 651.). The Sugar-cane (*Saccharum officinarum*), though so extensively cultivated in the West Indies and elsewhere, is considered to be a native of China. The same may perhaps be said of the Orange. Rice (*Oryza sativa*), equally distributed through the warmer regions of the Old and the New World, is perhaps more generally grown in China than in any other part of our globe; and the name is applied to a Chinese production, a most delicate material for drawing upon, and for manufacturing artificial flowers, known under the appellation of Rice Paper, from an incorrect notion, perhaps, that Rice was employed in its composition. But if this paper be held up between the eye and the light, an exquisitely beautiful cellular tissue is discoverable, such as no art of man could produce or imitate. It was, then, a subject of much gratification to us, that our late friend, Dr. Livingstone, surgeon to the Factory at Canton, favoured us with a specimen of the paper, enclosing a portion of the stem of the plant from which it is cut. The latter is evidently herbaceous; the piece is about four inches long, hollow in the centre, with a membranous transverse septum at each end, so that it appears to be the joint of a stem. The diameter is about an inch, and the thickness of the parenchymatous substance is little more than half an inch, but of the purest possible white. This piece might, therefore, be cut into a sheet or leaf, though only of four inches in length, yet of considerable breadth: for it would of necessity be cut in such a manner as to unroll like a scroll of common paper.

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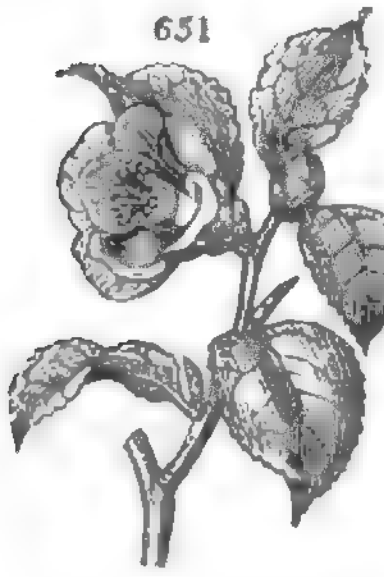

CAMELLIA JAPONICA.

4345. *The cutting of this material* into leaves or laminæ is not performed by transverse sections, but made vertically round the stem. The most perfect stems are selected for this purpose; few, however, being so free from knots as to produce a cutting more than nine or ten inches long.

4346. *It was Dr. Livingstone* who first brought from China to Europe a quantity of this substance, which he presented, about 29 years ago, to Miss Jane Jack, who was celebrated for the beauty and accuracy of her artificial flowers. Formed of rice paper, they obtained additional celebrity, fetched very high prices, and were eagerly sought for by persons of the greatest rank and most acknowledged taste. For a bouquet which Miss Jack presented to the late Princess Charlotte she received the regal present of 70*l.*

4347. *When Dr. Livingstone* first procured the rice paper from the Chinese, the pieces did not exceed four inches square; they were dyed of various shades and colours, and cost about 6*d.* each square. Since that time the price has been much reduced, and the size of the pieces increased, so as to be upwards of a foot long and five inches across, and preserving their natural whiteness. The tinted pieces are employed by the Chinese for their artificial flowers, and the plain white for making drawings upon. Now, this material is so much esteemed in Europe, that it is in request with all persons who visit Canton.

4348. *It is to be regretted* that the plant producing this curious and beautiful material is not known to botanists; for we are satisfied that, in the *Botanical Miscellany* (vol. i. p. 90.), two substances are confounded under the name of Rice paper, the soft and spongy stems of the Æschynomene paludosa (called Shola in Hindostan, and described at page 963. of this work), and the stems producing the substance in question, which are of a far more delicate texture, peculiar, we believe, to China, and, as far as can be judged from a drawing which has been communicated to us, belonging to the Malvaceæ; an opinion, as we think, also entertained by Professor Lindley.

4349. *Tea* is a vegetable which has lately risen into such infinite importance to mankind, and which is so restricted, in its still extended cultivation, to China and its dependencies, that we should hardly be excused did we not offer some remarks upon it. Two kinds of Tea plant are commonly cultivated in our green-houses; the one under the name of Thea viridis, or Green Tea, the other of Thea Bohea, or Black Tea; and which appellations had been given them, partly, as it would appear, on account of the relative colours of the foliage, and partly under the impression that the former produced the Green Tea of the shops, and the latter the Black Tea. But this idea seems to be founded upon no good authority, as we shall presently show; and even with regard to T. viridis and T. Bohea, botanists are by no means agreed as to their specific identity: indeed, a general opinion now prevails that they are mere varieties; an opinion, however, in which we do not coincide. Thea viridis is a large, strong-growing, almost hardy plant, with its branches spreading, its leaves three to five inches long, very broadly lanceolate, pale green, singularly waved, the margin reflected: the flowers are large, solitary, mostly confined to the upper axil: they appear in the autumn six weeks or two months earlier than those of T. Bohea (*fig.* 652.): while the latter is of smaller size, with remarkably erect stiff branches, leaves not above half or two thirds the size of the former, perfectly flat, more coriaceous, dark green, bearing, in the axils of numerous leaves, two or three flowers, which are smaller and have a slight fragrance, and are in perfection during winter. It will not endure our frosts. Both kinds are indeed so frequent in our collections, that every one has the opportunity of examining them and exercising his own judgment as to the importance of their characters. The difficulty is much greater in determining which of these species is the one cultivated in China: whether both may not be employed in the production of the different kinds of Tea, or whether they may not be indiscriminately used: for the Chinese are exceedingly jealous over the processes employed in the preparation of Teas; and, the Tea country being at a great distance from the European Factory, it is very doubtful if any scientific person has, from actual personal observation, been able to decide the question. An assertion is, indeed, (and, perhaps, rather too hastily,) made in the *General System of Gardening and Botany*, namely, that "*all* the different kinds of teas brought to this country from China are the produce of Thea viridis;" and again, under Thea Bohea, "This is falsely called Bohea Tea; as we find the Bohea teas of the shops, as well as other kinds, both green and black, to be the leaves of the former species, T. viridis." Dr. Abel, in his *Narrative of a Journey to the Interior of China*, satisfactorily notices the two kinds of tea plant under consideration, and he adds, "from persons conversant with the Chinese method, I learned that either of the two plants will afford the black or green tea of the shops; but that the broad, thin-leaved plant (T. viridis) is preferred for making the green tree." This statement is corroborated by our valued friend, Charles Millett, Esq. of Canton, who holds a high official situation in the Company's Factory there, and to whom we wrote to request information on the subject. "The Tea plant," he says, "is almost as scarce in the neighbourhood of Canton as it is in England. The tea country is at a great distance from hence, and the teas brought to Canton are several months on their route by inland navigation. Of the plants there are two kinds; of which one has a leaf of a much darker green than the other. This difference may partly arise from cultivation; but it is to the various modes of preparation, that the *green* and *black* Teas (as they are called in England) of commerce, are due. In proof of this, we sent home, last year, Green Tea from the Black Tea plant: you may, therefore, conclude, that though there are two plants, differing as much in appearance and growth as any two varieties of the Camellia japonica, each, by proper management, will produce black or green Tea indifferently. The varieties of teas from the several provinces arise from soil, culture, mode of preparation, and, above all, from the part of the shrub whence the leaves are pulled. From the same individual plant, indeed, there are three crops or gatherings annually; the first affords the finer teas, of which the Pouchong is the produce of the larger leaves on the young shoots. The extreme shoots, with the opening leaf buds, constitute the Peko. This is, in England, commonly supposed to be the flowers: but an examination, after infusion, will clearly show its origin. The first picking takes place in June, the second in July, and the third in August."

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BLACK TEA.

4350. *We may add*, that Kæmpfer's figure of the Japanese Tea plant, which is evidently the plant in general culture in that empire, is the Thea Bohea, not the T. viridis.

4351. *The native country* of both the species, is, probably, various parts of China; and the cultivation seems to be confined to the Temperate Zone, extending to the northern provinces of the Empire, and as far as lat. 45° N. in Japan. But the Tea districts, properly so called, are thus stated by Dr. Abel: — that of the Green Tea is in the province of Kiang-nan, between 29° and 31° N. lat., at the north-western base of a ridge of mountains, which divides the provinces of Tcho-kiang and Kiang-nan: the Black tea district, in the province of Fo-kien, is contained within lat. 27° and 28° N., and is situated on the south-eastern declivities of a ridge of mountains dividing the province of Fo-kien from that of Kiang-si.

4352. *The different kinds of tea of commerce*, as known to us in Europe, are not very numerous: but the Baron de Schilling has given the names of thirty-six sorts, copied from a Chinese MS. in his possession. Some of the appellations are very curious. The Black or Bohea Teas, if we may judge from their names, are most esteemed; such as Lao-kiun-mei, or "*venerable old man's eyebrows;*" Pekao, "*white hairs*," "*palm of the immortals*," &c. The leaves of some kinds are used to dye stuffs black, others of a golden colour. All the different sorts of tea may be distinguished, by the experienced merchant, merely by the taste. The situation of assayer of teas at Canton requires this sort of faculty: and the individual who holds it enjoys a salary of 1000*l.* per annum for tasting teas only!

4353. *The quantity of tea* produced in China must be enormous; for, with the exception of Japan, it has not been found practicable, though often attempted in Brazil and elsewhere (and mainly on account of the higher price of labour), to cultivate it to advantage any where but in China Proper: and there the Tea plant is spread, and not very thinly spread, over a square area of 1,372,450 square miles. It is now a common beverage throughout the whole civilised world. Its use in China reaches to a very high antiquity. An Indian prince, according to the Japanese, a holy and religious character, of the name of Darma, visited China, about the year 516 of the Christian era, with a view to instruct the natives in the duties of religion. He led a life of great abstinence, and denied all manner of rest or relaxation to his body; but he was at length so weary of his fatigues and fasting, that he fell asleep. As a penance for so great a dereliction from duty, he cut off both his own eyebrows, the instruments and ministers of his crime, and threw them upon the ground: each eyebrow became a shrub, and that shrub the one now called Tea; whose virtues were, till then, as unknown to the world as the plant itself. Darma quickly discovered the agreeable properties of the foliage, which endowed his mind with fresh powers to pursue his divine meditations. Having recommended the use of it to his disciples, it soon became general in China, and has now extended to the remotest regions of the earth: while the individual who first discovered its qualities is held in remembrance by a rude figure, in Chinese and Japanese drawings, of an old man standing upon water, with a reed under his feet, and one of his eyebrows sprouting out into a tea leaf.

4354. *Linschot is said to be the first traveller* who tells of an herb with which the Japanese prepare a drink, and which they offer to their guests as a mark of high consideration. Caspar Bauhin speaks of it, in his *Pinax*, under the name of *Cha*. It was very early in the 17th century that tea first became known in Europe; and we are assured that the Dutch at first carried on a trade, by recommending the Sage of this country, which they gave in exchange for Tea of China. The use of the former soon ceased; while that of the latter daily increased among us. Little more than a century ago, according to Lord Macartney, the English East India Company did not sell more than 50,000 lbs. of tea, and very little was smuggled. In 1784, the consumption of Great Britain was estimated at 1,333,814 lbs.: now, that of Great Britain and Ireland, exclusive of the dependencies, amounts to more than 28,000,000 lbs.

4355. *Lords Arlington and Ossory* brought home a quantity of tea from Holland, about the year 1666, at which time it was sold for 60*s.* per lb. But the practice of tea-drinking, even in public coffee-houses, was not uncommon in England prior to that period; for, in 1660, a duty of 8*d.* per gallon was laid on the liquor made and sold in all coffee-houses.

4356. *In the sister country of Scotland*, a century more elapsed before tea was generally known. It has been stated, and, we believe, on the authority of Sir Walter Scott, as proving how long a time had passed before tea came into common use in his native land, that people are yet living who recollect how the Lady Pumphraston, to whom a *pound of fine green tea* had been sent as a rare and valuable present, boiled the same, and served it up with melted butter, as condiment to a salted rump of beef, and complained that no cooking she could contrive "would make these *foreign greens* tender!"

4357. *America carries on a vast trade* in this article: but Russia is stated to rank next to Great Britain, inasmuch as 25,200,000 lbs. of tea are yearly imported and consumed by the Russians. Their trade with the "celestial empire," as may be conjectured by the proximity of their territories, is by land: and it is said, that, in consequence of it, the tea is of a superior quality to that which has been subjected to a long voyage. It is sent from Russia to Germany, where it fetches a high price, under the name of Caravan Tea. But, in Russia, a peculiar kind of tea, not known in other parts of Europe (and, indeed, in Russia its consumption is confined to the Asiatic territories), is Brick Tea; a term frequently made use of in the interesting travels of Ledebour in the Altaïc Mountains, and which has lately been explained to us, and a specimen shown us, by the Reverend William Swan, an intelligent missionary, who has resided for ten years at Selinginsk, in Asiatic Russia, where Brick Tea is in very general use among the Mongolian tribes and Bouriats. It is produced at Fo-kien, and consists of old or coarse damaged leaves and stalks pressed into moulds and dried in the oven. Of this a small quantity is taken, pounded in a mortar, and infused for a long time in boiling water before the infusion is ready; which, however, is too bad for the

Chinese taste. The people above mentioned generally add to it a little salt and milk, and sometimes flour, fried in oil.

4358. *Linnæus had the honour of introducing* this interesting and valuable plant alive to Europe: but not till he had experienced many disappointments. The seeds would never bear the voyage; for, like all oily seeds, they turned rancid in a short time. His pupil Osbeck brought a living plant as far as the Cape of Good Hope, where it was washed overboard during a storm. Lagerstrœm conveyed two shrubs, for the true tea, to Upsal: but they turned out to be Camellias, which the Chinese call by the same name; not distinguishing it (any more than some able European botanists) generically from Thea. Some time after, one reached the harbour of Göttenburg in good health: but, the evening before landing, the captain set the plant on the table of his cabin, where it was eaten by rats. At length, Linnæus advised Captain Elsberg to sow the fresh seeds in pots of earth at the moment of his departure from China; so that they might vegetate after passing the line; and the growing plants were thus brought in safety to Göttenburg on the 3d October, 1763, and transported to the botanic garden of Upsal.

Subsect. 3. *Zoology.*

4359. *The native Zoology* of China is as little known as its internal geography; nor do we ever recollect to have seen or heard of preserved animals having been sent from this part of Asia. The vague accounts of the old travellers cannot be much relied upon. Excessive population has no doubt extirpated or driven away the native quadrupeds of any considerable size, nor can many birds be expected in a country where every acre of ground is sedulously cultivated. These remarks, of course, apply only to those provinces which form the heart of the empire while, of the rest we are in complete ignorance.

4360. *Of the Ornithology,* some notion may be formed from the numerous drawings of birds, now in Europe, executed by native artists, and from a few gleanings made from other sources. The Pheasants of the interior are magnificent birds, and no less than four species appear as natives of the northern provinces bordering towards Central Asia. Three of these, namely, the Ring, the Golden or Painted (*fig.* 653.), and the Pencilled Pheasants, have been long domesticated; and, from their great beauty, are the chief ornaments of our aviaries; but the Superb Pheasant (P. superbus) is only known from drawings, and from its beautiful tail feathers, which occasionally are sent to Europe as curiosities.

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GOLDEN PHEASANT.

4361. *The Fish,* delineated by the natives, exhibit a great variety; and from China we have derived the gold and silver fish of our ponds.

4362. *The Insects* are numerous and splendid. The common sorts are put into little deal boxes, well preserved, and sold to Europeans at the factories. The Chinese Lantern Fly emits a strong phosphoric light from its long trunk-like snout. The Bombyx Atlas *F.* is one of the largest moths in the world, measuring full eight inches from one tip of the wings to the other.

4363. *The White Wax Insect* (*fig.* 65. *a*) deserves a more particular notice, as producing an important necessary of life. The perfect insect (*b*) has been named by Fabricius *Cicada limbata*, but it is the larva which furnishes the substance itself. Sir George Staunton mentions them as insects not much exceeding the size of a fly, having very curious pectinated appendages, rising in a curve, and bending towards the head; the whole insect being covered with a white powder: this powdery substance is imparted to the stems of the plants, upon which these insects are found in thick clusters; it is then collected by the natives; hot vegetable oil is then applied, and the whole, when cold, coagulates, and becomes as firm as bees' wax. As a medicinal drug it is in high estimation throughout China, and, when made into candles, is reckoned superior, for that purpose, to bees' wax.

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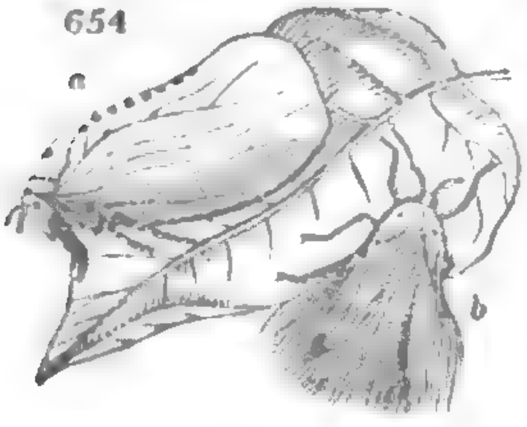

WHITE WAX INSECT.

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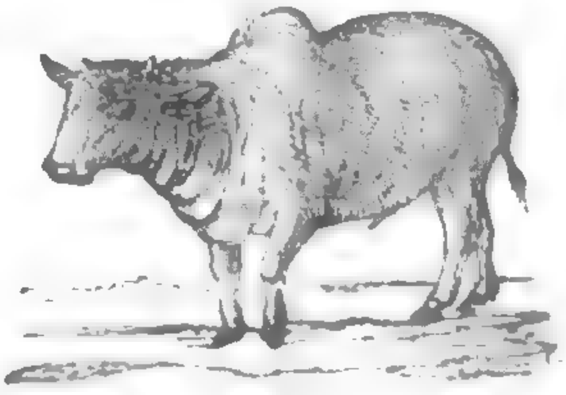

WHITE OX.

4364. *The Silkworm,* now cultivated in southern Europe, is said to have come originally from China, and there appears to be other species capable of producing silk coccoons of nearly equal value. The singularity of this people is likewise apparent in their fondness for beautiful insects: little cages with living specimens of shining and splendid beetles (*Buprestides*), and of chirping Cicadas, being exposed in the markets, and hung in the drawing-rooms, for the amusement of the wealthy.

4365. *The Domestic Animals* are better known than the wild ones. The Chinese Oxen are of the humped kid, and appear to be of two breeds. One is equal to the smaller British race, with very short horns, bent back, and the colour of the hide frequently white (*fig.* 655.). The other, or dwarf Zebu, is so wonderfully small as not to exceed the size of a hog: it is commonly greyish white, with or without very little horns. The Pigs, also, are proverbially small.

Sect. III. *Historical Geography.*

4366. *No country has experienced fewer revolutions than China*, or has sustained so little change from those to which it has been actually subjected. The brief notices of the Roman historians, in the first centuries, represent the Chinese to have been precisely such a people as they now are, — quiet, peaceable, industrious; and to have had, even at this early period, silk, and perhaps tea, for their staple productions. The Chinese, indeed, possess a much more complete and connected series of annals than any other nation of Asia. Some of these, indeed, are manifestly fabulous, ascending to a period of 49,000 years. The Shoo-king, however, the first strictly official portion, begins only at the credible date of 3000 years before Christ. At that time, the country is represented to have been in a state of almost complete barbarism, and the invention, first of the necessary and then of the ornamental arts, is ascribed, in these regal documents, to successive early kings of China. It appears, however, that, about five centuries before the Christian era, China was divided among a number of petty princes, who acknowledged in the emperor little more than a feudal supremacy. About this time arose Confucius, whose master mind, improving, probably, on the ideas of his predecessors, established those principles of law, manners, and government which have since predominated in China. A series of struggles continued during many ages. These being at length suppressed, a complete despotism, tempered, indeed, by institutions and customs calculated to give it a mild and protecting character, was established. Thus situated, the nation lost its military energy, and became an easy prey to those barbarous neighbours who roam over the high table-lands of central Asia. But China has civilised her invaders; and the manners and institutions of the empire have survived the shocks of successive conquest. The most perilous was that made in the thirteenth century by Zingis Khan, a ferocious chief, who committed destructive ravages, and even formed the dreadful design of converting all China into a pasture-field; but this project was happily renounced. His successors made it their study to maintain, restore, and reform the abuses of the Chinese institutions. They were supplanted by a native Chinese dynasty, bearing the appellation of Ming; but in the commencement of the seventeenth century the Mandshur Tartars, from the northern side of the Great Wall, again overran the empire, which, however, they appear, from the first, to have governed mildly, and according to its ancient laws and institutions. This dynasty has greatly extended the foreign dominion of China. Retaining and enlarging their northern possessions, they have extended their empire so as to be in contact with that of Russia, for the space of sixty degrees of longitude. They have added to it all Western Tartary, to Cashgar, inclusive; and, within the last thirty years, Thibet, formerly a sacred and independent territory, has been compelled to own their sway.

Sect. IV. *Political Geography.*

4367. *There is not, and perhaps never was*, on the face of the earth, a government more purely and entirely *despotic* than the Chinese. No power, honour, or distinction exists, except that which centres in, and emanates from, the sovereign. In every other country, even of Asia, there are some hereditary offices; some descendants of ancient princes; above all, some classes elevated, as it were, to a higher scale of social existence than the rest; by all which means, strong and permanent lines of demarcation are drawn between the different portions of the community. In China, no distinctions are owned between man and man, except those conferred by office; and to these, the highest and the lowest are permitted equally to aspire. This supreme power of the monarch is claimed for him as the representative of Deity on earth, and the *sole* representative; for the Chinese, proud of the extent and populousness of their own empire, and very ignorant of all beyond it, are easily persuaded that the world does not contain a nation which is not subject or tributary to the "son of heaven." One God in heaven, and on earth only one *Ta-whang-te*, is the fundamental principle of their administration. When any mission or embassy arrives from a foreign court, the people are told that it is for the sole purpose of conveying tribute and homage to the celestial emperor. The individuals composing Lord Macartney's mission were not a little disconcerted by seeing a placard to this effect affixed to the barge in which they were conveyed up the Peiho; though, on reflection, they judged it inexpedient to notice the circumstance. The relation of a parent to his children is another image under which the supreme power of the Chinese monarch is represented. Corresponding with this, the parental authority is uniformly held forth as entirely paramount. A parent may sell his children for slaves; and if he kill them, he incurs only a moderate penalty; but if a child addresses even abusive language to his father or grandfather, he is liable to be put to death.

4368. Although, however, *the despotism of China* be thus entirely raised above any direct and positive check, it is yet in practice *the most mild* and protecting of any that exists. The monarch is held within a circle of laws, institutions, and ideas, by transgressing which, he would lose the very basis on which his authority rests. The doctrine, that he is the son and vicegerent of Deity implies that he will use this high descent and power in securing prosperity to the nation over whom he thus holds a higher than earthly sway; and this is so fully recognised, that, even when his people are suffering under evils of nature, famine, earthquake, or inundation, he takes the blame, humbles himself, fasts, and strips himself of his costly attire, as a penitent under whose sins his people are groaning. The paternal character equally implies an anxious concern for the welfare of his people, who, amid the veneration with which they view these relations, are not forgetful of the accompanying obligations, or indisposed to revolt when they suffer severely from the non-observance of them. All prudent emperors, therefore, are at considerable pains to impress the idea that they govern consistently with their lofty pretensions. Above all, usage from time immemorial has established a certain regular system of administration peculiar to China, and which the most barbarous conquerors, after the first licence of victory was over, have found it wise to sanction and support.

4369. *In this system*, the fundamental, and, certainly, highly laudable maxim, has been, to make *knowledge the sole ground of official rank and public employment*. The examinations for this purpose are conducted with the greatest apparent impartiality, and, as seems to be generally believed, with much real fairness. Strict precautions are adopted for this purpose; such as, that every piece of composition that is to be judged, must be given in sealed and anonymous. There are three degrees, which the missionaries, in lieu of the uncouth Chinese appellations, designate by the European titles of bachelor, licentiate, and doctor. The first seems to be merely preparatory; the second qualifies the successful candidate to enter into the class of mandarins, in which is vested the whole administration of China. The mandarins are divided into nine degrees, rising from the lowest, who are collectors of the revenue, to the highest, who are viceroys and governors of provinces. As usual with the officers of an absolute government, each mandarin exercises within his sphere an authority as uncontrolled as that of the head of the state. His duty is not only to govern the people, but also to preach to them; and much importance is attached to the due exercise of this function. The tenour of the official prelections turns chiefly upon industry, peace, order, and respect to parents, the favourite Chinese virtues; and especial stress is laid upon their duties as faithful subjects and as payers of taxes. A portion of the mandarins are employed in carrying on those examinations according to which the several dignities are bestowed. Those for the lowest degree are conducted by a special class migrating for that purpose from place to place. The second degree must be the result of an examination in the capital city of the province, and under the eye of the governor. The highest rank of *tsintsé*, here translated doctor, must be the result of a triennial examination at Pekin. It is considered necessary for all high and independent command, even for the governor of a city of the second or third rank. A few doctors, under the appellation of *han-lin*, obtain superior distinction and respect. According to an established regulation, each individual who attains any of the prescribed ranks in literature is promoted, according to seniority, and as vacancies occur, to the corresponding places in the government; and, though there appear to be many instances of favour, fraud, and even bribery, the general practice is conformable to this rule. Various and strict regulations are also made, to restrain each mandarin within the limits of his duty. No one receives office in his native province, or even in the adjoining one; and the same functionary is rarely continued in the same place more than three years. A triennial survey is performed, and reports are made by the higher officers on the conduct of their inferiors. All these precautions are not, it is supposed, sufficient to guard against much corruption and misgovernment; which, in so extensive a system, may be readily believed, not only from the unfortunate propensity of human nature to abuse power, but from the degraded character which despotism naturally produces in its agents. Yet, that a system which maintains by much the greatest mass of population any where united under one government in a state of uninterrupted industry, order, and well-being, should be radically bad and corrupt, seems a very rash and hasty conclusion.

4370. *The laws* of China have been compiled not with any large or statesman-like views, but with a minute and elaborate care to lay down the various descriptions of offence, and apportion to each a suitable punishment. The cane is the grand instrument of government; and all China has been compared to a school, kept in awe by the rod of a master. For its application, the law specifies two distinct dimensions of length and thickness, and more pointedly fixes the number of blows to be inflicted on the offender. For crimes of a deeper dye than those which the cane can chastise, banishment in different degrees is inflicted; and for those still more flagrant, death is awarded. Mercy, however, may be, and is exercised by commuting punishments of every *grade* with different sums, according to a schedule, which the law carefully fixes. The Chinese have not improved so far in legislation as to abolish the barbarous practice of endeavouring to extract confession by torture, and that of visiting the crime of the guilty upon his innocent family. The objects of punishment are, generally speaking, reasonable, and resemble those of other civilised nations; but there is an attempt minutely to detail the various shades of guilt, and to fix a degree of punishment corresponding to each, which is vain, and even ridiculous. This detail is peculiarly copious in cases of bribery and corruption, the extensive prevalence of which is thus proved, and at the same time is probably very imperfectly guarded against. The Chinese laws have also the infirmity common to some early codes, of interfering in concerns beyond their province; such as forms, ceremonies, dress, and little transactions beneath the notice of a legislator. The manner in which an inferior bows to, or salutes his superior; the terms of the card written to him; the mode in which it is to be folded; the ceremonial of visiting, are all fixed by statute. Whether a Chinese sits down or rises up; whether he receives company at home or walks abroad, there is a rule fixed; and the cane is always at hand to punish its violation.

4371. *Upon the whole, the police is vigilant and effective;* and the laws are certainly not sanguinary; since in 1784, the entire number of persons condemned to death is stated by Amiot at 1384, a number deemed unusually large; yet, at a moderate estimate of the total population, it would not be more than one in 108,000.

4372. *The revenue* of China is derived chiefly from the land tax, or rather rent; for the sovereign, as in other Asiatic despotisms, is held to be the general proprietor. According to the usual Oriental scale, one tenth of the produce is levied. There is no lease, but ejection is not usual. The inferior kinds of grain are exempted. The produce is paid chiefly in kind, and is conveyed to Pekin in the imperial barges (*fig.* 656.) through the canals and rivers. The tax on salt is also very heavy, and its produce reckoned at about a fourth of the land tax; and another fourth is supposed to be constituted by the duties on imports and exports, the transit duties from province to province, and a variety of minor sources. Of the manufactured as well as the landed produce, a portion is paid in kind into the treasury. The only estimate of its amount hitherto formed in Europe is derived from a Chinese Encyclopædia, where it is rated at 12,000,000*l.* sterling, which in Britain might be reckoned equal in value to four times that sum. With such an impost, China would not appear at all heavily taxed according to its population; but there is a question, whether this includes the taxes levied in kind, and if it does not, the heaviest of the Chinese burdens would not be included.

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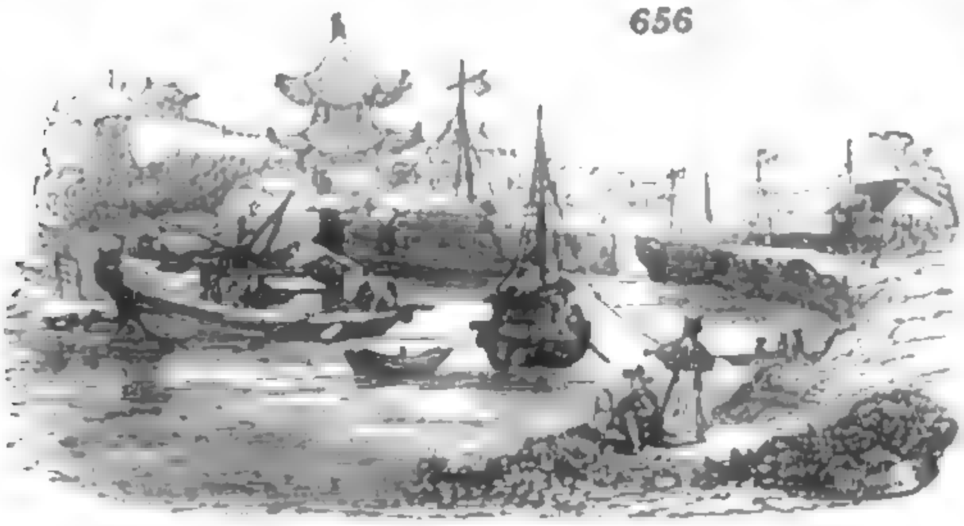

CHINA BARGES.

4373. *The military force* of China has been represented, in regard to numbers, at least, as very imposing: it has every been made to amount to millions. Grosier and Van Braam, however, seem to agree in fixing the actual number at about 800,000. The greater part are a mere militia, in which the population, when called upon, are liable to serve. Their appearance (*fig.* 657.) and habits are most unmilitary, and they are scarcely called out unless for purposes of police; to pursue robbers, and pass muster on state occasions. Their paper helmets, wadded

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CHINESE MILITARY.

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gowns, quilted petticoats, and clumsy satin boots, exhibit nothing of the aspect of war. The Dutch ambassadors remark, that the emperor does not, like other Asiatic princes, surround himself with guards, or maintain, even in the capital, a body of troops for the support of the throne. Nothing more was observed at Pekin than small piquets at the gates and principal stations. The most really effective corps is that of the Tartars, consisting of light cavalry, who fight with the bow. Mr. Barrow, however, does not doubt that 20,000 disciplined European troops might march from Pekin to Canton, without meeting any serious resistance. It appears from ancient records that the Chinese and Tartars made use not only of gunpowder, but even of something resembling cannon; but artillery does not at present constitute any part of the effective force of the empire.

4374. *The Chinese government* have, as already observed, very *numerous barges*, for the conveyance of tribute, and other accommodations; also a few armed vessels to suppress smuggling and piracy; but nothing which can called a *navy*. An English frigate would beat the whole of their maritime force.

Sect. V. *Productive Industry.*

4375. *No nation is so famed for industry*, in all the arts that minister to human subsistence. The lands, in particular, which are at all capable of culture, are tilled with a minute care, without example among any other people. The peculiar importance attached to agriculture is testified by an annual festival, in which the emperor exhibits himself to his subjects guiding the plough. It is not, however, supported by any large application of skill, science, or capital. The Chinese carry on farming on a small scale, with rude instruments, and almost no cattle. Their chief exertions are employed in irrigating their fields; and by the aid of the chain pump, they draw water out of their numerous rivers and canals, and inundate the crops of rice as soon as they are sown. This is done twice a year, and two crops are in general raised annually, without intermission or rotation. The highest mountains are formed into terraces, so constructed as to retain the requisite quantity of water, and allow what is superfluous to pass; and reservoirs are formed on the summits. The Chinese steep the seed-corn in liquid manure, and use the drill husbandry in order to avoid the waste of seed in broadcast; and the crop, when reaped, is placed on bamboo frames, and carried home on men's shoulders. Great care is also taken in transporting soils, and tempering them by mixture with those of an opposite character, as sand with a thick and adhesive clay, and marl with soils that are too light. But the Chinese are, above all, noted for their expedients in collecting manure, which, from the small number of cattle employed, is an object of great scarcity. Substances are appropriated to this purpose which are never thought of elsewhere. The urine of men and animals is most sedulously collected; to which is added human hair, all sorts of decayed herbs, with every offal and refuse which the strictest scrutiny can discover in the corners of streets and cities. As this manure, however, is little required on the inundated lands, it is in a great measure employed in raising culinary vegetables, particularly a species of brassica, called *petsai*, or white herb, which forms a favourite article of food with the Chinese.

4376. A grand and peculiar object of Chinese industry is the *tea plant*. It flourishes on the hills of southern China, chiefly between the tropic and the latitude of 30°. It is a bushy shrub, somewhat resembling the rose or myrtle tree, and which shoots leafy branches almost from the bottom of the trunk. The plants occur wild; but when cultivated, they are set in rows, four feet from each other, and, for the convenience of collecting the leaves, are artificially prevented from rising beyond a certain height. Whether the green and black teas be the produce of different species of plants, is a question discussed by Dr. Hooker, in the section on Chinese botany. The black teas grow chiefly in Fokien, and part of Canton; the green in the more southerly districts of Kiang-nan, Kiang-si, and Tche-kiang. They are raised in elevated and hilly districts, and generally in small compartments, like gardens. The earlier the leaves are plucked they are the more valuable and highly flavoured, though, of course, the produce is smaller. In black tea, a few leaf-buds plucked early in the spring constitute pekoe. The successive later pluckings form the congou, souchong, and, lastly, bohea. Green tea is similarly divided into gunpowder, imperial, hyson, and twankay. The leaves are rolled into the usual form by being passed through the fingers of a female, and then dried on thin earthen and iron plates over a charcoal fire. The merchants arrive at the end of harvest, give it a second drying, separate the different qualities, and, after packing it in large chests, convey it to Canton.

4377. Among other important agricultural products is the *sugar cane*, which appears to be taller and more juicy than that of the West Indies; but, as it is cultivated on the same small scale as all other articles, single proprietors cannot bear the expense of a mill on their grounds. The cane is boiled, and its juice expressed by migratory dealers, who bring machinery of a character very inferior to that used in our plantations, yet sufficient for its purpose. *Mulberry trees* are necessary for the production of silk, the staple manufacture of the empire. These trees, which do not appear to differ from those of Europe, are reared with the greatest care, in rows ten or twelve feet asunder, and on beds of a moist loamy earth. They are frequently pruned or dwarfed, in order to make them produce young shoots with tender leaves, which are supposed to be much more nutritious than those upon older branches. The insects are nursed in small houses erected in the heart of the plantations, in order to be removed from all noise; for the Chinese have an idea that they will be injured even by the barking of a dog. After the silk is wound off, the aurelias become an article of food. That no ground may be lost, the intervals between the trees are planted with rice. Cotton is raised in the middle provinces in large quantities, yet still not sufficient to dispense with importation from Bombay. Tobacco is largely grown and consumed; and we may also mention camphor, ginseng, and a variety of leguminous plants.

4378. *As a manufacturing people*, the Chinese are also eminent. The fabric of porcelain, so superior in beauty to every other species of earthenware, originated entirely with them; and, though the taste of their imitators in Europe has produced more elegant patterns, they are still unrivalled as to its whiteness, hardness, and the transparency of the colours; the materials of which they possess a peculiar art in extracting from a vast variety of animal, vegetable, and mineral substances. Silk also is a fabric which the western world has learned from the Chinese; and the silks of China are still unequalled as to richness, though in Europe they are considered too heavy; and those of France and Italy are preferred. That light and elegant cotton stuff which we call *nankeen*, derives its name from the great Chinese city where it is manufactured, and the cotton which grows in the neighbouring province is said to have naturally the yellow colour peculiar to it; but Mr. Barrow informs us, that this colour is not worn by the Chinese themselves, and that blue, black, and brown, are preferred by them. The Chinese ornamented papers, so much admired in Europe, it is unnecessary to describe. Their lacquered ware would be highly distinguished, were it not here eclipsed by that of their Japanese neighbours. A number, however, of little ornamented trinkets and toys are made with the simplest instruments, and by the hands of single individuals; yet with a beauty which we in vain attempt to rival. Such are their ivory fans and baskets; their ornaments of tortoise shell and mother of pearl; their silver filigree and lackered cabinets, chests, &c. Their paper and printing are both good, and their ink, for some purposes, superior to the European.

4379. *Trade* must be considerable in a country so extensive, and abounding with so many valuable commodities; yet it has the peculiarity of being almost wholly *internal*. China supplies within itself nearly all the commodities which minister either to the use or the pleasure of her inhabitants. Her foreign trade is permitted only at two points, and under the narrowest restrictions; and though it be considerable to the nations with which it is carried on, by China herself it is scarcely felt as a national object. Another great commercial want in China is that of a monied interest. Capital is so scarce, and so little feeling of security exists, that money is lent only on pawn; and, in that case, government restricts the interest to three per cent. per month, above which rate, of course, it must have a tendency to rise. Such a deficiency, in a country so wealthy and a people so industrious, seems to imply in this boasted administration some radical defect, some want of protection for all fortunes that rise above the humblest mediocrity. There is no system of credit established between the merchants of distant provinces, no bills of exchange; no circulating medium except a copper coin of the value of the third of a farthing. In this respect China yields greatly to India, which, amid all its political agitations, has formed a great monied and banking interest, comprising some individuals of immense fortune.

4380. *The commerce of China* is thus chiefly confined to the operation of *bartering* the productions of its different provinces; and these are sufficiently various to afford room for a very extensive traffic. The most ample facilities are afforded by the great *rivers* and their numerous tributaries, and also by the *canals*, which are constructed on a greater scale than in any other country. One of the great objects is the conveyance to the capital of the imperial land-rent, which is paid in kind, and consists chiefly of rice. Van Braam was told, that the barges engaged in the conveyance of it amounted to 9999, which, with the Chinese, is an even number, and that there were 200,000 sailors employed, who worked much more at their ease than the rest of the nation. Salt is a most extensive article. The British embassy found, at Tiensing, piles of that commodity, which they calculated at 600,000,000 pounds. It had been brought from the southern coasts of Fokien and Tche-kiang, where it had been evaporated by the heat of the sun, for the consumption of Pechelee and the northern provinces. The conveyance of coal, turf, and other fuel, affords also occupation to numerous barges. The distribution throughout China of the silks, porcelain, and other fine manufactures of the central provinces, affords another source no less ample.

4381. *Of the foreign commerce* of China the European part is the most considerable, and is chiefly in the hands of the English, being conducted by their East India Company, to the exclusion of private traders. They maintain a factory, in which are employed twelve supercargoes and twelve writers, with some subordinate officers. The first two classes rise by seniority and the three senior supercargoes, called "the Select Committee," have the supreme direction both of trade and political transactions. The charges, in 1816–17, amounted to 166,362*l.*, but were reduced, in 1828–9, to 138,526*l.* Their transactions are carried on entirely with the *hong* merchants, who are required to give security to government for the payment of the import and export duties on the cargo of every ship that arrives in any Chinese port, and for the good conduct of the crew. There are, however, others, called "outside merchants," many of whom, under sanction of the *hong*, carry on traffic to a great extent. Tea has been almost the exclusive article of import by the Company since 1824–5, previous to which, they used to introduce a considerable quantity of raw silk. In 1828–9, the import consisted of 28,617,280 lbs., of which 4,198,964 were bohea; 16,951,171 congou; 507,881 campoi; 183,493 souchong; 5,471,633 twankay; 154,767 hyson-skin; 1,149,371 hyson. There were, besides, 1,229,954 exported to the British North American colonies. The invoice value amounted, in 1828–9, to 1,981,419*l.* The exports by the Company consist chiefly of woollens, the amount of which has fallen from 832,160*l.* in 1813–14, to 459,553*l.* in 1828–9. The other articles consist of cottons, glass, iron, lead, which have fallen in the same period from 163,209*l.* to 124,098*l.* The question of throwing open this trade will soon become a subject of parliamentary discussion. The advocates of free intercourse urge, that, by economy of freight and management, tea could be delivered in London at one third less than it is sold by the Company; that other valuable articles would be imported; that extensive openings would be made for the introduction of British manufactures; and even a valuable contraband traffic carried on with other ports besides Canton. The Chinese, in fact, a people always intent on gain, seem only restrained by the jealous restrictions of their government from embarking with the utmost readiness in commercial transactions. The Dutch rank next to the English in the Chinese trade, but much inferior to them. Though the Portuguese possess the island of Macao, and the Spaniards from the Philippines have access to the port of Amoy, they make little use of these advantages. The French, Swedes, and Danes all carry on a little intercourse with Canton.

4382. *The trade to China from India*, where it is called the country trade, is almost entirely free, and has been carried to a great extent. It is chiefly with Bombay, which sends to it cotton, and the fine opium of Malwa; while from Calcutta it receives the inferior opium of Patna and Benares. The import of this article into China has increased surprisingly, from a value of 590,000*l.* in 1817–18, to 2,248,000*l.* in 1827–8. It has grown also in the face of the most rigorous prohibition, and by trade entirely contraband. This is carried on in the bay of Linting, with perfect security, by means of very slight precautions. Cotton, which used to be the largest article, fell during the above period from 1,310,000*l.* to 696,000*l.* Tin, pepper, betel-nut, and some other articles, raised the exports from India to China, in 1828–9, to 3,169,000*l.*

4383. *The American trade with China* has also, within the last thirty years, risen to very considerable importance. Commencing nearly with the century, it advanced till, in 1818–19, the imports and exports together exceeded 4,000,000*l.* sterling. Since that time it has rather been retrograde: indeed, in 1826–7, the amount had fallen to under 2,000,000*l.*; but in the following year increased fifty per cent. The Americans import from China tea to the extent of 10,000,000 or 12,000,000 pounds, nankeens, silks, and other minor articles; and give, in return, furs, chiefly from the north-west coast of America, Turkish opium, ginseng, woollens and cottons of English manufacture, and a balance in bullion.

4384. *The foreign trade of China* in her own bottoms, though bearing no proportion to the wealth and greatness of the empire, is not altogether inconsiderable. It is carried on in large unwieldy junks, whose structure can never be improved, as the slightest deviation from their present clumsy structure would subject the owners to the high duties imposed on foreign merchants. The viceroy of the provinces fixes the number of junks that shall sail to each particular country, and the species of cargo which they shall carry Mr. Crawfurd reckons that there sail annually to Japan ten junks, making two voyages; thirteen to the Philippines; four to the Sooloo isles; thirteen, Borneo; two, Celebes; seven, Java; ten, Sumatra; nine, Sincapore; six, Malacca; eighty-nine, Siam; twenty, Cochin-China; nine, Cambodia; twenty, Tonquin: in all, 212; which, with a number of smaller ones, make the tonnage of the celestial empire about 8000. These vessels are partly built and owned in foreign countries, but by Chinese natives. They have numerous owners, each of which has a compartment divided by strong planks from the rest of the vessel. In return for the staples of China, they receive gold, tin, and the gelatinous substances called sea-slug, and a peculiar species of birds' nests, which, when made into soup, are reckoned peculiarly delicate and nutritious.

4385. *The fishery* that exists in China is inconsiderable in a national or commercial point of view; but, as the means of individual subsistence, no nation carries it to such an extent. All the lakes, broad rivers, and sheltered bays of China are covered with floating cities, the crowded population of which have no home but on the water. Staunton and Barrow suppose that the waters of China are as densely peopled as the land, and that they sustain a floating population equal to that of the whole British empire. Chinese invention has discovered modes of ensnaring the finny tribes quite peculiar to itself. One most singular resource consists in the employment of the fishing bird, a species of cormorant, which dives into the water, seizes the fishes with a long bill, and brings them to its master, accepting in recompense such portion as he chooses to bestow. Others fasten to the side of the vessel a board painted white, which, by moonlight, has the appearance of glittering waves, and attracts the unwary tenant of the stream. Many, also, of the owners of these watery mansions keep large flocks of ducks, which go out and return, obedient to a signal. In some of the still waters are to be seen floating islands, composed of broad rafts on which houses are built, and some parts are even laid over with earth, and crops raised upon them.

4386. *In public works,* undertaken for purposes of utility, China stands without a rival. Ancient Egypt, indeed, exhibits monuments of equal labour; but these were mere displays of vain and superstitious pomp, and cannot come in competition with those canals which form the foundation of the prosperity of China. The labour and ingenuity are the greater, as they are seconded by little science; for the Chinese are unacquainted with the construction of locks, or other means by which a stationary supply of water can be ensured. Their canals are merely artificial rivers, formed by changing the direction of those constructed by nature. By that called, emphatically, the Great Canal, an uninterrupted communication of 500 miles is maintained between the Peiho, or river of Pekin, and the great central stream of the Yang-tse-kiang. A considerable river is arrested as it flows over the high land of Shantang, and the divided stream, turned into opposite directions, forms the basis of this great watercourse. In connection with the rivers, this canal completes, with only one short interruption, a line of 1000 miles of navigation from Pekin to Canton. On the other hand, the roads are narrow, and unsuited to vehicles of any magnitude; there being little ground to spare, and cattle being equally scarce. The only mode of travelling in state is in palanquins, which, as well as the baggage, are conveyed on the backs of coolies or porters, 1000 of whom, at a period when the Great Canal was frozen, were employed in carrying to Pekin the presents of the Dutch ambassadors. Ordinary goods are conveyed by double barrows, forming a small cart, the movements of which are produced, when wind favours, by the use of sails similar to those of a boat. The narratives of the late embassy occasionally mention the passage of whole *fleets* of wheelbarrows. This practice is noticed by the old travellers, and, on their testimony, by Milton, in his allusion to

> "Sericana, where Chineses drive
> With sails and wind their cany waggons light."

4387. Among the mighty works of China, may here be mentioned *the Great Wall,* though it was constructed entirely with a military object. Perhaps it is unrivalled among the productions of human labour. The wonder is not merely in the continuity of the rampart for upwards of 1000 miles, but in the difficulties which have been surmounted in carrying it over so rugged and mountainous a country. One elevation, near the place where the British embassy passed, was calculated at upwards of 5000 feet. It was seen, however, extending along the ridges of hills, over the tops of the highest mountains, crossing the deepest valleys, continued upon arches over rivers, and doubled or trebled in many parts, to take in important passes (*fig.* 658.). Its usual height is thirty feet, though a smaller and even half that elevation suffices where it is carried along declivities. The top is paved, and so broad that a carriage can drive along it. Square towers, sometimes forty feet high, are erected at very short distances. Mr. Barrow observes, however, that this huge work implies no display of skill, either in architecture or military defence. It is merely a mound of earth heaped together, and faced with brick or stone, similar to the walls with which all the cities of the Chinese are surrounded. Their history describes it as completed in the third century, but without mentioning the period of time employed in its construction. As a defence against invasion, on a great scale, such barriers have always been found nugatory; but this was probably useful in repelling the predatory inroads of those little wandering tribes who filled a great part of the surrounding deserts. Since the Tartar conquest, which incorporated them all into the Chinese empire, its use is no longer felt, and by the Chinese themselves it is now little regarded.

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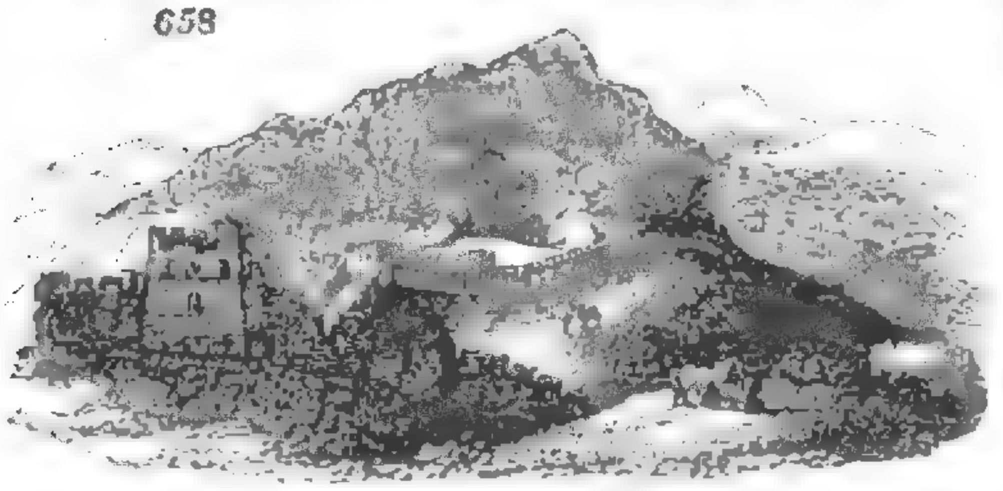

PART OF THE GREAT WALL OF CHINA.

Sect. VI. *Civil and Social State.*

4388. *One of the most remarkable features of China* is its *population*, which is certainly much the greatest that is in any part of the world united under one social and political system. It is, however, a subject which has afforded no inconsiderable scope for doubt and controversy. Lord Macartney's famous number of 333,000,000, though stated to him on official authority, which he considered respectable, is now discredited. On the other hand, some old enumerations, which make the amount only 50,000,000 or 60,000,000, are confessedly imperfect. One of the best authorities is that of the *Yetungshe*, a sort of encyclopædia, which rates the number of families paying taxes at 28,514,488; which, at five to a family, would give an entire population of 142,000,000. An addition being made, including the privileged classes, those living on the water, and others variously exempted, may raise the total to upwards of 150,000,000. This agrees pretty closely with an enumeration communicated by Dr. Morrison, as made by the present emperor, which amounted to from 145,000,000 to 146,000,000 *mouths*. On the other hand, statements reported by Father Allerstein in 1743, and by Grosier in 1760 and 1761, agreee in making the number 196,000,000 or 198,000,000. All these are probably very vague; especially as, when they come to the detail of the provinces, they exhibit the most complete discrepancies from each other. On the whole, we cannot persuade ourselves that the population of China is materially under 200,000,000. China is eight times the extent of France: it is more fruitful, more carefully, though perhaps not quite so skilfully cultivated. An equal density would give 230,000,000 or 240,000,000; and really it does not seem likely to be much inferior. Loose as this mode of estimate is, it is probably better than enumerations which are proved to be vague by their contradictory character.

4389. *The whole of this immense multitude* composes, in the strictest sense, one people, cast in one mould, both of form and mind. Their external aspect (*fig.* 659.) marks them generally as belonging to the Mongol race, and seems to indicate them as having originally come across the high pastoral table-land of middle Asia. It has been softened down, however, by pacific and regular habits, as well as by some features strictly Chinese. "The broad, irregular, and half-closed eye; the linear and highly-arched eyebrow; the broad root of the nose; the extension of the upper eyelid a little beyond the lower; the thin straggling beard, and the body generally free from hair; a high conical head and triangular face," are given as their peculiar characteristics. Their complexion is of a sickly white, or pale yellow, like that of a faded leaf, or the root of rhubarb. Their hair is universally black, and, if it fail at all in that colour, the defect is supplied by painting: it is so thick and strong, that they compare that of Europeans to the pile of the finer furs. They are generally of the middle size; few tall men, and still fewer dwarfs or deformed persons, are found among them. The female sex were seen with difficulty, and almost only those of the lowest ranks, who were not distinguished from the men by any delicacy of feature or complexion: on the contrary, their persons were pronounced by Mr. Hickey the reverse of what is generally considered as elegant or beautiful. Mr. Barrow also observed, that the air of good humour, which appears in the visage of the male Chinese, is exchanged in that of the females for one of fretfulness and discontent; which, perhaps, is but too well justified by the tyrannical treatment which they experience. The few, however, of the higher ranks who presented themselves to the view of the English embassy made a much more favourable impression; and, from the delicacy of their complexions, and the regularity of their features, appeared entitled to admiration (*fig.* 660.). The same judgment is warmly pronounced by the Dutch ambassadors, who appear to have made very diligent observations upon this subject. One somewhat dishonest cause of the difference here perceptible is found in the trade which

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GROUP OF CHINESE.

prevails in China, of purchasing, at an early age, girls who afford any promise of beauty, and training them for the future wives and concubines of the opulent classes.

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MANDARIN AND LADIES.

4390. *The national character* of the Chinese has been very differently regarded, and perhaps there has of late prevailed a disposition to rate it somewhat too low. Quietude, industry, order, and regularity, — qualities which a despotic government seeks always to foster, — seem to be peculiarly conspicuous. A general good-humour and courtesy reigns in their aspect and proceedings: even when they jostle and come into collision with each other, the extrication is effected without any of that noise, and exchange of turbulent and abusive language, which are but too often witnessed on such occasions in European cities. Flagrant crimes, and open violations of the laws, are by no means common. The attachments of kindred are encouraged and cherished with peculiar force, particularly towards parents and ancestry in general. The support of the aged and infirm is inculcated as a sacred duty, which appears to be very strictly fulfilled. It is surely a phenomenon in national economy very worthy of notice, that, in a nation so immensely multiplied, and so straitened for food, there should not be such a thing as either begging or pauperism. The wants of the most destitute are relieved within the circle of their family and kindred. It is said to be customary, that a whole family, for several generations, with all its members, married and unmarried, live under one roof, and with only two apartments, one for sleeping, and the other for eating; a system, the possibility of maintaining which, implies a great degree of tranquillity and harmony of temper. Within the domestic circle, however, and that of ceremonious social intercourse, seems to terminate all that is amiable in the Chinese disposition. In every other respect they show no interest in the welfare of their fellow creatures, nor even the common feelings of sympathy. Repeated instances have occurred of Chinese dropping into the sea, and being rescued by the English, while their own countrymen did not take the least notice, or make a single effort to save them. Their propensity to fraud has been amply noticed by travellers, but appears to have been somewhat exaggerated. To the hong merchants belongs the merit of having established a character of very strict honesty; and many even of what are called "outside merchants" appear to be highly respectable. The custom of the Chinese to write upon their signs, "Here no one is cheated," — though we might be rather rash in concluding, with De Pauw, that it implies a predetermination to cheat all the world, manifests pretty clearly that the thing is considered neither unprecedented nor improbable. The want of all independent place and power, the abject submission required, and the application of the rod to *all* classes alike, produces a general degradation of character, and the vices which are its natural consequences. The highest officers of state showed an entire disregard of truth, and hesitated not to utter the most glaring falsehoods, whenever a political purpose was to be served. Again, the practice of exposing children is another repulsive characteristic of the Chinese, which harmonises very ill with their apparent mildness, and boasted respect for the ties of kindred; nor can the poverty which prompts it form its excuse. In Pekin, where it most prevails, the number of children annually exposed, has been stated at 9000; but this is now admitted to be a great exaggeration, and the real number cannot be well guessed. The practice derives no palliation from being exercised chiefly upon the female sex, in consequence of the low estimation in which they are generally held in China. According to the Dutch ambassadors, females in that country may be considered universally as objects of traffic. Those who promise to be handsome are purchased in early youth by the class of dealers above mentioned, and trained for the harems of the great, where they pass the rest of their days, according to Eastern custom, in splendid seclusion. The confinement, if less rigorous than in some other of the Asiatic states, is yet strictly ensured by an infirmity arising out of the fantastic taste which prescribes, as indispensable to female beauty, that the feet be reduced to the most minute possible dimensions (*fig.* 661.). This, by compression from an early age, is effected to such an extent, as to leave them barely able to totter from place to place, holding by the wall or other supports. The lower ranks, on the other hand, after being purchased by the husband, are treated almost as slaves, and

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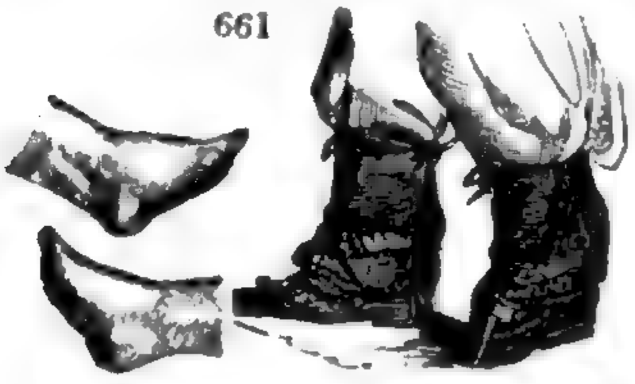

CHINESE LADY'S FEET.

subjected to the hardest labour: they have even been observed by travellers yoked to the plough.

4391. *In regard to religion*, China has the singular peculiarity of having none connected with or supported by the government. No creed is made a matter of state, except the abstract belief in the existence of a Supreme Being, and of the emperor as his sole vicegerent on earth. As to every further creed and rite, the nation adopts any or none, as it may judge most expedient. The learned, indeed, generally affect indifference upon this subject, and limit themselves to the above simple belief, joined to a superstitious reverence for ancestry and for the ancient sages of the empire. The people, however, require some more sensible objects of worship; and the vacant place has been chiefly occupied by the sect of Fo, essentially the same with that of Boodh, which rules in Thibet, and has spread thence through all the neighbouring regions of Tartary. It appears there with its doctrine of transmigration, its numerous images, its monastic institutions, its bells and beads, its noisy music, and its peculiar dress; all giving it such a resemblance to the catholic worship, that the missionaries of the church of Rome fill their journals with perpetual lamentations on the impossibility of distinguishing the two. Although jealous, in general, of every foreign system, the Tartar dynasties have been inclined to protect this religion of Tartar origin. The same favour has not been extended to Christianity, which has repeatedly made some progress. The Jesuit missionaries, in particular, have always rendered themselves necessary at court by their knowledge, contrasted with the Chinese ignorance of the astronomy requisite to predict eclipses, and to form a correct calendar. As soon, however, as conversions began to be effected, complaints were always preferred, that the new sect were changing the customs, and even the fundamental principles, of the empire. The prohibition of the almost divine honours paid to ancestry; the congregational meetings attended by females, and the representing celibacy as a meritorious state, were the points of objection most forcibly dwelt upon. Repeated persecutions have, in consequence, taken place, by which this faith has been almost entirely extirpated. Such also has been the fate of Islamism, though there are still mosques in some of the principal cities. The superstitions usual among the vulgar in all countries prevail also in China; as witches (*quey-shir*), good and evil supposed to be locally attached to particular spots, lucky and unlucky times. In the ports on the ocean, pagodas were found chiefly erected to a mysterious being, called the "King of the Eastern Sea;" a worship obviously suggested by the grand object which nature there presented to them.

4392. *Learning*, in China, must form a leading pursuit, and might be expected to be found in a very flourishing state, since it is held in almost exclusive honour, and forms the sole road to rank, distinction, and power. Yet this very circumstance is perhaps the cause of the limited and stationary state in which it actually exists. When science becomes a state engine, any change in its nature or extent becomes a political innovation, which the jealous character of despotism will never tolerate. The language, arrested probably by this cause at an early stage, requires alone the laborious application of years; after which the laws and history of the empire, and the precepts of its ancient sages, seem nearly to fill up the routine of official study. Mathematics and astronomy, which have been often cultivated with the highest success under absolute governments, have not in China reached beyond their most elementary forms. The Court Calendar, published for the guidance of the nation in various important concerns, has for a long time been constructed by foreigners; Arabs, Hindoos, and even Europeans. Notwithstanding, also, the paramount importance attached to objects of utility, the Chinese have made no progress in the application of the mechanical powers: they cannot even construct a common pump; and all their great works are the mere result of indefatigable labour performed by a multitude of human hands.

4393. *The Chinese language*, arrested between hieroglyphical and alphabetic writing, presents a singular phenomenon. The simple picture of the object, which appears in some of the early writings, has been changed, for facility of writing, into the letter; but the next step, which should have been to make each letter express a simple sound, and thus a small number by repetition represent all the words in the language, has never been taken. Every word, or rather every idea, continues to be represented by a separate character; and such characters, in the most copious Chinese dictionaries, amount to no less than 40,000; a much greater number than there are of words in any of our languages, where many expressions represent several ideas, the context explaining the one meant in each particular case. In China, each character represents the one single and separate idea. This copiousness becomes the more remarkable when contrasted with the peculiar poverty of the spoken language. This last consists altogether of monosyllables; and as they want, moreover, the letters *b*, *d*, *r*, and *x*, they have not been able to form more than about 330 syllabic sounds. These by accents and peculiar intonations, are multiplied to about 1300; still there remain about thirty written words to every spoken word. The latter afford thus an exposition of the written words, and, without reference to their sound, form the proper Chinese language. Europeans long looked with despair upon this chaos of characters, to learn the whole of which seemed the work of a life. It now proves, however, that a clue exists by which they may wind their way. Experience discovered first 473, and then 214 particular forms, one or other of which appears in every Chinese character. These, by the natives are called the eyes, by Europeans the keys or elements, of the language. Dictionaries have been constructed, by means of which the whole language has been arranged under them as with us under letters; and such facilities are thus afforded, that Europeans, in the course of two or three years' study, have been able to translate works from the Chinese.

4394. *The literature* of China appears to be extensive, though little known to Europeans. The perusal of written books, being the high road to honour and distinction, becomes a fashionable and favourite occupation with all classes. No nation of Asia can boast of such a mass of historical annals; but, though these are compiled with care, they evince not that philosophical spirit and fearless research which give lustre to the great historians of the West. The works on laws and on statistics are also very extensive. Like those on history, they are composed by the *han-lin*, or doctors of the first class, and are sent as presents to the great mandarins. For the amusement of the people, there appear in quick succession sundry dramas, poems, and tales, a few select specimens of which have lately been translated. The state of subjection in which the people live, and the narrow circle of their ideas, are unfavourable to any lofty flights of original thought; but their writings are often judicious, pleasing, and natural. Many of their poems are didactic, composed of short maxims or sentences; and the incidents in their stories are chiefly of a domestic nature. Printing was practised in China long before it was known in Europe; not, however, by employing movable types, which would be ill fitted to represent their innumerable characters; but by cutting these characters out of wooden boards, of which, consequently, there must be one for each page. The missionaries, however, by taking the keys instead of letters, have succeeded in printing according to the European style.

4395. *Theatrical exhibition,* in its various shapes, appears to be a favourite Chinese amusement. Mr. Barrow heard, that there was in Pekin about 100 companies, each consisting of 50 persons and upwards, conveyed from place to place in passage-boats. They perform not, as in Europe, to crowded and public audiences, but are sent for by the rich to act at their own houses. The foreign ambassadors have not, upon the whole, been very much edified with those presented for their entertainment. The Dutch declare that the spectacles exhibited for the entertainment of the court of China would not have attracted an audience in Europe at a country fair; and Staunton remarks on the grotesque nature of the exhibitions, and the presentation of scenes which taste and delicacy would have elsewhere withdrawn from the public eye. It is to be observed, however, that the selection of objects of mere show and buffoonery was the only way in which those could be amused who knew nothing of the language. Recent research has made us acquainted with dramas having a regular plot, and by no means destitute of interest and character.

4396. *The fine arts,* in China, are deficient. Her painters, indeed, can express with minute accuracy the forms and colours of natural objects; and can produce, on the whole, a light and pleasing effect. Being wholly ignorant, however, of perspective, and of the distribution of light and shade, they can accomplish no effects of foreshortening or distance; neither can they imitate that depth and blending of tints which nature actually presents to the eye. They give groups of individual objects; but not a picture. Their music, notwithstanding the mighty effects which they ascribe to it, is, in fact, still more defective. It is perfectly simple, and has been compared to the Scotch, but without possessing its plaintive tenderness.

4397. *In the architecture* of the Chinese, there is little either of elegance or of that magnificence which we denominate Oriental. The most solid material is half-burnt brick; and the mansions of the highest as well as the lowest are formed on the model of the primitive Tartar dwellings; but, even in the great cities, a traveller might fancy himself, from the low houses with carved overhanging roofs, uninterrupted by a single chimney, and from the pillars, poles, flags, and streamers, to be in the midst of a large encampment. The fronts of the shops are covered with varnish and gilding, and painted in brilliant colours. The external splendour of the palaces and pagodas consists merely in coloured varnish and gilding. The rooms, even those occupied by the emperor, are small, and little ornamented. The Dutch embassy was received by him in an apartment only ten feet square. There are, however, a number of large halls (*fig.* 662.), like galleries, for festivals and public occasions.

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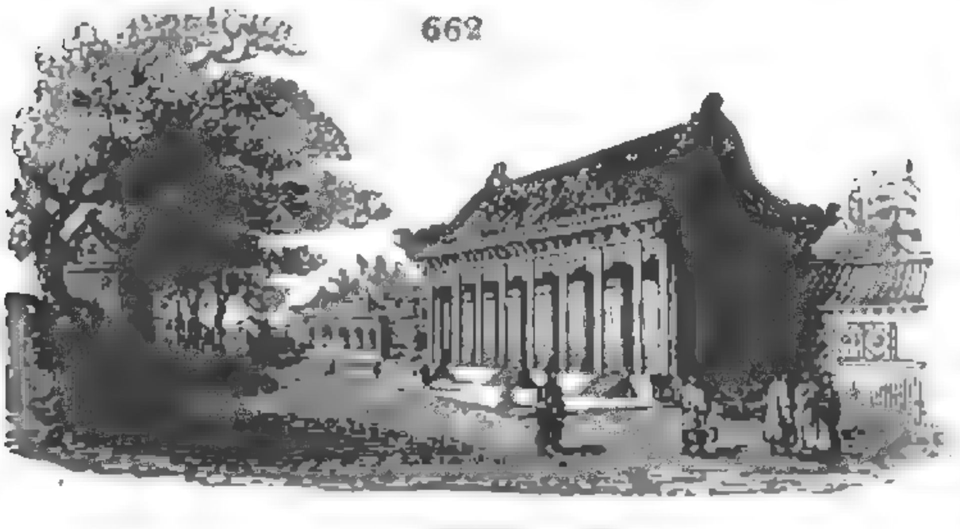

HALL OF AUDIENCE IN CHINA.

4398. *The gardens* of China have been celebrated, and are constructed on an opposite principle to ours. With the view of escaping from the monotony of a country entirely subjected to art and culture, the Chinese seek to exhibit the wildest and rudest aspects of nature; lakes, dells, hanging woods, and natural forests. In the great imperial gardens (*fig.* 663.) of Yuenmien and Zhehol, where an extent of country is ornamented in this manner, a great deal of really fine scenery is included. In private gardens, on the contrary, where objects of which the value depends on their grandeur are attempted to be comprised within a space of one or two acres, a ludicrous effect is often produced.

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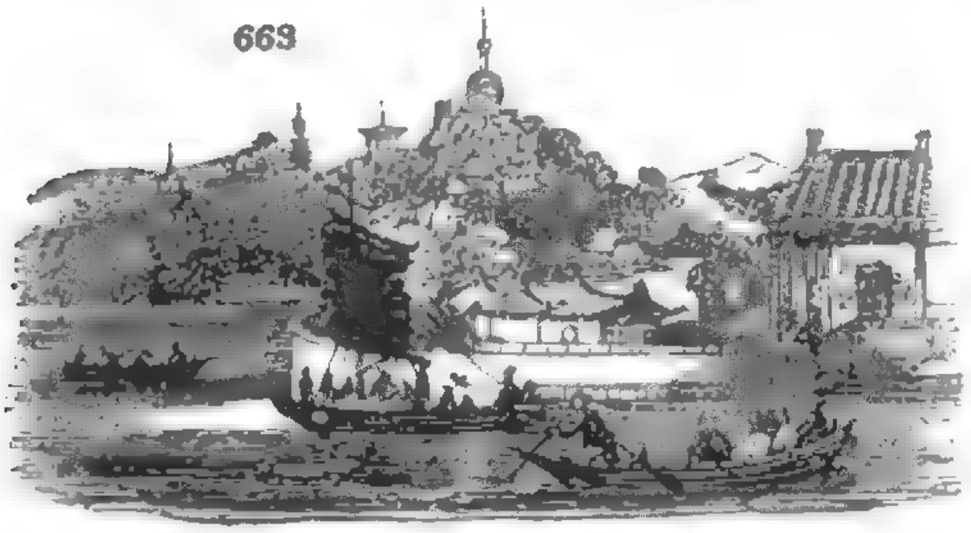

IMPERIAL GARDENS.

4399. *The Chinese are more completely and substantially clothed* than the other nations in the south of Asia. The men wear long gowns and petticoats, which would give them a feminine appearance, did they not add boots; while the women, with short jackets and trousers, might pass for men, but for the elegant ornament of braiding their hair with flowers. Silks, satins, and occasionally fine cottons, form the material of dress for the higher ranks: the lower are clad in coarse cottons. The button forms the attribute of rank, and by its various shapes and sizes expresses at once, to a Chinese eye, the dignity of the wearer.

4400. The Chinese differ from the other Orientals *in their food*, and in the mode of taking it. Instead of squatting on the floor, and eating with their fingers, they sit on chairs, eat off tables, and raise the food to their mouth with a species of chopsticks. Their dishes are placed on small tables, but piled in successive stages over each other. They consist, in a great measure, of confections and fruits, the latter of which are iced. One favourite luxury of the rich consists of soups made with the gelatinous substances, sea slug, birds' nests, &c., imported from the East India islands. The mandarins live luxuriously, and have several meals a day, with numerous dishes at each. The ordinary Chinese can have only rice, with a little seasoning; but they eat heartily of it, and scarcely any thing, Mr. Barrow says, puts a Chinese out of humour, except being interrupted at his victuals. Tea is the well known universal beverage, presented at and after meals, and on all occasions. It is drunk without cream or sugar, hot water being poured over the leaves. Their wine is bad, but they have an ardent spirit distilled from grain, of which they sip pretty largely in private. Even convivial excesses occasionally take place.

Sect. VII. *Local Geography.*

4401. Having thus completed the general survey of China, *its details* will not detain us long; since, though vast, they present a monotonous uniformity, and do not, at any point but one, come in contact with European connections and interests.

4402. We shall begin with *the province of Pechelee*, the most northerly, and, though not the finest, yet distinguished as containing the capital of the empire. Its elevation, as well as its position, combine to render the climate comparatively cold; ice prevails for three or four months in the year; the sea-coast is marshy; and, instead of rice, wheat and barley, the species of grain that belong to the temperate climates are chiefly raised. The Tartar frontier presents mountains of considerable height, over which extends the Great Wall.

4403. *Pekin* (*fig.* 664.), the celebrated capital of this great empire, stands almost in a corner of it, only forty miles from the Great Wall. It consists of two very distinct parts, the Chinese and the Tartar cities, of which the former is the most elegant and populous, but the latter is adorned by the imperial palace and gardens. The united city is about twelve miles in circumference, surrounded by walls, like every other in China; but those of Pekin are peculiarly lofty, and completely hide the city from those who are without. The population has been a subject of controversy. The English embassy calculated it

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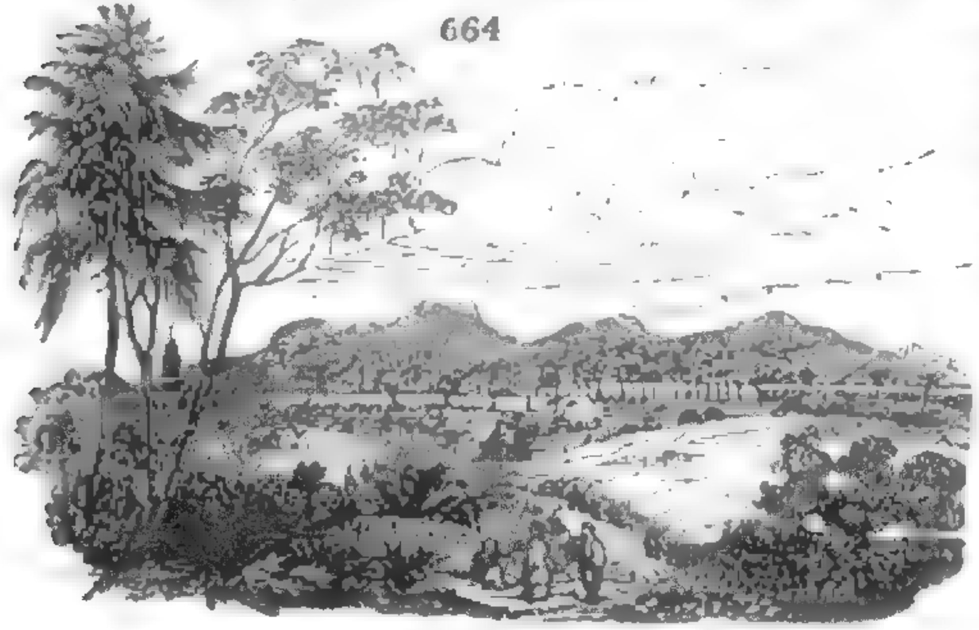

PEKIN.

at 3,000,000; probably too high; but Malte-Brun, in calling this "an extravagance more than English," commits, we apprehend, a much greater one, when he says, that this number could not have room to stand upright in Pekin. The Russian embassy judged it only double the size of Moscow, and as containing nearly as much unoccupied ground; which would infer only 600,000 or 700,000. But Moscow is built in a very scattered manner, and a much greater number of Chinese are understood to live under the same roof than is usual among the inhabitants of any city in Europe. The estimate of Le Comte, who appears to have studied this subject with particular attention, is 2,000,000; which, perhaps, with a little abatement, may be nearest the truth. Pekin is divided into regular streets, the principal one of which crosses the whole city, and is about 120 feet wide, unpaved, but carefully watered. It consists chiefly of shops, which, though, like every other edifice in the empire, seldom exceeding one story in height, are adorned with flags, varnish, painting, and lanterns of a peculiar and elegant construction. The streets are immensely crowded, as the Chinese spend much time in the open air.

4404. *Other towns* in Pechelee are Tongchoo and Tiensing, the ports of Pekin; one on the Peiho, and the other lower down, at its confluence with the Queyho. This last was stated by the mandarins to contain 700,000 souls; an estimate which seemed to agree with the crowds it put forth; and its length is nearly equal to that of London. Paoting, the residence of the viceroy, has an agreeable inland situation in the heart of a fertile district.

4405. *Shantung*, to the north of Pechelee, is traversed in the west by the Great Canal on its way to the Yellow River, and in the east stretches into a great peninsula. This province is mountainous; many parts of it are bleak, and thinly inhabited; and, instead of rice and wheat, yield only the inferior articles of d'hourra and millet. Valuable mines of coal are found here, which serve for the supply of the whole empire. Tsinan, the capital, is an ancient city, with the tombs of many kings in its neighbourhood; it has, at present, flourishing manufactures of silk.

4406. *Proceeding southwards*, still along the Great Canal, we enter *Kiangnan*, the pride and the boast of China. Here are all the grand communications of the empire meet: the Hoang-ho and the Yang-tse-kiang flow into the sea, and are connected by the Great Canal. Mr. Barrow describes with admiration the scene which appeared at their junction: — "the multitude of ships of war, of commerce, of convenience, and of pleasure; some gliding down the stream towards the sea, others working against it by sails, oars, and wheels, and others lying at anchor; the banks on either side, as well as those of the canals, covered with towns as far as the eye can reach; the continuance, along the canals, of cities, towns, and villages, almost without interruption."

4407. *Nanking*, the ancient capital of China, is, in extent, considerably superior to Pekin. The exterior wall, enclosing the suburbs, resembles rather the boundary of a province than of a city. Since the government and tribunals, however, were transferred to Pekin, it has greatly declined, and about a third part of its area is now uninhabited. It still continues to be the most manufacturing city of China. Its silks, its paper, the cottons bearing its name, are preferred over the empire to those made elsewhere. Learning also continues to flourish in an unrivalled degree; the booksellers' shops are nowhere so amply furnished; and a greater number of doctors are sent forth from it than from any other city. Nanking contains, also, in its pagoda, or porcelain tower (*fig.* 665.), the chief architectural monument of the empire. It consists of nine stories, ascended by 884 steps. The material is a fine white tile, which, being painted in various colours, has the appearance of porcelain; and the whole is so artfully joined together as to seem one entire piece. The galleries are filled with images, and set round with bells, which jingle when agitated by the wind. On the top is a large ball, in the shape of a pine-apple, of which the Chinese boast as consisting of solid gold; but on that point foreign observers seem to be sceptical.

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PORCELAIN TOWER AT NANKING.

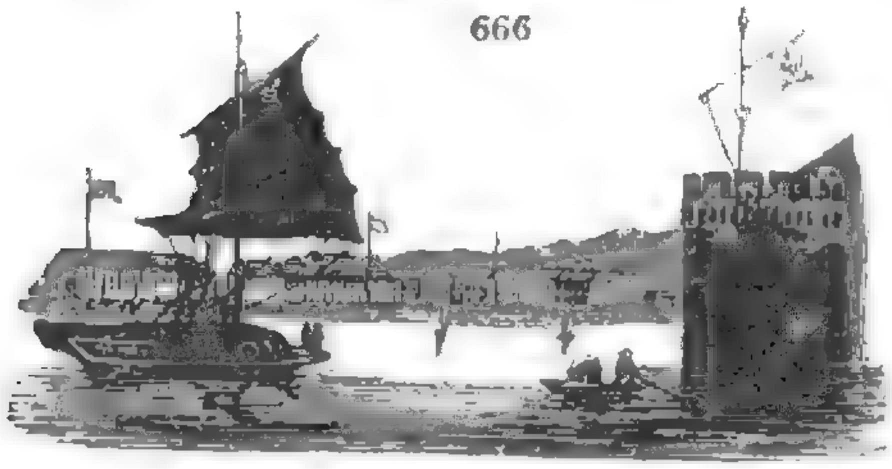
4408. *In this province, also, the traveller who proceeds southward along the Great Canal* finds the large and beautiful city of *Soutcheoufoo*, which the Chinese extol as their terrestrial paradise. Branches from the Great Canal traverse it throughout, and render it, like Venice, a city on the waters. The small lake of Taihoo, in the neighbourhood, surrounded by picturesque hills, affords a scene of delightful recreation. Here all the classes whose function is to minister to pleasure, lawful or unlawful, are trained to their respective vocations; comedians, dancers, jugglers, and the females destined to fill the harams of the great. The latter are judged to be fairer and more gracefully attired than those of the northern cities; and paint, both red and white, is lavished to heighten their beauties.

4409. *To the north*, Kiangnan has on its left the maritime province of *Tchekiang*, one of the finest in China, and covered in particular with extensive plantations of mulberries. The surface is very picturesque, its rich plains being varied by irregular hills and rugged rocks. It is distinguished by containing the great city of Hangchoo-foo, situated at the point where the Great Canal joins the river Chiang, which here, in approaching the sea, spreads into an ample lake. This is the city described by Marco Polo under the name of Quinsai, as the capital of southern China, and as the most splendid and delightful he ever saw. Even in its present decline, its magnitude, rivalling that of Pekin; the varied beauties of its lake, the numerous pleasure parties which cover its surface, the gilded barges, with floating streamers, sailing to and fro, and the aërial pavilions with which its margin is studded, form a magic scene, which acquits of all romance the glowing descriptions of that celebrated traveller.

4410. *Kiangsee*, to the east of Tchekiang, is a province bordered and traversed by mountains of considerable height; but as these mountains, wherever it is possible, are cultivated to the summit, and have many fine intervening valleys, it is almost as fertile and populous as any of the other provinces. It is traversed by the Poyang lake, a noble piece of water, surrounded by mountains of considerable height, whose sides are highly cultivated and peopled. Nanchang, the capital, on a river which falls into it from the north, presents monuments characterising a city of the first rank, but is now reduced to a state of poverty. Yaotcheoufoo, and several other cities, rise on the borders of the lake. The place most worthy of notice in Kiangsee is Kinteching, which the Chinese, indeed, account only a village, but a village which, according to some, contains 1,000,000 inhabitants. It is the centre of the manufacture of porcelain, and its site is marked by the clouds of flame and smoke which rise from it, and make it appear at night like a great city on fire. No foreigner has ever been admitted into its precincts, lest he should discover the secret of the processes there carried on. A river which falls into the Poyang lake affords the means of exporting the produce of Kinteching, and exchanging it for that of the rest of the empire.

4411. *Interposed between Kiangsee and the ocean* is the maritime province of *Fokien*, or *Footchien*, a region of considerable resort to early European navigators, while the southern ports of China continued open to them. It is now little noticed; but is described as a very fine province, covered with hills, usually such as Chinese industry can cultivate to the very summit. It abounds not only in grain, but in fruit, particularly oranges; and the tea plant is reared on a great scale. Foutcheou, the capital, situated near the mouth of a great river which admits the largest vessels, and is crossed by a superb bridge of 100 arches, makes an ample display of whatever is splendid or beautiful in a Chinese capital. Amoy, on an island upon the coast, affords a very fine harbour, whence the Chinese carry on a great part of their foreign trade.

4412. *The southern frontier of Kiangsee* is bounded by a lofty and naked barrier of mountains, which interrupts the water communication, hitherto continued from Pekin. On the other side is the province of Quangtung, the northern approach of which consists, in a great measure, of naked and rugged mountains, diversified by fantastic rocks, and on many parts of which even Chinese industry can impress only a very limited cultivation. The interior, however, beyond the city of Chaucheou-foo, equals any of the other maritime provinces. It is traversed by the river Pekiang, to which goods, from the great water communication, are conveyed by a land carriage of some days, and which, during a course of 250 miles, is covered with barks transporting merchandise to and from Canton.



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CANTON.

4413. *Canton* (*fig.* 666.), the best known city of China, and with which alone Europeans carry on habitual intercourse, is situated at the confluence of the Pekiang with the Taho, a much larger river coming from the west. Their united streams spread below this city into a broad estuary, called, by Europeans, the Bocca Tigris, which extends about fifty miles in length, and twenty in breadth, to its junction with the ocean. Canton itself is about five miles in circumference; besides which, its extensive suburbs compose, as it were, another city. The great estuary of the Bocca Tigris also is covered with floating mansions arranged in streets, the tenants of which have no home on land. The hongs, or factories, are handsome buildings, situated in the suburbs, and arranged in a line along the water. The streets are narrow, and the front of almost every house is a shop; but the suburbs and vicinity contain many agreeable sites, in which the wealthy inhabitants have erected their mansions. All that has been said of the European trade of China applies to that of Canton, now the sole theatre of this trade; for the admission granted at an early period into Amoy and Liampo has long been withdrawn.

4414. Near the mouth of the Bocca Tigris is *the Island of Macao*, separated from the continent only by a narrow river channel. It was once a place of high importance, whence the Portuguese, in the days of their pride, carried on most of the commerce between Europe and China. It has more than shared, however, in that supine sloth and decay which has involved all their Eastern empire. The town contains, at present, a population of about 12,000, including about 4000 Portuguese, who still fit out a few vessels, or give their name to those whom it benefits in trading with this jealous government. Thirteen churches, four convents, and fifty secular ecclesiastics, are supported by this priest-ridden population.

4415. West of Quangtong is *Quangsee*, which does not rank high as to wealth and population, a great part of its territory being covered with thick forests and rugged mountains. In the south, however, are plains that yield abundance of rice, of which a supply is even sent to Canton. The river Taho, which traverses it throughout, has its navigation obstructed by rocks and cataracts. Considerable mines are said to exist in this province, which the jealousy of the government prevents from being worked. Neither Queyling-fou, the capital, nor any of the other cities of Quangsee, rank with those of the rest of China.

4416. *West of Quangsee* is the frontier province of *Yunan*, situated on a still more lofty portion of that great chain which traverses the southern portion of the empire. Though the site be elevated, and the climate consequently temperate, it is well peopled, and yields many valuable products. The upland tracts are occupied by a hardy highland race, called Lolo, of a totally different temper from the other Chinese. Such is their valour, and the strength of their haunts, that even this jealous and despotic government has been, after long effort, obliged to content itself with a formal acknowledgment of homage, leaving the internal government to be entirely conducted by hereditary chiefs, to whom their clans pay almost implicit submission. The metallic wealth of the province is said to be considerable, and even to include gold. The capital, of the same name, once handsome and considerable, has been injured by civil war.

4417. *From Yunan*, tracing the frontier northward, we find *Koeitchoo*, a still ruder province, filled with turbulent and refractory tribes. Its cities are small, being little better than military posts with strong garrisons, which, as the revenues of the province are unequal to support them, prove burdensome to the imperial treasury. It contains, however, a number of valuable metals, particularly copper.

4418. *Sechuen, the next frontier province* to the north, presents a much more favourable aspect. Its mountains are only of moderate height, and it is traversed and fertilised by the great river Yang-tse-kiang. Along with the silk, sugar-cane, and grain of China, it unites the Tartarian commodities of musk and rhubarb, and is also distinguished for a small and active breed of horses. The capital, Tching-tou-fou, though much injured during the civil wars, is still very populous, and carries on a great trade.

4419. *The north-western angle of China* is composed of the province of *Shensee*, which is very extensive, and throws out, as it were, even a long promontory into the Tartarian desert. Its aspect is mountainous, and somewhat rude; but it is highly productive of wheat and millet, and contains copious pastures, on which large herds of cattle are fed. The inhabitants, exposed to perpetual incursions from the Tartars, are trained to arms, and are of a more hardy and courageous character than in other parts of the kingdom. Its capital, Singanfou, is a fine city, strongly fortified, and always well garrisoned.

4420. *Between Shensee and Pechelee*, with which our survey began, the interval is filled by the small province of Shansee, which presents an aspect very similar to its western neighbour. The climate is healthy; yielding wheat, millet, and even good grapes, which are not, however, employed in making wine: it has also considerable mines of iron. Tay-yuen-fou, the capital, is distinguished for splendid palaces belonging to a former dynasty, now, however, allowed to go to ruin.

4421. *After making this complete circuit of China*, we have still left the interior provinces of *Honan* and *Houquang*, which compose the centre of the empire. They rank among its finest portions, being watered by the two great parallel rivers, and by numerous tributaries with which they are fed. Houquang has been called the granary, and Honan the garden, of the empire. The former is particularly marked by the vast numbers of lakes which it contains, and which are signified by its very name. That of Tongting is described to be 300 miles in circumference, and covered with numberless vessels, the tenants of which derive their subsistence from its waters. Vouchang, the capital, is an immense city, especially when viewed in combination with Hang-yang, only separated from it by the broad channel of the Yang-tse-kiang. The French writers compare the former to Paris, and the latter to Lyons. Thousands of barks along the whole length of these cities form a continued forest. The towns of Honan are not so distinguished, though that bearing the name of the province has been reckoned by the Chinese the centre of the earth. Kay-yong, the residence of the governor, is defended from the inundation of the Hoang-ho only by strong dikes, which were broken down by the enemy in the last war; a disaster from which it has never fully recovered.

4422. *China*, generally speaking, is a country strictly continental, composed of a rounded range of coast, little broken into bays and promontories. There are, however, several *insular appendages* to it, which deserve notice. Of these, the most interesting are the islands called Loo-Choo, or Leu-chew. The great Loo-Choo is about fifty-eight miles in length, and from twelve to fifteen miles broad; and it is the principal of a group of thirty-six, situated about 400 miles from the eastern coast of China. It is at present tributary to the latter country, though the supremacy has been sometimes disputed by Japan; and from China it also derives its literature. The great island itself is represented as one of the most delightful spots on the globe. According to Mr. Macleod, "the verdant lawns and romantic scenery of Tinian and Juan Fernandez, so well described in Anson's Voyage, are here displayed in higher perfection, and on a much more magnificent scale; for cultivation is added to the most enchanting beauties of nature." The sea breezes, blowing over it at every season of the year, preserve it from the extremes of heat and cold; and numerous rivulets, which seldom or never stagnate into marshes, render it at once pleasant and healthy. The population could not be conjectured; but, from the extent and state of cultivation, it must be considerable. The character of the inhabitants appears every way to harmonise with the charms of their climate and scenery. They are gay, kindly, hospitable, and intelligent. They exhibit none of the recluse and contracted habits of the Chinese, but meet frequently together at little festivals in the open air, and appear peculiarly alive to social enjoyment. They showed extreme attachment to the English, though they still adhered to the jealous precaution of preventing them from penetrating into the country, and even as much as possible from landing: as well as to that of keeping the females secluded from their view. This primitive race appeared, to Captains Macleod and Hall, to be wholly ignorant of the use of money, and without any arms offensive or defensive; but the scrutinising observation of Captain Beechey discovered that in neither respect were they so remarkably distinguished from the rest of mankind. The artillery and muskets of the English, however, were to them quite a new and an astonishing sight; but the employment of the latter against animals caused them such pain, that it was soon discontinued. The people of Loo-Choo are a diminutive race, averaging only five feet two inches high; but stout and well built; their faces rather agreeable than handsome. Indeed, the whole animal creation, except the poultry, is small, but otherwise of excellent quality. This interesting group appears to extend about 500 miles in a direction nearly from south-west to north-east. Captain Broughton, who landed on some of the islands at the eastern extremity, found there the same mild and courteous people with those of the great island.

4423. *The island of Formosa*, called by the natives Tai-ouan, has been chiefly celebrated by the impudent fiction of Psalmanazar. The western part, to which alone the application of Formosa, or *fair*, is applicable, is in possession of the Chinese, and may rank with their best provinces. Its surface is finely diversified, and watered by numerous rivulets descending from the higher parts of the island. Settlements were formed here first by the Portuguese, and then by the Dutch; but both are now expelled. The eastern part, rugged and mountainous, is occupied by races almost savage, who live by hunting, sleep on leaves, have scarcely any clothes or furniture, and tattoo their skin like the rudest of the South Sea islanders.

4424. *Hainan* is a large island, 190 miles in length and 70 in breadth, separated by a narrow channel from the eastern extremity of the province of Quang-tong. Though in view of vessels going to Canton, it is little known or visited. The interior is mountainous; but a great part of the island is moist and unhealthy; and, though the necessaries of life are abundant, the people seem little improved. They are ugly, of small stature, armed with bows and arrows, and wear scarcely any clothes. When Krusenstern visited them, in 1805, they were found subject to the pirates of the *Ladrones*. That group of isles, which must not be confounded with a larger one of the same name in the South Sea, extends close along the coast of China from Hainan to Canton. Their aspect is rocky, bleak, and rugged, like fragments torn from the continent by some violent convulsion, and their sides are dashed with the continual spray of the waves. Although a very small European force would be sufficient to root out the nest of pirates that harbour there, they have continued to defy the whole maritime force of the celestial empire.

4425. Along the coast of Tchekiang extends the almost numberless group of *the Tchusan islands*, of which, in a sail of 60 miles, 300 have been discovered. They are small, not rugged like the Ladrones, but verdant, cultivated, and rising from the sea in a conical shape. One of them, called Pootoo, is described as a perfect paradise, and as being occupied by a body of 3000 monks, who have 400 temples, with houses and gardens attached to them. This establishment is richly endowed, and celebrated throughout the empire. There are many fine ports in these islands, and the channels between them are crowded with almost innumerable vessels, carrying on a commerce, of which the centre is at Ning-po, on the opposite coast. The great Tchusan island is about forty miles in length, and about twenty in breadth. It is highly cultivated. Tinghai, the capital, intersected by canals, resembles Venice on a small scale, and presents a crowded scene of busy industry.

Chap. IX.

THIBET.

Sect. I. *General Outline and Aspect.*

4426. *Thibet*, or, as M. Klaproth has recently called it, *Tubet*, forms a mountain region of a very peculiar character. We have already traced the mighty mountain ridge of Himalayah, forming the whole northern boundary of Hindostan. Parallel to this, at a varying distance, extends another, nearly, if not altogether, as lofty, which the Chinese called the Kuenlun, and at its western extremity, Ksoung-ling, or the Blue Mountains. Towards the east, it penetrates with its snowy peaks the Chinese province of Shensee, being there, too, connected with a mighty circuit of mountains that surround the lake of Kokonor, and, as Humboldt conceives, give rise to the Yellow River. At this eastern portion of the range, the interval which separates it from the Himalayah is of considerable breadth, and includes some fruitful and highly cultivated plains. As the two chains proceed westward, the space between them is gradually narrowed, till, at their extremity, they meet and form one mass with the Hindoo Koh, or Indian Caucasus, which extends thence westward through Independent Persia. M. Humboldt even views the two boundary chains of Thibet somewhat as *débris saillans*, shattered branches from the Caucasus. The Hindoos, who see them in their closest approach to each other, consider both as the Himalayah, and Thibet as only a great and long valley enclosed within this astonishing chain. High detached branches from both of the great boundaries penetrate and encroach upon the territory; yet, wherever the breadth is at all considerable, the greater part of it is occupied by a vast table-plain, the most elevated, perhaps, on the globe, which yields only scanty crops of grain, but is pastured with numerous flocks of animals peculiar to this elevated region. *Thibet* presents a region every way distinct in aspect and character from Hindostan, whence it is separated only by a mountain ridge. Instead of sultry plains, luxuriant harvests, and magnificent cities, appear only rude plains, covered with scanty herbage, and diversified by rocky heights, under whose shelter a few rough-built villages find protection from the chilling winds of the snow-clad mountains.

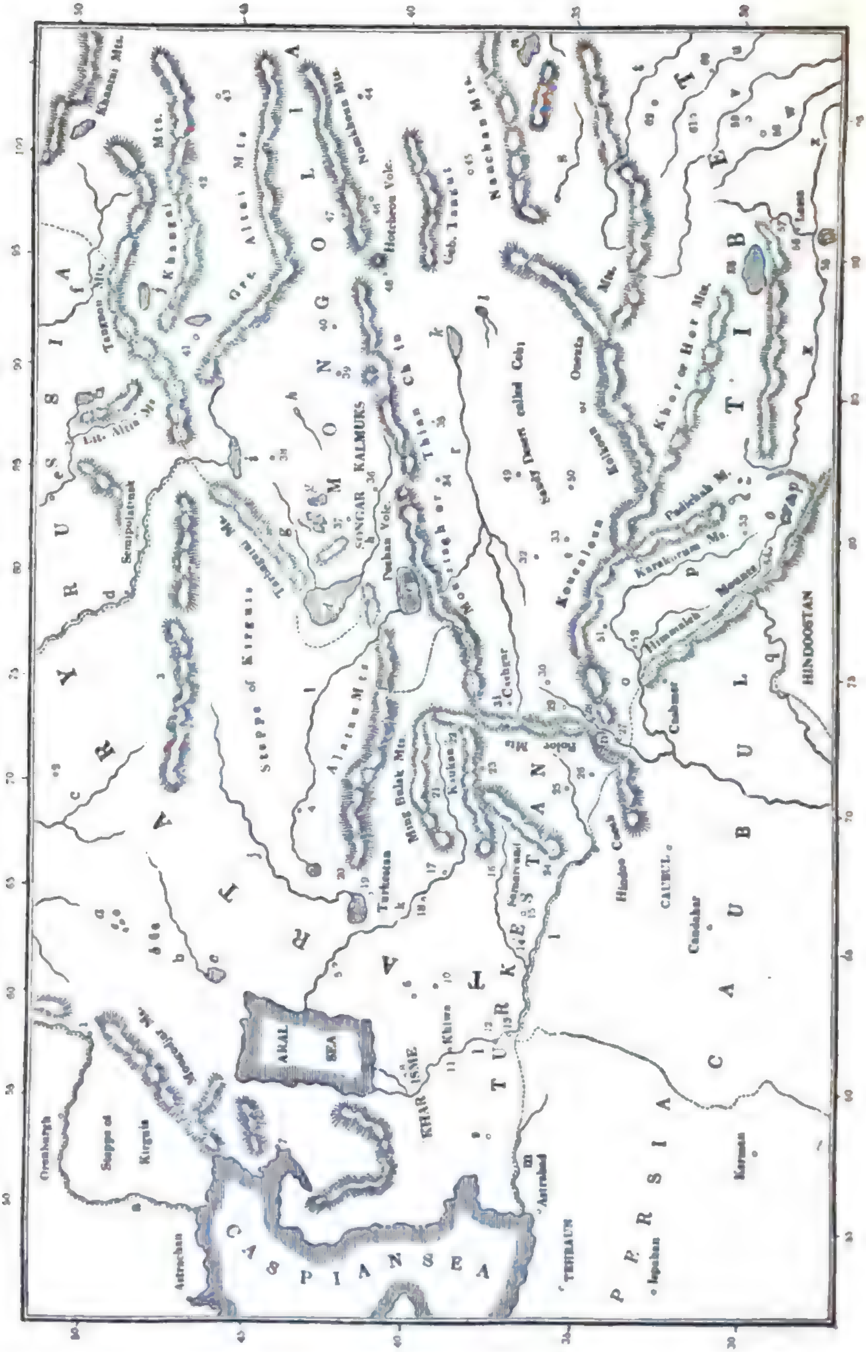
4427. Besides its grand mountain features, Thibet is distinguished as containing the source of many of the greatest *rivers* of Asia. The Indus and the Sanpoo, rising near to each other, from that loftiest part of the chain which gives rise, on the other side, to the Ganges and the Jumna, traverse this high plain in contrary directions. The Indus, after draining the waters which descend into it from the western part of both ridges, bursts its mountain barrier, takes a new direction, and flows southward into the ocean. The course of the Sanpoo has not been traced beyond the vicinity of Lassa; and the theory which identified it with the Brahmapoutra has become, at least, extremely doubtful. There seems, however, every reason to conclude, that most of the great rivers which water the empire of China and the kingdoms between it and India, derive their sources from the mountains of Thibet. The Sutledge, the largest tributary of the Indus, also takes its rise upon their border.

4428. *Thibet contains the lakes of Manasarowara and Rawan Hrad*, picturesque and striking objects, encircled by some of the loftiest snow-covered peaks of the Himalayah, and which are held by the Hindoos in religious veneration; yet they are by no means of great extent. The lake Tchemarorel, farther to the west, is similarly described by M. Gerard. The Chinese maps delineate in the north-eastern part the lake of Terkiri, seventy miles long, and several others, respecting which no further particulars are yet known.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4429. *Gold* is found in grains in many of the rivers, and also disseminated and in masses in quartz rock and other rocks. *Silver ores* are not mentioned by travellers. but some varieties of galena contain that metal. Mines of *lead* occur, but they are not worked to any extent; ores of *iron* and *copper* occur in different quarters, and the Thibetians are said to work rich mines of mercury, the ore being *cinnabar*. *Rock salt* is reported to be common; but the most interesting saline mineral met with in Thibet is that named *tincal*, or *borax*. According to Mr. Saunders, the lake from which borax and common salt are obtained is fifteen days' journey north from Teshoo Lomboo. Surrounded on all sides by rocky mountains, it receives no rivulets, but is fed by brackish springs rising from the bottom of the lake itself. The borax is found crystallised in the lake, and is taken up in large masses, which are then broken, for the convenience of carriage, and exposed to dry. This mineral, though collected for a considerable length of time, has no appearance of diminishing, and most probably is continually


MONGOLIA
SIBERIA
RUSSIAN TARTARY
TURKESTAN
THIBET
CABUL
PERSIA
HINDOOSTAN
CASPIAN SEA
ARAL SEA
KHARISME
Khiva
Samarcand
Cashgur
CAUBUL
Candahar
Kerman
Ispahan
TEHRAUN
Astrabad
Astrachan
Orenburgh
Steppe of Kirguis
Lassa
Himmaleh Mounts
Karakorum Mts.
Kouenleun
Kalkoun Mts.
SONGAR KALMUKS
Thian Chan
Alatau Mts.
Ming Bulak Mts.
Kaukan
Bolor Mts.
Hindoo Coosh
Gre Altai Mts.
Tangnou Mts.
Khangai Mts.
Khentai Mts.
Nomkhoun Mts.
Lit. Altai Mts.
Semipolatnoi
Tarbagatai Mts.
Mougodjar Mts.
Sandy Desert called Cobi
Nanchan Mts.
Hotcheou Volc.
Pechan Volc.
Gob. Tangout
Turkestan
Pedischah M.
Khor or Hor Mts.
Mouztagh or Mts.

formed anew. The lake is said to be at least twenty miles in circumference. For a part of the year it is frozen over. In Thibet, as in Europe, borax is employed for soldering, and as a flux for promoting the fusion of gold and silver.

Subsect. 2. *Botany.*

4430. The reader is referred to the remarks under this head at page 965.

Subsect. 3. *Zoology.*

4431. *The Zoology of Thibet and of Tartary* cannot well be separated in a work of this nature, and with the scanty knowledge we yet possess of their productions. We shall therefore enumerate the most remarkable quadrupeds that have yet been found on the elevated deserts of Central Asia.

Georynchus Lagurus.	Hair-tailed Lemming.
Vulpes Corsac.	Corsac Fox.
Vulpes Karakan.	Tartarian Fox.
Putorius alpinus.	Alpine Polecat.
Dipus Jaculus.	Siberian Jerboa.
Dipus brachyurus.	Short-tailed Jerboa.
Dipus minutus.	Little short-tailed Jerboa.
Gerbillus Tamaricinus.	The Tamarisk.
Gerbillus meridionalis.	Torrid Tamarisk.
Lepus Tolai.	Mongolian Hare.
Lagomys Ogotoma.	Grey Pica.
Equus Hemionus.	Mongolian Horse.
Moschus moschiferus.	Thibetan Musk.
Cervus Pygargus ?	Tartarian Roe.
Ovis Ammon.	Asiatic Sheep.
Bos poëphagus.	Yak Bison.

4432. *Several of the above quadrupeds* claim a more particular notice; as the Mongolian Horse, the Pica Hare, the Musk Deer, and the Tartarian Roe.

4433. *The Mongolian Horse* (Equus Hemionus *Pall.*) inhabits, in troops, the great central deserts of Asia. It is about the size of an ordinary horse, but is distinguished by having hairs only at the end of the tail: along the back is a black line: the ears in size are rather larger than intermediate between those of the horse and mule: the tail is black, near two feet long, and much like that of a cow. This was probably the wild mule of the ancients. All the proportions of this singular animal exhibit much lightness and elegance. It runs almost literally with the rapidity of lightning, carrying its head erect, and snuffing up the wind: its air is wild and fiery, and the fleetest courser that ever scoured the desert would in vain attempt to overtake it. When unmolested, its character is peaceable and social. Their troops are from 20 to 100 in number, each headed by a chief, who acts as guide and sentinel. It is said to leap three times in a circle round the object which inspires fear. If the chief is slain, which, from his temerity in approaching very near the hunters, will sometimes happen, the troop disperse. The Mongols, the Tungooses, and other Tartar nations bordering the Great Desert, hunt these animals for their flesh, which they highly esteem; but it appears they have never succeeded in taming it.

4434. *The Grey Pica Hare* is not more than six inches long. It is common in the Tartarian deserts, and beyond Lake Baikal. These little animals dig very deep burrows with two or three entrances, furnished at the bottom with a thick and soft bed of leaves; they wander about during night, for they are exceedingly timid, and have many enemies. In spring they begin to cut and lay in their winter provision of tender herbage, &c., which they pile in numerous small heaps, like haycocks, about the entrance of their dwelling, previously filling that as full as it will hold. To the external store of provisions they probably gain access during the deep snows of winter, by undermining it from their subterraneous retreat.

4435. *The Musk Deer of Thibet* (*fig.* 668.) yields the valuable drug so called. The animal itself is nearly the size of the roebuck. The flesh is esteemed, although strongly impregnated with this scent. When the animal is killed, the bag is cut away, and made into a kind of purse. So powerfully does every part retain this perfume, that even the blood and liver is frequently mixed up with the genuine musk by the crafty Asiatics.

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MUSK DEER.

4436. *The Tartarian Roe* is larger than our roebuck. It is marked with a large disk of white on the buttocks, and is remarkable for having no tail: it inhabits the loftiest regions, only descending to the plains in winter: the horns are much branched, and of great expanse.

References to the Map of Thibet and Tartary.

1. Orsk
2. Koktchetov
3. Karkarali
4. Kuduk
5. Razy
6. Bukhan
7. Kopent
8. Khurabad
9. Abiverd
10. Kala
11. Khiva
12. Tastmetteggav
13. Amoo
14. Bokhara
15. Kurchee
16. Samarcand
17. Yakhend
18. Uratuba
19. Turkestan
20. Sousaa
21. Kaukan
22. Kodjen
23. Ferganah
24. Suedabad
25. Durwaus
26. Fyzabad
27. Chitrual
28. Peankob
29. Muscooch
30. Yarkand
31. Cashgar
32. Khoten
33. Karia
34. Koutche
35. Charashar
36. Gouldja
37. Korgos
38. Bourgalsoutai
39. Orta
40. Purul
41. Gobdo Khoto
42. Oulasouti Khoto
43. Karakorum
44. Sogoknoor
45. Koutcheou
46. Hami
47. Barkoul
48. Turfan
49. Peym
50. Guinak
51. Leh
52. Durres
53. Gortope
54. Daba
55. Teshoo Lomboo
56. Lassa
57. Pancton
58. Tardsong
59. Louranasong
60. Chamtoo
61. Kilatche
62. Tourman.

Rivers.

a Ural
b Turgai
c Ischim
d Irtysch
e Tom
f Yeniseï
g Aingas
h Oulia
i Isoul
j Sarasov
l Gihon, Amoor, or Oxus
m Attrack
n Kameh
o Sinde, or Indus
p Leh, or S. W. Branch of the Indus
q Sutledge
r Taum
s Kaukbousal
t Yong-tse-Kiang
u Koolano-Kiang
v Irawaddy
w Keen Duem
x Sampoo.

Lakes.

a Balekoul
b Koum Koul
c Aksakal
d Palkati
e Issikoul
f Alaktougu
g Alakoul
h Darlai
i Zaisang
j Oubsa
k Loss
l Gach Noor
m Khoukhou Noor
n Manasarowara
o Rawan Hrad
p Manasa.

4437. *Among the very few Birds* yet brought from these unexplored regions, we may notice two large Pheasants, whose singularity and splendour is almost unrivalled.

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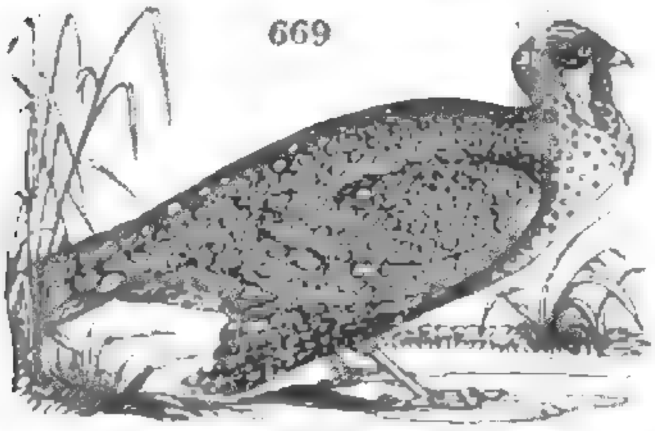


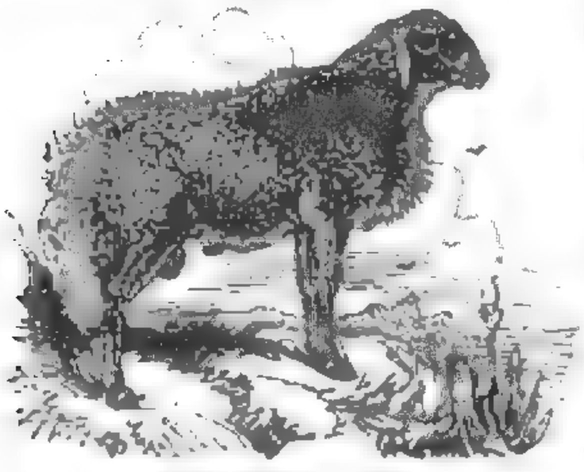
HORNED PHEASANT.

4438. *The Horned Pheasant* (*P. cornutus*). (*fig.* 669.) In size and general appearance is between the fowl and the turkey: the top of the head is red, and over each eye is a fleshy blue substance, like a horn, and bent backwards: the throat has a bright blue naked flap, marked with orange spots: the breast and back is red: the rest of the plumage deep chestnut brown, marked all over with white spots surrounded with black.

4439. *The magnificent Impeyan Pheasant* (Lophophorus refulgens *T.*) is larger than a fowl. It is called by the Indians the Bird of Gold: its whole plumage is metallic, reflecting every colour and lustre that can be conceived: the crown of the male is ornamented with several feathers shaped like a lance or arrow, and those of the neck are all pointed. It has been found in the mountains in the north of India, but is very rare.

4440. *The domestic animals*, among tribes having no fixed habitation, are naturally few. The Tartar Horses appear to be small and ill made, yet docile, and more fitted than any others to undergo long and violent journeys without food. The most vigorous are alone preserved; the others are killed and eaten, to prevent them from consuming provender wanted for the rest. The fat-rumped Sheep (*fig.* 670.) is a breed reared in southern Tartary: the horns are small, or wanting; the ears long and pendulous, and the tail very short and thin. There is another breed, having very broad tails, with four, five, and sometimes six horns; the wool of the first is good, but that of the latter very coarse. The Thibet Goats are well known to furnish materials for those delicate shawls which bear this name: the hair is very fine and long, particularly on the back, and the ears small and pendent.

670



FAT-RUMPED SHEEP.

Sect. III. *Historical and Political Geography.*

4441. One section may comprehend the very little that can be said on these subjects. Although Thibet be placed amidst nations of ancient origin, its *history* is almost a complete blank. By the Arabian geographers it is barely named; but, under the name of Tebeth, Marco Polo gives a series of relations which, with a certain tincture of fable, suggest a country not materially differing from that which is now to be described. The ecclesiastical character of its government, and its subjection to a sovereign priest, appear to have favoured a report, that there existed in the heart of Asia a Christian monarch, to whom the early discoverers gave the appellation of Prester John. His sacred character, joined to the strength of the mountain barrier of his kingdom, served in a great measure to the Thibetians as a safeguard against the barbarous tribes by whom they were surrounded. Tradition, however, represents their shrines to have been at different times plundered by the Tartars. The most serious invasion was made in the end of the last century by the aggressive and encroaching power of Nepal. Tempted by reports of the wealth of its temples, and particularly of Pootala, the king of that country marched an army into Thibet, and, after an obstinate war, compelled the Lama to purchase peace by the payment of an ample tribute. The emperor of China, professing to revere that sovereign priest as his spiritual head, determined to interpose on his behalf. In 1791, a Chinese army of 70,000 men arrived at Thibet, and, notwithstanding a very vigorous resistance, drove the Nepalese troops beyond the mountains, from the summit of which the Chinese might even descry the British possessions on the plains below. The Thibetians now experienced the too frequent lot of a weak state which seeks the aid of a stronger. The religious attachment of the emperor to the Lama did not prevent him, when he found the country in his hands, from assuming civil sway over it, and limiting his ally to a spiritual jurisdiction. The whole country is now, therefore, a province of China, which has thus become almost conterminous with the British Indian empire. The sway, however, according to the usual Chinese maxims, is mild, and does not interfere with the original plan of internal administration. The Chinese have only established, along all the Thibetian frontier, that jealous exclusion of foreigners which renders it so difficult to gain information respecting any country included within their territories.

4442. *The government of Thibet*, so far as it is unaffected by foreign interference, is altogether priestly. The lama, or high priest, is the sovereign, while the successive ranks of monks and gylongs compose the nobility. The laity are the vulgar. It is under the head of religion, therefore, that we must comprehend the political arrangements of this singular country.

Sect. IV. *Productive Industry.*

4443. *Thibet, in respect to agriculture,* labours under great disadvantages. The general character of its soil is bleak, barren, and poor: wheat and barley can be grown only in a few favoured situations, and often fail of coming to maturity. Even the herbage, the most valuable product, though it reaches a tolerable height during the rainy season, from March to September, suffers severely by arid and cold winds, which blow during the remaining part of the year, when it often dries up and crumbles into dust. Yet these mountain pastures possess qualities peculiarly nutritious and grateful, and support numerous flocks and herds. Many species of those especially belonging to Thibet are remarkable for their beauty and value. Indeed, this side of the mountains is alike noted for the profusion of animal as the other is for that of vegetable life. Birds, game, and wild animals of various descriptions, are equally abundant with those trained for the use of man.

4444. Among the numerous animals that enrich Thibet, the most prominent seems to be the *yak,* an animal of the buffalo tribe, but in some particulars resembling the horse. Though not employed in agriculture, the yak is of great value for the conveyance of burdens, and yields also a rich and nutritious milk. Its tail, composed of a mass of long, flowing glossy hair, forms, under the name of *chowrie,* a considerable article of trade. It is in general demand among the great men of India, both as an ornament and as a flap for dispersing insects. Another animal, equally characteristic and useful, is the goat, which yields the fine wool used in manufacturing the shawls of Cashmere. Smaller than the smallest English sheep, it is the most beautiful of the goat species. The wool grows like down, close to the body, and is covered with a profusion of thick and strong hair. This fine covering is evidently given by nature as a fence against the cold, and soon degenerates in any milder climate. Sheep, though certainly not peculiar to Thibet, are here of peculiar value; the mutton being the finest, perhaps, in the world, and the fleece extremely soft and silky. The lamb fleeces, when tanned with the hair, afford linings considered particularly luxurious in China, Tartary, and all the cold districts of Asia. Goats and sheep are used in this country as beasts of burden, in which capacity they follow each other in long trains, and make their way with surprising safety across the most difficult and perilous mountain passes. The musk deer, a product of the chase, is found also in the neighbouring parts of China and Tartary, but is peculiarly abundant and valuable in the high districts of Eastern Thibet.

4445. *This country seems to have been almost as bountifully stocked by nature with mineral* as with animal productions. The imperfect skill of the inhabitants, however, the scarcity of timber, and the difficulty of transport, render the coarser and more useful kinds of little value, unless for immediate consumption. In this view, the most estimable product is gold, which is found nearly pure, in the form of dust, and sometimes in pretty large pieces. Copper is drawn from the mines in considerable quantities as a material for the manufacture of idols, gongs, and sacred instruments. Near Teshoo Lomboo is a mine of lead, obtained by the simple process of fusion. There are also mines of cinnabar rich in mercury, which the natives have not the skill to extract. A most valuable fossil substance is the tincal, said to be deposited at the bottom of a lake, surrounded by lofty mountains in the north-east, and fed by mineral springs bursting forth in its own bed. The tincal is detached in large masses, and, besides those employed for fusion and other purposes, quantities of it are brought by way of Bengal to this country, where it is refined into borax. Rock salt is likewise plentiful.

4446. *The manufactures of Thibet* are rude, and only adapted for immediate consumption; but *commerce* exists on a considerable scale, and under some striking aspects. It is, of course, entirely inland, and carried on through perils and difficulties, only equalled by those, of an opposite nature, to be encountered in crossing the burning sands of Africa. The merchandise must be conveyed over the tremendous steeps and snows of the Himalayah, by tracts rudely formed along the edge of precipices, obstructed by falling rocks and showers of stones, and where the least false step may hurl the travellers into instant distruction. Thibet thus maintains, however, a commerce of some extent, by the export of gold, tincal, musk, shawl-wool, and sheepskins; while from Bengal it imports cloth, particularly woollen, tobacco, spices, and toys; from China, tea, porcelain, and silk. The trade is much impeded by the injudicious system of the chiefs, who monopolise the most valuable articles, particularly musk and wool, and by the disposition generally prevailing among them, rather to carry on traffic themselves, than to protect their subjects in doing so.

Sect. V. *Civil and Social State.*

4447. *Religion forms the essential basis* of the constitution, both civil and social, in this mountain region of Asia. The system which here holds sway is that known in Asia under the title of Boodh, its founder, and of the Lama, its sovereign head; while in China the same worship is denominated that of Fo, and in Tartary is called Shamanism. It had its origin in Hindostan, though now nearly expelled thence by the rival system of Brahma; from which it is generally supposed to have separated as a schism, though others conceive it to have been the parent superstition. It is so far less enlightened, that its objects of worship are mortals exalted into deities, instead of a spiritual and eternal Author of the universe. The doctrine of transmigration is alike held under both religions; but in that of Boodh, it is converted from a speculative belief into a powerful engine of practical influence. As soon as the Lama dies, the priests, by supposed celestial indications, discover an infant into whom his soul is supposed to have transmigrated. This person is immediately exalted into the character of Lama, and in his name all the civil and ecclesiastical affairs of the state are administered. In Thibet and the bordering regions of Tartary, every great district has its Lama; but the chief of these spiritual sovereigns is the Grand Lama, who resides at Lassa; next to him is the Teshoo Lama, resident at Teshoo Lomboo. The latter, at the period of the

English embassy, was only a year and a half old, having but just, it was supposed, had transferred to him the spirit of his deceased predecessor; yet the ambassadors were admitted to an audience, in which he acted his part with surprising propriety. As the sovereignty centres in the Lama, so the nobility is formed by the monks called *jelums* or *gylongs*. The monastic principle exists under the Boodhist system in its utmost rigour, accompanied by the same usages of seclusion and celibacy which distinguish it in the Catholic church. These habits being adopted by the most celebrated characters both in church and state, the idea of dignity is exclusively centred in them, and those of degradation and vulgarity are attached to marriage. The priests reside in large mansions, much the handsomest in the country, and uniting the character of convents and palaces. The monks in the villages bordering on India are represented as a dirty, greasy, good-humoured, happy class of persons, who do not think it inconsistent with their vocation to carry on a good deal of worldly traffic. In the great central establishment, more dignity of character is preserved, and the obligations imposed by their situation appear to be strictly regarded. On the whole, their deportment is represented as humane and obliging; on the part of superiors unassuming, and respectful on that of inferiors. Somehow or other, however, all the wealth appears to centre in them, and a general poverty pervades the rest of the community. The ceremonies of the Boodhist religion bear a striking resemblance to those of the Catholic, insomuch that many of the missionaries found it scarcely possible to discover any distinction. This has even been ascribed by some to a mixture with the votaries of the Nestorian heresy, which was spread through the East. A favourite part of the service consists of music, less remarkable for its harmony than for the employment of every means of raising as great a noise as possible. Not only are all the voices of the congregation put forth, and trained by practice to an almost stentorian pitch, but drums, trumpets, cymbals, hautboys, and other instruments of the most sonorous description, of three or four times the usual size, swell the chorus. One of the favourite exercises of devotion consists in producing by the hand the revolution of a painted wheel with gilded letters, on which the gaze of the worshipper is fixed. Notwithstanding the difference between the religions of this country and Hindostan, many of the temples of Thibet are crowded with Hindoo idols; and the seats of Indian pilgrimage, particularly Benares, Juggernaut, and Sagur, are devoutly visited by votaries from the dominions of the Grand Lama. On their part, the Hindoos pay a deep religious veneration to the lofty snowy peaks and the lonely mountain lakes of this elevated neighbourhood. Among the former, Chumularee, on the Boutan frontier, and among the latter Manasarowara, hold the pre-eminence.

4448. *Of the learning of Thibet* scarcely the least notice has reached us; and yet there appears to be a good deal. The Thibetians possess the art of printing, derived, apparently, from the Chinese; since it is executed, like theirs, on fixed wooden blocks instead of movable types. The language has a large infusion of Sanscrit, and is admitted by the Chinese to be superior to theirs in sound, though its characters have not equal beauty. It is written, conformably with the practice in Europe, but contrary to that of the East, from left to right. Turner found the mausoleum of the Lama (*fig.* 671.) filled with high piles of sacred books. M. de Koros, a Hungarian physician, who has resided in the country, and acquired its language, discovered an encyclopædia, in forty-four volumes; and a system of Boodhism, comprising also a general view of the arts and sciences, in 108 volumes. In those discovered among the Calmucks, the Russians complain of impenetrable mystery; but, perhaps, such specimens might not be the most favourable. The Thibetians must have had some skill in astronomical observation, since they were acquainted with the satellites of Jupiter and even with the ring of Saturn.

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MAUSOLEUM OF THE LAMA.

4449. *In social life*, the most characteristic feature is that unique species of polygamy, peculiarly opposed to the general Asiatic ideas, and consisting in the marriage of one wife to several husbands. All the brothers of a family have only one spouse among them, the privilege of selecting whom rests with the eldest. It seems to be said that a surprising degree of harmony prevails in this extraordinary kind of household: the females, who are active and laborious, enjoy higher consideration than those of India or other Oriental countries.

4450. *The ordinary buildings in Thibet* are very rude, consisting of rough stones heaped together without cement, and with flat terraced roofs. The only thing like ornament consists in a small banner, composed of pieces of rag or white paper, employed as a charm. On the contrary, the religious edifices, which unite the triple character of temples, monasteries, and palaces, display in many instances an extraordinary splendour. That of Teshoo Lomboo, with its white walls, coloured wooden roofs, numerous gilded canopies and turrets, makes an appearance almost magical; and the apartments are furnished with a regard both to elegance and comfort. That of Pootala, at Lassa, is said, by M. Klaproth, to be 367 feet high, to contain 10,000 apartments filled with images in gold and silver, and to have its roof richly gilded. There, as at Teshoo Lomboo, the state apartments are at the top of the edifice, seven stories high. The villages and monasteries are generally situated about half way up the insulated rocks which diversify the table-plain of Thibet. The rock above shelters them from the cold blasts; that below affords channels by which the melted snow may run off, while in the heart of it granaries and magazines are usually excavated.

4451. *The national dress of Thibet*, contrary to that of India, is composed of thick woollen cloth, and prepared sheepskins with the fleece turned inwards, forming a comfortable protection from the severity of the climate. The religious orders wear a vest of woollen cloth with red sleeves, a large mantle resembling a plaid, with a kilt, and a pair of huge boots. Silks from China, and furs from Tartary, are employed by the higher classes. A fine white silken scarf is an invariable present on occasions of ceremony, and is enclosed in complimentary letters.

4452. The religion of Thibet does not impose the same austere abstinence in respect to *food*, to which the leading castes are subjected under the Hindoo system. A general renunciation of animal food, indeed, would very reluctantly be observed in a country which scarcely affords any other aliment. The heads of the church and state, however, seem to value themselves on great simplicity of diet, and abstinence from strong liquors. Tea is the universal drink, not taken, as with us, in a purely liquid form, but thickened with flour, salt, and butter, the leaves being retained, so as to form a mess by no means agreeable to an European palate.

4453. The entirely religious character of the people of Thibet is scarcely compatible with any very varied *amusements;* though their religious exercises, from their splendour, and their imposing effect on the senses, may almost be accounted as such. The game of chess is well understood, and frequently played.

Sect. VI. *Local Geography.*

4454. *Our topographical knowledge of Thibet* is extremely imperfect, and, unless at a few detached points, can scarcely be considered as having any existence. The missionaries, indeed, found in the Chinese archives a map constructed upon the information of two lamas, who had been sent by that government to make a survey of the country. It contains, at best, mere outlines and names, and is evidently far from being strictly accurate. This defect, partly owing to a civil war which broke out in the course of their mission, particularly appears in the delineation of the course of the great rivers, since the Indus and the Ganges are evidently confounded; the latter being represented as flowing along the table-land of Thibet, and penetrating the Himalayah. Our definite knowledge, therefore, is confined to the very few points which have been visited by European travellers, and to some recent extracts, made by M. Klaproth, from works published in China.

4455. *Lassa, or Hlassa*, the capital spiritual and temporal, "the Rome of central Asia," is situated in the finest part of Thibet, an extended valley bordered by stupendous mountain ranges. The winters are severe; but from April to October, notwithstanding occasional cold blasts, the climate is warm; rice, the vine, and other fine fruits come to maturity. The city, independent of its chief ornament, which is the temple of Pootala already described, is represented as handsome and opulent. In the surrounding plain are twenty-two other temples, all richly adorned, and of which those of Sera and Bhraeboung are described almost to rival Pootala. The entire number of priests and monks maintained at the expense of government is stated at 84,000. Lassa is the seat of the grand or sovereign Lama, from whom all the priests and sovereigns of that denomination, throughout Thibet and Tartary, receive their investiture. He ranked, also, till lately, as the civil ruler of an extent of country about 300 miles in length, and composed of the best territory in this region; but the Chinese, as already observed, after expelling the Nepalese invaders, have established at Lassa a military commander and a civil governor, and virtually annexed it to their empire. They rule it, however, with a mild sway, leaving all the ecclesiastical institutions undisturbed, and in full possession of their ample endowments; and the tribute, conveyed by an annual embassy to Pekin, is extremely moderate. Within the district of Lassa, and to the south, is the remarkable lake of Palte, described as forming merely a belt of about four miles broad, round the large interior island which it encloses.

4456. *Teshoo Lomboo* is the seat of a lama, second in rank to that of Pootala, but is rendered interesting to us by its close vicinity to the Bengal frontier, from which it is only separated by the mountain district of Boutan. Two successive embassies, under Boyle and Turner, have been sent thither, and have made us tolerably acquainted with the place and neighbourhood. About 400 mansions combine to form a large monastery (*fig.* 672.), the walls of which are built of stone, the roofs of coloured wood, and crowned with numerous gilded cano-

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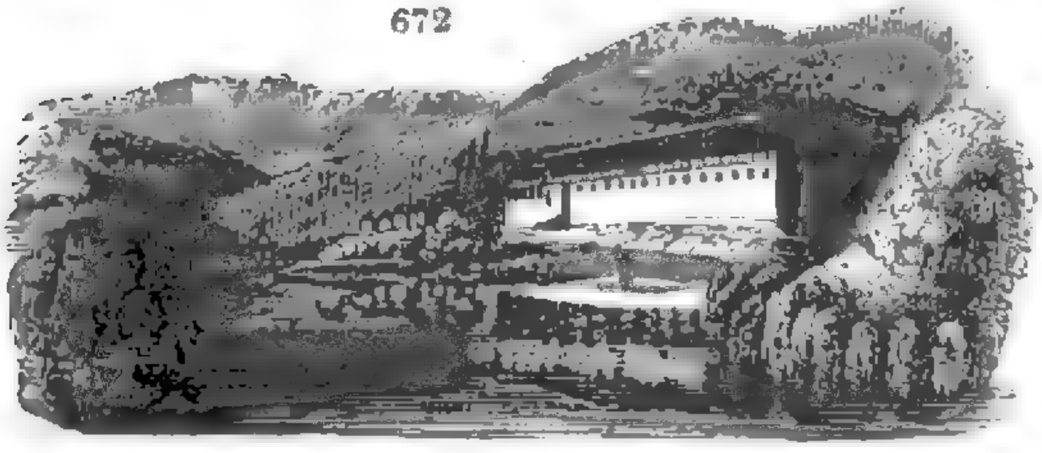

PALACE OF TESHOO LOMBOO.

pies and turrets. According to the usual system, it is built under the shade of a high rock with a southern exposure, and looks down upon the great river Sanpoo, whose course is here diversified by numerous islands, through which it flows in deep and narrow channels. The number of monks and gylongs, the sole inhabitants of this monastic capital, amounted in 1783 to 3700. Between it and the Boutan frontier is the district of Jhansu Jeung, surrounding a monastery of the same name, and containing a considerable manufactory of that thick soft woollen cloth which is generally worn in Thibet.

4457. *Mr. Moorcroft penetrated* at a more westerly point into the region beyond the mountains, called there the *Undes*, or plains. He went with the double object of opening a trade in shawl wool, and of viewing the celebrated lake of Manasarowara, and the rivers, if any, which flowed out of it. The only entrance from India is by a narrow and most perilous path, along the precipitous sides of these loftiest mountains of the Himalayah, which give rise to the Ganges. Niti, a village of about sixteen poor houses, forms the frontier point; beyond which, on the Thibet side, the road passes over a tract whose extreme elevation is indicated by its effects on the human body, — oppressed respiration, and a giddiness threatening apoplexy; the blood, at the same time, bursting from the lips, and all the parts exposed to the air becoming red and sore. Here all the tops of the mountains are covered during the night with snow, which melts in the heat of the day, and thus fills the beds of numberless torrents. The first village reached in the Undes is Daba, perched on a number of irregular eminences, and sheltered by a hill of great height. The administration seemed in this region divided between the Lama and the Deba, or civil governor; but the Chinese commands were of paramount authority.

4458. *About eighty miles to the north of Daba lies Gertope, or Gortope*, the chief market for the shawl wool. This place is rather a camp than a town, consisting merely of clusters of black tents made of blankets fastened to stakes by ropes of hair, and adorned at the tops with flags formed with shreds of coloured silk and cloth. It is situated in the midst of a vast plain, covered with large flocks of sheep, goats, and yaks; not fewer, it is supposed, than 40,000.

4459. *About 100 miles to the south-east of Gortope* are the lakes of Rawan Hrad and Manasarowara. The latter, though of smaller dimensions, bears a much greater name, and is an object of reverential pilgrimage from all parts of Hindostan. The few, who can overcome the tremendous obstacles encountered in the way consider all their sins as forgiven, and an entrance into paradise as secured. The lake Manasarowara is of an oval form, about fifteen miles long and eleven broad, surrounded by cliffs of prodigious height, haunted by vast numbers of aquatic eagles and a species of grey wild geese. It is studded with numerous convents, above which the loftiest mountains of the Himalayah rear their snowy pinnacles. It has been generally reported that some great river, supposed once to be the Ganges, and afterwards the Indus, had its source in this lake; and even that the Sanpoo issued from it in an opposite direction; but Mr. Moorcroft could not discern the least trace of any outlet. He was, however, prevented by illness from making the complete circuit in person. The Rawan Hrad was described to be four times as large as the Manasarowara, and is supposed to give rise to the Sutledge; though this, too, seems not fully ascertained. Between these lakes and Daba, the country is filled with hot springs, largely impregnated with calcareous matter. Those at Tirtapuri throw up the water, which is intensely hot, to the height of a few inches.

4460. *It appears that, though not from the lake Manasarowara*, yet from some of the mountains in its vicinity, the main branch of the Indus takes its rise, and, after passing Gortope, rolls to the north-east, for more than 300 miles, till it passes *Leh* or *Ladauk*. This province, the most westerly of those which have been included in Thibet, appears to be rude and decidedly Tartar. The Ladaukis have held themselves independent of China, and were accustomed to lay waste the Undes by frequent inroads, till the Chinese government adopted the expedient of assigning that territory in jaghire to the Grand Lama, who is held in such reverence by the Tartar tribes, that they have been induced to desist from their ravages. They have stipulated, however, that the shawl wool sent from the Undes to its market in Cashmere shall be conveyed exclusively by the route of Ladauk. The town of that name is the seat of a considerable trade, being the place of transit for the caravans which come along both sides of the valley of the Indus, from Thibet, Hindostan, and Cabul. It is stated by Humboldt to bear the name of Tubet, and, perhaps, has communicated that appellation to the whole region. To the north ascend the snowy steeps of the Moos Tagh, whence descends a rapid stream called the Shayook, which joins the Indus at Ladauk. About 100 miles to the west, at Dras, that river is joined by another tributary from the south-east, which has been sometimes considered as the main stream.

CHAP. X.

TARTARY.

4461. *Tartary* is the name given in Europe to that immense region extending almost entirely across Asia from the Caspian to the Eastern Ocean. It is the second of the three great belts into which that continent is portioned out. Although the name of Tartary be only partially recognised within these limits, and though, in so vast a region, much diversity of every kind must necessarily exist, the general similarity is striking. Many parts of it are bordered, and even pervaded, by chains of mountains; and large cities, cultivated spots, and fixed societies here and there occur. It contains also sandy deserts of considerable extent. Still, the predominant characteristic is that of plains almost boundless, covered with herbage more or less abundant, and occupied by wandering and pastoral tribes, whose camps, like moving cities, pass continually to and fro over its surface.

Sect. I. *General Outline and Aspect.*

4462. *The surface of Tartary* consists of bold and strikingly contrasted features, on an immense scale: in the east, long and lofty chains of mountains supporting very elevated table-lands; in the west, a plain of astonishing extent. The researches of Humboldt and his

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learned coadjutors have thrown great light on the configuration of this great region, which was before involved in much obscurity.

4463. *Three great chains of mountains*, running from east to west, traverse the wide expanse of Eastern Tartary. Two of these are limitary; one, the Kuenlun, already described, which separates it from Thibet; the other the Altaï, dividing it from the bleak regions of Siberia. This last remarkable chain extending eastward under the titles of the Sayanskoi and Yablonoy mountains, is prolonged almost from the sources of the Irtysch and the Obi to the Eastern Ocean. The intermediate chain, which is wholly Tartar, and divides the country into two great table-plains, is called by the Chinese the Thianchan, or the celestial mountains. This range, hitherto imperfectly distinguished from the Altaï, appears to reach its highest pinnacle to the north of Turfan and the lake of Lop, where three peaks covered with perpetual snow are celebrated under the title of the holy mountain (Bokhdaoola), or of "the mountain of the queen." Hence Pallas, who erroneously views this chain as part of the Altaï, has given to the whole the name of Bogdo. The Turks have attached the appellation of Mooz Tagh, or snowy mountain, to its western portion, where it stretches beyond the general range, and shoots a branch towards Khojend, separating the sources of the Oxus from those of the Jaxartes. Here the lofty peak termed the throne of Soliman, and several others, appear covered with perpetual snow. Considerable mountains also occur north of the Jaxartes; but all these gradually sink into the vast low level of western Tartary. Eastward, near the frontier of China, this elevated range declines, partly into the great desert of Cobi, partly into a lower range separating that empire from the country of the Mandshur Tartars. The boundary in that direction is formed by the transverse chain of the Khingkhanoola, beyond the meridian of Pekin, which runs from south to north, and probably connects it with the branches from the Altaï. At the western extremity, the plain enclosed between the Thianchan and Siberia, is believed to be entirely open, and connected with that of Independent Tartary. It is otherwise with the plateau south of the Thianchan, and separated from Thibet by the Kuenlun. The extremities of these two boundary chains are connected by a transverse one called the Beloor or Bolor, of a peculiarly lofty and rugged character, and affording only two narrow and difficult passes, by which caravans can penetrate into Eastern Tartary. This remote corner of Asia is distinguished by valuable mines of ruby, lapis lazuli, and other precious stones.

4464. *These three mighty chains* enclose *two great table-lands*, of which the Thianchan forms the central and common boundary, whence the southern extends to the Kuenlun, and the northern to the Altaï. The former, commonly called Little Bucharia, is very imperfectly explored, not having been traversed for several ages by any European; but it is known to contain several states that have risen to a considerable height of culture and civilisation. An impression has prevailed, as if this were the most elevated plain on the globe; but Humboldt observes, that a country in the fortieth degree of latitude, where cotton, the vine, and the silkworm come to maturity, can scarcely exceed in elevation the plateaux of the Mysore, Spain, and Bavaria. The northern table-land, called commonly Mongolia, is, probably, nearly similar in elevation; but, being in a more northerly situation, its climate is much more bleak and ungenial: it yields, in its best tracts, only pasturage, and includes large expanses of sandy and saline desert. The country still farther to the eastward, occupied by the Mandshur and other tribes of Tartars, is still more imperfectly known, but appears to consist, likewise, of an alternation of mountain and table-land, bearing still more decidedly a rude and pastoral character.

4465. *Western or Independent Tartary* presents an aspect entirely different; and, as the one is supposed to rise higher, this is believed to sink lower than any tract on the surface of the globe. A few branches, indeed, from the lofty mountains, which give rise to the Oxus and the Jaxartes, penetrate its border; but in extending westward to the Aral and the Caspian, the surface declines lower and lower, till a great extent of it is believed to be 200 or 300 feet beneath the level of the sea. It consists generally of a vast and monotonous level, which by the scarcity of water is rendered in many places almost a desert; and the fine countries fertilised by irrigation from the great rivers, are little better than large oases amid a greater surrounding waste.

4466. *A considerable number of rivers* descending from these high mountain ranges traverse the great upland plain of Tartary; but, unable, across so many barriers, to reach any of the surrounding oceans, they expand into large interior salt lakes, whose magnitude entitles them to the appellation of seas. The Caspian, indeed, the largest inland sea on the globe, is fed, not from Tartary, but by the Volga and the torrents of the Western Caucasus. The Aral is the receptacle of the two great characterising rivers of Tartary, the Oxus or Amur, and the Jaxartes or Sirr, which rise in different parts of the transverse chain of the Beloor Tagh. Thence flowing westward through the long tracts of Independent Tartary, they fall into the Aral, either by two separate channels, or one united stream; for this is still an undecided point of Eastern geography. The Oxus seems to hold a course of about 1000 miles, and the Jaxartes of more than half that length. Along and between these streams are situated the most fertile and populous tracts, and the most powerful states, of Western Tartary. In little Bucharia, another series of rivers, flowing eastward from Aksou, Cashgar, and Yarkund, unite in the Tarim, which proceeds in the same direction towards the great lake of Lop. To the north of the Thianchan, the Ili, a considerable stream, flows westward into the lake Balkash or Palkati. Several other rivers traverse this part of Asia, and expand into lakes. The Irtysch, Angara, and Selinga, though they rise in this region, soon break the northern barrier, and roll through Siberia. Eastern Tartary is watered through nearly its whole length by the Amoor or Saghalien, which, after a somewhat winding course, falls into the long narrow strait that separates the continent from the island of Saghalien. It may vie in magnitude with the greatest Asiatic streams; but, from its unfavourable position, it conduces little to the interests of commerce and communication.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4467. *The central and interior portion of Asia,* which forms neither an immense cluster of mountains nor a continued table-land, is crossed from east to west by four grand systems of mountains: these are, the Altaï, the Thian-chan, the Kuenlun, and the Himalayah. The *Altaïan chain* exhibits magnificent displays of primitive and transition rocks, which are more or less deeply covered with secondary and tertiary deposits. The metallic wealth of this range is great; for, independent of other metals, it affords annually 70,000 marks (a mark is equal to 4608 grains) of silver, and 1900 marks of gold. The geology of the system of the Thian-chan is not known; and we are equally ignorant of the geognostical structure and composition of the Kuenlun. The little that is known of the Himalayah range is noticed in our account of Hindostan. It is worthy of remark, that ancient volcanoes, and some in a state of activity, have been met with in Central Asia. The most remarkable volcanic mountains are Pechan, Houtcheou, Ouroumptsi, Kobok, and Aral-toube. These mountains, along with other similar tracts, form a volcanic territory, the surface of which is upwards of 2500 square leagues, and which is distant 300 or 400 leagues from the sea. Vast quantities of sal ammoniac are collected in this volcanic region.

4468. *Great western Asiatic depression.* The Caspian Sea and the Lake Aral occupy the lowest part of this great depression, whose surface is probably 18,000 square leagues in extent, and which lies between the Kooma, the Don, the Volga, the Yak, the Obsheysyrt, Lake Aksakal, the Lower Sihon, and the Khanat of Khiva, upon the shores of the Amoodavia, and whose surface is situated below the level of the sea. This very low country abounds in tertiary formations, whence proceeds melaphyre, and in debris of scorified rocks, and offers to the geognostic enquirer, from the constitution of its formations, a phenomenon hitherto almost without parallel on our globe. To the south of Baku, and in the Gulf of Balkan, this aspect is materially modified by volcanic forces. On both sides of the isthmus between the Caspian and Black seas, naphtha springs and mud volcanoes are numerous. The mud volcano of Taman is a dependency of Baku, and of the whole peninsula of Absheron. Eruptions take place where the volcanic forces encounter the least opposition. On the 27th November, 1827, crackings and tremblings of the earth, of a violent character, were succeeded, at the village of Gokmali, in the province of Baku, eight leagues from the western shore of the Caspian Sea, by an eruption of flames and stones. A space of ground, 290 toises long and 150 wide, burned for twenty-four hours without intermission, and rose above the level of the neighbouring soil. After the flame became extinct, columns of water were ejected, which still continue to flow.

Subsect. 2. *Botany.*

4469. The reader is referred to the remarks under this head, at page 965.

Subsect. 3. *Zoology.*

4470. The *Zoology* of this country is described with that of Thibet.

Sect. III. *Historical Geography.*

4471. *The Scythians of the ancient world,* the Tartars of modern times, have maintained in all ages an unchanged character. In war, their name has always been memorable. Their rapid inroad, their sudden and desultory attack, their flight which defied pursuit, enabled them to baffle all attempts to effect their subjection, though made by the greatest conquerors of antiquity. In those ages, however, their power was chiefly displayed in maintaining their rude independence, and occasionally committing extensive ravages on the more favoured regions subject to the great empires. They could not, except in one instance recorded by faint tradition, reduce their conquest to any permanent subjection. The clouds of arrows which they shot flying, though they might harass, could not vanquish in regular battle, the well-armed and better disciplined troops of the great military nations. The tide of Arabian invasion, which reduced to subjection the countries beyond the Oxus, appears to have first caused a reaction. The Turks from the countries beyond the Jaxartes poured down in vast bodies, and not only drove the Arabian invaders out of central Asia, but over-ran the greater part of Persia, which the Turkish princes of the race of Seljuk governed for the greater part of two centuries. Even after being expelled by subsequent revolutions, they found a home in Asia Minor, where, being recruited by voluntary levies, they, at length succeeded in subverting the Greek empire of the East. Tartary began now to wield entire the destinies of Asia. In the thirteenth century, Zingis Khan rallied round his standard the tribes of Mongolia, of the same race with those who had formerly, under the name of Huns, and under the command of Attila, ravaged the remotest countries of the West. After having assembled under him all the native bands, he began the conquest of China; which was completed by his successors, who afterwards added Western Tartary, and Persia with all its appendages; so that, with the exception of India, they reigned almost the supreme and sole rulers of Asia. To this immense dominion they afterwards added Russia and part of Poland, while Hulagou subverted the throne of the caliphs. The empire of Zingis, however, was divided among his sons, the Tartaric part forming what was called the empire of Capschak, while distinct branches ruled over Persia and China. This order of things continued till the rise, in the fourteenth century, of the empire of Timur. This prince, taking advantage of the dissensions which reigned among the posterity of Zingis, successively overcame them, and on their ruin erected a new empire, as splendid as that which he had subverted. He conquered Persia, overcame and made prisoner the proud Bajazet, and crushed for a time the rising power of the Turkish Roumelian kingdom. But India was the most splendid and permanent acquisition of the house of Timur, and, under the title of Mogul emperors, they reigned over it, long after the vicissitudes of fortune had obliged them to quit hold of their original seats.

4472. In the last two great revolutions the conquerors had belonged to the race of Mogul or Mongul; but the Turks, or Toorks, who had begun the career of conquest, again appeared on the field. Pouring in vast bodies from the least known part of interior Asia, they over-ran all the fine country on the Oxus and Jaxartes, and carried their arms as far as the grand range, the Hindoo Koosh, which separates Tartary from Cabul. They have not as yet made any attempt to pass that barrier, or to grasp any of the southern sceptres of Asia. The whole Turcoman tribes, indeed, have never been united under one head, but have been divided into several distinct monarchies, of which the most powerful and flourishing are those of Bokhara upon the Oxus, and of Kokaun on the Jaxartes.

4473. *Eastern Tartary*, meantime, had effected by conquest an important revolution. China, the most valuable possession belonging to the posterity of Zingis, had remained to them after every other had been wrested out of their hands; but at length they were so far weakened by ease and prosperity, that even that timid nation succeeded in driving them out, and re-establishing a native dynasty. This was a situation, however, in which China was not destined long to remain. In the sixteenth century, the Mandshurs succeeded in again reducing it under a Tartar yoke. To the empire thus formed were speedily annexed, not only the original conquering state, but the whole of Mongolia as far as the frontier of Asiatic Russia, and all the interior countries of Tartary to Beloor Tagh and the boundary of the Uzbeks. Over all these countries China has established a very mild sway, leaving the internal administration almost wholly in the hands of the natives, and not scrupling to procure the submission and peaceable behaviour of the wandering tribes by paying rather than receiving an annual tribute.

Sect. IV. *Political Geography.*

4474. *The government of all the Tartar races* presents a singular phenomenon. This bold and rude people, who seemed to set the whole world at defiance, are yet subject to a despotism as complete as that established in Turkey or Hindostan. As this cannot be placed to the account of any thing timid or effeminate in their nature, it must arise from some other principle in the human mind. The Tartars do not, like the shepherds of a civilised country, lead their flocks through remote and sequestered valleys, and spend their days in peaceful seclusion. They move from place to place, usually in large bodies, united for some purpose either of war or plunder. It has been always found necessary that the leader of a military enterprise should be invested with discretionary powers. The habitual exercise of these powers, with the attachment and admiration generated in the minds of the followers whom he had guided with success in a series of such expeditions, give him, by degrees, a permanent claim to supreme authority. The same tendency is greatly aided by the superstition incident to a barbarous people, whose creeds, all derived from the south, are accommodated to the system of absolute power there prevalent. Under the character of mollahs and of lamas, many of the princes of Asia preach and rule. Although, however, every thing in these states owns the supreme law of the sovereign, minute inspection discovers in the inferior branches indications of aristocratic and even of popular influence. Each nation is formed by an aggregation of clans or *oorooghs*, the members of which are united to each other by strong hereditary ties. Over each oorooogh is a chief, who, according to Mr. Frazer's account, is, in Tartary as well as in Cabul, elected in many instances by the body of the clan. This chief administers all its internal affairs, and arranges the quotas of tribute and military service exacted by the general government. The general heads of clans, however, do not unite in any assembly, or claim the right of exercising any regular control over the measures of the sovereign.

4475. *The vast tracts under Chinese dominion*, composing about two thirds of all Tartary, are subject in a manner to despotism over despotism. The people are despotically ruled by their native prince, while he is held in complete thraldom through the military occupation of his territory by a foreign power. Yet the sway of this great empire is said to be singularly mild, and even auspicious to the rude realms over which it extends. It prevents their bloody internal contests, their roving propensities, their predatory habits; it promotes the influence of order and industry. In the flourishing districts of Cashgar and Yarkund, it is even said to have generated such an attachment among its subject tribes, that, far from feeling any inclination to shake off the yoke, they would even fight with zeal in its cause.

4476. *The military force of all the Tartar states* consists of cavalry, which for the strength of the horses, the hardihood of the troops, their endurance of fatigue, and even their valour in a tumultuary shock of battle, are scarcely equalled, perhaps, in the world. If Bokhara, Kokaun, and the other kingdoms of Independent Tartary, were united under one head, they would muster about 300,000 such horsemen, well mounted and well conditioned, and might renew the ages of Tartar conquest. Yet a mere tumultuary host of this nature, without infantry and without artillery, would probably, if brought into contact with a force either European, or trained after the manner of Europe, be wholly unequal to the contest.

4477. *As Tartary is divided into a number of separate states*, connected only by the general similarity of institutions and habits, the details of the power, revenue, and administration of each, so far as they can be ascertained, must be given under the local section.

Sect. V. *Productive Industry.*

4478. *Tartary*, with some local exceptions, is a poor country, scarcely affording to a thin population the mere necessaries of life. Articles of luxury it does not produce; and it affords few others for which they could be received in exchange. Whatever of splendour has shone in the courts of Karakorum or Samarcand, has been wrested, by the sword, from their effeminate possessors in southern Asia. Conquest, indeed, no longer enriches Tartary; but the plunder of caravans, or the booty swept together in long *chepaos*, or forays, forms still the chief source of wealth to its petty khans and chieftains.

4479. *In regard to agriculture*, although in some favoured districts there are fixed tribes who cultivate the ground, the general aspect of modern as of ancient Scythia, is that of a pastoral region. The horse is the wealth and strength of Tartary. Those, however, for which this region is so famous, display neither the elegance, the airy lightness, nor the almost preternatural swiftness of the Arabian steed. They are inferior in these respects even to those of Persia and the Deccan. They are of great weight, with long bodies and large limbs. Their merit consists in what is called *bottom*; in the power of making immense journeys, without pause or fatigue; and by this quality they wear out, at the long run, their swifter adversaries. According to Mr. Fraser, their powers of endurance on these long expeditions are by no means promoted by setting out in good condition. On the contrary, they are studiously reduced, till they become almost skeletons, and their flesh feels like marble; after which they will perform continued journeys of seventy or eighty miles a day without injury. They form a regular article of trade, and are in great demand for the cavalry of Persia and India. They are used, however, not merely as instruments of war and plunder, but also for economical purposes, and particularly for food. Horse-flesh, from one end of Tartary to the other, is the standing dish; and mares'-milk, fermented into a liquor called *koumiss*, is almost the only liquor used for convivial purposes. The other animals of Tartary are more local, and chiefly borrowed from the adjoining districts. Eastern Tartary has in the south, the yak, the goat, and the musk-rat of Thibet; in the north, the fur-bearing animals of Siberia; but neither in such perfection as in their own proper districts.

4480. *The vegetable productions* which are the objects of culture in Tartary do not materially differ from those of Europe: in the southern and milder tracts are raised wheat, barley, and millet; while the ruder northern districts, particularly of Mandshur Tartary, scarcely yield any grain except oats. On the declivities, however, of the great chain which separates Tartary from Siberia, are found some valuable and peculiar products; the rhubarb, so useful as a medicine, and which has been transplanted into Europe, without attaining the same excellence; and the *ginseng*, which, though it has never been valued among us, is in China and Tartary held of sovereign virtue.

4481. *Manufactures* cannot be said to have any national existence in Tartary, though here, as every where else, the women produce some coarse fabrics for internal consumption. Among these, the principal are felt, coarse woollens, and skins, particularly of sheep, variously prepared.

4482. *Commerce*, over this vast region, is on a scale not quite so limited; resting, indeed, on other resources than its own exports and imports, which are of very small amount. These wide open plains have in all ages formed the route of communication between Eastern and Western, and of late between Northern and Southern, Asia. Notwithstanding the multiplied obstacles of mountains, deserts, snows, and the more deadly impediment of barbarous nations devoted to plunder, caravans proceeding by this route have always exchanged the products of Persia and Hindostan for those of China. To avert the perils that await them, they proceed in large bodies, well armed, and purchase the protection of the princes through whose territories they pass, and who, indeed, if at all enlightened, seek rather to encourage this system of transit. Even, in the fourth century, we find Ptolemy describing an immense caravan route across Asia from Byzantium to the frontier of China, and which probably existed long before, though it escaped the notice of earlier writers. This route varies with the disturbed or peaceful state of the countries which it traverses; but its favourite points of rendezvous seem to be Herat (ancient Aria), Balkh (Bactria), and, above all, Yarkund, situated on the line which separates Eastern from Western Tartary. The tract beyond may be considered almost as unknown land, since it has been but loosely described by one or two travellers, whose narratives are several centuries old. They mention Khoten, Koutché, Turfan, and Hami, as important points to be passed; but this route is rendered arduous by the necessity of crossing the great desert of Shamo or Cobi, which extends here for a vast distance from north-west to south-east. Of late, the Russians have opened a great trade across Independent Tartary. They have annual caravans from Orenburg to Bokhara, a commercial route, which Britain vainly attempted to open, for several centuries; and these caravans, it is said, consist frequently of 30,000 men They frequent also the fairs of Yarkund, and some of them have even been seen in those of Thibet. From all that part of Tartary, however, which is subject to China, they are rigidly excluded. The only communication between the empires is on the frontier of Siberia, at the two towns of Mamaitchin on the Chinese, and Kiachta on the Russian side. Here the commodities of the respective empires are exchanged, under those strict regulations by which China limits all her intercourse with foreigners.

4483. *The chief trade peculiar to Tartary* consists in its *horses*, the superior qualities of which have already been noticed. There is a small, stout, hard-working breed, selling from 5*l.* to 10*l.* apiece, exported to Cabul, and some parts of India, for purposes of husbandry. The large war-horse of Turkestan has been always in request for the cavalry, of which the armies in Hindostan and all the south of Asia chiefly consist. The demand, however, has been much diminished in India by the prevalence of the English, whose troops consist chiefly of infantry, and whose officers prefer Arabian horses.

Sect. VI. *Civil and Social State.*

4484. *The population of the tribes roving over the boundless plains of Tartary* cannot be estimated from any precise data, nor can a loose conjecture on the subject be hazarded with much chance of coming near the truth. The population of Bokhara has been stated at 3,000,000, that of Kokaun at the same, that of Balkh at 1,000,000. Badakshaun, Khiva, the Kirghise territory, and other minor divisions, may raise the whole of Independent Tartary, perhaps, to somewhat above 10,000,000. In regard to what is called Chinese Tartary, we are destitute of all positive data; but if we suppose the same ratio to prevail between the extent and population, we must allow to this portion double the number. Against this allowance, it may be argued, that Eastern Tartary contains immense tracts of desert, and thinly inhabited country. It is not certain, however, that these are more extensive than in its western regions; and our accounts of it, which must be confessed to be imperfect, represent various districts as fertile and highly cultivated. Under these views, we might guess the entire population of Tartary at about 30,000,000.

4485. *The Mongols and the Turks, or Toorks, the two leading races* among the various tribes who inhabit this immense region, are distinguished by numerous peculiarities from each other. The Mongols, so celebrated in the annals of conquest and ravage, both under their own name and the ancient name of Huns, occupy chiefly the pastoral districts bordering on the north upon the great desert of Shamo. Their visage is strange, and almost deformed; broad, square, and flat, with high cheek-bones, the nose peculiarly depressed, small and keen black eyes, bending obliquely towards the nose, thick lips, and a scanty provision of black hair upon the head, eyebrows, and beard. Their persons are somewhat diminutive, spare, muscular, and active, and the horses on which they continually ride are more distinguished for swiftness than for size and beauty. The Calmucks, the Kalkas, the Eluths, the Burats, may be considered as branches of the great Mongol family. The Turks, celebrated for their early conquest of Persia, and for their possession of Constantinople, are a much handsomer race. They have short and stout persons; broad foreheads, high cheek-bones, small but not twisted eyes, and black hair. Their features cannot thus be considered as perfect, according to European ideas; but as they have none of the Mongol deformities, and, instead of the dark-yellow tint of the latter, have clear and ruddy complexions, their beauty is celebrated by the poets of Asia. They are divided chiefly into the Uzbeks, the Turkomans, the Kuzzauks. The Mandshurs are represented by some as exhibiting the Mongol features, with a fairer complexion; but, according to Pallas, they belong to the same class as the Tunguses. Although there be this variety in the external appearance of these races, yet the same wandering, pastoral, equestrian habits; the division into tribes; and the absolute sway of their khans, unite in fixing a similar character on all the nations who bear the name of Tartar.

4486. *Of the national character of the Tartars* very various reports have been given, according to the relation under which they have presented themselves. Their delight is in war, and there is no nation that wages it on a more dreadful and barbarous system. The "scourge of God," the "terror of mankind," are the appellations by which they are known to the neighbouring empires. General extermination, without regard to age or sex, is what they consider themselves entitled to inflict on all who attempt resistance; and this is mitigated only when a profit can be made by carrying off captives, and selling them as slaves. It was said of the armies of Zingis and Timour, that they saw before them a fruitful kingdom, and left behind them a solitary desert. It was their boast, with regard to some of the proudest capitals, that they had reduced them to such a state, that a horse might pass over their site without stumbling. A picture greatly the reverse of this has been drawn by those who have observed the Tartars, even when they were spreading elsewhere the widest desolation; displaying, in their domestic life and their intercourse with each other, the simplicity and amiable virtues of the pastoral age. They are cordial, kind, and hospitable; quarrels are rare, seldom produce fighting, and scarcely ever bloodshed. Compared with the Hindoos and Chinese, they are frank, sincere, and honest; and though they make even peaceable strangers feel the influence of a national pride, nourished by the recollection of so many victories, yet they protect them, and treat them with courtesy.

4487. *Two religions divide Tartary*, and are professed with zeal through different portions. All its eastern regions acknowledge the Shaman doctrines, and the supremacy of the Grand

Lama; while, ever since the commencement of the eighth century, when the countries beyond the Oxus were conquered by the arms and instructed by the preaching of the caliphs, they have remained devoted to the Mussulman creed. Under the former system, the little tribes of Eastern Asia have minor lamas, exercising a mingled spiritual and temporal jurisdiction, though not holding a supreme sway in either capacity. The original Boodhist system, also, here seems combined with ruder features; particularly magic, sorcery, and similar modes of deluding the ignorant wanderers of the desert. In the west, again, Mahometanism seems to be professed in greater purity, and with stronger bigotry, than in almost any other of the numerous regions where it reigns. In Bokhara, the reigning sovereign raised himself from a low rank to that high station, solely by his eminence as a mollah, or Mahometan doctor, and by his rigid observance of the austerities enjoined in that religion. The Koran is here strictly enforced, not only as a sacred but a civil code: according to its rules justice is administered and the revenue collected; and, conformably to its precepts, a tenth part of the revenue is bestowed in alms. The prohibition of wine, and even of tobacco, is enforced with the utmost rigour. Killich Ali, the able and equitable ruler of Balkh, equally aspires to distinction as a Mahometan saint. He bestows large sums in maintaining mosques and mollahs, feeds daily a hundred poor, and affects the humility of never riding on horseback, lest his feet should at any time be higher than the head of any true believer.

4488. *The learning of Tartary* is little known, and is at best only a reflected light from the southern regions of Persia, Hindostan, and China. Yet the country is by no means involved in that thick darkness which the name Tartar suggests to an European ear. In all the Mahometan states, some of the first elements of knowledge are very widely diffused; and the few great cities contain colleges for instruction in the sciences, on as extensive a scale as those of Europe. Unfortunately, the sciences there taught form a contracted and monastic circle, nearly similar to what was professed in Europe during the middle ages. Commentaries upon the Koran take the lead of every other class of literature; and as that rude composition is the standard of Mussulman law as well as theology, the science of jurisprudence can never assume any liberal aspect. Astronomy appears merely under the character of astrology; medicine has lost all the lustre it possessed in the days of Avicenna; and, perhaps, the only solid parts of knowledge retained of those which were taught in the schools of Bagdad, are arithmetic, and the branches of practical mathematics.

4489. *Architecture*, in a country of which the greater part of the population is movable, can never be expected to make much progress. The great capitals are decorated with handsome edifices, on the model of those of Persia; but none of these have attained any great celebrity. The regular abode of all native Tartars is the tent, carried from place to place with the tribe or encampment. The Tartar tent is much more commodious than that formed of black cloth, which is used in Cabul or Thibet. It is framed of close lath or wickerwork, covered with felt, and terminating upwards in the shape of a dome. These, which are often large and lofty, are placed on waggons, and conveyed from place to place, suggesting the idea of a moving city. A camp or migratory village is called *onool*, and consists usually of from twenty to fifty tents.

4490. *The dress of the Tartars* differs materially from that of Southern Asia, and is chiefly adjusted for the production of that comfortable warmth which the climate renders desirable. The Turks wear a cotton shirt and trousers, a silken-woollen tunic, tied with a girdle, and over it a gown of broad cloth or felt. The national head-dress is a large white turban, drawn, in general, over a *calpauk*, or pointed cap. Boots are worn at all times by all classes, poor and rich, men and women, but the rich have them of a sort of light leather, without soles or heels, forming rather a species of leather stocking, over which shoes must be worn when they go out. Every man has a knife hanging from his girdle. The women wear nearly the same garments as the men, but longer, and throw a robe of silk or cotton over all. They delight in gold and silver ornaments, and plait their hair into a long queue, like the Chinese. In Mongolia, sheepskins, dressed in a peculiar manner, with the hair inwards, are considered the most comfortable protection against the cold; and some furs, though not of the finest kind, from either Tartary or Siberia, are added.

4491. *The favourite food of the Tartars* is horse-flesh, so repugnant to the taste of all other nations. The varied delicacies which cover the tables of the great in Persia and Hindostan are considered by them as very insipid when compared with a stew of this coarse aliment. Horses there, as oxen with us, are regularly fattened for the tables of the rich; but their limited number, and the higher services to which a large proportion must be put, place this delicacy, in a great measure, beyond the reach of the poor. They can enjoy it only occasionally in winter, when the scarcity of pasture obliges the camp to kill such as they are unable to subsist. Among the wandering tribes, however, an animal diet must preponderate, both from its abundance and the want of any other; but, in the absence of the above most valued kind, recourse is had chiefly to mutton. To the horse, the Tartars are also indebted for their most national and characteristic liquor. The milk of the mare is fermented into an intoxicating drink, called *koumiss*, which is their favourite beverage, and which physicians have described as really very palatable and wholesome. The stern precept of the Koran is, by a Tartar interpretation, not considered as applying to this exhilarating fluid, in which the Turks, notwithstanding general habits of sobriety, indulge nearly to the utmost extent in which it can be procured. They use also bouza, a thin acidulous liquor, made from grain, and which is likewise much drunk in Arabia and Northern Africa. They breakfast on tea, which, after the mode of Thibet, they make into a thick liquid, with milk, flour, and butter.

Sect. VII. *Local Geography.*

4492. *The most eastern division of Tartary*, or the country of the Mandshurs, forming the interval between China and Siberia, and bordered by the Eastern Pacific, is still less known than most of its other regions. We scarcely know it at all, unless by Chinese descriptions, which are in general meagre and pompous. It presents generally a different aspect from those immense and naked plains which characterise the centre of Asia. It appears to be diversified by rugged and broken mountain ranges, covered with thick forests, and separated by valleys, many of which, notwithstanding the coldness of the climate, possess considerable fertility. Their recesses are filled with wild beasts of a formidable character, and in such crowds as to render travelling dangerous. Wheat is raised only in the most favoured spots; the prevalent culture is that of oats, elsewhere scarcely an Asiatic grain. The product most valued abroad is the *ginseng*, the universal medicine in the eye of the Chinese, who boast that it would render man immortal were it possible for him to become so. It grows upon the sides of the mountains. The shores of the Eastern Ocean appeared to La Pérouse covered with magnificent forests, but abandoned to nature; a singular circumstance in a region so closely bordering on the over-cultivated and crowded empire of China. The few inhabitants do not even hold any intercourse with its civilised districts; but subsist on fishing, and live entirely independent, but display a mild and excellent disposition. The great river Amoor, after rising in Mongolia, traverses the whole of this province, receiving from the south the large tributaries of the Usuri and the Songari. It abounds with fish of the finest kinds, of which the sturgeon, in particular, is found in matchless abundance and perfection.

The lands upon its shore ought also, it should seem, to possess ample capacities of culture. Yet they are occupied merely by tribes of poor and wandering fishermen, and for a great extent, near the mouth, are almost a complete desert. The very few towns that exist are inhabited chiefly by Chinese, defended by Tartar garrisons. North of the Amoor, the country is Siberian, and is filled with a race of hunters, who find many valuable fur-bearing animals, among which the sable is conspicuous.

4493. *The Mandshurs* are by no means wholly destitute of civilisation. They possess even a language and writing, essentially different from that of the Chinese, or of any other nation of central Asia. The language is distinguished by an excess of smoothness, which forbids two consonants ever to come in contact with each other; by a copiousness almost unrivalled; by the very varied inflections, particularly of the verb. Philologists have traced in it analogies with the languages of Southern Asia, and even with the cognate dialects of Europe. This refinement, however, seems to belong rather to some other era, or to have been imported from some other region; for the impression which Sir George Staunton received of these Tartars, immediately after he had crossed the Great Wall, was that of a very rude people. Their persons were tall and robust; but their countenances were less expressive than those of the Chinese; their manners were comparatively rude and unpolished; the same strict order and police were not maintained; and beggars, who are never tolerated in the Chinese empire, swarmed on all the roads. They were so rational as not to have adopted the ridiculous and injurious system of cramping the female feet. On the whole, though the Tartar lords hold a high and even ruling place at the court of China, the nation in general is depressed under the ascendency of the conquered state, all whose institutions have been adopted entire by the government.

4494. *The province of Mandshur Tartary*, immediately adjacent to China, is called Kirin-Oula, with a capital of the same name. The most remarkable place, however, is Zhehol or Gehol, the summer residence and hunting-seat of the Chinese emperors. The gardens here are most superb and extensive, occupying a large expanse of ground tastefully ornamented. The province, however, which is reported to contain the greatest extent of productive land is that of Shin Yang, or Leaotong, bordering on Corea. There are cities bearing each of these names, and of considerable extent. This district is even reported to carry on the manufacture of a species of ornamented paper, in request at Pekin. The northern region, watered by the Amoor, bears the title of Tzitzikar, or Mandshur Proper, being the original seat of that conquering race. Its towns, Tzitzikar, Nimgouta, and Saghalien Oula, are poor, and of middling extent. On the Upper Amoor is the district of Solon, inhabited by a rude race of Tartars, who take their name from it; and farther to the east is Daouria, peopled by a mingled race of Mandshurs and Mongols.

4495. *The eastern coast of Tartary* does not, at any point, face the open expanse of the Pacific. It has, parallel to it, a chain of great islands, or rather a continuous extent of continent, penetrated at different points by narrow straits, and extending for about twenty degrees from north to south. The three greatest of these islands compose the empire of Japan, the importance of which claims a separate description, and which is divided from Asia by a broad expanse of sea. Japan has only a narrow strait between it and the island of Jesso or Matsmai, which, with the neighbouring one of Saghalien, suggested to the early navigators the idea of an immense extent of continent stretching indefinitely to the east and north. The observations of Pérouse and Broughton have established it to be an island, extending about 150 miles in length, and 80 in breadth. All the level coasts adjacent to their own territory have been occupied and cultivated by the Japanese; but the rugged tracts in the centre and north are still held by the natives. A strait, as narrow as that which parts Jesso from Japan, interposes on the northern side, between it and the long and narrow island of Saghalien, which, for a space of about 700 miles, faces the eastern coast of Tartary. It has now, indeed, become almost more than doubtful whether it be an island or not. European navigators have traced on the south what is called the Channel of Tartary, and on the north the bay of De Castries; but they have left in the middle a space unexplored, where the natives report that Saghalien is joined to the continent by a sandy isthmus, so small that fishermen drag their boats across it. This isthmus, if it exists, is perhaps of recent origin, and is an alluvial deposit formed by the Amoor, which here terminates its course. Although the maps of the Chinese and Japanese represent Saghalien as entirely insular, yet the want of current, and the freshness of the water on the south side of the suspected isthmus, seem to give a greater weight to the contrary hypothesis.

4496. *The inhabitants of Saghalien*, and the natives of Jesso, consist of a peculiar race, called the Ainos, who possess a physical character entirely distinct from the inhabitants of the opposite coast of Tartary. Travellers, content with remarking this, have given very few particulars of their actual outward appearance, except that their persons are covered with a more ample growth of hair than those of any other race; a fact which, though Krusenstern has doubted it, seems to have a great predominance of testimony in its favour. Their occupations rank them among the rudest classes of human society. They are unacquainted either with agriculture or pasturage, and derive their sole subsistence from fishery or the chase. Yet Pérouse remarked among them a degree of reflection and information superior to that which distinguishes the bulk of the people in a civilised country. He did not consider, that these precarious and adventurous employments, requiring invention and ingenuity to be always on the stretch, give much more scope to the intellectual faculties than the routine task of an European labourer. Their moral attributes he praises in still more unqualified terms; representing them as mild, peaceable, generous, and warmly attached to each other. The verdure is more brilliant than on the opposite coast of Tartary, and the sea abounds in an extraordinary degree with fish, among which whales in considerable numbers reach the coast of Jesso. They did not appear, however, to possess any materials for trade with nations at a distance so immense as those of Europe. Their only intercourse is with Japan, and with the country to a considerable height up the Amoor.

4497. *On the western limit of Mandshur Tartary* commence the almost boundless plains roamed over by the tribes of Mongolia, who extend for nearly fifty degrees of longitude as far as the Lake of Balkash or Palcati. In the central portion of Tartary, a principal feature is the Desert of Shamo, or Cobi, which extends almost entirely across it. According to the best of those imperfect accounts which we yet possess, it reaches about 2000 miles from south-west to north-east, separating like a great inland sea the countries upon which it borders. According to the report of Marco Polo, it is crossed, like the African deserts, by caravans with camels; and the real terrors of the journey are heightened by superstitious alarms, natural to those who find themselves bewildered in the depth of such an awful solitude. The traveller who chanced to straggle from the main body imagined that he heard a sound of march, sometimes like that of the caravan, sometimes like that of music and warlike instruments echoing through the air; when, following these delusive indications, he was led astray into some perilous, and, perhaps, fatal situation. The only precise account of it is given by the Russian embassies to China, particularly that of Lange, narrated by Bell. Though a month was spent in crossing it, the breadth does not appear to have exceeded 400 miles. The ground was covered with short and thin grass, which, owing, perhaps, to the saline quality of the soil, maintained a greater number of cattle than could have been supposed. There is, indeed, a considerable number of springs and lakes, but the water is so brackish as to be scarcely potable; so that a single pure spring which occurred, tasted as delicious as burgundy or champagne. A space of twenty miles in extent immediately beyond the Chinese wall was composed of shifting and sinking sand, formed into waves twenty feet high, and the crossing of which was an operation of the greatest labour. The ground along this tract is covered with pebbles of considerable beauty, and even value.

4498. *All the habitable parts of this desert*, with the tracts to the north of the Thianchan, covered with rank and luxuriant pastures, are traversed by the *tribes or standards* of the Mongols. This terrible race are no longer in a condition to pour over Asia the tide of conquest and desolation. They are split into a number of petty tribes separate from each other, generally hostile, and incapable of combining for any common object. They have been made to own the sovereignty of China; but that state, unable either to maintain garrisons or exact tribute, leaves them much to themselves, and requires little more than that they shall leave it unmolested. Even this is not accomplished without the payment of a small salary or tribute to their chiefs. There is not even any effective prohibition against the practice of waging private war with each other; though, when this threatens to reach any serious or perilous height, a force is levied and sent out, by whose influence terms of accommodation are dictated. The physical features of the Mongols have been already described. In their character they are rough, roaming, warlike; but in domestic intercourse, frank, cheerful, and hospitable. Their main pride consists in the management of their horses, in which they appear indeed to show a wonderful degree of dexterity. They do not attempt to rival the weight and size of the Turkish horses, but prefer those which are swift, hardy, and serviceable. They have trained them to stop in their most rapid career, and to face, without fear, the fiercest animals. As the luxuries of horse-flesh and koumiss can be commanded only to a limited extent, they supply their place with cows, and with that species of sheep having huge tails composed entirely of fat, which prevails in many parts of Asia and Africa. For amusement, they hunt deer and a few sables; but find little opportunity for fishing. Amidst all the privations to which they are exposed, they manifest a gay and cheerful disposition, and take delight in various kinds of sports and exercises. Complete converts to the religion of Boodh, they have lamas, feigned or fancied to be immortal, and each of whose places is immediately supplied after death by another, believed to be a new body animated by the same soul. They have also gheims (gylongs), or monks, by whom the religious ceremonies are conducted; and these ceremonies are observed, as in Thibet, to bear a close resemblance to those celebrated under the superstitious forms of Christianity. This ecclesiastical nobility, however, though reverenced and handsomely supported, is far from enjoying the same exclusive dignity as in Thibet. The warlike chiefs hold that pre-eminence which is usual among such rude tribes.

4499. *The Calmucks* are by much the most numerous among the branches of the Mongols, and they occupy all the western portion of the region now described as Mongolian. In form, manners, and religion, they present scarcely any distinction. They appear, however, to have a more independent and regular form of government than any other Tartar nation. The khans of the different ooroghs, or tribes, meet in a general council, to elect the great khan of the Calmucks. They boast of their country as that whence issued the Huns, who acted so celebrated a part in the overthrow of the Roman empire; and they even claim the great Zingis as their countryman. In the end of the seventeenth century, they had made themselves completely the ruling people, and masters of all central Tartary, including the southern countries of Cashgar and Khoten. Being attacked, however, by the Mongols, their rivals, confederated with the whole force of the Chinese empire, they were unable to sustain the unequal contest, which ended in the subjection to China of all Tartary east of the Beloor. The Mongols, though sharing the common subjection, became pre-eminent over their rivals, many of whom, unable to brook this double servitude, sought refuge in Asiatic Russia; but the mildness of the Chinese sway has since induced a large proportion to return. The whole number occupying their original seats is now supposed to amount to about 1,000,000.

4500. *Other branches of the same widely extended race* are the Kalkas, called sometimes the Black Mongols, whom Gerbillon describes as, next to the Hottentots, the dirtiest and ugliest race he ever saw; their neighbours on the south, the Eluths, dwelling round the great lake of Kokonor; and the Sifans, divided into Black and White, who occupy the head of the great rivers of China, on whose sands are found some grains of gold.

4501. *The region to the south of Thianchan, and of the Great Desert*, although of vast extent, and including some of the finest tracts of central Asia, has remained to the moderns almost utterly unknown. The narratives of Marco Polo and Goez, the only Europeans who are recorded to have passed through it, and the Tartar histories, afford only a few scattered notices, which can be combined into nothing like a regular survey. The appellation of Tangut appears to have been extensively, though in a somewhat vague way, applied to this region, which has also been called Little Bucharia and Eastern Turkestan. According to the report, however, of our late Persian travellers, the Chinese, having driven out the native princes, have incorporated the greater part of it into the kingdom of Cashgar. This kingdom, in its original limits, forms a wide plain to the east of the great chain of the Beloor. It is described as superior in beauty and fertility to any other part of Tartary, and as rivalling the finest tracts in southern Europe. It is watered by numerous streams, descending from the high border chain; the fields, carefully cultivated, are covered with large crops of grain, and the fruits are peculiarly excellent. It is a tract redeemed, as it were, from the general desolation of Tartary. At present, Cashgar appears to be flourishing under the Chinese sway. There, and in Yarkund, both Mahometan countries, the magistrates of that profession administer justice, and carry on all the internal affairs, while the Chinese military officers called *amdans* collect the revenue, and defend the country against foreign invasion. The exclusion of strangers does not seem so very rigid at this frontier as at all the others. The boundary line is guarded by a chain of military posts, at which every package brought by the caravans is carefully examined; and permission is then given to proceed to Cashgar and Yarkund, where duties of no very oppressive amount are exacted.

4502. *Cashgar* is described as a handsome and ancient city, the seat of government, and, though not the chief emporium of this part of Asia, yet a seat of considerable trade. A fine river from the west passes by it, and a lead mine in the neighbourhood affords employment to a considerable number of the inhabitants. Yarkund is universally allowed to be a larger and still handsomer city. Though destroyed by Abubeker, the grandson of Timur, it speedily regained its former prosperity. Its situation, indeed, seems to ensure its continuance as the centre of the inland trade of Asia, the grand medium of communication between the east and the west, the north and the south, of that great continent. Yarkund, accordingly, is a place of immense resort, and filled with numerous caravansaras for the reception of strangers. A handsome street runs the whole length of the city, entirely filled with shops and warehouses, which are kept by the Chinese, who sit on benches in front. There is also a considerable number of *madresses*, or colleges. The country around [illegible] described as almost unrivalled, particularly for its finely watered gardens and the excellence of its fruits.

4503. *Ten* other countries and cities are enumerated by Mr. Fraser and other writers as situated in Little Bucharia: Khoten, Aksou, Koutche, Eclah, Turfaun, Karachar, Elchi, Karria, Guama, Kargalie, Yengu, and Hissar. Khoten is celebrated in the early histories and travels as an independent kingdom of considerable extent and importance. Its territory, besides the ordinary products, is said to contain a species of marble and jasper, beautifully variegated with flowers, leaves, and other objects, which afford a material of profitable exchange with China. Its temperate climate and fruitful soil are marked by the production of the vine and the silkworm. At a period anterior to the Christian era, the doctrines and learning of Buddhism are said to have been introduced into Khoten, and to have flourished there till they were driven out by Mahometan conquest. At present, under Chinese sway, both religions are equally tolerated. Aksou is also described by Fraser as the capital of an extensive district subject to Cashgar. Humboldt describes it as the seat of an active commerce, and gives general caravan routes, which pass through it in different directions. Eclah was the Calmuck capital, when that people were the rulers of central Tartary; it is perhaps the Cialis of Goez, described by him as a small but well fortified city, considerably to the east of Cashgar, but still in dependence upon it. Turfaun is also mentioned by him as a large and strong city, the capital of a considerable country, governed by a branch of the royal family of Cashgar. No recent mention is made of Peym, or Poym, which, according to Marco Polo, ought to be within the above limits. Farther to the east, that traveller has described the country of Lop, in which was a great lake where the river of Cashgar found its termination. The city of Lop formed then a rendezvous of the caravans, that here found the most favourable opportunity of crossing the Great Desert on their way to China. Beyond it, and close on the Chinese frontier, is Khamil, called Hami in the Chinese maps, represented as a peculiarly fine country, inhabited by a learned and polished people, immersed, however, in dissolute and voluptuous habits. The Mahometan religion, which has been established through Cashgar and all its dependencies, gives place here to the ecclesiastical sway of the Lama. Peculiar superstitions, the remains, probably, of an earlier system, are said to prevail in this part of Tartary. The dead are often embalmed in spices, and kept for several years till the astrologer has determined the planet under which they ought to be interred. There are lodged along with them in the tomb painted representations of men, women, cattle, money, and other objects, which it is imagined may be useful to them in the other world; a remnant, probably, of the custom prevalent among many savage tribes, who bury these objects themselves along with their chiefs.

4504. *Independent Tartary,* commencing at the great boundary chain of the Beloor, reaches westward to the Caspian, and is bounded on the south by Persia, and on the north by Asiatic Russia. Its chief divisions are the kingdom of Bokhara and that of Kokaun, both fertile and populous when compared with the wastes by which they are surrounded; both famed and ancient seats of empire. They are situated upon, and derive their fertility from, the two great central rivers; one from the Oxus, Amour, or Amoor, the other from the Jaxartes, Sihon, or Sirr.

4505. *Bokhara* forms a fertile oasis, extending about 200 miles along the northern bank of the Oxus, at about the middle of that north-westerly course by which it flows to join the Aral. The principal cities and cultivated lands, however, are on the tributary stream of the Zurufshaun, or Kohuk. The population, by the last Russian embassy, is reckoned at 2,500,000, of which a great proportion consists of fixed inhabitants, cultivating the ground, or inhabiting towns. The bulk of these, over all Independent Tartary, as well as Cashgar and Cabul, consist of a race called Taujiks, apparently descended from an original native people reduced to subjection by the conquering tribes who at present bear sway; and the name is now generally applied to all who have adopted the same peaceable and industrious habits. The military force of the kingdom consists entirely of cavalry, of which not more than 15,000 or 20,000 are regularly embodied; but it is supposed that 100,000 could be brought into the field. The present sovereign has never shown any disposition to cherish schemes of conquest; and the only expeditions in which his troops engage are for the purpose of plunder, chiefly over the vast plains of Khorassan. On these occasions, the party often ride for several hundred miles without intermission, till they have reached the city which is to be the object of attack. They study to arrive in the night, and watch the moment in the morning when the gates are opened and the inhabitants come out. The invaders then rush in, set fire to the place, kill all that resist, and carry the rest into slavery. Such proceedings, however, arise rather from the predatory habits of the Tartars, than from any peculiar impulse from the sovereign, in whose eyes, however, they are sanctioned by the consideration, that the Persians are heretical Shiahs, and therefore, by the holy and orthodox Sunites, are justly devoted to bondage. Shah Hyder himself leads the life rather of a moollah, or dervish, than of a sovereign. He passes a great part of every day in preaching and expounding the Koran, and of the night in prayers and vigils. As these habits, however, are accompanied with capacities for business, they probably tend to increase his authority over a devout and superstitious people. He has established a sway still more absolute than that of any of his predecessors, and has even ventured to put to death members of the ulema whose proceedings he regarded as dangerous. The country is well governed, peaceful, and flourishing. Cultivation is only limited by the want of water, and by the naked character of the vast plains which enclose Bokhara. A considerable inland trade is carried on with India, Persia, and, above all, with Russia. From Astrachan, two annual caravans come by way of Orenburg, each accompanied by 4000 or 5000 camels. In winter, the Oxus being frozen, they are enabled to pass it over the ice; but much hardship is experienced in consequence of the desolate character of the route, where often neither provisions nor water are to be found for several successive days. The imports from Russia are metals, arms, cutlery, cloths, and other European manufactures; the returns are in silk, cotton, hides, rubies, and turquoises.

4506. According to Mr. Elphinstone, and the late Russian mission, *the city of Bokhara* contains 70,000 or 80,000 inhabitants. Mr. Fraser heard them stated at a much greater number. Bokhara was reported to him as containing 120,000 houses, which would include a population second only to the greatest capitals of China and Hindostan. That he was misinformed, however, seems pretty evident; as there is nothing either in the site of Bokhara, or in its commerce, capable of supporting so vast a population. As usual in Asiatic cities, the habitations of the ordinary citizens are poor; but there is a number of mosques, and *madresses*, or colleges, handsomely built of stone. Bokhara is a great seat of Mahometan learning, such as it is, and Hyder Shah is a liberal encourager of it. The city contains eighty madresses, each attended by from 40 to 300 students. To every madresse there is a lecturer; and these, with the students, are supported by funds consisting chiefly in the rent of lands or houses, appropriated to that purpose by Mahometan zeal and charity.

4507. Farther up the Kohuk, and about 200 miles to the east of Bokhara, is *Samarcand*. Its walls still enclose a circuit of forty-eight miles: the beauty of its environs, and the delicacy of its fruits, are still extolled in the same lofty terms which were used by the writers of the middle ages. This renowned capital of Asia is now little better than a mass of ruins. Murad Bey, however, one of the princes, having fixed his residence there, has of late done something for its revival. Here is still found the celebrated observatory of Ulugh Beg, and the mausoleum of Timur, paved with green stone adorned with jewels. It is watched by a few attendants, who were liberally supported by the court of Delhi; but, since the fall of the Mogul empire, they are left in a state of extreme poverty.

4508. *The tracts between the Oxus and the Jaxartes* partake of the rudest character of Tartary, and are occupied only by bands of wandering Turkmans. The waters of the latter river, however, fertilise the kingdom of Kokaun and Ferganah, similar in cultivation and improvement to Bokhara. Omer Khan, a Mahometan prince, without preaching or making quite so high profession as Shah Hyder, cultivates peace, and is mild and beneficent in his internal administration. Kokaun, or Kokann, of modern origin, and recently made the capital, has risen from a small village to a city of 50,000 houses, with 300 mosques. It lies in a fruitful plain, watered by two small rivers. Khojund, the ancient capital, though decayed, is still more than half the size of Kokaun. Its situation on the Jaxartes is described as truly delightful, and its inhabitants as the most learned and polite of any in this part of Tartary. Taschkend is an ancient city, still very flourishing, and estimated, in Humboldt's itinerary, to contain 100,000 inhabitants, with 320 mosques. Murgilan is a large and fine city, described even in some routes as the capital of Ferganah. On the frontier towards the Kirghises is *Ush*, a populous town, the inhabitants of which have succeeded in reclaiming from roving habits a great proportion of that barbarous race, who are now peaceably settled round them.

4509. *Khiva* forms still another kingdom of Independent Tartary, once a seat of empire, and still considerable. It is situated on the lower Oxus, separated by a wide interval of desert from that of Bokhara. This country was the first in Tartary that was converted by the sword to the faith of Mahomet; which, about 710, the conquering Catifah preached in the mosque of Kharism. This last name became afterwards that of the kingdom, of which Urgunge was the capital, as well as of an empire extending over a considerable portion of Asia, but which was subverted by the arms of Zingis Khan. After being destroyed by Nadir Shah, it was rebuilt and made the capital of the present kingdom, the cultivated part of which extends less than 200 miles in length, and 50 in its utmost breadth, along the banks of the Oxus. The canals derived from that river are the chief means by which cultivation is produced. To Khiva, also, is loosely attached the roving population of those immense deserts which, on every side, insulate it from the civilised world; from Persia, from Candahar, and from Bokhara. Travellers across these wastes find only at wide intervals a few spots affording water and pasturage. That there exists, however, in their recesses a greater number of these *oases* than the routes across them would indicate, is proved beyond a doubt by the multitudes whom they pour forth for the purposes of war and plunder. The population of the whole territory has been reckoned at 300,000 families, of whom about a third are fixed, the rest wandering, pastoral, and predatory. These last roam usually through their deserts in a state of wild independence, under hereditary chiefs, yet are ever ready to join any standard, either of their own sovereign, or of Persian revolted chiefs, under which they may promise themselves adventure and booty. At present, as nothing on a great scale presents itself, they are principally employed in desolating Persia, and particularly Khorassan, by plundering expeditions, in which they not only carry off every thing valuable, but the inhabitants themselves to perpetual captivity in the heart of their immense deserts.

4510. *The settled inhabitants of Khiva* are described as gross and uncivilised, when compared either with the Persians or with the Tartars. They indulge in gluttonous excesses, foreign in general to Oriental habits, and the persons of the chiefs are in consequence corpulent and overgrown. Their situation enables them to carry on some trade similar to that of Bokhara, though on a smaller scale. One branch they have extended much farther, that of slaves, if trade it can be called which consists merely in selling the unfortunate victims whom they have obtained by violence. Mr. Fraser heard it estimated that there were in slavery, throughout Khiva and Bokhara, from 150,000 to 200,000 Persians, and 15,000 Russians.

4511. *The city of Khiva* is situated about fifteen miles to the south of the Oxus, and contains about 5000 families. It is poorly built, and is, indeed, rather a fixed encampment than a regular town. Even the palace of the khan is only a large wooden tent plastered with clay. Urgunge, the ancient capital, is almost in ruins, though its situation on the Oxus still preserves to it a little trade. Hazarasp, a place distinguished in the revolutions of Asia, has experienced an equal decay.

4512. *The region of Balkh, or Bulkh*, is another grand feature, though now merely a loose dependency on the kingdom of Cabul. Being situated, however, on the north side of the mountains, it forms part of the same vast plain which extends to the Altaï, and, being ruled by Uzbek chiefs, it must properly be considered as belonging to Independent Tartary. Under the name of Bactria, this country has, from the remotest antiquity, been celebrated in the annals of the East. It has been, in a manner, the link connecting together the civilised and uncivilised worlds of Asia; the main point of union between them. Under the auspices of Alexander, a Greek kingdom of Bactria was formed, which continued for several centuries, and even after its fall retained some marked traces of civilisation. Under the Roman empire, when a commercial route had been opened across Asia as far as China, Bactria was the grand rendezvous, before entering the bleak regions of Tartary. When Asia yielded to the dreadful sway of the Mongol warriors, whose southward track to conquest lay across the Bactrian territory, that unfortunate district became exposed to accumulated disasters. Subject at present to the sway of the Uzbeks, it is parcelled into several districts, almost detached and independent. The Cabul government, in its present agitated state, with difficulty obtains an acknowledgment of supremacy, and scarcely attempts to draw any tribute; satisfied if it finds in this dependency a barrier against the more powerful kingdoms beyond the Oxus. Balkh is well administered by Killich Ali Beg, an Uzbek prince, who, after subduing the small district of Khoolloom, raised himself to the supreme power over all the rest. He makes a strict profession of Islamism, and spends most of the revenues arising from the city in grants to its learned professors. He feeds every day 100 poor people. He lives in the plainest manner, and gives daily public audience, sitting on a carpet, without pillows or cushions. What is more important, he is honest, just, vigilant, and at once strict and discriminating in the administration of justice. The fame of his good government is spread wide amid the turbulent regions by which he is surrounded. His army may consist of about 17,000 men, of whom 2000 are in his own pay, and 15,000 brought into the field by chiefs holding their lands on a military tenure. The entire population of Balkh may be about 1,000,000. The chiefs, in consequence probably of the unsettled state of the country, enjoy a greater degree of independence than those of any other Uzbek government.

4513. *Balkh, or Bulkh*, the ancient Bactria, possesses in Asia the fame of almost unrivalled antiquity, which seems to ascend even to the age of Semiramis. It is commonly called, in the East, the mother of cities. It retains, however, a mere shadow of its ancient grandeur. Only one corner of the wide circuit which its walls enclose is now inhabited, and is supposed to contain not more than 5000 or 6000 houses. The surrounding district is flat, fertile, and well cultivated, containing about 360 villages. This fertility is produced, in a great measure, by a grand reservoir formed of the numerous waters which descend from the southern side of the Paropamisan mountains; a single canal derived from which is said to yield a revenue of 9000*l.* sterling. As this source of fertility dries up, the country to the north declines into those sterile and naked plains which compose the greater part of Tartary.

4514. *Among the secondary districts of Balkh*, that of *Khoolloom*, situated among the mountains to the south, is comparatively rugged and barren. Yet Tausk Koorghaun, its capital, is a considerable place, containing near 8000 houses. Koondooz, to the west, is a much finer territory, consisting chiefly of a fertile plain, watered by numerous streams from the Hindoo Koosh. The chief, a feudatory of Balkh, can raise 15,000 men, and enjoys a revenue of 30,000*l.* The capital, of the same name, exceeds Tausk Koorghaun in extent. Khost, Inderaub, and Jaulikaun, are small and mountainous, but fertile and well inhabited, districts.

4515. *The long mountain valley of Badakshaun*, situated between the Beloor Tagh, and a high branch thrown out from it, called the Ridge of Pamere, remains to be described. At the loftiest meeting point of these two chains, in a glacier called Pooshtee Khur, the Oxus rises, and, flowing along the whole of Badakshaun, collects from its mountains a mass of waters, with which it proceeds to force its way through the deserts of Tartary. Badakshaun is celebrated over the East for its mineral products; iron, salt, sulphur, lapis lazuli; but, above all, rubies considered equal to any in the world. The mines are situated in the lower part of the Beloor, near the Oxus. According to Mr. Elphinstone, they are no longer worked; but this seems to be a mistake, or only partially true, since Mr. Fraser enumerates these gems among the leading articles of the transit trade of Khiva and Bokhara. Badakshaun is independent; for, though a vizier of Ahmed Shah once over-ran the country, he found himself unable to retain possession. The king, however, is said to be absolute within his own realm, enjoying a revenue of about 60,000*l.*, and being able to raise from 7000 to 10,000 troops, well skilled in the use of the matchlock. The capital is Fyzabad, on the Coacha, a mountainous tributary to the Oxus.

4516. *Contiguous to Badakshaun*, on the opposite side of the Oxus, is the district of *Derwaz*, the king of which claims a descent from Alexander, which his neighbours are said to admit; probably on very slender testimony. West of this is *Shoghnaun*, which anciently conveyed to the whole of this mountain tract the name of Sogdiana.

4517. In order to complete the picture of *Tartary*, we must take a view of that northern region, bordering on Asiatic Russia, which is covered with the flocks and tents of the *Kirghises*. This remarkable race does not figure in the early revolutions of Asia. They appear then to have chiefly occupied the pastoral regions of Siberia, on the Upper Yenisei. When the Russians invaded these regions with a force which undisciplined warriors could not resist, the Kirghises, after a desperate struggle, yielded without submitting. They retired over the mountains into the wide uncultivated plains or steppes which extend to the north of the Jaxartes and the east of the Aral. They are divided into three branches or hordes, called the Great, the Middle, and the Little Horde. The Great Horde ranges to the east and south on the frontiers of Cashgar and Kokaun, and many of its tribes have adopted the habits of those more improved districts, and acquired a fixed and peaceable character. Only some of the high separating ranges contain about 50,000, who are called wild or mountain Kirghises, and entirely merit the name. The Middle and Lesser Horde occupy the shores of the Aral, and the tract extending from the Aral to the Caspian, and in these the original nomadic and pastoral character is preserved most entire. They own, in a certain sense, the sovereignty of Russia, which, however, must have recourse to measures both of conciliation and defence, to prevent them from making extensive depredations in its territory. In the former view, it grants pensions to the principal chiefs, of whom the khan receives annually 600 rubles and 20 camels; the rest in proportion; and it maintains a chain of strong posts along the whole line from the Ural to the Irtysch. This does not preserve the frontier from occasional inroads; still less does it secure from plunder the great caravans which carry on by this route an intercourse with the central countries of Asia, and which can ensure their safety only by the humiliating expedient of a tribute, usually of ten or twelve rubles for each camel.

4518. *In their social and political capacity, the Kirghises* enjoy a greater share of independence than most of the other tribes of Middle Asia. The Little Horde, indeed, allows Russia to appoint a nominal khan; but he enjoys scarcely any power, unless what he can secure by wealth or personal qualities. The main authority rests with the little khans who are at the head of each clan, and the union of whom with the old men constitutes a sort of democratic assembly, by whom the great affairs of the nation are determined. Yet the slowness and indecision incident to such a body renders it less formidable in war than those which are commanded by warlike and absolute chiefs. The private life of the Kirghises is directed by the maxims of Mahometan law, of which they are strict but not learned observers. Under its sanction the chiefs observe polygamy to as great an extent as purchase or robbery can enable them, and a separate tent is allotted to each wife. The wealth of the Kirghises consists in horses, goats, the large-tailed sheep (which afford very delicate food), and a few camels. In these respects their possessions are said to be often very considerable. Their tents of felt are both larger and neater than those of the Calmucks, and one of them will often accommodate twenty persons. It has been chiefly, as yet, by plunder or contribution that they have obtained foreign luxuries; but some, adopting more peaceable habits, have begun to obtain them by the exchange of furs, hides, and felt.

Chap. XI.

RUSSIA ON THE CASPIAN.

4519. *The Urals* form the western boundary of that main body of Asiatic Russia which is denominated Siberia. Between them, however, and the confines of Europe on the west, Persia and Turkey on the south, intervenes *a region of considerable extent* and remarkable character, over which sway is claimed, and in some rude manner exercised, by Russia. It consists of two portions, which, though considerably differing in aspect, circumstances oblige us here to combine.

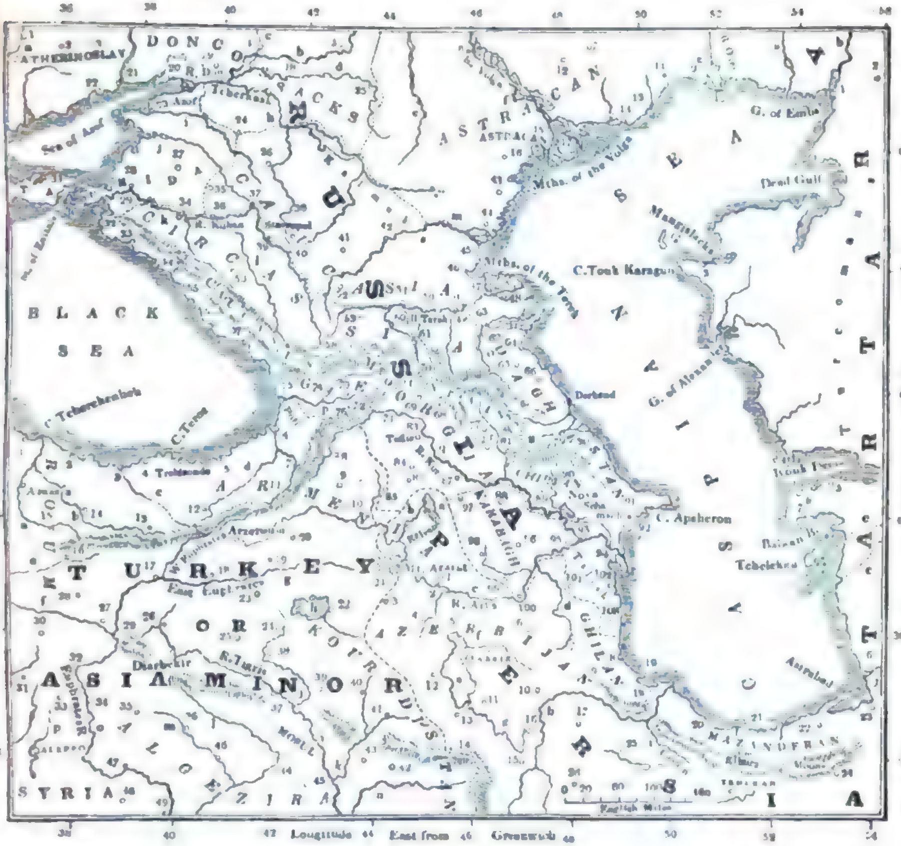
Sect. I. *General Outline and Aspect.*

4520. *In this territory* the most prominent and connecting object is the *Caspian.* It is the largest inland sea in the world. Its greatest dimension reaches almost due north and south, and in this direction its extent appears to be upwards of 600 miles. It has an extreme breadth of 300; but this occurs only in the great bay or projection at its north-east extremity: every where else the breadth varies from 90 to 120 miles. This mighty inland expanse is supplied on the north by the Volga, which, after traversing, in a course of 2000 miles, the whole of European and part of Asiatic Russia, pours in the united waters of those vast regions. On the west it receives ample streams from the mighty peaks of Caucasus and Ararat. The Araxes, Kizil Ozen, and some others, reach a certain magnitude; but in general these rivers are too near their source to attain any great expansion, and they arrive chiefly in the form of mountain torrents, descending from the long range of snowy heights. On the south, also, the streams descending from the Elbourz, — the Kur, the Terek, and the Kuban, — are of moderate length, but copious and rapid. On the west, not far from the Persian frontier, one considerable tributary, the Ochus, Tedzen, or Kizil Daria, enters the Caspian; but by far the greater portion of this border consists of arid and dreary deserts, from which the Caspian Sea does not derive any accession to its magnitude. Considering the large sources which supply this great interior sea, many enquirers are at a loss to determine how they can be disposed of. Hence has arisen the theory of a subterraneous passage, by which its superfluous waters are conveyed either to the Black Sea or the Persian Gulf. As, however, the facts on which this theory rests seem derived from the most superficial observation, so the difficulty which gave rise to it appears more imaginary than real. Evaporation from a surface so immense may satisfactorily account for the waters received from all these rivers, of which only one is of the first magnitude. Its surface is supposed to have become lower within the last 200 years, and it certainly appears to be about 300 feet beneath that of the Black Sea.

4521. *The waters of the Caspian,* unless at the immediate influx of the great rivers, are as salt as those of the sea, with the admixture of a bitter taste, arising from a portion of Glauber salt, supposed to be produced by the decomposition of the naphtha which is found on its shores in considerable quantity. The navigation is very dangerous, particularly in the northern part, on account of the heavy and sudden gales which descend from the high cliffs of the western shore, and of the rocks and shallows with which this quarter abounds. There are no good harbours from Astrachan to Derbend. A cluster of considerable islands occurs in the Gulf of Balkan, on the eastern coast; and a number of small ones extend along the north shore, but none of much importance, considering the magnitude of the sea. An immense quantity of fish, particularly sturgeon, is taken in the northern part.

4522. *Of the shores of this great sea,* the southern belongs to Persia, the eastern to Independent Tartary and to the country of the Turcomans. The western and northern only are proper to the region we are now to delineate. Between the former and the Black Sea

Fig. 673. MAP OF THE COUNTRIES ON THE CASPIAN



References to the Map of the Countries on the Caspian.

RUSSIA.
1. Alexandrovsk
2. Oriatkov
3. Kermentchik
4. Koudrioutchevsk
5. Nagavsk
6. Tchernollar
7. Be'oi
8. Baksaeva
9. Lebedevo
10. Gouriev
11. Kopinskoi
12. Tchiptchinsk
13. Bieloujei Kosie
14. Eruk Auman
15. Dourmovsk
16. Bachmatchebagi
17. Astrachan
18. Koumschatsk
19. New Tcherkask
20. Taganrog
21. Mariopol
22. Petrovsk
23. Vodina
24. Postoialoi
25. Katelnikov
26. Kazalpnoi
27. Kirpilskaia
28. Atchouiff
29. Kopil
30. Taman
31. Enikale
32. Anacopia
33. Teka
34. Ekaterinodar
35. Novomalorossisk
36. Labinsk
37. Kavkask
38. Bezopasnoi
39. Derjarnoi
40. Temnolesk
41. Alexandrov
42. Madniarei
43. Batkalie
44. Bielom Ozer
45. Koumsk
46. Koulpitchia
47. Kisliar
48. Alexandria
49. Tchodrim
50. Kozilar
51. Mosdok
52. Georgievsk
53. Sagouran
54. Soubaschi
55. Mamai
56. Kentchili
57. Soukoum
58. Miout
59. Tembice
60. Talarup
61. Wladikoukas
62. Tilbek
63. Temir
64. Tarki
65. Dungretl
66. Oshemish
67. Schacharie
68. Chartch
69. Anamur
70. Koby
71. Gori
72. Surami
73. Scander
74. Kutais
75. Anactia
76. Akalzike
77. Telav
78. Richa
79. Tsugul
80. Niezalud
81. Belakani
82. Signag
83. Teflis
84. Lambeli
85. Gumri
86. Bekant
87. Dzegamskoi
88. Ganja
89. Katele
90. Vanka
91. Baku
92. Eshek
93. Djalal
94. Saltan
95. Bait
96. Shusha
97. Kilkila
98. Tativ
99. Saphalan
100. Andovar
101. Germi
102. Lenkoran
103. Astara.

Rivers.
a Dnieper
b Don
c Donetz
d Sal
e Sarpa
f Volga
g Oural
h Manitch
i Eia
j Tchelbasia
k Kuban
l Laba
m Kouma
n Terek
o Koison
p Rhion, or Phas
q Kur
r Alason
s Samur.

TURKEY, or ASIA MINOR.
1. Samsoun
2. Eunieh
3. Kerasoun
4. Tireboli
5. Rizeh
6. Batoum
7. Gol
8. Zurdani
9. Kars
10. Mushko
11. Oltisi
12. Baibout
13. Karahissar
14. Niesar
15. Takat
16. Sivas
17. Snarvier
18. Jebakshur
19. Malazghird
20. Delibaba
21. Bayazid
22. Van
23. Mouah
24. Betlis
25. Erzen
26. Ardis
27. Malatia
28. Hassan Chelebi
29. Simsat
30. Seoubair
31. Marash
32. Samisat
33. Aentab
34. Bir
35. Harran
36. Ras el Ain
37. Jezirah
38. Sert
39. Amadieh
40. Julamurk
41. Ranba
42. Koi Sanjak
43. Erbel, or Arbel
44. Sinjar
45. Hadhr
46. Oladdia
47. Racca
48. Resafa
49. Der.

Rivers.
a Jekil Irmak
b Shawr-mawggi
c Kerasoun
d Tchorah
e Kizil Irmak, R. branch
f Koremos
g Euphrates, E. branch
h Van Lake
i Tigris
j Khabour
k Zab
l Husll
m Khabour
n Little Zab
o Euphrates
p Coich.

PERSIA.
1. Nakhjuwan
2. Abbasabad
3. Agnjik
4. Khoi
5. Marand
6. Akhar
7. Ardebil
8. Sengar
9. Setal
10. Mianeh
11. Maragha
12. Ouroomia
13. Mamian
14. Sar Balagh
15. Tabvar
16. Takti Suliman
17. Zunjan
18. Reshd
19. Enzelee
20. Koumabad
21. Amol
22. Saree
23. Astrabad
24. Aseran
25. Abhar
26. Debdeben.

Rivers.
a Lake Erivan
b Zengui
c Aras
d Kara Sou
e Lake Ouroomia
f Augi
g Jigattl
h Kizil Ozen
i Schaherzai
j Attruck.

TARTARY.
1. Ras Engoubai
2. Ras Aba
3. Mangislacka Port
4. Krasnovodskaia-kosa
5. Sulmen
6. Kaldi
7. Balkou
8. Koumsmorfe

Rivers.
a Gorkaia Sogie
b Emba

extends a wide region entirely covered with those lofty chains to which the ancients applied the name of Caucasus. In height, in ruggedness, and in the variety of their aspects, though not unrivalled, they are surpassed by few in Asia, or in the whole world. This great range of high land may be stated, generally, at about 400 miles in extent from north to south, and 300 from east to west. Its greatest breadth and elevation appear to take place in the northern border of Georgia, where the Elbourz rears its gigantic summit. M. Kupfer, lately sent by the Russian government, on the suggestion of General Diebitsch, to measure its altitude, determined it to be about 16,500 English feet, which is considerably higher than Mont Blanc. He was only able to approach within 2000 feet of the summit. The boundary of perpetual snow is about 11,000 feet, which is considered higher than in any other chain, except the Himalayah. "This central chain of Caucasus," says M. Kupfer, "is entirely formed of porphyry. Imagine a plateau, 8000 or 10,000 feet high, extending from east to west, rent in every direction by deep and narrow valleys, and traversed lengthwise by a ridge of rugged and picturesque rocks, whose summits are covered with eternal snow; figure about the middle of this ridge an excavation very broad, but not deep, the centre of which is occupied by a cone which might be believed to be entirely formed of snow, did not the naked rock, which it covers, occasionally appear: this is Elbourz, whose height surpasses, by 3000 or 4000 feet, that of all the surrounding mountains. The Caucasian territory formed, for a century, the debateable ground between the empires of Russia and Persia; and the greater part of it, after having been an undisputed, though somewhat turbulent, appendage to the latter, has, unless in some rugged mountainous districts, yielded to the powerful arms of the European invader.

4523. *The tract of Asiatic Russia to the north of the Caspian*, enclosed between the Volga and the Ural mountains, is of a different character. The immediate shores, composed of the deltas of the rivers Volga and Ural, and forming the province of Astrachan, are flat and marshy. Farther north, the provinces of Oufa and Orenburg rise insensibly into a mountainous elevation, till they terminate in the declivity of that great chain which separates Europe from Asia. Here these regions participate in the rich metalliferous character which distinguishes Catharinenberg and the other districts on the Asiatic side.

Sect. II. *Natural Geography.*

Subsects. 1. and 2. *Geology and Botany.*

4524. *The Geology and Botany of this region* have no features distinguishing it from those parts of Tartary and Siberia which lie under the same latitude.

Subsect. 3. *Zoology.*

4525. *The Zoological tribes*, which appear to have had their origin from the towering elevations of Caucasus, have been so frequently mentioned in the preceding pages, that little more need be said on their general nature. There is reason to believe, that around this lofty chain of Alps are concentrated most of those quadrupeds whose geographic range has been assigned to Europe; and representations of others, whom nature has given to western and southern Asia, and the confines of Africa. But the *Fauna* of these interesting regions is so deplorably defective, that much remains to be investigated before this theory can be received with confidence.

4526. *The Quadrupeds* mentioned by travellers as inhabiting the Caucasian regions are the Caracal Lynx, the Chamois and Ibex Goats, Bears, several Antelopes, and a species of small Tiger of an unknown race. The true Bison, so long extinct in Europe, is still sheltered in these wild recesses; and the Ovis Ammon, or wild Asiatic Sheep, extends from Central Asia to Caucasus. The Ibex of these mountains is distinct, however, from that of Europe, to which it appears superior both in strength and agility; there is also another species (*C. Ægagus* Pallas) differing from both the former in its horns; and more closely resembling our domestic goat.

4527. *On the warm shores of the Caspian* is found that rare British bird, the Charadrius himanlopus, or the long-legged Plover (*fig.* 674.), together with most of the aquatic species known in Europe; nor can we point out a more interesting subject for philosophic enquiry, than the affinities which these countries appear to exhibit between the animals of Europe and of Asia.

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LONG-LEGGED PLOVER.

Sect. III. *Historical Geography.*

4528. *The tribes inhabiting this tract* have always been regarded as dwelling on the outer border of the civilised world. They attracted, indeed, the notice of nations with whom they were in somewhat close vicinity; but their annals have never assumed a regular or connected form. The Greeks viewed them only in dim and romantic distance, and considered the cliffs of the Caucasus, and the shores of the Mæotis, as the wild and extreme boundaries of nature. The poets painted Prometheus chained by the wrath of Jove to these awful rocks. The expedition undertaken to this quarter in search of the golden fleece was considered as exalting almost to the rank of demigods the daring mortals by whom it was achieved. Afterwards the southern borders of Iberia and Colchis became better known, and were even noted in the revolutions of Asia. Their rugged and inaccessible tracts served occasionally as the refuge of the vanquished, while they deterred even the boldest conquerors from an attempt to subdue them. It is believed that these recesses still enclose races whose habits and language bear the stamp of very high antiquity. Etymologists have even conceived themselves able to trace many of the radicals of that original language which, under varied forms, has spread from the East through Europe. It is much more probable, however, that the rugged seats of the Caucasus afforded shelter to these ancient races, than that they were the source whence population and language originated.

4529. *In modern times, Georgia,* the most powerful of the Caucasian kingdoms, has been distinguished by its contests for independence with the Persian empire, and, subsequently, as the main theatre of contest between that empire and the rising power of the czar. Russia, after a pretty long struggle, has secured the whole western shore of the Caspian, and all the level tracts between it and the Black Sea. Even the rude mountain tribes are obliged to own a certain homage; but this, as well as the accompanying tribute, is scanty, and fully compensated by the frequent plundering excursions, against which the Russians with difficulty guard by cordons of troops drawn along their border. Georgia, and still more Circassia, has been distinguished for the athletic strength of its men, and the fine forms of its females; in consequence of which qualities, they have been in great request as domestic slaves over all the Turkish empire. In Egypt, particularly, the offspring of those slaves, kept up by continual accessions, long maintained, under the appellation of Mamelukes, a sway superior or paramount to that of its Turkish masters.

4530. *Turkey possessed, till lately, some ports and districts* on the shores of the Black Sea, which enabled her to carry on a considerable traffic, especially in slaves, and also to foment insurrection among the rude mountain tribes. As, however, she has been obliged by the late treaty to cede to Russia the ports of Anapa and Poti, with the districts of Guriel and Akhaltzisk, she may be considered as having entirely lost her hold of the Caucasian territory.

Sect. IV. *Political Geography.*

4531. It has already been observed, that *nearly the whole of this territory owns the sovereignty of Russia.* That power, to the extent of its means, seeks to establish around the Caspian the same despotic system by which its other territories are governed. Many circumstances, however, render this, in its full extent, impossible. Over a dominion extending amid inaccessible cliffs, buried in snows, or on boundless plains traversed by wandering shepherds, the most absolute ruler is obliged to slacken the rein. Provided the Caucasian tribes yield a certain form of submission, or even remain peaceable, they suffer little disturbance in their domestic economy, which proceeds upon principles very different from those which prevail among the servile nobles of Russia. The same proud aristocratic ideas, and the same value for the distinctions of birth, reign here which prevailed in Europe during the feudal ages. The lower ranks, who till the ground and perform all the menial offices, are nearly in the condition of serfs, or slaves, who, in many cases, may be, and are, sold for the profit of their masters. The fighting part of the population, again, consists chiefly of voluntary and attached vassals, the companions in peace, and the followers in war, of the head of their tribe. In the southern districts, especially, where the Russians must court the natives as their allies against Persia, they are obliged to allow them the unrestrained exercise of their national propensities. To the north, again, the vast plains on every side of Astrachan are continually traversed by Calmucks, Nogais, Kubans, and other Tartar tribes, who, though they may be brought to yield an enforced homage, could never brook a daily interference in their interior concerns. These are administered by their khans, who collect and transmit such scanty tribute as can be drawn from the flocks and herds of their humble vassals. Thus, in all the wide regions around the Caspian, Russia holds, indeed, full military occupation of the leading positions; but she is obliged to allow to all the natives, not indeed any solid or rational liberty, but that rude and proud independence which, in their eyes, is more precious. It is only in the northern provinces of Oufa and Orenburg, where cities with a civilised population, and extensive mining establishments, have been formed, that she has been able to mould the people to that uniform subjection which prevails in other parts both of her European and Asiatic territory.

Sect. V. *Productive Industry.*

4532. *The wealth and industry of this region* will not afford scope for very copious details. The Caucasian region presents to the scientific enquirer a varied and interesting vegetation, but a scanty portion of those products which are subservient to the uses of life. Even the lower valleys of Georgia and Mingrelia, though endowed by nature with extreme fertility, are little improved. The inhabitants, ill disposed of themselves to industrious culture, are moreover liable to the almost continual ravage of war and predatory incursion. Their supply of arms and of foreign luxuries is chiefly derived either from plunder, or from the sale of their people as slaves. Wine in considerable abundance, though of middling quality; a little silk from the low southern districts; some skins and furs from the higher, and fine honey from the declivities of the hills, nearly complete the list of their commodities which are fit for the purposes of trade.

4533. Ever since Russia became at all civilised, *Astrachan*, at the head of the Caspian, has been of some importance as *a seat of commerce.* Two spirited attempts, indeed, were made by the English, one in the sixteenth century, and the other in the eighteenth, to establish a factory there, and open thence a communication with the interior of Asia. The leading object was a share in the commerce of India, which, in consequence of the occupation of all its ancient channels by the enemies of Christianity, had found out this circuitous and difficult line by the north of Persia, and across the Caspian to the Crimea. It was found, however, that Indian commodities could now be more cheaply conveyed by the new maritime channel of the Cape, and even by the Euphrates, to Aleppo. The secondary object, of exchanging the raw silk and precious stones of Persia for English cloth, was baffled by the cruel civil war which distracted and impoverished that kingdom. Even the great extent of land and river carriage across Russia, with the jealous caprice of a despotic government, would have presented insurmountable obstacles to the regular maintenance of such an intercourse. Astrachan, therefore, was in both cases abandoned, and has been left to carry on the little trade which can belong to the vast and desolate regions that stretch round it on every side. The Volga, indeed, after traversing all European Russia, and receiving many great tributaries, must bring down articles of some magnitude, — timber, flax, iron, copper; but these find not in the round of the Caspian either any adequate demand, or any means of obtaining copious returns. One of the chief sources of wealth consists in the immense quantity of fish which both the sea and its tributary rivers supply. The sturgeon is particularly excellent, and from it is manufactured the caviare, which is considered a delicacy over all Europe. To the north, the provinces of Oufa and Orenburg, as already observed, contain mines of considerable value, the management of which is intrusted to the general board at Catharinenberg, on the opposite side of the Urals.

Sect. VI. *Civil and Social State.*

4534. *As the countries of the Caucasus* have ever been little accessible to the rest of the world, the social existence of their inhabitants, modified neither by conquest nor foreign communication, presents many picturesque and varied aspects. Indeed, there is, perhaps, no part of the earth, in which rude and barbarous life appears under a greater variety of forms. As these are, however, in many respects dissimilar, and as society is split into a multitude of small tribes, the subject ramifies into a variety of details, which will be better given under the local division. In general, all these tribes profess the dogmas of the Mahometan faith, though in a somewhat loose manner, free from the tame and mechanical routine which that religion prescribes. Scarcely any of them possess among themselves, or have imbibed from the Russians, the smallest tincture of literature. They are almost universally addicted to habits of plunder, — that national plunder, on a great scale, which is considered rather a boast than a disgrace, and which is generally familiar to rude tribes who live in the vicinity of more opulent nations.

Sect. VII. *Local Geography.*

4535. In treating the details of this part of Asia, we shall begin with *the regions of Caucasus*, which present the grandest natural features, as well as the most peculiar and striking forms of society. The Kuban and the Terek are considered its northern boundary. Within this river-line the country presents a continuation of those vast pastoral steppes which compose southern Russia. In approaching them, however, the traveller descries the mighty precipices of Caucasus rising before him. Its highest ranges are clad in perpetual snow; beneath is the black region of rocks and precipices; while the lower declivities contain a number of well-watered valleys, forming fine pastoral districts; and, though not capable of high culture, yielding plentifully the inferior products, maize and millet. In these mountain valleys dwell the *Circassians*. This race have been peculiarly celebrated for their physical qualities. The men, though spare, are tall, handsome, and athletic. But it is the fine form and delicate complexion of the female Circassians which forms so wide a theme of Eastern panegyric. In these high valleys, with a northern exposure, they do not suffer that intense heat of the sun, which produces, generally, the dark tints of Asia. The daughters of all above the rank of slaves are exempted from oppressive or degrading labour, and merely occupy themselves in sewing, embroidery, and the plaiting of straw. Their beauty seems also to be the result of a careful study of all the circumstances which tend to produce or preserve female charms. The face is carefully shaded from the sun; they are fed moderately on milk and pastry; their feet are protected from injury by a species of wooden shoe; and their hands by the use of gloves. Some even make use of paint, but this is considered discreditable. The value set upon their virtue is marked by the barbarous precaution of a broad leathern girdle, fastened at an early age with silver clasps, and which the husband cuts through at marriage.

4536. *The distinctions of rank and birth* are observed in Circassia with all the strictness of highland pride. Under the prince, or sovereign, are the usdens, or nobles, who attend him in war or foray, but exercise a sway almost absolute over their own immediate vassals. They are of two kinds, — bondsmen, who cultivate the glebe, and armed retainers, who attend him to the field; which last have often been raised, on this condition, from the inferior rank. The arrangements for marriage and education are of a most peculiar character, founded on a sort of Spartan apathy, which tramples upon every tender and domestic tie. Until after the birth of the first child, the husband and wife live entirely separate, and never see each other, unless by stealth; the husband considers it an insult if the wife be even named in his presence. The child, when born, is never reared in the house, or under the eye of his parents. At the age of three or four, some friendly nobleman receives him, and undertakes the sole task of educating and rearing him. Under him the sons are trained in all manly exercises, and the females in those which belong to their sex, until the former is ready to take the field, and the latter to receive a husband, which this foster father is bound to provide. Then, and not till then, they are allowed to see their parents, to whom they have before remained strangers. This violent and fantastic mode of escaping the dangers of effeminate indulgence does not seem to be here inconsistent with that nurture for which full confidence is elsewhere reposed only on the parental care.

4537. *The noble Circassians* lead that sort of life which is usual with independent chiefs on their own estates, and surrounded by their vassals; a round of war and feasting, of hunting and jollity. Especial pride and care are manifested respecting their horses, whose parentage they consider almost equally important with their own. At the birth of the foal, a black mark, indicating its pedigree, is burnt upon the thigh, which cannot be effaced or altered under pain of death. As these noble animals are wanted both for ornament and use, they must unite the qualities of beauty, strength, and fleetness. On the armour, also, no cost is spared. The modern musket and pistol are combined with those of a former age; a coat of mail, often proof against pistol shot; a helmet of polished steel; a bow and quiver. As these, besides being of the finest materials, are, in the case of uzdens, ornamented with pearls and precious stones, their value amounts often to 2000 roubles. Besides the ordinary occupations of war and predatory excursion, these arms are employed in enforcing the right of private revenge, which, as in all barbarous societies, where no other mode of redress exists, is confided to the sword of the injured person, or that of his friends. With these habits of violence is combined, as usual, an almost romantic hospitality. When a stranger has been once admitted to draw a mouthful of milk from the breast of the mother of the family, he is under the protection of the house, and considered one of its members.

4538. *The only estimate of the population of Circassia,* which we have met with, is that of Pallas, who reckons the number of usdens at 1500, and their fighting vassals at 10,000. This number would seem to be under the truth, unless it were restricted to the great Kabirdi, who form the principal tribe, and that which approaches nearest to civilisation. The serfs, or labouring part of the community, must, of course, exceed in number both the two classes mentioned above.

4539. *The Russian territories* every where border upon, and enclose, Circassia; yet the valour of its inhabitants, and the rapid movements of the light cavalry of which its bands are composed, have set at defiance every effort to reduce it to a state of regular subjection. The Russians, on the contrary, are only able, and that somewhat imperfectly, to protect their own confines from inroad by a chain of strong fortresses. These are chiefly erected along the Terek and Kuban, two considerable streams, which, rising among the loftiest heights of Caucasus, flow for about 400 miles, first north, then the former east, till it falls by numerous mouths into the Caspian, the latter west into the Black Sea. Mozdok, on the Terek, is the centre of this line of defence; a town of 3000 people, with a strong garrison. Georgiewsk, on the Kuban, is a fortress of smaller magnitude. Near the sources of the Terek is Uladi-Kaukas, "the ruler of Caucasus," situated amid the loftiest of its snowy pinnacles, and the fiercest tribes by whom they are tenanted. Though defended only by palisades and a wall of earth, it is sufficient to repel their unskilful assaults. It serves at once to bridle those fierce mountaineers, and to secure the route to Teflis, which, however, cannot be safely undertaken without an escort of upwards of a hundred Cossacks. Formerly a great part of this road lay along steeps so rugged that there was not even room for a traveller to pass on foot between the river and the cliffs, and he was obliged to make his way by projections along their perpendicular sides, crossing, too, many imperfect bridges, that were often swept away by the rapidity of the stream. But the Russian government lately caused to be constructed, from the fort of Dariel to that of Uladi-Kaukas, a secure road, 51 versts long, with only two bridges; and, though rocks were to be blown up, hills levelled, ravines filled, and large dikes constructed, this great work was completed in five years.

4540. *The baths of Caucasus* are situated about thirty miles to the south of Georgiewsk, at the foot of one of the lower mountain ranges. They are very numerous, extending over a space of about twenty miles. They are of various qualities, sulphureous, chalybeate, and acidulous; and the principal one is described by M. Godet as so copious as to discharge about a million of pints in the twenty-four hours. They were scarcely known till the first journey of Pallas, but are now much frequented during the months of May and June, and commodious buildings have been erected, both by government and private individuals. In this vicinity is the Scots colony of *Karass*, which is in a flourishing state; though the missionary station established there has not answered expectation.

4541. *The lower course of the Terek*, through a fertile country, presents some interesting objects. Its commerce is chiefly carried on by Kislar or Kisliar, a town described by M. Godet, in 1828, as containing 2000 houses, and about 10,000 inhabitants, of whom 8000 are Armenians. This race, sober and industrious, founded the city in 1736, and carry on all its trade, by which they place themselves in easy and even opulent circumstances. The country round produces 40,000 hogsheads of wine, of 500 pints each; but it is of indifferent quality, and three fourths of it is made into brandy. Silk is also produced in large quantity.

4542. *On the opposite or southern declivity of the Caucasus* extends the famous and once powerful kingdom of *Georgia*. The world, perhaps, does not contain a region more profusely gifted both with richness and beauty. Numberless streams, flowing from the central and loftiest parts of the chain, irrigate and fertilise all its borders. On the sides of the mountains hang magnificent forests of beech, ash, chestnut, oak, and pine; and the ground is covered with vines growing wild in vast profusion. On its successive stages are raised all the varieties of fruit and grain, both of the temperate and tropical climates. The woods abound with game; and the mountains contain in their bosom mines of considerable

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value. The human race flourishes in an equal degree: the men are distinguished for vigour; and the females, with the single exception of a darker complexion, are as famed for beauty as those of Circassia. All these bounties of nature, however, have been rendered unavailing by the oppressions of a feudal government, and by the continual wars which have desolated Georgia for more than a century. The nobles, who had reduced the prerogative of the king within very narrow limits, possess over their vassals the power of life and death, and extract from them the whole produce of their lands beyond what may afford the most scanty subsistence. The unfortunate husbandman is moreover exposed to the continual inroad of the Lesghians and other tribes from the upper heights of Caucasus, and is often obliged to plough with arms in his hands. Georgia, which had been protected by its situation from the tide of Turkish and Tartar invasion, was attacked two centuries ago by the whole strength of the Persian empire; and, after a very gallant struggle, was obliged to yield. The Sophis endeavoured to conciliate their new subjects, and Georgian youth were even employed as the royal guards of Persia. Yet the spirit of independence was not subdued; and when the power of their conquerors was shaken by the growing fortune of Russia, they eagerly sought to regain their freedom by an alliance with this new power. So far as related to the downfall of Persian influence, all their hopes were fulfilled; but the potentate through whom this triumph had been achieved, soon proved no less ambitious. The sons of the brave Heraclius were deprived of their inheritance, and Georgia was at last reduced to the regular form of a Russian province. This might have proved an ultimate good; and the Russians have in fact made some efforts to introduce tranquillity and industry; but the constant wars in which they have been engaged with Persia, and of which Georgia has been the theatre, have rendered these hitherto of very little avail. Through the pressure of these various evils, the population of this fine region is supposed to be reduced to a number not exceeding 320,000 souls. The greater number are not Mahometans, but Greek Christians, with a large proportion of Armenians, who have in their hands all the traffic of the country. The Russians draw from it a revenue of 800,000 rubles, not nearly sufficient to defray its expenses. The waters of Georgia are chiefly collected by the Kur or Cyrus, which flows first northward, along the foot of a chain of lofty mountains; but afterwards turns to the west and south, passes by Teflis, and falls into the Caspian on the borders of Ghilan. It has previously received the Araxes, from Ararat; the greater part of whose course, however, has been through Armenia and Aderbijan.

4543. The only city of Georgia of any importance, or worthy of the name, is *Teflis*, (*fig.* 675.), the capital. It is boldly situated on the precipitous banks of the Kur, which flows here through a deep and gloomy defile covered with immense forests. Several points in its vicinity command a grand view of the bordering chain of mountains, rising in successive stages above each other, and terminating in the snow-covered pinnacle of Elbourz. The city, founded in the eleventh century, does not possess any architectural beauty. It is a collection of low flat-roofed dwellings, built of dun brick, with small doors and paper windows. Nor are those splendid mosques, and gilded minarets, which elsewhere redeem the general poverty of Oriental cities, to be found at Teflis. There are, however, several handsome churches, though chiefly distinguished for their picturesque situation; and the old citadel, placed on a high promontory, presents a grand and imposing mass of ruins. The only really good buildings are a few which have been erected by the Russians; the arsenal, the hospital, and particularly the great market-place, the shops of which are screened from the weather by a long range of columnar arcades; and which, as the natives begin reluctantly to acknowledge, is much more commodious than the old one. Teflis is famous for its baths, formed of warm streams descending from the neighbouring hills, and collected into two large apartments, one for the male and the other for the female inhabitants. Their medicinal virtue is said to be considerable; but to an European eye, they are dark, dirty, and incommodious. The Russians make Teflis their head-quarters, and keep there a large military force, which is quartered upon the inhabitants. This is considered a serious grievance, being wholly inconsistent with the habits of Oriental seclusion, particularly in regard to the female sex, whose virtue, made hitherto to depend chiefly on the jealous guard kept over it, is said to have suffered materially from this intrusion. The population of Teflis, in consequence of the evils under which it has suffered, has declined in the course of the last twenty years from 22,000 to 15,000.

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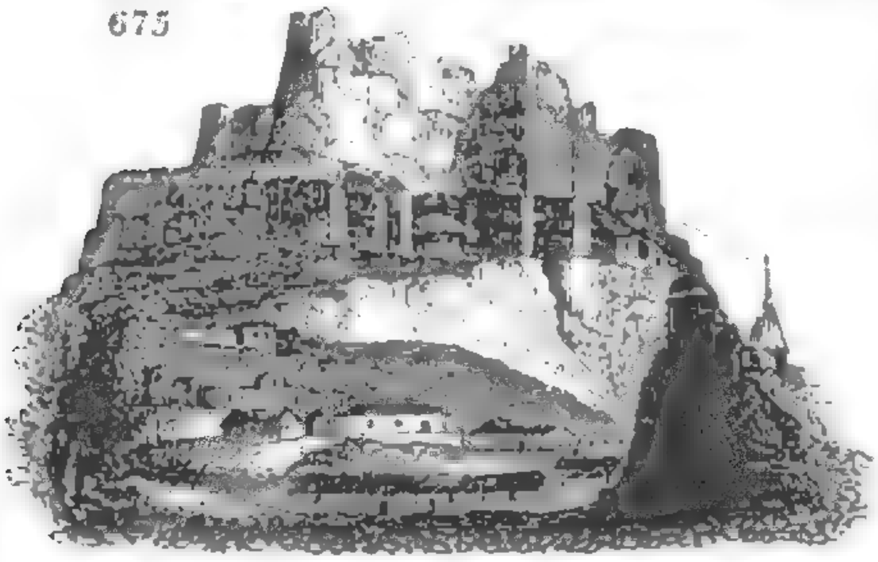


CASTLE OF TEFLIS.

4544. Proceeding eastward from Georgia to the shores of the Black Sea, we find *Mingrelia* and *Imiretta*;

regions celebrated in antiquity under the name of Colchos. The interior tracts are mountainous and rugged; but Caucasus here slopes downward, and allows to intervene between it and the sea a large plain, moist, fertile, but unwholesome. Floods innumerable, descending from the heights, and uniting into thirty considerable rivers, inundate this watery region. Among these, the only one of great importance is the ancient Phasis, now called the Rioni, which, after a long course through the deep Circassian glens, enters the plain of Mingrelia, and forms its boundary on the side of Turkey, as it was anciently supposed to form that of Europe and Asia. The ground, impregnated with such copious moisture, becomes too soft for the plough, and unfit for the production of wheat or barley, but yields plentifully millet and other small grain, which forms the ordinary food of the inhabitants. Fruits of every kind grow spontaneously, though containing sometimes more juice than flavour; but this fault is not found in the figs, chestnuts, and grapes, which yield a strong agreeable wine. Raw silk abounds, and some rude manufactures are made of that material. There is a person holding the title of Prince of Mingrelia, and the country has vibrated between an attempt to maintain its independence, and a submission to Turkey or Russia; which last power has, by the course of events, become paramount. Mingrelia, however, has always been more exposed than even the rest of Caucasus, to oppression, tumult, and misrule of every description. The nobles are passionately devoted to hunting: they account a good horse, a good dog, and a good falcon, the first elements of human felicity. At the same time, they carry on the most regular system of oppression towards their dependants, and of indiscriminate plunder towards all others. Yet Mingrelia has not wholly lost that commerce which anciently rendered Colchos celebrated. Communicating by the Black Sea with Asia Minor and Constantinople, it supplies them with the commodities of the Caspian territory; silk, honey, and, unfortunately, above all, slaves; the obtaining of which, by purchase, seizure, and every sort of nefarious process, forms the principal occupation of the chiefs of Mingrelia. It is calculated that Turkey receives annually from thence about 12,000 of these unfortunate beings. As the port of Poti, however, at the mouth of the Rioni or Phasis, has by the last treaty been ceded to Russia, that power will henceforth command the trade of Mingrelia. Poti contains about 1000 inhabitants; from the obstructions at the mouth of the river, large vessels must anchor at the distance of half a mile. The late entrance of an English ship into this port forms a memorable event in the annals of commerce. Mingrelia extends about 140 miles along the sea-shore, and about forty or fifty inland. Reineggs estimates the population at 4,000,000; but, from every picture which has been drawn of it, we should imagine one fourth of that number exaggerated.

4545. *Imiretta*, composing the lofty interior of Mingrelia and the banks of the Upper Phasis, is a bold pastoral region, inhabited by a simple people, who have remained more exempt than the rest of Caucasus from the evils by which that region has been desolated. Their czar, an hereditary chief, continues to rule them, under a mere acknowledgment of vassalage to Russia. Retired in woody hills, or agreeable valleys, the inhabitants of Imiretta keep aloof from the scenes of contention by which they are surrounded. When, however, their native fastnesses are invaded, they defend them with all the hardihood of mountaineers. They have among themselves deep understood tones, which, echoed among the mountains, will often call up several hundreds from spots which did not seem tenanted by a human being. The people are accused of indolence; yet it is admitted, that silk, honey, and other Caucasian staples are reared by them with greater diligence than in other quarters. Cotatis, called its capital, is an old city on the left bank of the Phasis, now reduced to about eighty families.

4546. Bordering on Imiretta, south of the Phasis, is *Guriel*, a country naturally as rich as Mingrelia, but still more desolated by Turkish inroads, and now reduced almost to a desert, being estimated to contain not more than 6000 families. By the last treaty, however, it has been ceded to Russia, whence a material improvement in its condition is anticipated. Bathoumi, a port with the only good roadstead on this coast, is the seat of some trade.

4547. Proceeding northward along the Black Sea, after an almost impassable range inhabited by a wild race called the Sisanes, appears an extended and wooded region, *the country of the Abasses*, a rough variety of the Circassians. They resemble, without equalling, that people in their handsome persons and dignified manners. Secured from foreign invasion by the poverty of their country, and by its immense and entangled forests, they are wasted by intestine contests; and to the various forms of plunder, their situation has tempted them to annex that of piracy. It has also, however, enabled their country to become the theatre of some commerce in the usual Caspian commodities, that of slaves not excepted. Of this trade, Phanagoria, at the mouth of the Kuban, forms a sort of entrepôt. Anapa, farther to the south, a considerable port, with a good harbour, was in possession of the Turks till the last treaty, when it was transferred to Russia.

4548. All the nations now enumerated occupy the declivities or borders of Caucasus, where alone any extent of culture, wealth, or civilisation can exist. Yet its *extreme and most awful heights*, the regions of rocks and eternal snows, are not wholly without their tenants. Among these, the most known and formidable are the Ossetes and the Lesghis. The former occupy the mighty northern heights behind Circassia, and either hold or border upon all the routes leading thence to Georgia and the southern Caucasus. Of this position they avail themselves, either to plunder the passing traveller, or to levy a composition upon him. They block up the defiles, or roll down huge stones as he proceeds along the narrow paths cut in the perpendicular face of the cliffs. They have not a village that contains a hundred inhabitants, and their abodes are like little castles; yet, on an emergency, they can muster 10,000 horse. The Russians have beaten them, without being able to reduce them, but they have been forced to render up a number of their chiefs, who are kept as hostages at Mozdok, and by that pledge alone are prevented from indulging against Russia their favourite propensities.

4549. *The Lesghis*, who, from the southern summits of Caucasus, overlook the plains of Georgia, are a still more noted and terrible race. Viewing from this awful height the magnificent harvests which wave in the distance beneath, they are impelled to a perpetual career of robbery, and have become the terror and scourge of all the surrounding territories. Their habitations, perched on the summits of the loftiest cliffs, and on the edge of the steepest precipices, have a most fearful appearance. Respected as the bravest of all the tribes of Caucasus, and entrenched in its most rugged recesses, they have from time immemorial set all attempts to invade them at defiance. Like the Swiss, they have been tempted by poverty to engage in mercenary warfare, and hire themselves for a campaign of three months at the rate of twelve roubles. In their interior economy, they display no small degree of industry and energy. They have thrown strong bridges of stone or wood across unfathomable gulfs, have carried roads along precipices, and raised good water to their habitations by pipes or canals cut in the rock. They have availed themselves to the utmost of their scanty portion of ground, by forming it into terraces. They are chiefly Mahometans, with some remnants of Christianity; but a considerable number are still devoted to Pagan superstition, and worship the sun, moon, and stars.

4550 *Between the grand divisions now enumerated*, there are *various little tribes, and septs* of greater ones, scattered through all the corners of this mountainous region. Enough, however, has been already said; for the few scanty annals of the Kistes, the Jugouches, the Tusches, and the Karabulaks, would, we conceive, afford little edification to the reader.

4551. We have still to notice, at the head of the Caspian, *Astrachan* and its district, formerly constituting a government by itself, but now united to Caucasus, of which the city of Astrachan forms the capital. This place, seated amid such a vast range of mountains and deserts, has little opportunity of becoming great or opulent. Yet its water communications are very extensive, by the Volga on one side and the Caspian on theother; though these are inferior to those of Europe, and of the rich countries of the East. A river, however, which traverses all European Russia must bring down some commodities; and Astrachan obtains raw silk from Persia; turquoises from Khorassan; rubies and other gems from the head of the Oxus. After all, its chief wealth is derived from its own industry, particularly the vast fishery which it carries on. The quantity of fish obtained, is not only sufficient for domestic consumption, but is largely exported; and the roes of sturgeon, prepared in that peculiar form called caviare, form an article of trade for which it is famed. A good deal of salt is obtained from marshy lakes in the neighbourhood; and some fabrics of leather and silk are carried on. The Russian monarchs, since the time of Peter, have made every effort to improve Astrachan and its trade. The Kremlin, however, and other monuments of its grandeur, when it was the capital of a separate kingdom, are now in ruins; and the city, though three miles in circumference, and surrounded by a wall, is for the most part poorly built of wood. Some handsome edifices of stone, however, have lately been erected, particularly two commercial halls. The population, amounting to 70,000, forms a various mixture of the people of Europe and Asia: Russians, Greeks, English, French, Persians; even the Hindoos have a small quarter appropriated to them. Most of the Persian trade is carried on by the Armenians.

4552. *The environs of Astrachan*, unless in its immediate vicinity, consist of a boundless extent of flat *steppe*, in many places almost desert, but in others capable of supporting a considerable pastoral population. The occupants are decidedly Tartar. A large body of fugitive *Calmucks* have filled the eastern part with their flocks and herds. The western tribes are chiefly *Nogais*, mixed to some extent with the Cossacks of the Don. The Tartar habits and character universally prevail, though the people are reduced by subjection to somewhat a more orderly and industrious way of life than they would spontaneously adopt.

4553. To the north of Astrachan is the large government of *Orenburg*, which forms, as it were, the link between European and Asiatic Russia. Tartars still form the basis of the population; but many of them have been trained to regular and industrious habits. The country is capable of every kind of culture, but is chiefly covered with rich pastures. Its western frontier is formed by the Ural mountains, possessing that rich mineral character which has been so often noticed. From these mountains flows to the Caspian a river called also the Ural, and which in its eastern course separates Russia from the vast wilds traversed by the Kirghises and Calmucks. A line of military posts here secures the empire from the inroad of these rude tribes. On this river is situated *Orenburg*, whose site has been several times changed, and which is now rather a well built town of 2000 houses. To this market the Tartars bring annually 10,000 horses, and from 40,000 to 60,000 sheep, the latter purchased chiefly for the sake of the tallow. Hence also numerous annual caravans depart for Khiva, Bokhara, Khojend, and other cities in the interior depths of Asia. Though Orenburg, however, be the most important city of the district, yet, in consideration of its exposed situation as a frontier place, the seat of government has lately been transferred to *Oufa*, situated at the junction of the river of the same name with the Belaia, which afterwards falls into the Kama. It is surrounded by a fertile territory, but lies itself in a species of hollow, intersected by numerous torrents and ravines. It is reported to have been once a great Tartar capital, and contains, in fact, many remains covered with Arabic and Cufic inscriptions.

Chap. XII.

SIBERIA.

4554. Of the three great belts into which Asia is divided, and with which the geographic distribution of its animals has been observed to correspond, *Siberia* constitutes the third and most northerly. Its features are peculiar to itself, and, like those of the other portions of this continent, on a gigantic scale. As those of the south include the most extensive and populous empires in the world, and the middle tracts the widest range of pastoral table-land; so the northern regions of Asia present an almost unbounded expanse of frozen desert. Some of the plains, indeed, of its southern border are covered with deep and rich pasture, and, under a more careful tendance than they have yet received, might become the seat of populous kingdoms. But, as we proceed to its northern boundaries and the bleak shores of the ocean, human life, with the means of supporting it, becomes more and more deficient. Even here, however, that beneficent contrivance which presides over nature has provided for the support of a profusion of animals. That severity of the cold, which would otherwise be fatal, is guarded against in some by a thick coat of fat and unctuous substances; in others, by skins and furs, much richer, softer, and more beautiful, than those which clothe the tenants of the more favoured regions. The substances which communicate to these classes of animals the power of resisting the fiercest colds of the north, become, with little preparation, eminently useful and ornamental to man; the midnight gloom is enlivened, and the pomp of kings derives one of its most splendid decorations from commodities furnished by the shivering hunter of the polar desert.

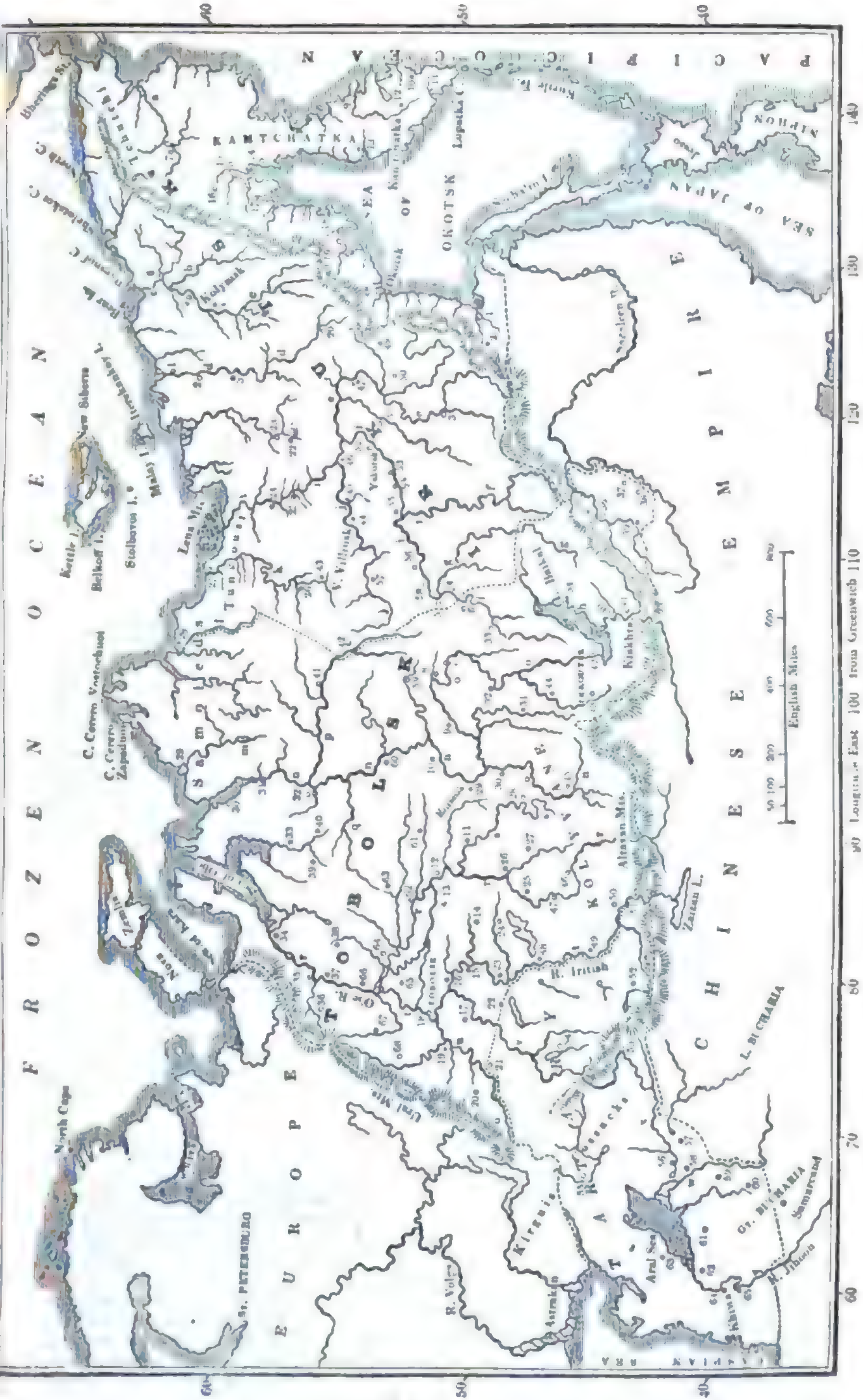
References to the Map of Siberia.

NORTH PART.
1. Sinoimo
2. Ogiginsk
3. Yedinsk
4. Kolymsk
5. Sredne Kolymsk
6. N. Kolymsk
7. Anadyrsk
8. Deanki
9. N. Kamtschatka
10. St. Peter and St. Paul
11. Bolcheretsk
12. Kamtschatka
13. Tigil
14. Boostaresk
15. Kamenoi
16. Aklansk
17. Tigiginsk
18. Yamsk
19. Taunskoi
20. Omolon
21. Baralass
22. Verkonsk
23. Yansk
24. Gigansk
25. Karbinskoi
26. Ceghaka
27. Olensk
28. Korgin Vill
29. Popova
30. Nagrebovko
31. Doudinsk
32. Turukhansk
33. Tazovskaia
34. Barvageska
35. Berezov
36. Vourinski
37. Morkalskoi
38. Satarnov
39. Tyniska
40. Karachonska
41. Tlimpeiska
42. Tremia
43. Tarai
44. V. Villinsk
45. S. Villinsk
46. Villinsk
47. Ladamarka
48. Okhotsk
49. Tudoroskou Kraut
50. Pokoe
51. Amginska
52. Yakutsk
53. Nuiskoi
54. Markinskoi
55. Olekminsk
56. Mourin
57. Magazines of Salt
58. Jelovskoe
59. Tchapogirska
60. Tchoulkovo
61. Kitchanginl
62. Murasovi
63. Sartam Ourei
64. Sourgout
65. Sit
66. Voronika
67. Soumskoi
68. Catharinenberg

SOUTH PART.
1. Uda
2. Oudskoi Ostrog
3. Maukai
4. Tchoulskoi
5. Wittim
6. Ivanouchkola
7. Pacchino
8. Tchadolsko
9. Irkineva
10. Zotina
11. Taragnevi
12. Narym
13. Tornekovi
14. Nazarovo
15. Tara
16. Ashevanskie
17. Ischim
18. Tobolsk
19. Tumen
20. Tcheliabinsk
21. Zvermogovskaia
22. Lomevo
23. Omsk
24. Kansk
25. Kholyvan
26. Tomsk
27. Kousnetsk
28. Atchinsk
29. Yeniseisk
30. Krasnoyarsk
31. Oudinsk
32. Yekharevo
33. Marcova
34. Barginsk
35. Kourlarska
36. Nertchinsk
37. Koudon
38. Chindat
39. Tchindantourou-touevska
40. Selinginsk
41. Kiachta
42. Irkoutsk
43. Okinskoi
44. Coudaleiska
45. Albakanskoi
46. Beisk
47. Barnaoul
48. Jelleznskaya
49. Lebiajei
50. Ubinsk
51. Bouchtarminskoi
52. Copper Mines
53. Copper Mines
54. Tatagai Ruins
55. Mog Hish Moula
56. Kuduk
57. Turkestan
58. Ostrar
59. Uratube
60. Ourajmah
61. Shaxlomir
62. Kharabad
63. Ruins of Hay-avulis
64. Khiva
65. Mecmet Seral

Rivers and Lakes.
a Anadir, R.
b Omolin, R.
c Kolyma, R.
d Indigirka, R.
e Aldan, R.
f Olekma, R.
g Wittim, R.
h Baikal, Lake
i Lena, R.
j Vilui, R.
k Olensk, R.
l Olen, R.
m Pasida, Lake
n Yenisei, R.
o Angara, R.
p Toungouska, R.
q Klagoni, R.
r Obi, R.
s Tchoudim R.
t Irtysch, R.
u Tobol, R.
v Ischim, R.
w Sihon, R.
x Sarasu, R.
y Amour, R.

Fig. 676. MAP OF SIBERIA.



Sect. 1. *General Outline and Aspect.*

4555. *The outlines of Siberia* are formed by a continuous prolongation of some of the grandest features of nature. To the north, the ocean extends in a continuous line, not varying far from 70° of latitude, or somewhat beyond the Arctic Circle. On the east, also, Siberia is bounded by the ocean, not, however, the Arctic Ocean, but a corner of the great Pacific, enclosed between the opposite coasts of Asia and America, which approach each other till they form the narrow Strait of Behring. On this side the coast of Siberia is very much broken, and is bordered, not so much by the ocean itself, as by its deep gulfs of Okhotsk and Anadir. For its western boundary, Siberia has the long chain of the Urals, which reaches from the ocean almost to the Caspian, and separates the vast plains of Russia in Europe from those, equally vast, of her Asiatic dominions. This "stony girdle of the world," as the ignorance of Europe once termed it, presents not the formidable barrier which that ignorance has sometimes supposed. The height does not exceed 3000 or 4000 feet; and the slope on each side is so gradual, as to be ascended with little difficulty in ordinary vehicles. At its southern point, it is nearly, if not entirely, connected with that vast chain which, running from west to east under the general name of Altaï, forms a parallel line with the mightier ranges of central Asia and India, and separates Tartary from Siberia. It appears in most of its course to be considerably higher and more rugged than the Urals; the branches which it throws into Siberia are peculiarly rich in metallic ores. The range strictly bearing this appellation occupies only about 7° of longitude around the sources of the Irtysch and the Yeniseï, and is more remarkable for its richness in metallic ore than for its elevation; but it is connected with other limitary chains extending in the same direction; the Sayanskoi, reaching to the Baïkal; the Yablonoy or Apple mountains, an extensive and rugged range, which, uniting with the transverse one of the Khing-khanoola, is prolonged, under the title of the Slanovoy or Aldan mountains, to the Eastern Ocean. The application to the whole of the term Altaï is somewhat arbitrary; but M. Humboldt conceives that it may be advantageously called "system of the Altaï." It forms a continued line, bounding Siberia, and parallel to the Celestial Mountains, the Kuenlun, and Himalayah, those mighty chains of central Asia and India. After extending along the shore of the Eastern Pacific, it throws across the peninsula of Kamtschatka a ridge which shoots up to a much greater elevation than any of the rest; since M. Ermann has just determined Klintcheva, its highest peak, to be 18,805 French (above 20,000 English) feet above the sea. He found the whole of the ridge to bear the most decided marks of volcanic action.

4556. In delineating the land boundaries of Siberia, we have mentioned *its mountains*; for the whole interior of this region forms one vast dead and dreary level. The only great feature by which its wide expanse is diversified is its *rivers*; and these, in regard to length of course and volume of water, rival the greatest of the ancient world. They are not destined, however, like the streams of happier regions, to fertilise the plains through which they flow, and convey their rich produce to bordering kingdoms, and to climates beyond the ocean. No such purposes can be fulfilled by these

> "solid floods,
> That stretch, athwart the solitary vast,
> Their icy horrors to the frozen main."

If any of them had flowed westward into Russia, and reached any of the seas of the civilised world, it might have borne rich cargoes on its bosom, and given an impulse to the industry of this rude region. But they all flow parallel to each other, from south to north, beginning in the Altaï and its connected chains, rolling their sluggish waves through frozen plains, and ending in a sea "bound in chains of perpetual ice," along which the utmost efforts of modern navigation have in vain attempted to find a passage. It is only by a broken line, ascending the tributary of one river and descending that of another, that a laborious boat track, interrupted by frequent land portage, is formed across Siberia to the Eastern Ocean.

4557. *In tracing this chain of great rivers*, beginning with the west, our notice is first drawn by the combined streams of the *Irtysch* and the *Obi*. The Irtysch, which seems to have some claim to be considered as the main stream, rises, to the south of the Altaï, from an elevated portion of that chain. After a considerable westerly course, it combines with some other waters in forming the lake Saizan, whence it again issues, and, crossing the mountain limit, rolls northward through rich pastoral plains, till it reaches Tobolsk. Here it meets the Tobol, which, with its tributaries, has collected the waters of the western tracts of Siberia. About 200 miles lower it meets the broad stream of the Obi. This chief of the waters of Siberia rises in or immediately behind the Altaï, and runs through the provinces of Kolyvan and Tomsk, by whose capitals it passes, till, swelled by numerous tributaries, it joins the Irtysch. Though rising from a source less distant, it pursues a more winding course, and rolls a larger body of water, so that its name prevails after its junction. The united stream,

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however, rolls only through frozen plains, till, after a course of about 400 miles, it opens into a bay, or rather a broad estuary, called the Gulf of Obi.

4558. *The Yeniseï* flows east of the Obi, in the same direction, and nearly of equal magnitude. This second of the rivers of Siberia arises near the Lake Baïkal, on the southern side of the Sayanskoi chain, whose waters it receives for a considerable space, till it finds or makes an entrance into Siberia. It then flows nearly due north to the Frozen Ocean. On its banks are the considerable, though secondary, cities of Krasnoyarsk and Yeniseisk. A very little above the latter it receives an important tributary, the Angara, or Upper Toungouska, whose waters rush impetuously through a rocky passage out of the Baïkal lake. They become afterwards peculiarly clear and transparent, and pass by Irkoutsk, the second capital of Siberia, till they bring to the Yeniseï a stream of equal magnitude to itself. In its further course the Yeniseï receives two other Toungouskas, the lower of which has a course of 500 or 600 miles, and joins it at Turukshansk, on the borders of the Arctic Circle.

4559. *The Lena remains* still to be mentioned amid the mighty waters of Northern Asia, traversing its most remote and eastern regions. It rises from a small cluster of mountains on the northern shore of the Baïkal lake. Its early course, for nearly 1000 miles, is northeast, and sometimes almost due east; a direction highly advantageous for establishing a water communication with Okhotsk. While following this direction, it receives two considerable rivers, the Witim and the Olekma, both from the great boundary chain, called here the Yablonoy mountains. The Lena now passes Yakoutsk, the only place which, amidst the immensity of these eastern deserts, deserves the name of a town. A little farther down it receives the Aldane, which, with one of its tributaries, enables boats to reach within a short land carriage of the Eastern Sea. The Lena then flows almost due north, through desolate plains only frequented by the adventurous hunter, in search of the beautiful furs with which the animals that inhabit them are covered.

4560. *The secondary rivers of Siberia* are chiefly the tributaries of the great ones, and, as such, have been already mentioned. The Olenek to the west of the Lena, and the Indigirka to the east, would in Europe be considered great; but their obscure and distant course, in the vicinity of features so much more grand, scarcely attracts attention. The Kovima and the Anadir, in the extreme east, have obtained more notice, in consequence of researches to ascertain on that side the boundaries of the continent.

4561. *Siberia contains one great lake*, the *Baïkal*, whose dimensions almost entitle it to the appellation of an inland sea. The boundary chain, here throwing out branches peculiarly bold and lofty, forms a circuit of mountains, the waters of which not only suffice to feed this ample reservoir, but give rise to all the great rivers of north-eastern Asia. The Baïkal presents a grand and imposing aspect, being encircled by these mountains, which on the northern side are particularly rugged and rocky, and crowned with woods. The Russian navigators view it with peculiar reverence, calling it the Holy Sea, and reporting tales of those who have suffered severely in consequence of applying to it any less respectful appellation. This lake is about 300 miles in length by 50 in breadth. In winter it is completely frozen over, and down to the middle of March can be passed in waggons. Even in May, Mr. Bell found the navigation dangerous from the ice, and it was only by being moored to a solid mass of it that the vessel escaped injury. The lake abounds with fish, particularly sturgeon, and with seals, the presence of which seems very remarkable, considering the distance from the sea. The waters are said to be subject to certain interior agitations, which render the navigation sometimes dangerous, even when the wind is moderate. Its water is completely fresh. The other lakes of Siberia are excessively numerous, but scarcely deserve the name of lakes. They are rather chains of ponds, or stagnant collections of water, in the marshy or submerged steppes which cover a great extent of its western territories. Only the lake of Tchany in the steppe of Barabra, and of Kurg Algydum in that of Issim, present considerable expanses. A great proportion of these little lakes are saline, or variously impregnated with mineral substances. M. Humboldt thinks it not improbable that they are remnants of some great interior sea connected with the Aral and the Caspian.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4562. *The Uralian and Altaian ranges* afford splendid displays of all the rocks of the primitive, transition, and alluvial classes; vast tracts, also, are composed of secondary and tertiary formations; and volcanic rocks of ancient and modern date rise through the older and newer deposits.

4563. *Mines.* — Siberia has been celebrated from an early period on account of its rich mines and precious stones.

1. *Gold mines.* The principal gold mines in Siberia are those of Berezof, in the district of Catherinenberg, on the east side of the Uralian mountains. The gold occurs either pure or disseminated through iron pyrites, forming what is called the pyritious ore of gold. Five English pounds' weight of gold are obtained from 1250 stone weight of the crude ore.

2. *Silver mines.* The most considerable silver mines are those of Kolyvan, Nertchinsk, and Schlangenberg. The silver occurs in a native state, more frequently in the state of ore, as silver glance, red silver ore, horn ore, or muriate of silver. Platina has been found in such quantity, to the east of the Urals, that it is now coined, the coins containing a certain proportion of silver.

3. *Copper mines.* Rich copper mines occur in the Uralian and also in the Altaïan chain. The prevailing ores in these mines are red copper ore, or red oxide of copper, and green and blue malachite.

4. *Iron mines.* Iron abounds in Siberia, but hitherto few considerable mines have been established in this division of the Russian empire.

5. *Lead mines.* Although galena abounds in Siberia, hitherto but few mines of lead have been opened.

4564. *Gems and Ornamental Stones.* — *Diamond*, the most precious of all the gems, has been lately found in Siberia, but not in considerable quantity. The most frequent of the gems are *topaz* and *beryl*: the true emerald has not been met with. The *Siberian avanturine* is a variety of quartz rock, with disseminated scales of mica, which, when polished, has a beautiful appearance. The red tourmaline, or *rubellite*, a very beautiful mineral, found at Sarapulka, not far from Mursinsk, when cut and polished, is highly esteemed as an ornamental stone or sub-gem. Beautiful *blue and green felspars*, valued by collectors, are met with in different places; and the valuable and beautiful mineral, the *lazulite*, or lapis lazuli, which affords the well known pigment named ultramarine, is met with around the Lake Baïkal. The elegant *agates*, *carnelians*, and *calcedonies* of Siberia are well known; and the rock crystals, with embedded green tourmaline and rubellite, are prized by collectors.

Subsect. 2. *Botany.*

4565. *The botany of the Altaïc mountains* has very lately been ably illustrated in the Travels of Professor Ledebour, of Dorpat, which we regret are not yet translated from German into the language of our country; but from which we learn, that the southern and western parts of the Altaïc mountains, which it was the principal object of the author's journey to explore, consist of wide steppes, whose soil is partly sand and partly clay, containing more or less saline principle. There, nature, with few exceptions, only offers the general forms of the north of Europe, and those objects which are new and peculiar are neither remarkable for beauty nor singularity of structure. The Altaïc range, on account of their north and easterly position, contrast but unfavourably with the mountains of more southern and tropical latitudes. The traveller does not, as in tropical climes, descend from lofty mountains into "smiling fertile vales," where a bright sky makes him forget all his fatigues: on the contrary, he must submit to be drenched with continually recurring rains, to experience frost even in the summer nights, and to wade through long and weary bogs. Deep and rapid are the rivers of this country, especially the Irtysch and the Alei: the Uba and the Ulba, the latter a tributary stream to the Irtysch, also take their rise in the mountains, and water, for a greater or less distance, the steppes of this district. There are many lakes, some strongly impregnated with salt, and few entirely free from it. Through the whole of the country which lies south of the Irtysch, the ground rises, partly into separate hills, and partly into ranges of small eminences, stretching one above another, like terraces, to a height of 1156 Parisian feet. Large pine forests skirt the Irtysch from Barnaoul to Schulbinsk; the banks of the Alei are also covered with trees, exclusive of the Fir tribes, and the same is probably the case with the other small rivers. The Uba and Ulba are, however, mostly destitute of wood; and in general, this wide steppe tract, except the above-mentioned pine forests, is barren of trees, though farther north, there is no deficiency of them. In the steppes occur many plants that grow plentifully in Europe, particularly the following: — Adonis vernalis and Anemone patens, both in great abundance; many species of Artemisia, Allium, Gypsophila and Statice; numerous Umbellatæ; Ceratocarpus arenarius and Diotis ceratoides cover whole tracts; and, where the ground is impregnated with saline principle, the peculiar salt plants occur in abundance, such as the species of Polycnemum, Atriplex, Chenopodium, Frankenia, Tamarix, Salicornia, and Halocnemum; also Chorispora sibirica, Diotis atriplicoides, and others. Farther south, Amaryllis tatarica is extremely plentiful, with Rindera tetraspis, and the equally rare Nepeta sibirica; and the beautiful Eremurus growing on the little hills. But the peculiar richness of the Flora of this steppe first displays itself near the Irtysch, where, besides most of the above-named plants, the following deserve to be particularly noted: a new species of Peplis and of Camphorosma; many individuals, quite peculiar to this country, belonging to the genera Cachrys, Peucedanum, and Seseli; among the Asperifoliæ, the genera Echinospermum and Lithospermum, Cynoglossum viridiflorum, Solenanthus circinatus (n. sp.), Tournefortia Arguzia, Hyoscyamus pusillus, Rheum leucorhizum; Arenaria subulata, filifolia, and longifolia; Cotyledon Lievenii (n. sp.), Saponaria elegans (n. sp.), many Zygophylla, Ammodendron Sieversii, Calligonum Pallasii, the Saxaul

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ROSA BERBERIFOLIA.

(*Anabasis Ammodendron*, n. sp.), Rosa berberifolia (*fig.* 677.), Ranunculus platyspermus, Dodartia orientalis, Dracocephalum integrifolium (n. sp.), two new kinds of Eremostachys (a genus that ranks between *Phlomis* and *Molucella*), Phlomis agraria, several Alyssa, Chorispora stricta, Goldbachia, many Lepidia, Megacarpæa laciniata, Sterigma tomentosum, Tauscheria; a host of Astragali, several of them frutescent; Hedysarum splendens, Robinia Halodendron, Cirsium igniarium, and a variety of Saussureæ, Scorzoneræ, and Serratulæ, with Tragopogon ruber, and numerous others. Many of these plants occur also even in the territory of Loktewsk. When rising to the mountains from these steppes, the vegetation, at a height of 4500 Parisian feet, assumes a still greater similarity to that of Europe; though many of the peculiar productions of the country still appear. The latter principally belong to the vernal plants; they also grow on the steep sides of the rocks, or adorn the banks of the mountain streams, wherever these are liable to occasional inundations. In such spots, Gentiana acaulis and Cortusa Mathioli flourish, and Cardamine macrophylla, Saxifraga Geum, Pedicularis resupinata, and others, grow in the greatest luxuriance. Also, rich flat meadows, situated at the foot of the higher mountains, produce many of the peculiar plants of Siberia; while, on the contrary, gently rising hills, or spots clothed with scattered wood, exhibit such vegetation only as is common to Europe. This is likewise observable in such places as form standing bogs, and are neither irrigated by the fresh water trickling down the mountains, nor shaded by a thick covering of foliage. Still the morasses of this region do possess some plants peculiar to themselves.

4566. *The Spring flora* is especially marked by the abundance of Ranunculaceæ and Liliaceæ; as Ranunculus polyrhizos; Adonis vernalis, sibirica, and villosa; Pæonia hybrida, Anemone patens, cærulea, altaica, and umbrosa (n. sp.), Atragene alpina, Ornithogalum angulosum (n. sp.) and uniflorum, Tulipa altaica and tricolor; Iris ruthenica, glaucescens (n. sp.), and flavissima. Among the rock plants of this region may particularly be noted the following, as most numerous: — Veronica pinnata, Ziziphora media; Dracocephalum origanoides, peregrinum, pinnatum, Ruyschianum, and nutans; Nepeta lavandulacea, Thymus angustifolius, Patrinia sibirica, Androsace dasyphylla (n. sp.), Myosotis rupestris, Onosma simplicissima and Gmelini, Sibbaldia erecta and altaica, Statice speciosa, Swertia dichotoma, Thesium rupestre (n. sp.), Bupleurum baldense, several Allia, Stellera altaica, Gypsophila thesiifolia, Orostachys chlorantha, Sedum Eversii and hybridum; Silene altaica, graminifolia, stylosa (n. sp.); Potentilla pennsylvanica and sericea, and many other individuals of this genus; Thalictrum petaloideum, Linaria altaica, several Alyssa, Erysimum lanceolatum, Hesperis aprica, various Astragali, Oxytropis setosa, Aster alpinus, Centaurea sibirica, Prenanthes diversifolia (n. sp.), and Ephedra monostachya. On the same plain grow, to the height of a man, some Heraclea, Seseli athamantoides, Cirsium heterophyllum, Silybum cernuum, Achillea impatiens, several Adenophora, Delphinia, and Aconita, many Veratra and Thalictra, with Senecillis glauca, Tragopogon orientalis, Pedicularis elata, and the beautiful P. proboscidea, that covers large tracts.

4567. *Among the peculiar bog plants* of this region may be mentioned Androsace filiformis, Viola (*tricolori aff.*), Ranunculus Cymbalaria, longicaulis (n. sp.), natans (n. sp.), Gentiana barbata, Cirsium Gmelini, Potentilla multifida, Allium uliginosum (n. sp.); and, where the ground is shaded by shrubs or low copsewood, we find Primula sibirica, Phaca exaltata, Pedicularis speciosa, and others; where the valleys expand, in consequence of the rivers that water them being swollen, as in the valley of Tscharysch and that of the Koksun; there, between the river and the mountain that bounds the vale, are extended, flat, steppe-like plains, similar to those found at the foot of the mountains, but with less luxuriance of vegetation, and different from them in their peculiar productions. In such spots grow Convolvulus Ammanni, Gentiana Gebleri, Potentilla (n. sp.) subacauli aff., Saussurea (n. sp.); Peucedanum vaginatum (n. sp.), which, in dry places, is only a few inches high; Aster altaicus, Veronica incana, Alyssum tenuifolium, several Artemisiæ, with Ranunculus amœnus (n. sp.), Sisymbrium micranthum (n. sp.), Ballota lanata, several kinds of Leontodon, and, according as the soil is more or less salt, Glaux maritima, which frequently densely covers the ground, and the other formerly enumerated saline plants. From 4500 to an elevation of 6500 Parisian feet, where Pinus Cembra marks the highest present boundary of the growth of trees, the European species gradually diminish, to give place to the flora of the Altaï. Here grow most of the individuals of the genus Pedicularis, Sanguisorba alpina (n. sp.), Primula nivalis, Veronica densiflora (n. sp.); Gentiana altaica, angulosa, glacialis, humilis, and septemfida; Swertia obtusa (n. sp.), Athamanta compacta (n. sp.), Linum sibiricum, Lonicera hispida, Primula Pallasii, Viola altaica, uniflora and pinnata, Juncus triglumis, Epilobium alpinum, Cerastium alpinum, Saxifraga Hirculus, Mespilus uniflora (n. sp.), Potentilla macrantha (n. sp.), Aquilegia glandulosa, Ranunculus altaicus, Anemone narcissiflora, Dracocephalum altaiense, Linnæa borealis, Phlomis alpina, Cochlearia integrifolia, Macropodium nivale, Oxytropis altaica, sulphurea (n. sp.), Doronicum altaicum, Erigeron alpinus, Frolovia lyrata (n. sp.), Leuzea altaica, Saussurea pycnocephala (n. sp.), a number of Willows, &c. The most central and westward of these extended steppes, which rise one above another like terraces, to an elevation of 5759 Parisian feet, is still more distinguished by its vegetation than the lower ones, situated on the banks of the Tscharysch and Koksun, being extremely arid, though sparingly producing, here and there, individual groupes of plants, and exhibiting such only as are entirely peculiar to itself. Two species of Anabasis, a new and shrub-like Atriplex, likewise an undescribed frutescent Chenopodium, and three new Zygophylla, two novel shrub-like and very strong-scented Artemisiæ; Corydalis stricta in large bushes; some species of Oxytropis, with persistent prickly peduncles, some with verticillate leaflets, forming low shrubs: these, together with a few other plants, form the whole of the certainly poor, but highly interesting, flora of this steppe. Yet, at some hundred feet above the present boundary of the growth of trees are seen their dead stems, and on the ground many prostrate shrubs, such as Juniperus nana (?), Betula nana, several Willows, Mespilus uniflora, and Dryas octopetala. Many of the herbaceous plants of the preceding region occur also in this; but among those entirely confined to it are the following: — Eriophorum Chamissonis (n. sp.), Athamanta crinita (n. sp.), Claytonia acutifolia, Gentiana algida, nutans, and rotata, Sibbaldia procumbens, Luzula spicata, Oxyria reniformis, Arenaria (*Helmio aff.*), nardifolia, and another new species, Biebersteinia odora, Cerastium pauciflorum (?) Lychnis uniflora and tristis (n. sp.); Saxifraga cernua, glandulosa (n. sp.); terektensis (n. sp.); and hieraciifolia, Sedum elongatum (n. sp.) and quadrifidum, Thermopsis alpina, Potentilla grandiflora and nivea, Papaver nudicaule, Ranunculus isopyroides, Thalictrum alpinum, Gymnandra bicolor (n. sp.), several species of Pedicularis; Draba carnosula (n. sp.), hydrophila (n. sp.), and lactea; Parrya exscapa (n. sp.), Corydalis pauciflora, Phaca frigida, Trifolium grandiflorum (n. sp.), Artemisia alpina, Cineraria (*aurantiaca aff.*), and lyrata (n. sp.), Hieracium crocatum (n. sp.), some kinds of Leontodon, Pyrethrum pulchrum (n. sp.), Saussurea pygmæa, Orchis viridis, and various Grasses and Sedges. Some plants also grow in this district that are found at every elevation throughout the country. Caltha palustris generally adorns the margin of little alpine rivulets; Epilobium angustifolium also is found in spots above the boundary of trees, quite unaltered in its appearance; Erythronium Dens Canis springs up wherever the snow is just melted.

4568. *The highest limit of trees*, estimated by Ledebour at 6500 Parisian feet, is, however, as he says, not always the same. It depends partly on the species of tree, partly on the declivity of the mountain. On the south side, at the rise of the Tscharysch, the last stem of Pinus Cembra appeared, at an elevation of 6541 feet above the sea. On the north side of the plateau of the Korgon, the highest limit of the same tree was 5254 feet; on the Koksunchen Snow Mountains (their east and west sides), at 5692 feet, on the snowy peaks of Ulbinski to the Kreuzberge, at Riddersk, where the Larch forms the boundary, these trees now cease at 5500 Parisian feet, while their dry stems may be seen at a height of 6187 feet. As to the grouping of the different kinds of trees, the following were remarked: Birch, Firs, and Pines are in the lowest situations; the Birch (*Betula alba*) rises no higher than 4536 feet on the Ridderschen Kreuzberge; on the east side of the Koksun Snow Mountains it ascends to an elevation of 5236 feet. Pines, which are seen on the sandy soil of the steppes, and are also common on the granite rocks among the mountains, seldom appear higher than 3000 Parisian feet above the sea. Firs, on the contrary, ascend to an elevation of 5270 Parisian feet, though from 4000 feet they are less frequent than on the steppe, where they form large forests. Pinus sibirica grows at the foot of the mountains with the Fir, but more frequently together with the Spruce (*P. Abies*); and at a height of 2000 to 2300 feet it is very abundant. From 4000 feet upwards, this species occurs more frequently as P. Abies disappears, and at 4000 to 5000 feet it forms large and close forests, but was never observed beyond 5270 feet, its limit being the same as that of the Fir. The Larch trees were not seen below 2550 feet; their highest boundary being on the Ritter Kreuzberge, 5500 feet: at 4000 feet they form extensive woods, every where covering the north side of the mountains, as on the Cholsun, Listwaga, and several others. Pinus Cembra first occurs at 4000 feet, but is never so numerous as to cover a tract of country, to the comparative exclusion of other trees. Ledebour heard of a forest of Cedars at Tschetschulicha, but never saw it, which was stated to attain a greater elevation than any other tree on the Altaï, even 6540 Parisian feet. When the woods are very thick, particularly of Pinus sibirica (but such were not observed north of Riddersk), they will scarcely allow a plant to grow; where they are not so close, and the ground is moist, they then shelter an uncommonly luxuriant vegetation: Aconita, Cimicifuga fœtida, Senecio sarracenicus, Cacalia hastata, Polemonium cœruleum, Orobus luteus, Pæonia hybrida, Arabis pendula, and several others, frequently attain a considerable height, eight to ten feet, and even more; but where the woods are very thin, and the ground is dry, there the covering of plants is extremely scanty. It is difficult to fix the line of snow exactly. On the north side of the mountain at Riddersk, the snow lies sometimes in the hollows at the height of 5500 feet during the whole summer, the quantity varying in different years. On the plateau of the Korgon, on the side inclining to the northward, Ledebour observed, at 6700 feet, large masses of snow, in which might be clearly distinguished the layers of several years; a circumstance rarely, if ever, seen on the south side of any mountain. For whether the summit of the Alp of Baschalathi is always covered with snow during summer, seems uncertain, though the natives declare such to be the fact. To what altitude the culture of corn may be successfully prosecuted, has not been ascertained by actual trial; yet it deserves notice, that corn grows, at about 4000 feet above the level of the sea, in villages to the south of Cholsun, which is also the limit of resident inhabitants. Some Calmucks, who rove in the lofty Tschuja steppe, may, perhaps, pass the winter at a greater height; still their *yourten* cannot be termed settled dwellings, nor is it possible that they do spend that season there. When the geographical position of these countries is carefully considered, lying from 47° to 54° north latitude, and at their northern boundary from 99° to 105° (but on the south from 91° to 102°) E. longitude from Ferro, no other prevailing forms of vegetation can really be expected, than such as bear a general similarity to those of the northern and midland parts of Europe; for it is well known, whatever be the longitude, that corresponding degrees of latitude produce the same kind of vegetation, becoming more and more alike as they proceed from the equator towards the poles. But we may reasonably conclude that many species, different from the European, occur in a country which is divided from Europe by a large chain of mountains, the Ural, running north and south, by immensely extended steppes, lying at the south and eastern foot of them, and which are even traversed by mountains whose elevated summits rise above the level of the snowy region.

4569. *A striking feature* of Altaïc vegetation consists in the scarcity of hard-wood trees. The Terebinthaceæ, Acereæ, and Tiliaceæ are absent, as also the genera Quercus, Fagus, Carpinus, Fraxinus, &c. The Birch is almost the only hard wood found in tolerable plenty; next to it are the Aspens, which present themselves here and there, collected into little groves. Besides these, two species of Poplar occur on the banks of rivers and in the low tracts. The other hard-wood trees do not attain a large size, and are scarcely numerous enough to deserve notice. With regard to the herbaceous plants, there is a considerable disproportion between the amount of annual and perennial ones. The former are very few, even in the less elevated districts; and as they diminish on the mountains of other countries, so they here disappear almost entirely. In a country where the vegetation is often, during the flowering season, covered with snow, the annual plants cannot be expected to survive long, as their seeds are seldom perfected; while the perennial plants suffer less, their roots being unhurt, and capable of throwing up new shoots.

4570. *There still belongs* another peculiarity to the Altaïc flora, which is, that in many of the families that are numerous there as to species, the genera are very few; while all the others seem to be replaced by an individual or a couple of genera: thus it is among the Personatæ, where the genus Pedicularis composes almost one third; and among the Asperifoliæ, where Myosotis and Echinospermum number more than one half. In the Cynarocephalæ, too, upwards of half the species belong to Saussurea and Serratula; among the Eupatorinæ, the Artemisiæ are two thirds; and in the Rutaceæ, three fourths are claimed by the genus Zygophyllum. But the Leguminosæ present the most striking instance of this; for three fourths of the species in this very numerous family consist of the genera Astragalus, Oxytropis, and Phaca, while the many genera which are found in other places, contributing numerous individuals to swell that tribe, are, in the Altaï, almost wholly wanting: for instance, there are but two species of Medicago, and five of Trifolium. Twenty-three Ferns, according to the Linnæan system, of which one third belongs to Equisetum, were collected by Ledebour. There is little difference between the Cryptogamia of the Altaï and that of Europe.

4571. *Of the other parts of Siberia*, the vegetation is so similar to that of the northern districts of Europe, that we shall omit all notice of it, and direct the attention of our readers to a country which has been more satisfactorily explored by the botanists of the recent Russian expedition*; namely, KAMTSCHATKA, the ALEUTIAN ISLANDS, and BEHRING'S STRAITS.

4572. *The cove of Awatscha*, lying between the same degrees of latitude as Berlin and Hamburgh, and the haven of St. Peter and St. Paul in the interior, seem to be but little exposed to the influence of sea winds. The arborescent Birch grows here; but stunted, and very different from the slender, graceful tree that is so much admired in the north of Europe, and particularly at Petersburgh. Pinus Cembra, which, on the European Alps, attains to a greater height than P. Abies, and forms the boundary of the trees, Sorbus Aucuparia, Alnus incana, and some Willows, are seen; but they remain quite shrubby Timber may, however, be raised in the interior of the peninsula, where the climate is milder than on the east coast; and the seeds of the Pinus Cembra, which are eaten at the tables of the Russians, come from Siberia, via Okhotsk. Grasses and herbaceous plants thrive luxuriantly, the soil being rich and the sky mild. There are but few species of vegetables, and these seem about equally distributed. In shady spots grow Spiræa kamtschatica, Allium ursinum, Maianthemum canadense, Uvularia amplexifolia, Trillium obovatum, &c. In the pastures are a Veratrum, Lilium kamtschaticum, Iris sibirica, &c. On the hills, which are rocky, abound some species of Caprifolium, Spiræa, Rosa, the Atragene alpina, and other mountain plants, as Rhododendron kamtschaticum, Empetrum nigrum, Trientalis europæa, Linnæa borealis, Cornus suecica, Saxifragæ, &c. Some kinds of Ferns, from the number of the individual plants, form a considerable part of the vegetation. Urtica dioica, which was probably introduced, seems to have established itself as a prevailing inhabitant of the soil.

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* Particularly by Chamisso, from whose botanical writings many extracts are given in the first volume of *Hooker's Botanical Miscellany*.

4573. *The peninsula of Alashka, and the adjoining island called Unimak*, which is only separated from the continent by a narrow strait, seem to have the same character of vegetation as the main land, for trees are produced there; while Unalaschka and the other islands of the range are quite bare of them. A few miserable Firs, originally brought from Sitha, and planted at Unalaschka, may still be seen, most of them decayed, and the others scarcely living; but the plantation is young, and trees of this kind endure removal but ill.

4574. *The island of Unalaschka*, having been most explored, may serve as a point of comparison to illustrate the vegetation of adjacent and more northern countries.

4575. *At Unalaschka*, Willows scarcely grow higher than the grass and herbage of the moist grounds. On the inferior hills, a completely alpine vegetation appears; even on the least elevated parts of the mountains are some Vaccinia, resembling V. Myrtillus, that scarcely rise above the ground. Besides the brilliant verdure, due to a moist atmosphere, which decks the grass in Kamtschatka, and enlivens even the summits of the rocks, the lustre of the fresh unsullied snow, and of some tufts of plants, bestow on those dreary regions a variety and beauty of hues which are quite delightful. Lupinus nootkensis, Mimulus luteus and guttatus, Epilobium angustifolium and E. latifolium (*fig.* 678), Rhododendron kamtschaticum (*fig.* 679.), &c. are among the most conspicuous.

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EPILOBIUM LATIFOLIUM.

4576. *The vegetation of Unalaschka* appears to have nothing further in common with that of St. Peter and St. Paul, than as respects its alpine flora and the coast plants of these northern shores. Besides such species as are likewise found farther north, there is only the Lilium kamtschaticum (except, indeed, the variety which grows at Unalaschka should prove a distinct species), and the Uvularia amplexifolia, common to both places; while, on the contrary, more Kamtschatkan species of plants prevail on the American coast, north of Behring's Straits, that are absent at Unalaschka. It is the flora of north-west America which descends to the base of the hills of Unalaschka, where it unites with the Arctic flora. Thus, Rubus spectabilis, Lupinus nootkensis, Epilobium luteum, and Mimulus guttatus, Claytonia unalaschkensis and sibirica may be reckoned also here. Sanguisorba canadensis, Lithospermum angustifolium, &c. belong to the common flora of America.

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RHODODENDRON KAMTSCHATICUM.

4577. *Many kinds of Grasses grow in the low lands*, with some Umbelliferæ, as Angelica, Heracleum, &c. A dozen Carices, scarcely forming a larger proportion of the vegetation than in the north of Germany, some Scirpi and Eriophora, accompany them, and a few Junci, in the proportion of about one to two. The Orchideæ constitute a groupe of some importance, both because of the number and beauty of the individual species: they prevail alike in the valleys and on the hills, to the number of 11 kinds; among them is a beautiful Cypripedium. Higher north, not one of this family can be seen. Of the Ferns there are about 8; nearer to the Pole a single specimen of Filix only appears. At Unalaschka there are some Lycopodia; in the more arctic regions but one. Water plants grow in the lakes, as Potamogeton, Sparganium, Ranunculus aquatilis, &c.; in the higher latitudes only two species of Hippuris, and the common Callitriche can be found. Two other Ranunculi, Prunella vulgaris, a species of Rhinanthus, of Cineraria, Achillæa, Plantago, and Geum; some Rubiaceæ, a Claytonia, Menyanthes trifoliata, a Triglochin, &c., form part, also, of the productions of the valleys in Unalaschka, with a Bartsia, perhaps distinct from B. pallida. To a beautiful plant which constitutes a new and distinct genus, the appellation of Romanzoffia unalaschkensis has been given, in commemoration of the noble patron of science in Russia. The genera Rumex, Polygonum, Aconitum, Thalictrum, some Alsineæ, the Iris sibirica, Geranium pratense, Comarum palustre, and Montia fontana, are distributed all over these arctic regions. Empetrum nigrum, and Helleborus trifolius *Linn.*, the latter being an American plant, not found more to the north, grow on most of the hills, indicating the alpine nature of the scenery. Also some Vaccinia, with the common Oxycoccos, Arbutus alpina, and Uva-ursi, with a white-flowered Menziesia (*M. cærulea var.?*) Rhododendron kamtschaticum, Azalea procumbens, Andromeda lycopodioides (which, nearer to the Pole, gives place to A. tetragona), the alpine Willows, Silene acaulis, Sibbaldia procumbens, Cornus suecica, Trientalis europæa, Linnæa borealis, Ornithogalum striatum (2 vars.?), Anthericum calyculatum *Linn.* var. borealis, Königia islandica, a Gymnandra, apparently different from that found farther north, 10 Saxifrages, 3 Pediculares, some Potentillæ, 2 Gea, 2 Anemones, 3 Primulæ, a Papaver, a Drosera, a Pinguicula, 2 Pyrolæ, a Viola, a Parnassia, a Rubus, and an Arenaria. There have been but one alpine Ranunculus and 3 Gentianæ seen; more individuals of these genera prevailing farther north. Of the class Syngenesia, Aster, Hieracium, Gnaphalium, Leontodon, and Artemisia grow at Unalaschka; this class abounding greatly towards the Pole, the genus Artemisia, in particular, exhibiting many individuals. On the other hand, Unalaschka produces some alpine species of Campanula and Veronica, which are entirely wanting in higher latitudes. Some individuals of the order Cruciferæ are scattered, partly on the hills, and partly in the valleys. Neither Alnus incana, Betula nana, Ledum palustre, Dryas octopetala, Diapensia lapponica, Rhodiola rosea, nor the genera Spiræa, Astragalus, Allium, Myosotis, Corydalis, Valeriana, Aretia, Androsace, Dodecatheon, Delphinium, or Orobanche, all of which are natives of more arctic regions, grow at Unalaschka.

4578. *The maritime flora*, which is unaltered in the arctic regions, consists particularly of Elymus mollis (*Trinius*), Arenaria peploides, Pisum maritimum, with various appearances of Pulmonaria maritima *Willd.* (being, perhaps, a different species, the P. parviflora *Pursh*), Cochlearia officinalis, and Arnica maritima, which, though luxuriant and branched in Unalaschka, is, farther north, only one-flowered. To this list may be added Potentilla anserina. The sea, along the coast and in the creeks, is rich in Algæ; while the Fucus esculentus (the Sea Kale of the Russian inhabitants) is particularly observable among many gigantic species of this genus.

4579. *At Unalaschka, the Mosses and Lichens* begin to assume that predominant station which they hold in all the very cold districts.

4580. *A cursory view only has ever been taken* of the islands St. George and St. Paul, situated in nearly the same latitude as Riga. It is extraordinary how much more arctic is the appearance of nature there than at Unalaschka. No sheltered valleys, no protected spots, favour the vegetation of the plants of milder climes; a perfectly alpine growth prevails, both on the hills and the beach. The high summits of the desolate rocks are covered with pale and black Lichens, while those spots which are irrigated with melted snow afford only Sphagnum, a few other Mosses, and some Carices. There are no springs in the soil. The various arctic plants choose, according to their nature, the rocky or the moory spots; none rising above the ground, to which they seem as if closely appressed. A Lupine in the island of St. George, and an Achillea at St. Paul, remind the observer of the productions of Unalaschka; but there also are several species that are not seen even in the highest parts of the latter island, such as Ranunculus Pallasii and Gmelini, an Androsace, and a Claytonia. One plant only seems peculiar to these islands, a Cochlearia (?), which is plentiful and characteristic.

4581. *The alpine or arctic flora*, which at St. Lawrence adorns the foot of the mountains, does not seem to enliven their summits; for, when these are entirely free from snow, and the water produced by the melted snow irrigates some brilliant plants, the dry ridges and declivities of the masses of fallen rocks are only scantily attired with grey and black Lichens.

4582. *The mountains of these dreary climes*, being unprotected by any covering of vegetation, soon decompose. The frost bursts the rocks, every summer's gentle warmth causing fresh ruins, and so the destruction hastens towards its completion. Wherever the abundance of Sphagnum has not produced a boggy turf in the deeply watered places, the ground presents only heaps of broken rocks.

4583. *The aspect of nature at the cove of St. Lawrence* is most wintry; the scanty herbage barely covering the black soil, while the dwarfish Willows do not reach to one's knee. The Andromeda polifolia (*fig.* 680.), that is found there, does not exceed two or three inches in height, and is one-flowered. Among the plants of this cove are a Delphinium, a Dodecatheon, and an Aretia; also many undescribed species of those truly arctic genera, Gentiana, Saxifraga, Astragalus, Artemisia, Draba, Ranunculus, and Claytonia.

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ANDROMEDA POLIFOLIA.

4584. *The island of St. Lawrence*, situated 2° more to the south, does not differ in vegetation from the cove of the same name. The Andromeda tetragona (*fig.* 681.), Dryas octopetala, Diapensia lapponica, and some alpine kinds of Myosotis, and a Gymnandra, clearly indicate the prevailing character of its productions. The naturalists who have visited this island remarked, however, that, on their arrival, they gathered more flowers there in the first few minutes, than during many weeks' investigation on the range of islands comprising Radack, &c., situated between the tropics. Here grow Alnus incana, in a very diminutive state, and Spiræa chamædrifolia, both of which are natives of Kamtschatka, but not of Unalaschka; and which a severer atmosphere seems to have banished from St. Lawrence's cove. An Orobanche and a Pinguicula are among the plants of this island. Cineraria palustris vegetates with remarkable luxuriance in the well-watered slopes formed at the base of the mounds of ice; while Betula nana (*fig.* 682.) is seen even on the very shores. The plain country of this island is free from snow throughout the summer.

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ANDROMEDA TETRAGONA.

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BETULA NANA.

Subsect. 3. *Zoology.*

4585. *Our knowledge of the Zoology of Siberia and of Asiatic Russia* is chiefly derived from the researches of the celebrated Pallas. The ungenial nature of the climate, the sandy and arid steppes and rocks by which these regions are every where intersected, and the total absence of umbrageous forests, at once accounts for the paucity of species appropriated to this immense territory. The assertion, therefore, made by Pennant, that Siberia is hardly less interesting than America, in the number and novelty of its animals, is singularly inaccurate: the proportion not being more, probably, than one to fifteen. There scarcely appears, in fact, either among the quadrupeds or birds of Siberia, one genus which is not common to the European zoological region: although the following list of quadrupeds will exhibit several species apparently confined to the eastward of the Ural mountains and the shores of Lake Baïkal.

4586. *The Quadrupeds* more particularly belonging to Siberia are the following: —

Putorius sibiricus.	Siberian Weasel.
Canis sibiricus.	Siberian Dog.
Phoca leporinus.	Hare Seal.
Otaria ursina.	Sea Bear.
Otaria jubata.	Sea Lion.
Arvicola arvalis.	Field Mouse.
Arvicola œconomus.	Economic Field Mouse.
Arvicola saxatilis.	Rock Mouse.
Arvicola alliarius.	Garlic Mouse.
Arvicola rutilans.	Red Mouse.
Arvicola gregalis.	Baïkal Mouse.
Arvicola socialis.	Social Mouse.
Arvicola Aspalax.	Siberian Leming.
Phoca bothnica.	Baikal Seal.
Phoca sibirica.	Siberian Seal.
Georychus talpinus.	Mole-like Leming.
Georychus torquatus.	Ringed Leming.
Mus Caraco.	Caraco Rat.
Mus agrarius.	Sitnic Mouse.
Mus subtilis.	Subtle Mouse.
Cricetus migratorius.	Siberian Hamster.
Cricetus arenarius.	Sand Hamster.
Cricetus Songarus.	Songar Hamster.

4587. *In addition to the above*, travellers enumerate several others, common alike to the two Russias and the neighbouring regions, as the Rein-deer, Elk, Bear, Wolf, Fox, Marmot, Martin, &c.; but these have been already noticed as inhabitants of Europe.

4588. *The Economic Mouse*, as one of the most interesting animals, deserves a particular notice. These little creatures form burrows, with wonderful skill, in soft turfy ground. There are sometimes near thirty different entrances to the principal chamber; close to this are other caverns, used as granaries for their winter provisions. These stores they gather in summer, and in damp seasons will frequently bring them out to dry in the sun; they will not touch these hoards until the time of need, living in the interim on such other food as can be supplied from over-abundance. On the approach of winter, the male and female, who have hitherto been separate, mutually retire to their well-stored dwelling, and pass this rigorous season in ease and plenty, living upon the fruits of their former industry and forethought.

4589. *Of the aquatic Quadrupeds*, the *Phoca grœnlandica* (*fig.* 683.), and numerous other Seals, appear on the frozen shores of the North and White Seas, and different varieties on those of Lake Baikal. The northern Stellerus (*S. borealis* Cuv.), long confounded with the Manati of India, represents that unwieldy animal in the seas of Kamtschatka.

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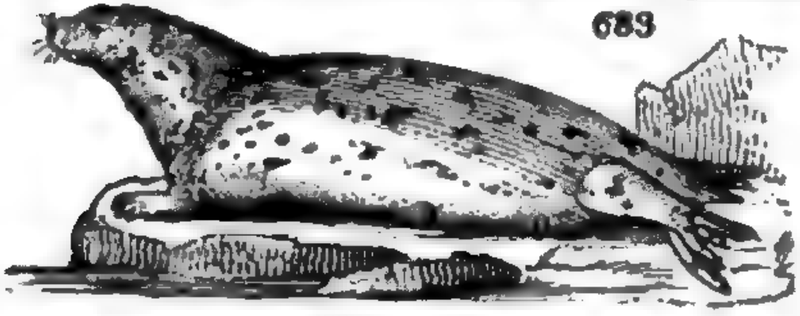

GREENLAND SEAL.

4590. *An immense species of Elephant, now extinct*, appears to have formerly belonged to the frozen regions of Siberia; an entire specimen having emerged, not many years ago, from a mass of ice on the shores of the White Sea. Its skeleton is now in Russia, and proves it be distinct both from the Indian and the African species. The enormous tusks occasionally found, and said to weigh, sometimes, 600 lbs., have been inconsiderately assigned to the wild boar; but they no doubt belonged to this, or some fossil species of equally gigantic size.

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SWALLOW-TAILED PRATINCOLE.

4591. *Of the Birds*, our information is very defective. Pallas enumerates several, unknown to Europe; but they are small, and not generally interesting. The Great Bustard of Europe is spread over the deserts, with the Swallow-tailed Pratincole (*fig.* 684.), a restless and clamorous bird, of rare occurrence in Europe. Partridges, Quails, and the smaller gallinaceous birds, are common; but the larger and more splendid Pheasants begin only to appear on the confines of central Asia and towards Persia.

4592. *The Domestic Animals* are much the same as those of European Russia.

Sect. III. *Historical Geography.*

4593. *The rude regions of Siberia* have but recently attracted the notice of the historian. No portion of it was included by the Greeks and Romans in their idea of the known or habitable world. The Scythians, the same pastoral tribe who occupy the regions of modern Tartary, were in their eyes the remotest people of Asia; the regions on the Jaxartes appeared to terminate Scythia.

4594. *The modern Tartar conquerors,* of whom Zingis, the greatest, had territories immediately bordering on this region, might have been expected both to explore and conquer Siberia. Although, however, traditions were found by Carpini, which showed a knowledge extending as far as Kamtschatka, it does not appear that much impression was ever made beyond the chain of mountains which separates these two regions of Asia. Formidable barriers of nature here arrested their efforts; and the current of their progress and conquest was always directed to the more tempting regions of the south.

4595. *It was reserved for Russia,* after she had shaken off the Tartar yoke, and become a great and powerful kingdom, to penetrate the secrets of this bleak and unknown region. Yet the first entry was from the province of Archangel, into its most dreary and unpromising quarter. The Samoyedes, inhabiting the Lower Obi, and the shores of the Frozen Ocean, were accustomed to come to the banks of the Dwina, to exchange their skins and furs for Dutch toys and other articles suited to their taste. Anika Strogonoff, an enterprising individual, conceived the idea of extending this trade by penetrating into the districts whence these valuable furs were brought. He obtained considerable wealth by this traffic, and at last persuaded several of the leading people among that simple race to repair to Moscow. The mere view of the pomp and luxury of the Russian court is said by the writers of that nation to have so strongly acted upon their minds, that they agreed to acknowledge the supremacy of the czar, and even to pay him a small tribute of furs. That prince soon availed himself of his newly acquired dominion to build on the Obi forts composed of logs cemented with earth, and to people this tract by making it a place of banishment for criminals, particularly those condemned or suspected of offences against the state. Siberian discovery assumed a more active character, in consequence of other remarkable events. Ivan Vassilevitch II., having driven the Tartars before him as far as the Caspian, found his power defied and his commercial views obstructed, by a band of daring nomadic warriors, who, under the name of Cossacks, have since been the bulwark of the empire. At that time, it required the exertion of all its force to root them out; and Yermak, their gallant chief, with about 6000 followers, refusing to submit, fled westward into southern Siberia. In seeking to obtain settlements there, he was opposed by the Tartar prince who reigned over that tract; but, having gained a complete victory over him, he found himself in his capital, Sibir, at the head of a more extensive kingdom than that which he had lost. Being still pressed, however, by the arms of the Russians, he could maintain his place only by acknowledging the supremacy of the czar, and reigning as his viceroy. Yermak having soon after fallen into an ambush laid by the Tartars, and lost his life, the dominion of Siberia reverted entire to the Muscovite prince. The facility with which it appeared that these extensive kingdoms might be traversed and conquered afforded encouragement to persevere. Orders were sent to the garrison at Narym to advance eastward. After a somewhat painful march through the dreary steppe of Baraba, they came to the fine pastoral regions watered by the Yeniseï. Here they found the Tungouses, a people new in form and aspect; and who, being gentle, and few in number, were easily induced to admit a light sway, and to pay a moderate tribute of furs. In descending the Angara, however, they came upon a tribe of different temper, the Burats, a branch of the fierce Mongol race, who showed no disposition tamely to resign their independence. The Russians paused in this direction; but found on their left along the Lena an almost unoccupied region, bleak and dreary indeed, but abounding in furs of the finest quality. The Cossacks pushed on, therefore, undeterred by the snow and ice, which, during most of the year, involved this wild extremity of Asia; and, in 1639, fifty years after the commencement of this career, one of their number, Dimitrei Kopilof, arrived at the shores of the Gulf of Okhotsk, a branch of the ocean boundary of Asia. Meantime, additional forces being brought forward at length compelled the submission of the hardy races on the Angara and round the Baïkal; every thing yielded till they came to the banks of the Amoor. Here they met the power of China, incorporated with that of its Tartar conquerors; and though, even in this combined state, that empire was much inferior to Russia in a warlike capacity, yet, being on its own ground, it could bring a greater force of somewhat disciplined troops. The issue of this contest was the repulse of the Russians within the line of the Amoor and behind that of the mountains, and the establishment of China in full dominion over the desolate course of that great river. Neither of these powers have since attempted to pass those pastoral boundaries which form the distant frontier of each; and Russia has remained in peaceable possession of an empire which, if measured by superficial extent, would considerably surpass that of Alexander or the Cæsars.

4596. After this empire was acquired, however, *some grand problems respecting its boundaries* remained to be solved. The most important was, whether it communicated with the ocean on the east; which last involved also the question if Asia and America were or were not joined to each other. These questions had early appeared of deep interest to the great maritime nations of the west, chiefly because an open passage by the north of Asia promised a shorter route to India than that by the Cape. For this object a series of expeditions were undertaken by some of the first naval men of the age, both English and Dutch, who conducted them with characteristic boldness, not dismayed even by the tragical catastrophes which terminated the career of several. None, however, were ever able to pass the frozen barriers opposed by the coasts of Nova Zembla and of the Gulf of Obi immediately beyond. These attempts were relinquished in despair; yet the Dutch, when Peter the Great paid them his extraordinary visit as an apprentice in navigation, pressed upon him the importance of applying his superior means to the solution of these great problems. Peter sent instructions to Yakoutsk, to make every enquiry respecting the maritime boundaries of the Siberian territory, and particularly its relation with America. He never appears to have known what Müller claims the credit of having discovered during his visit to Yakoutsk, that there were buried in the archives of that place narratives of most important discoveries on these very points, which were then forgotten. From the year 1636, expeditions were sent down the easterly rivers Lena, Indigirka, Alaska, and Kolima, which ascertained the termination of these rivers, and the continuity of the ocean into which they fell. In 1646, a company of merchants undertook the first voyage eastward from the Kolima, and actually reached the territory of the Tchutchi, the rude tenants of the north-eastern peninsula of Asia. This was followed, in 1648, by a more important expedition, undertaken by two Cossack chiefs, Deschnew and Ankudinow. The latter was wrecked near the isthmus at the mouth of the peninsula; but Deschnew, after various adventures, suffered shipwreck, at the end of the year, on the river Olutera, south of the Anadir. This would imply that he had rounded the north-eastern points of Asia, and ascertained the disjunction of the two continents; and this appears the most probable supposition: though the great imperfection of his journal still left room to assert, that he had passed from one ocean to the other, merely by crossing the isthmus of the Tchutchi peninsula.

4597. *At the very close of the seventeenth century,* the sphere of Russian knowledge and dominion was extended to *the peninsula of Kamtschatka*, neither a fine nor valuable territory, but presenting, both as to the country and inhabitants, an entirely different aspect from the rest of the empire. Here, launched on the Eastern Ocean, the Russians found themselves, as it were, in a new world; they saw the long chain of the Kuriles, terminating in the large islands of Saghalien and Jesso, and, beyond these, the great and fine islands which compose the empire of Japan. Their discoveries were now linked with those of the great maritime nations of Western Europe, and had thrown a pretty full light on the whole of the extreme east of Asia. No less important was the era when it was ascertained that some large islands, reported to exist in the ocean to the east, were fragments of the corresponding coast of America, and that this coast approached closely, if it did not actually join, the new shores occupied by Russia.

4598. *The report of these interesting discoveries* reached Petersburg when the throne of Peter the Great was occupied by his relict, Catherine I.; a princess who at once revered his memory and inherited a portion of his spirit. She entered with zeal into the projects of discovery, and formed a regular plan for completing it. Several connected expeditions, proceeding at once from the northern and eastern coasts, were appointed to explore thoroughly the remotest limits of her vast eastern dominion. In 1726, Captains Spangberg, Behring, and Tchirikow set out from Petersburg on this destination, and were afterwards joined by the eminent mathematician Delisle de la Croyère. These expeditions did not answer all the expectations formed of them; but in 1728, Behring discovered the Straits which bear his name, and was there informed that, after passing beyond a cape about 200 miles distant, the direction of the coast became entirely westward. He reached this cape, where, seeing the coast, as far as the eye could reach, actually run in that direction, he conceived that he had passed the extreme point of Asia, and inferred the entire disjunction of that continent from America; a just conclusion, on hasty premises; for this coast takes another circuit to form the peninsula of the Tchutchi, before its final western direction. Behring and Tchirikow, also, in 1741, sailed across, and made considerable discoveries in the hitherto almost unknown coast of north-western America.

4599. After this time the spirit of discovery on the part of Russia seems to have slumbered, and the next great light thrown upon these regions was by *Cook*, the immortal British navigator. After exploring a great part of the north coast of America, he sailed through Behring's Straits, and along a considerable portion of the opposite coasts of the two continents; when their respective lines were found decidedly receding from each other, one to the east and the other to the west. The separation of the continents appeared then to be ascertained; yet it has been surmised, that, as the northern coast of Siberia cannot be considered as thoroughly examined, they may approximate, and, by a long circuit, unite with each other. This supposition, against which there are many presumptions, is said to be now completely negatived by the successful voyage of Baron Wrangel along that part of the northern coast of Siberia from which alone it was possible that such a junction could have taken place.

Sect. IV. *Political Geography.*

4600. *European and Asiatic Russia* are subject alike to the same simple government, that of a pure despotism, in which the absolute power of the sovereign is liable to no check whatever, either on the part of the nobles or the people. Siberia is in this respect even less fortunate than Russia, since the sway exercised over it does not rest on custom or opinion, but is enforced by the constant presence of a foreign military force. In Asia, as in Europe, however, this sway is mild, and tempered even with an active regard to the introduction of knowledge and civilisation, into regions which were before destitute of all these blessings. Yet Siberia shares more distantly the beneficent and enlightened spirit which has actuated the Russian cabinet. Officers so far removed from the seat of government have greater opportunity and temptation to abuse their power; and the native tribes have retained, almost unaltered, all the rude habits of their former life. Still, they have been checked in that career of intestine war in which they were otherwise likely to be almost perpetually involved; and whatever exists in this vast region of the habits and comforts of civilised life has been introduced by the colonisation and conquests of Russia.

4601. *Siberia for a long period formed one single government,* of which the seat was at *Tobolsk;* but of late it has been divided into two governments, *Western* and *Eastern* Siberia. Of the former alone Tobolsk is now the capital; the latter has its seat at *Irkoutsk.* Western Siberia includes the provincial governments of Tobolsk Proper, Omsk, Tomsk, and Kolyvan; the Eastern includes those of Irkoutsk Proper, Krasnoyarsk, Nertschinsk, Yakoutsk, and Okhotsk. Although the intentions of the general government are good, it is inevitable that, in the distant establishments, opportunity must be given both for embezzlement and oppression. "God is high, and the emperor far off," is said to be a maxim extensively acted on. In the naval department of Okhotsk, such laxity prevailed, that it was customary for an officer, whenever he wanted money, to step into the dockyard, take out articles to the requisite amount, and sell them for his own advantage. Much, however, has lately been done to remedy these abuses; and the administration at the central seats of government is said to be at present very good.

4602. *The Cossacks,* the military force by which Siberia is held in subjection, compose also the bulk of the Russian inhabitants. In the government of Tobolsk, Giorgi supposes them to amount to 22,000. Two regiments are stationed at Tobolsk, the same number at Tomsk, at Irkoutsk, and in the government of Krasnoyarsk. A large proportion, however, are employed to garrison the chain of *ostrogs,* or wooden forts, formed along the Irtysch and the line of the Kirghises, to protect the frontier against the inroads of that lawless and daring people. A smaller number is necessary along the Chinese frontier, comparatively well-ordered and pacific, and likewise among the thinly scattered and quiet occupants of the northern plains and rivers. In Kamtschatka, however, a considerable force is maintained.

Sect. V. *Productive Industry.*

4603. *Agricultural industry* affords less wealth to Siberia than to any other region of equal extent. The greater proportion of it must indeed be confessed to have been unfitted by nature for this important pursuit. Throughout all the northern tracts, the earth is bound in perpetual frost. Yakoutsk, the most northerly town of any magnitude, possesses a rich soil, and the inhabitants attempt to raise a little rye; but in a climate where, at the beginning of June, the earth is still deeply frozen, the ripening even of this crop is ever a matter of complete uncertainty. The limitary mountains, also, which form the land-boundaries of Siberia, bear nothing but pines and other hardy trees of a northern region. Even that broad level belt which, in the south, extends under a tolerably mild climate, consists in a great measure of those marshy and saline steppes which yield only rank and unwholesome vegetation. Various tracts, indeed, along the upper part of the Irtysch as well as along the Tobol, the Izet, and others of its tributaries, are covered with luxuriant pastures, and might yield very rich crops. Culture, however, is limited, not only by the indolence of the inhabitants and the want of a distant market, but by the almost exclusive taste of the Tartar inhabitants for pasturage, and particularly the rearing of horses. Even under the last head, Pallas complains that, in their eagerness to procure mares' milk for the purpose of converting it into *koumiss,* they rob the foals of their due, and also that they do not make sufficient provision for their winter subsistence; yet he cannot deny that they contrive to rear a very fine breed. Even of grain, amid all their neglect, the produce is so plentiful, that its cheapness, as well as that of animal food in the great cities of Siberia, is almost incredible. Pallas, at Tomsk, found oatmeal selling from a halfpenny to three farthings per peck; an ox at five shillings; while an excellent horse was considered dear at ten shillings. Gmelin asserts, that at Tobolsk a man may live comfortably on an annual income of a guinea and a half. The very finest district of Siberia appears to be that along the Upper Yeniseï and the Angara, from Krasnoyarsk to Irkoutsk. Immense crops, not of wheat, indeed, but of oats, barley, and rye, are produced without the aid of manure, which, in a soil so luxuriant, is said to be even injurious.

4604. *Manufactures* can scarcely be said to exist in Siberia; we therefore pass to *mines*, which form a most extensive part of her exchangeable wealth, and in which she may rank with the richest countries in the world. No sooner has the traveller passed the Urals, than he finds himself in a sort of mineral empire, and sees metals of almost every kind extracted almost in every possible manner from the bowels of the earth. Gold, indeed, may be said rather to have given splendour and celebrity to the mines of Catherinenberg, than to have yielded any considerable profit. In the course of thirty-four years their entire produce did not exceed 1,200,000 rubles. The metal is found in quartz diffused through a ferruginous pyrites. Of late, however, it appears that sands impregnated with gold have been discovered, from which it has been drawn in much larger quantity. A late traveller conceives that these auriferous sands are diffused over a space of 1000 miles along this chain. The produce in 1828 was 318 poods (about 53 tons), which Humboldt values at 727,000*l.* The rare metal of platina is also drawn in considerable quantity from the Urals. They are not so rich in silver as some of the mountains of the interior, but the supply of copper and iron is truly immense. In the year 1782, the quantity of copper drawn from both sides of the chain, but chiefly the Siberian, was 190,000 poods (about 31,500 tons); of iron nearly 400,000 poods, or 66,000 tons. Almost all these mines are worked on behalf of the government, with slaves, who consist chiefly of banished convicts. The yearly wages of these unfortunate persons are limited to 13*s.* 6*d.*, with a suit of clothes; and for subsistence their daily allowance is only two pounds of bad bread. The superintendents fared tolerably, when, in the days of Catherine, they were allowed 3*s.* 4*d.* per day, in good coin; but as this rate has never been augmented, and is now paid in paper depreciated 75 per cent., it amounts only to a miserable pittance. The consequence is, that embezzlement has become almost a fundamental part of the system; and, being accompanied with the waste and mismanagement too common in such great public works, has reduced the profits of government to a very small amount.

4605. *The other great mineral range is that of the Altaï*; and it is remarkable as being perforated throughout by ancient works carried on by a nation now unknown, and which have been long abandoned. If gold is less copious here than in the Urals, this deficiency is amply compensated by the mines of silver, which are so numerous that, according to Captain Cochrane, the whole district may be said to be silver. The original mines at Kolyvan itself are now fallen into comparative neglect, owing, perhaps, to the deficiency of wood. The chief present scene of operations is in the Schlangenberg, the loftiest of the mountains in this part of the Altaï, and which, in the removal of its slate covering, presents an almost unbroken mineral mass of ores of gold, silver, and copper. In twenty-two years, it yielded 12,348 pounds of gold, and 324,000 pounds of silver. Copper, however, is the most valuable metal; for the iron, though inexhaustible, is considered scarcely fit to bear the expenses of transport. As soon as the ores are extracted, they are conveyed to Barnaoul, where forges on the most extensive scale are prepared to smelt and refine them. Twelve thousand horses and oxen, and 1500 workmen, are employed in this conveyance; and the entire number of persons engaged in the mineral operations is 13,000 constantly, and 55,000 occasionally; the latter being employed also as peasants to cultivate the ground. The entire value of the produce is 4,500,000 rubles, or 200,000*l.* sterling. Although the labourers are all serfs of the crown, and the wages very small, the extreme cheapness of provisions makes them tolerably comfortable; and the works, upon the whole, are managed much better and more advantageously for all concerned, than those of Catherinenberg. Silver forms also the prominent feature in the mines of Daouria at Argunsk, on the extreme frontier in the southern part of the province of Nertschinsk. In the beginning of the present century, they produced annually from 40,000 to 60,000 lbs. of silver; but recent details are wanting respecting their management and value. The entire produce of silver in Siberia is stated, in 1828, to have amounted to 1093 poods, which Humboldt estimates at 158,000*l.*

4606. *In simple minerals*, Siberia is also very rich; and these, though not so splendid as those of Southern Asia, present, perhaps, a greater variety. The topaz and the chrysolite are found at Mursinsk, among the Urals, which yield also the beautiful ore of copper, called *Malachite*, and very fine rock crystals, some of which, of a green colour, have even been mistaken for emeralds. The mountains of Daouria, and those round the Baïkal, produce the topaz, the beryl, the onyx, lapis lazuli, and red garnets. In 1829 the diamond, and in 1831 the emerald, were discovered in the Urals; but the extent of their produce is not yet ascertained. A remarkable and useful product is afforded by the mines of talc in eastern Siberia, particularly on the banks of the Witim. This mineral supplies the place of glass over all Asiatic and part of European Russia. It is in many cases equally transparent, without being liable to break. It is divided by the insertion of a knife into thin laminæ, which, like pieces of glass, are valuable in proportion to their size. The rock salt at Solikamskoi, in the Urals, is worked to a great extent, and conveyed in huge waggons to Petersburg. Those singular efflorescences called rock marrow and rock butter are chiefly objects of curiosity, though the former is eaten by the Tunguses with milk, and the latter is sometimes employed in medicine.

4607. Second in value to mineral products, or even rivalling them, are those of *the chase*; a source of wealth no longer regarded as such in any part of the civilised world. In the eastern and northern parts of Siberia, on the contrary, the rich and soft furs with which nature has protected the animal creation from the rigour of the climate, form one of the most valuable articles of commerce. The most esteemed have always been those yielded by that species of weasel called the *sable*. Yakoutsk is the great market for them; and those obtained on the banks of the Witim and the Olekma are reckoned the best, selling at from 15 to 20 pounds a pair. In the lapse of ages, however, their numbers have been thinned by hunting; and it is necessary to go to Kamtschatka to find them numerous, though of inferior excellence. Great address is employed to take this animal, without injuring its skin. Sometimes it is struck by a species of arrow with a blunted point; at other times it is closely pursued till it runs up a tree, when the hunter kindles a fire beneath, upon which the sable drops down, and is caught in nets. Next to the sable ranks the black fox, of whose skin the very fine specimens sell sometimes for thirty pounds, and five pounds is a very ordinary price. The skins of the red and grey fox do not sell for more than two or three pounds. Those even of the bear and the wolf have a certain value. Among the useful animals of Siberia, it is impossible to pass over the rein-deer and the dog. The former are found in every part of Asiatic Russia, but chiefly on the bleak shores of the Northern Ocean, and among the Samoyedes; to whom, as to the Laplanders, they supply milk, clothes, and the means of rapid conveyance over the vast plains of ice. Only those taken in hunting are killed for the sake of the flesh. It is not in Kamtschatka only that the strong and well-trained Siberian dog is used as an animal of labour, and particularly in transporting sledges over the ice.

4608. *The supply of fish*, both in the rivers and the seas of Siberia, is inexhaustible, and only the distance and difficulty of transport prevents this from being an immense source of wealth. The Obi, and still more the Irtysch, abound with a very great variety of excellent species; including, besides those found in other rivers, sturgeon of peculiarly fine quality, very large sperlings, and several species peculiar to these rivers. The Yeniseï and the Lena are chiefly remarkable for fine varieties of salmon and trout. But it is the eastern bays of Asia, and the seas thence extending to America, that swarm with life in a degree almost unexampled. The most remarkable are those huge marine animals, the tenants of the frozen seas, against the cold of which they are fenced by thick skins, and a substance almost entirely composed of fat and oil. Whales take the lead among this class; but the coast seems peculiarly to swarm with the minor species, seals, otters, sea-calves, sea-wolves, and others of the same species. The skins of these animals, however, are the only part of them which can bear a transportation across the immense breadth of Siberia. Those of the sea-otter are said by Captain Cochrane to sell at from 10*l*. to 30*l*. in the market of Yakoutsk. The abundance of these and of ordinary fish maintains the eastern shores and islands in a state of plenty, independent of agriculture or pasturage. Indeed, we can scarcely credit the statement of Captain Cochrane, that 600 persons, inhabitants of the district of Nischnei-Kolymsk, consume between themselves and their dogs, 2,000,000 pounds annually; making fifty pounds a day to each person. Probably the fishery along the northern shore would not be less abundant; but the difficulty of carrying it on in frozen seas, and the cost of conveying its products, have hitherto prevented the Russians from attempting its prosecution to any extent. The numerous little lakes, the marshes, and inundated grounds of Siberia are covered with vast flights of waterfowl; and wild ducks, wild geese, swans, &c. afford an important resource to the inhabitants. On the whole, Siberia, particularly in its eastern tracts, would be the first country in the world for the sportsman, could he bring himself to endure the relegation from society which a residence in it would impose.

4609. *In no country has commerce to struggle against so many disadvantages.* Its northern seas are barred by ice; its eastern are too distant to hold any intercourse with the civilised world. The land communication from St. Petersburg extends over very little less than half the breadth of the globe, through tracts sometimes buried in snow, sometimes impassable by inundation, and sometimes destitute, for hundreds of miles, of a human habitation. Its rivers, though magnificent, all cross this great line at right angles, and consequently afford no accommodation for transit, except by ascending and descending the winding course of their tributaries, with frequent and laborious portages from one to the other. The country all round the frontier, and to a certain extent within, is infested by predatory hordes. Yet, under all this accumulation of obstacles, the commercial spirit in

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Siberia is active. The Russian inhabitants, with the exception of the officers of government and the exiles, are almost all merchants, who, having taken up their abode in this dreary region under the hope of making a fortune with some facility, prosecute this object with indefatigable zeal. The transactions generally being of that speculative and adventurous cast which afford a chance of great gain, are attractive to bold and sanguine spirits.

4610. *The great line of Siberian commerce*, that leading from Petersburg by Moscow, Nischnei-Novogorod, Kasan, and Perm, crosses the Urals at Catherinenberg. It then proceeds direct to Tobolsk, and from that capital almost due east by Tomsk and Krasnoyarsk to Irkoutsk. The first of these places, with the Barabinski steppe, which precedes it, is sometimes avoided by ascending the Irtysch, and taking the route of Omsk and Barnaoul. At Irkoutsk, Russian commerce branches out into two great opposite lines. One of these crosses the Baïkal and ascends the Selinga, to the contiguous towns of Kiachta and Maimatchin, which form the solitary point of commercial intercourse between the two great empires of Russia and China. Almost all the principal houses in Russia have an agent at Kiachta; while the Chinese traffickers consist chiefly of temporary visiters, who are not even allowed to bring their families. The Russians here receive the staples of China; tea, porcelain, silk, cotton, rhubarb, tobacco, with a variety of those little ornamental works in which that nation excels: in return for which, they give furs, skins, coarse cloths of various kinds, cattle, and glass. The value of articles exchanged on each side is supposed to amount annually to between 200,000*l.* and 300,000*l.*

4611. *The other commercial line*, branching from Irkoutsk, is that which descends the Lena into the heart of the frozen regions, and to the shores of the Eastern Ocean. Yakoutsk, about 800 miles down the Lena, forms the market at which the furs and other precious products of this desolate region are collected. They arrive, not only from all the surrounding wastes, but from Okhotsk, which collects those of Kamtschatka and of north-western America, and even from the remote north-east angle of Asia, which forms the peninsula of the Tchutchi. A considerable proportion consists of the tribute to government, which is easily paid, and profitably received in kind. The rest is obtained by the wandering traffickers, in exchange for tobacco, spirits, cutlery, beads, and toys.

Sect. VI. *Civil and Social State.*

4612. *According to an enumeration made in* 1801, the population of Siberia amounted to 1,038,356; of whom 515,114 were male, and 523,242 female. Considerable as this amount is in itself, yet, if we reckon the superficial extent at 5,000,000 square miles, we shall not have much more than one inhabitant to every five miles.

4613. *This very scanty population* consists of two very distinct portions, the foreign rulers and the native tribes. The latter, also, have scarcely any common relation, except that of having been all subdued by Russia. It will be necessary, therefore, to consider separately these different races.

4614. *The Russian inhabitants* are composed chiefly of that unfortunate class who have been exiled into these remote regions for various offences, chiefly those which excited the alarm of a jealous and absolute government. A basis was formed by the Swedish officers made prisoners at the battle of Pultowa, and a regular succession of recruits has since been furnished from the empire itself. As they were often men of cultivated minds and polished manners, and as, according to Captain Cochrane, "no government ever banishes fools," they, with their posterity, have formed at Tobolsk a society which has appeared agreeable even to those accustomed to that of the most refined European cities. Of the humbler class of convicts, those considered most incorrigible are plunged into the mines, where they are strictly watched, and subjected, as we have seen, to hard labour and hard fare. A class, whose offences are milder, find a place in the distilleries; while a third, who rank a step higher, receive grants of land, for which they pay only at the rate of eight rubles for each male head. These are formed into villages, where, according to M. Ermann, the strict police, and the miserable state of those who attempt to find refuge in the surrounding deserts, generally deter them from a repetition of the offences for which they were banished. Mr. Holman, however, complains that some make their escape, and form themselves into plundering bands, who infest the high roads; but they generally fall victims at no distant period.

4615. *The two great capitals of Siberia,* Tobolsk and Irkoutsk, have acquired, to a considerable extent, the polish of European society. In Tobolsk, as already observed, the basis of the population consists of exiles and their descendants, often men of rank and intelligence. In Irkoutsk, the merchants and the military officers, constantly passing and repassing from Europe, have imported its most recent manners, literature, and arts. Sievers, in 1790, found a small public library, a collection of natural history, and even a theatre, on which were represented some pieces of native production that were pretty tolerable. At Tobolsk, Kotzebue saw some of his own dramas performed; which was a great advance since Gmelin's visit, when the pieces resembled the European mysteries of the middle ages, in which Adam, Noah, and the Devil acted the principal parts. Hospitality, the virtue of rude and recluse regions, is said to be most liberally exercised throughout Siberia. On the other hand, the Russian vice of drunkenness seems to be copied with most ample addition. In the small provincial towns, above all, where little exists to refine and animate society; where the facility of subsistence allows, and the severity of the climate compels, a great portion of time to be spent in indolence, it seems to be carried often to a most deplorable extent; and it then becomes, of course, accompanied with other species of dissoluteness. We regret that, from the narrations of the most recent travellers, the inhabitants of these provincial districts do not appear to have improved in this respect, or to have shaken off those slothful habits to which a great part of them have long been addicted.

4616. *Of the native Siberian races*, those which occupy the whole southern frontier are Tartar, both in their origin and character; and that people, indeed, until their conquest by the Russians, held the supreme sway in Siberia. West of the Irtysch, the prevailing race are those called Baschkirs; between that river and the Yeniseï are the Sluschivies, the Tzulimm, and other small local tribes; while the regions round the Baïkal, and to the south of it, are occupied by the Burats, a division of the Mongol family. All these Tartars are attached to the general habits of their countrymen; a wandering life, occupied almost exclusively in the rearing of cattle, and particularly of horses; making horse-flesh and fermented mares' milk their favourite luxuries. The sway of Russia has been in so far salutary as it has suppressed that system of perpetual war and plunder which was formerly carried on by them, and which still prevails in all the countries of Independent Tartary. Their activity is now more laudably turned to the multiplication of their flocks and herds, and sometimes to a limited degree of agriculture; though they have never duly improved in this respect the capacities of some of the tracts which they inhabit. In the western districts, as in the corresponding parts of Tartary, the Mahometan religion is followed; but, over all the east, full sway is held by that modification of the Indian system of Boodh which is called the Shaman religion. Sievers lately visited, beyond the Baïkal, the residence of the Bandida Lama, the great head of this religion, so far as concerns Siberia. The ceremonies do not seem to have materially differed from those which Turner observed to be practised in Thibet. A splendid throne was erected for the Lama himself, while the inferior priests, clothed in red, sat in successive rows. Numerous images were placed upon the altar, or ranged along the walls, to which were presented rice, brandy, and, on solemn occasions, a fowl or even a sheep roasted whole. Their sacred music was of the same noisy character. Kettle-drums, trumpets eight feet long, sea conchs, and others of the most powerful instruments of sound, produced a thundering and tremendous concert. These genuine Shamans, however, reject as heretical the bulk of their professed fellow-worshippers in this religion, who, in fact, introduce largely that mixture of magic and witchcraft which has always formed the favourite superstition of the north. The impostors who practise it, both male and female, endeavour to attract the admiration of the ignorant natives by huge horns or drums, throwing themselves into hideous contortions, and even giving themselves stabs in vital parts, from which blood, previously provided by them, appears to flow; but all this is done in so clumsy a manner, that it is at once detected by an European scrutiny. In the late enumeration, the Burats amounted to 49,761 males, and 47,932 females; while the Mongols proper were not more than 12,000.

4617. *Among the thoroughly native tribes of Siberia*, the most remarkable are the *Tungouses*. They are chiefly found in the extensive region watered by the Yeniseï and its tributaries the Toungouskas. Unlike the Tartars, they possess no herds, except those of rein-deer; and their sole employments are hunting and fishing along the frozen plains and the bleak shores of the great Siberian rivers. They use no arms in the chase except the bow and arrow, in which they are so skilful, that they fear not to attack the strongest and fiercest animals. As it is very desirable, however, not to injure the precious skins of the fur-bearing species, they are rather desirous to take them by art or stratagem, and show wonderful ingenuity in the contrivances which they employ for that purpose. They are not less skilful in tracing out by scent, or by the faintest track, the animals which they pursue. In fishing, they use little boats composed of the rind of the birch or of the larch tree. They have no settled abodes, but wander from place to place, guided by the abundance of fish and game, or by the mere love of change. It costs them very little trouble to construct temporary abodes. The *yourt*, or summer hut, is formed merely by arranging in a circular shape a number of wooden poles, and giving them a conical roof of the bark of the birch tree. Their winter abodes also consist of one single apartment, the wooden walls of which are more strongly put together, and the windows are formed of expanded bladder. The oven which heats the apartment and cooks the victuals is placed in a corner; and round the room are benches, on which the family sit, eat, and sleep; and which, being hollow, contain their stores and provisions. The smoke makes its way through an aperture in the roof stuffed with dry grass to exclude the cold; in its way thither it fills the entire hut, but, its own lightness causing it to ascend, there is left a space near the floor not absolutely enveloped. The Tungouses are of a brownish tint, derived, perhaps, from the atmosphere of smoky huts; their features are flat, and their eyes small; though neither of these characters occur to nearly the same extent as in the Mongol race, nor have they its peculiar physiognomy. They are described, by those who have held intercourse with them, in terms of praise, as frank, stout, honest, and brave. Though professed votaries of the Shaman creed, they combine it much more than the Burat tribes with magical observances and other native superstitions.

4618. *The Yakoutes* occupy the banks of the Lena, and all the extent of wide and desolate plains which reach thence to the Eastern Ocean. The inroad of the Mongols and Burats is supposed to have driven them from the more southern tracts which they originally occupied. Their pursuits and habits of life much resemble those of the Tungouses, though they are considered, on the whole, as less daring and active. Far to the north, in particular, they dwindle into a poor and stunted race. Unable to procure bread, they have become, in a great measure, indifferent to it; and their vegetable food consists of various roots, as onions, garlic, and berries, which many parts of their territory produce in peculiar excellence. The superstitious habits which generally prevail among the natives of Siberia seem to have arrived at their utmost pitch among the Yakoutes. They reckon thirteen kinds of evil spirits, with the dread of which they are perpetually haunted; and the influence enjoyed by their magicians is unbounded. Their numbers, according to the census of 1801, amounted to 42,956 males, and 41,607 females.

4619. *The Ostiaks* are a numerous Siberian tribe, occupying the banks of the Lower Obi with its tributaries, and the plains which extend far on each side of it. Their size is somewhat diminutive; their hair, of a yellow or reddish tint, floats on their shoulders; and their features are destitute of all beauty. Their habitations, both of summer and winter, are nearly similar to those of the Tungouses, except that the latter frequently contain two or three families, divided by slight partitions, and having one common fireplace. They depend for subsistence chiefly on fishing, though they give chase to the bear and various fur-bearing animals; the finest of which, however, are now found only in the eastern regions. In these pursuits they display indefatigable activity, which their detractors impute to the pressure of want, since they show a disposition, when opportunity serves, to sink into indolent habits. They are said to be distinguished by great simplicity of manners, goodness of heart, and open hospitality. Their superstition is entirely that of the old rude paganism, without any Hindoo or Mahometan admixture. In their tents they have many little images, before which they place a table, and lay upon it snuff, willow bark, fish oil, and whatever commodities they themselves consider most valuable. In return for these gifts, they consider as due a prosperous fishing and hunting; and when, in spite of lavish donation, these fail, their wrath is sometimes kindled against their divinities, whom they even dash on the floor, and break in pieces. The bear is the object of a sort of fearful worship; and, in their oath of allegiance to the Russian government, they wish that, if it be not fulfilled, they may be devoured by that formidable animal. Their favourite amusement consists in a species of dance, in which they imitate to the life the motions and cries of the beasts, birds, and fishes with which they are daily conversant. The population, by the census of 1804, is stated at 17,236.

4620. *To the north of all the races now surveyed*, on the extreme shores of the Arctic Ocean, wander *the Samoyedes*, whom the poet denominates "the last of men." They present nearly the same original form as the Tungouses, but want and hardship have sunk them into a meagre and stunted race. They have a flat, round, and broad face, large thick lips, a wide and open nose, little beard, black and rough hair in small quantity. Their territory, along these dreary shores, extends for nearly 2000 miles, from the European frontier to the Olenek, and almost to the Lena. Placed in the same situation with the Laplanders, their habits and modes of life are almost entirely the same. All their wants are similarly supplied by the rein-deer; but the herds which they have tamed are employed solely for the purpose of conveyance; those only which are caught in the chase are used as food, and their skins converted into clothing. On the sea-coast they attack the bear, and feed on his flesh, as well as on that of the whales which are cast ashore. Fishing on the rivers is considered by them an easy and luxurious occupation. In autumn they are chiefly employed in hunting the white fox, the fur of which affords the only medium by which they can obtain foreign luxuries.

Sect. VII. *Local Geography.*

4621. *In taking a survey of the local features of Siberia*, beginning at its western or European extremity, we find, first, the already described mining district of Catherinenberg. It is politically attached, not to Siberia, but to the government of Perm, on the other side of the Urals. The capital, of the same name, situated near the source of the Iset, contains 2000 houses, built chiefly of wood, but some of stone; while the great manufactories are of brick roofed with thin iron plates. Here the Russian government has established the college of mines, which presides over all the founderies, 114 in number, maintained by it on both sides of the Urals.

4622. *The first territory that is wholly Siberian* consists of the province of *Tobolsk*. The government of this name comprehended once the whole, and still includes the better half, of Asiatic Russia. Tobolsk Proper, however, consists of the territory watered by the Tobol, the Lower Irtysch, and their tributaries. It forms an expanse of wide and watery steppes, covered with deep pastures and immense woods, and capable, in many places, were culture employed, of yielding the most luxuriant crops. Pallas particularly remarks the district of Isetsk, or the plain of the Iset, about 900 square miles of the very finest, rich, black soil, capable of growing harvests that might feed a nation; yet it does not contain above 57,391 inhabitants. Of the same character are the plains of the Lower Tobol and Issim. Along these elevated confines of Siberia and Tartary, roam branches of the Kirghise horde, against whose inroads even the cordon formed by the powerful empire of Russia is not always a secure defence. Every where the basis of the population is Tartar; the prevalent race in the interior districts is the Baschkir, rather a quiet and substantial people; but still, as among other Tartars, their industry consists in the rearing of horses, and their indulgence in the eating of horse-flesh and drinking of mares' milk. The absence of any other agricultural industry condemns regions to waste that are capable of supporting the most extensive population. As to manufacture, the only process which can deserve that name is distillery, for the products of which there exists but too extensive a demand. Even in the very large establishment of Count Schouvalof, however, the machinery is so rude, and the tubes so defective, that a quantity of steam escapes, sufficient to intoxicate the bystanders, and to kindle at the approach of a flame.

4623. While the open country is in the possession of the Tartars, and the still ruder native tribes, *the towns* have a character very decidedly European. This is particularly the case of *Tobolsk, the capital* of this province, and of all Siberia. Its principal division is placed on a high rocky eminence overlooking a majestic plain, in which the Irtysch and the Tobol blend their mighty waters; while the horizon is closed on every side by a boundless expanse of forest. With the exception of the government houses and two churches, Tobolsk is built wholly of wood, and even the streets are paved with that material. The edifices are not constructed with any architectural skill; but the walls being white, and all the cupolas gilded, they make from their elevated site a very splendid appearance. The chief want is water, which can be procured only by a laborious carriage from the grounds below. The lower town, on the bank of the river, is Tartar, built wholly of wood, with water in abundance, but not of good quality. The basis of the social system at Tobolsk consists of exiles banished by a jealous government into their "prison of unbounded wilds;" and, from causes formerly specified, the society is upon a good European model, and Tobolsk makes an agreeable residence. The literature which, in the middle of the century, Gmelin found somewhat antiquated, is now, by the frequent passage of Russian officers, brought up to the latest German standard. All the trade of Siberia passes through Tobolsk. As soon as the first influence of spring has melted the snows, the merchants are seen crowding from the west, to traverse the long tract which leads to the Chinese frontier and the Eastern Ocean; and as soon as the winter sets in, similar crowds are seen returning. All the tributes of fur, collected from the tenants of the boundless deserts, are accumulated at Tobolsk.

4624. *In the southern and western parts of the province of Tobolsk* are Tara on the Irtysch; Jalutorosk and Kurgan on the Tobol, and Tumen on the Taura; small towns, surrounded by rich pastures, which enable the inhabitants to live in coarse abundance, and to carry on a considerable trade in timber, tallow, and hides.

4625. *To the north*, this region presents a very different aspect, as the Obi rolls to the Northern Ocean. Its dark and frozen waves are bordered by icy plains, or vast forests of gloomy pine, amid which a few handfuls of stunted and shivering natives erect their *yourts*, or movable tents. The Russians content themselves with maintaining here stations with a commissary and a few troops, not for the purpose of opposing a hostility which is not to be apprehended, but for collecting the fur tribute, which, though not very burdensome, would not be given quite spontaneously. Sourgout, above the junction with the Irtysch, is surrounded by a palisade, contains two churches, and 168 houses. Here grain cannot ripen; but white and black foxes, with other game, are found in abundance. Samarov, at the junction of the two rivers, is a position nearly similar. Still farther to the north is the district and post of Beresov, where domestic animals indeed may still be reared, but the rein-deer can alone be used with advantage. Finally, upon the Obi, before it opens into the great bay of that name, stands Obdorsk, a post of a few hovels and about twenty-five Cossacks, who collect the tribute of these desolate tracts. Amid the naked mountains of this northern extremity of Asia, attempts have been in vain made to introduce the plants and animals of civilised life: in a short time they have uniformly perished.

4626. Returning to Tobolsk, and proceeding thence southwards, we come to the *provinces of Omsk and Kholyvan*, stretching along the Upper Irtysch and Obi, and separated from Tartary by the chain of the Altai. Of this region, already noticed as one of the most metalliferous in the world, the produce would exceed even the vast amount of that on the Urals, were not the land carriage too heavy for the bulky metals. Though fine pasture districts exist in these provinces, as in those on the western rivers, yet they are by no means of equal extent, and a great part of their surface consists of long chains of little saline lakes. In these the mineral covers the whole bottom of the lake with a layer of the most brilliant whiteness; but there is no room for the assertion which has been founded on this appearance, and which represents them as investing it with a crust like ice. The steppe of Baraba, and others which extend along these dreary regions, are almost covered with a forest of willows and other aquatics, and the air is very pestilential. The inhabitants, as Mr. Holman informs us, believe that there are plants which emit poisonous effluvia; but this is nothing more than the usual marsh miasma. The natives here are miserably poor, living in huts half sunk in the ground, covered with long coats of sheepskin, and in perpetual fear of Tartar incursion. This last circumstance, notwithstanding all the precautions used by the government, leaves uninhabited large and fine pastoral tracts along the southern border.

4627. *The whole of this frontier presents features* indicative of some great revolution, physical and political. Every where are found bones of elephants, buffaloes, and other huge animals, that belong to another and a distant climate, and some even to varieties that are no longer known to exist. Another feature consists in a vast number of tombs, extending along the whole of this line, and which were filled with gold and silver ornaments, coins, arms, evidently belonging to chiefs who ruled over a wealthy and powerful people. At the time of the earliest travellers, these tombs were a considerable source of wealth, and it was a regular employment to search them; but, by the latest accounts, they are now so completely rifled, as no longer to repay the trouble of examination. There are remains of edifices, but not corresponding to the grandeur of the sepulchral monuments. One ruin of considerable fame, called Semipalatnoi, or the Seven Palaces, appeared to Pallas evidently of Bucharian origin. He was much more struck by the ruins of Ablaikit, a temple which tradition reports as erected by a Calmuck prince of the name of Abloie. It was filled with upwards of forty images, representing all those huge, deformed, and often monstrous deities which are the objects of Shaman adoration. They were half male, half female; some had ten faces and seven arms; the features of others were hideous and inflamed. The edifice was sustaining daily injury from the Russian and Kirghise troops; and of the inscriptions, which were found in great abundance by the earlier travellers, only a few fragments remained.

4628. *Upon this line* the Russians maintain their grand *chain of fortresses*, by which the frontier is imperfectly defended from the inroads of the Kirghises. Omsk, the capital of a province, contains the head-quarters, and a garrison of 4000 men, with 7500 inhabitants. This garrison Captain Cochrane describes as maintained in admirable order. Government even supports a school for the children of the military, as well as another for those of the inhabitants. The limitary post is at Semipalatnoi, where 2000 men were stationed in garrison under as good management as at Omsk. Here is a great rendezvous of the Tartars and Bucharians, bringing the merchandise of interior Asia, and often their plunder, to exchange for tobacco and brandy. A little farther up the Irtysch is Ubinsk, "a dirty little spot, called here a town," and at a small distance beyond is Bouktarma, close upon the boundary of the Russian and Chinese empires. Captain Cochrane describes this as one of the most romantic spots in the world. From a vast plain covered with the most luxuriant herbage, but without a tree or a shrub, a number of detached, rocky, precipitous granite mountains start up and spread in various directions. Notwithstanding the richness of the pasture with which this plain is covered, it is a complete desert; "all this fair and fertile tract is abandoned to wild beasts, merely to constitute a neutral territory."

4629. In the east of Omsk is *the province of Kholyvan*, the seat of those immense mineral operations which have been repeatedly noticed. Kholyvan itself is now nearly deserted, less from the exhaustion of the mines, than of the timber, of which a large quantity is requisite, the metals being difficult of fusion. The town, therefore, is at present small, and little frequented. Barnaoul, to which, as already observed, all the metals drawn from the huge mineral mass of the Schlangenberg are brought to be smelted, is now the principal town of this district. It was found by a late traveller to contain 8000 inhabitants, and appeared the happiest, best governed, and neatest place in Siberia.

4630. *South-east of Kholyvan* is *Tomsk*, which, lying on the high road from Tobolsk eastward, is a great thoroughfare. Being used, however, almost solely as a passage, the business done there, though enough to support a population of 9000 or 10,000, does not maintain them in any stirring or active state. Travellers agree that drunkenness, and the habit of low sensual indulgences, those besetting sins of all the Siberians, are carried to a peculiar height at Tomsk. The surrounding country, naturally very fine, wears a general aspect of misery, and is over-run with birch and brushwood. The cottages of the inhabitants are extremely poor, and the little produce that is raised is half eaten by large herds of field mice. Tomsk, however, is the centre of a considerable trade in whisky, brought from the distilleries on the Tobol and the Iset for the supply of the eastern districts. Kutznetzk, on the Upper Tom, is a small town, the inhabitants of which live in a state of lazy abundance.

4631. *The direct and now most frequented route from Tomsk* leads through the territory of *Krasnoyarsk*, the soil of which is among the richest in the world, and capable of yielding the most luxuriant crops, not of wheat, for which the climate is too severe, but of barley, oats, and other grain, which can endure the cold. It is cultivated, with some measure of industry, by a race of Tartars called Sluschivies, whose habits, however, are chiefly pastoral. The town contains about 3500 inhabitants, not exempt from the reigning vices of the country, but by recent accounts it appears to have been much improved by an intelligent governor.

4632. *To the south of Krasnoyarsk*, in a much bleaker region, is found the considerable town of *Yeniseisk*, the capital of a district. The land route by it to western Siberia is circuitous; but its position upon the great river from which it derives its name, at a very short distance below the junction of the almost equal tributary of the Angara, renders it a great centre of the river intercourse of Siberia. A water communication with Tobolsk is formed by the Ket, which falls into the Obi. On this dreary tract is found Narym, a village with a church, and 100 houses, established solely to collect from these wide regions the tribute of furs.

4633. *The Yenisei, after passing Yeniseisk*, rolls for upwards of 1000 miles to the Northern Ocean, through a *desert* still more vast and dreary than that of the Lower Obi. Turukshansk, or Mangasea, is the name given to this awful world of desolation. It is occupied chiefly by the Tungouses, who, not in their persons, but in their habits and mode of subsistence, even in the construction of their winter and summer houses, considerably resemble the Esquimaux. Turukshansk, in the Russian archives called a city, is the smallest, perhaps, that bears the name, not having more than 100 inhabitants, who mostly reside within a little wooden fort defended by four guns. The trade and tribute of furs are the only source of subsistence. Its situation at the junction of the great tributary of the Lower Toungouska is favourable for this purpose. The vicinity is dreary, but enlivened by numberless flights of waterfowl.

4634. From Yeniseisk and Krasnoyarsk, population and commerce take a southern direction, and centre themselves at *Irkoutsk*. The position of this capital altogether fits it to be the emporium of Eastern Siberia. The Angara enables it to communicate on one side with the western rivers, on the other with the Baïkal Sea, and that point of the Chinese frontier which is the scene of the most active land commerce of Russia. The Lena, again, which takes its rise not far distant, connects it with the Eastern Ocean, and with immense tracts, which, though destitute of all the necessaries and even comforts of life, abound in the most precious furs. Its prosperity and growth have, therefore, been rapid; and, from being a secondary city, dependent upon Tobolsk, it has been raised to be the seat of a government which comprehends all the eastern tracts now to be described. Travellers generally describe Irkoutsk as now the handsomest in external appearance, and the most elegant as to society, of any in Siberia. The houses, indeed, are chiefly of wood; but the streets are broad and spacious; some of the public buildings are very fine, and there are twelve handsome churches. The population, by the last census, consisted of 11,292, and has probably increased since. The principal inhabitants consist of merchants, chiefly connected with houses in St. Petersburg, and of the civil and military officers of government. Captain Cochrane laments, as the main bar to social enjoyment, the jealousy which reigns between these two parties: yet of such local and precarious application are those remarks, that Mr. Holman, his contemporary, considers the agreement between those very classes to be a subject of agreeable surprise. Both being in the habit of passing to Europe, have introduced whatever is most recent in its literature, as well as in musical and dramatic performance. A small library has been formed, as well as a collection of natural history; and government, among other seminaries, has founded a school for the instruction of the Japanese. The shops of Irkoutsk are filled with nankeens, porcelain, lacquered ware, and other articles of Chinese dress and furniture, and it has almost the aspect of a Chinese city.

4635. *Descending the Angara* from Irkoutsk, we enter *the wide inland sea of the Baïkal*, which, as one of the grand features of Asiatic Russia, has been already described. Beyond it to the south, a scene opens altogether Mongolian. The country presents the sandy plains of Eastern Tartary, intermixed, occasionally, with good pastures. The Mongols, with the cognate tribe of the Burats, fill all the country; and even the Russian colonists imitate their manners and language. The religion of the Lama is celebrated in all its pomp of sound and image; tea, formed as in Thibet into a pulpy mass, is the favourite beverage: all the habits and system of life are those of Middle Asia. Nertschinsk is the name given to this south-east corner of the Russian empire. The town of that name was once frequented as the main route to Kiachta; but since the merchants have preferred to ascend the Selinga, Nertschinsk derives its importance solely from its mines of lead and silver, which are very abundant. Their annual produce is usually 40,000 lbs. of lead; from which are extracted 250 lbs. of silver. The mines, like others, are worked by exiled convicts, whose situation is peculiarly hopeless, as the Chinese never harbour them. Westward from these metalliferous chains stretch the Yablonoy mountains, the most rugged, and perhaps the loftiest part of the great chain which here crosses Asia. Thick and continued forests, rocks, steeps, morasses, and snow, cover all their higher pinnacles; these features render them impenetrable, unless to a few daring hunters, who make their way by paths scarcely distinguishable from the track of wild beasts. The prevailing form is that of a number of pyramids uniting in a broad summit resembling an apple; whence is derived the appellation Yablonoy.

4636. In order to facilitate the route *to Kiachta* up the Selinga, the Russians have built upon that river *Oudinsk* and *Selinginsk*, small towns, in a barren country, and merely supported by this transit. *Kiachta* has been already mentioned as the busiest scene of the commerce of Northern Asia, having been fixed upon by the treaty of 1728, as the only point at which commerce can take place between the vast empires of Russia and China. It stands on a naked, somewhat elevated plain, with lofty granite peaks rising round it on every side. It is closely contiguous to the town of Maimatchin, crowded with Chinese merchants, who resort thither for the purposes of this trade. The towns, however, are distinct; and each is surrounded by its separate fortification. Forts built on the pinnacle of two opposite mountains mark the boundary of the empire, being surmounted on the Russian side with a cross, on the Chinese side with a cone or pyramid. In consequence of the influx of strangers, the manners are said to be more polished and sociable than in other towns of Asiatic Russia, and the two nations mingle cordially in social intercourse. The Russians are even invited to the place, and entertained there; though, on the tolling of a bell at sunset, they must all hastily quit it. The European residents, in imitation of the Chinese, drink vast quantities of tea, and even annoy visiters by pressing upon them a beverage not generally the most agreeable to the Russian palate.

4637. We return now to Irkoutsk, to trace the line by which its domain stretches through *the vast extent of its eastern wastes* to the dimly explored ocean boundary of Asia. A north-east route of 600 miles leads to Kirensk, situated on the Lena, where it first begins to be a river of importance, and in a position equally convenient to travellers from Irkoutsk and from the Yenisei. The last traces of rich vegetation are here produced by a fertile soil, even amid the severity of the climate. It is also well situated for the trade in furs; and its sturgeon is reckoned the best in Siberia. With all these advantages it is no more than a village of about 100 houses. Istkut and Olekminsk, situated on the Lena, as it descends into the frozen regions, are merely small posts formed for the collection of furs, and for stages on the road to Yakoutsk.

4638. *Yakoutsk*, in the heart of this frozen territory, has still pretensions to the name of a city, since its ill built wooden houses contain about 7000 inhabitants. Nothing can be more bleak than its situation and environs. A few crops of rye are sown on a rich soil, but under a complete uncertainty whether they will ever ripen, in a climate where, in the end of June, the ground is still deeply frozen, and early in September the Lena is passable on sledges. Still, it is rendered a place of some importance by the rich furs which are either caught in the surrounding region, or brought from the opposite coast of America. The merchants make very high profits, both by the enormous price at which they sell tobacco, spirits, and other European commodities, and the low rate at which they obtain those of the natives in exchange.

4639. *On the Lower Lena and Olenek*, and within the borders of the Arctic Circle, the Russians have established *Gijansk* and *Olensk*, small posts for hunting and tribute. Near the mouths of these rivers, the Northern Ocean presents a number of isles, of which some are large. They have been carefully examined by the hunter Liackof, who discovered, even at the distance of about 200 miles from the shore, an extensive coast, to which some have given the name of New Siberia. The Russian government sent afterwards to examine it more carefully, but without being able to ascertain its extent and boundaries. Some even have imagined them to extend in such a manner as to become connected with the continent of America; but this supposition is now pretty generally abandoned. The aspect of these shores is, as might be expected, dreary and desolate; but they present one indication that is truly extraordinary, and gives much room for thought to those who speculate on the changes and destiny of the earth. There are found numerous bones and other remains of the elephant, an animal now altogether foreign to this part of the globe, or to any which is not separated from it by nearly a fourth of its circuit. Remains of that huge animal, of an extinct race, the mammoth, are also found at this extremity of Siberia.

4640. *Proceeding from Yakoutsk* eastward, we come to a more active and thriving scene. The traveller who ascends the Aldan and the Joudama, and after a short portage descends the Okhota, reaches *Okhotsk*, the emporium of the north-eastern seas of Asia. It is a neat, thriving, improving town, situated on a long narrow ridge between the sea and the river, and containing 1500 inhabitants. Nearly half of these are in the employ of government, which maintains them at an expense of 10,000*l.*; which sum, however, the revenues of the district do not pay. Okhotsk collects all the furs and skins of Kamtschatka and of north-western America, which last branch has of late received a great augmentation.

4641. *A large and long peninsula*, of peculiar character, called *Kamtschatka*, extends into the ocean which waters the eastern extremity of Asia. This territory is about 600 miles in length, by 300 in its greatest breadth. Its position on the globe ought to give to the greater part of it a climate like that of Britain; but the winds blowing from the plains of Siberia, and from the vast polar seas by which it is surrounded, induce an Arctic climate, and allow scarcely three months of summer. This cold is increased by the chain of mountains which traverses nearly its whole length, some of whose peaks rise, as already observed, to an extraordinary height. Attempts have in vain been made to rear, in Kamtschatka, the coarsest kinds of grain peculiar to the most northern climates. There are, however, berries of various kinds, some roots, which when dried, supply the place of bread; and a gramineous plant, from which they contrive to extract a spirit. But the main compensation is in the profusion of animal life, which fills alike earth, water, and air, and in which no territory on the globe seems to rival this. A sportsman who should be willing to sacrifice to his favourite amusement the pleasures of civilised life would find Kamtschatka a paradise. The land animals afford a valuable prize, being all covered with rich furs, and very abundant. Though not quite so fine as those of Siberia, they form the basis of a considerable trade. The coasts swarm with seals and other marine animals; the rocks are coated with shell-fish; the bays are almost choked with herrings, and the rivers with salmon. Flocks of grouse, woodcocks, wild geese, and ducks, darken the air. Thus the inhabitants obtain in abundance not only food, but full materials for that gluttonous indulgence to which they are addicted. They form a peculiar race (*figs.* 685. and 686.), with flat features, small eyes, thin lips, and scarcely any beard. Their stature is diminutive, with large head and short legs. Since the Russian sway put an end to the wars which they were wont to wage with considerable fury, they have passed into a peaceable, honest, lazy, drunken, servile race, careless of the future, and addicted to coarse sensuality. They have houses both for winter and summer (*fig.* 687.). The former, composed of branches of trees, plastered with clay, are half sunk in the ground; and in the interior one lamp, fed with train oil, lights, warms, and cooks the victuals of two families. The summer-house has a peculiar structure, its floor being raised by posts, twelve or thirteen feet from the ground, and leaving beneath an empty space, in which the fish is hung up to dry. In their domestic habits, the most remarkable peculiarity is the use of dogs harnessed to the sledges (*fig.* 688.), and employed to draw them. These dogs are of no peculiar size or strength, but resemble our mountain or shepherd dogs. They are fed on the offal of fish, and in summer are turned out to find their own food; their return being certain at the approach of the inclement season. In travelling, the driver yokes them two and two abreast, and from four to ten in one vehicle, according to the weight to be drawn. He then places himself in the sledge, which is in the form of a basket with two ends turned up; but no ordinary skill is required to prevent both rider and carriage from being overturned on the rugged ground over which it is frequently dragged. At their high festivals, the Kamtschadales give themselves up to an almost frantic mirth, which astonishes those who have viewed the sluggishness of their ordinary deportment. Their favourite dance is one in which all the actions and motions of the bear are represented to the life; and the violent and uncouth attitudes assumed for this purpose excite in the spectators rapturous admiration.

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MAN OF KAMTSCHATKA.

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WOMAN OF KAMTSCHATKA.

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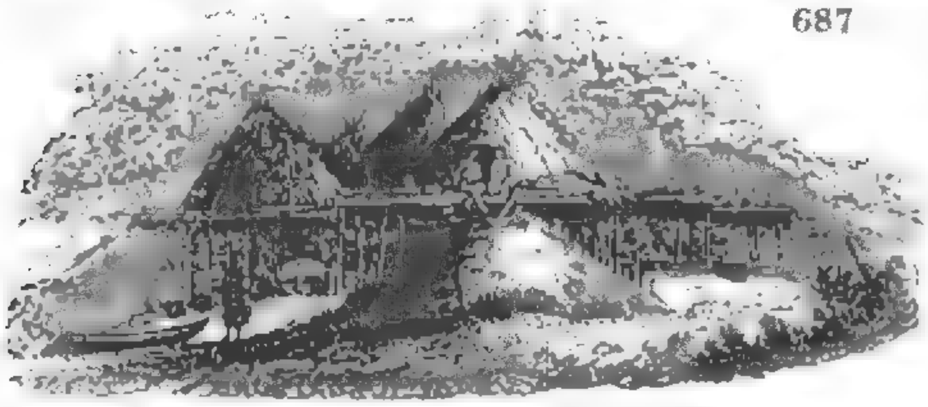

SUMMER AND WINTER HABITATIONS AT KAMTSCHATKA.

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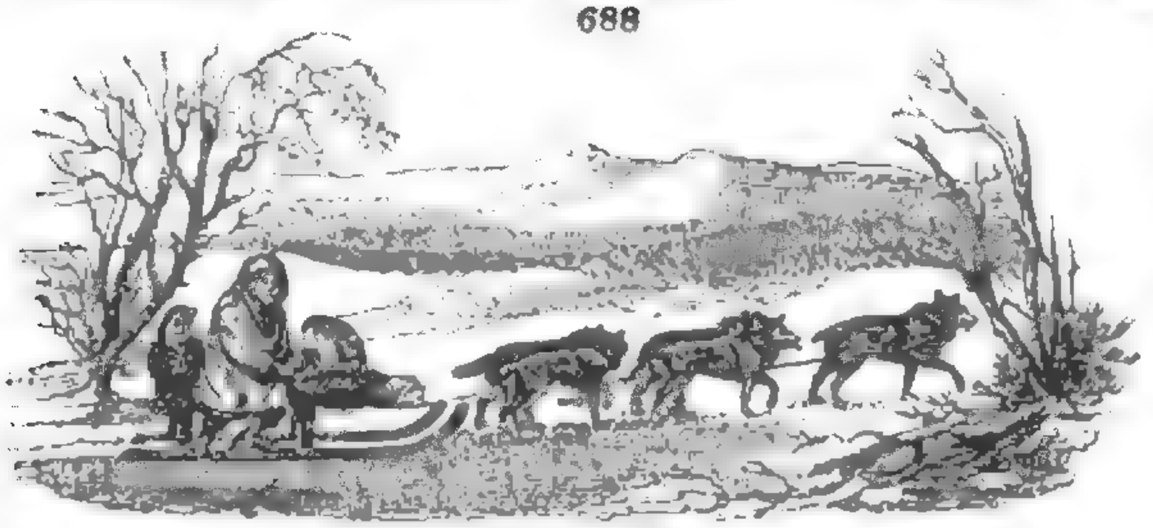

SLEDGE AND DOGS.

4642. *Although the Kamtschadales*, by connection with Russia, have gained an exemption from war, they have suffered deeply from the introduction of ardent spirits and of various contagious diseases. Their numbers have thus been diminished, and do not at present exceed 4600, of whom little more than half are natives; the rest Russians and Koriaks. Bolcheretzk and Nischnei-Kamtschatsk, are small villages, which pass for towns; but the only place of any real importance is Petropaulowsk, or the harbour of St. Peter and St. Paul, a thriving little port, by which the merchants of Okhotsk carry on almost all the trade of Kamtschatka.

4643. *An archipelago of small islands, called the Kuriles*, stretch from the southern point of Kamtschatka to Jesso, a line of nearly 900 miles. Twenty-two are known, of which nineteen are subject to Russia. Some are uninhabited, from the want of water: others rival Kamtschatka in the abundance of game and fish. The inhabitants are peaceable and well disposed; they live nearly as the Kamtschadales, but in a neater and more civilised manner; and some of the southern islands have imbibed a tincture of Japanese habits. Their subjection to Russia consists almost wholly in paying a tribute of furs and sea calves.

4644. *A wild and remote country yet remains*, in the extremity of Asia, into which only a few daring adventurers attempt to penetrate. All the features of Siberia are on an extensive scale; but scarcely any rival the immensity of its eastern deserts. Those who set out from Yakoutsk for the peninsula of the Tchutchi have to traverse nearly 2000 miles, in which there is only, at each interval of 200 or 300 miles, a post of eight or ten huts. On the intermediate spaces are placed, for the accommodation of travellers, *yourts*, or little square wooden huts, at the precise distance of twenty-five miles from each other, with a fireplace in the middle, for which the pine-woods always supply plenty of fuel. At length they reach Nischnei-Kolymsk, on a bay of the Arctic Ocean, at the mouth of the Kolima. This town, as it is here called, consists of fifty wooden houses, and about 400 inhabitants. The soil yields neither grain nor herbage; but a few horses and cows are kept half alive by cropping the tops of the bushes. In return, the waters yield food in boundless profusion.

4645. *The gulfs of the Kolima and Anadir*, belonging to the opposite oceans, enclose the extreme peninsula of *the Tchutchi* (*fig.* 689.). This race, in their rude retreat, have preserved entire the independence so long lost by all the other nations of Siberia. They meet the Russians, however, for purposes of traffic, at the fair of Ostronaya, which, when visited by Captain Cochrane, was the resort of about 200 Tchutchi of both sexes and of all ages, and 500 reindeer. They are a stout, rough, honest, bold, and fearless race. Dear-bought experience has rendered them excessively jealous of the Russian traders, and by no means so easily cheated as formerly. They take off about 40,000 pounds of tobacco, averaging three rubles a pound, with various little articles of hardware, cutlery, and toys; in return for which, they give sea-horse teeth, various skins and furs of sea and land animals, the produce of their own coast, of the neighbouring islands, and of the opposite coast of America.

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TCHUTCHI.

Chap. XIII.

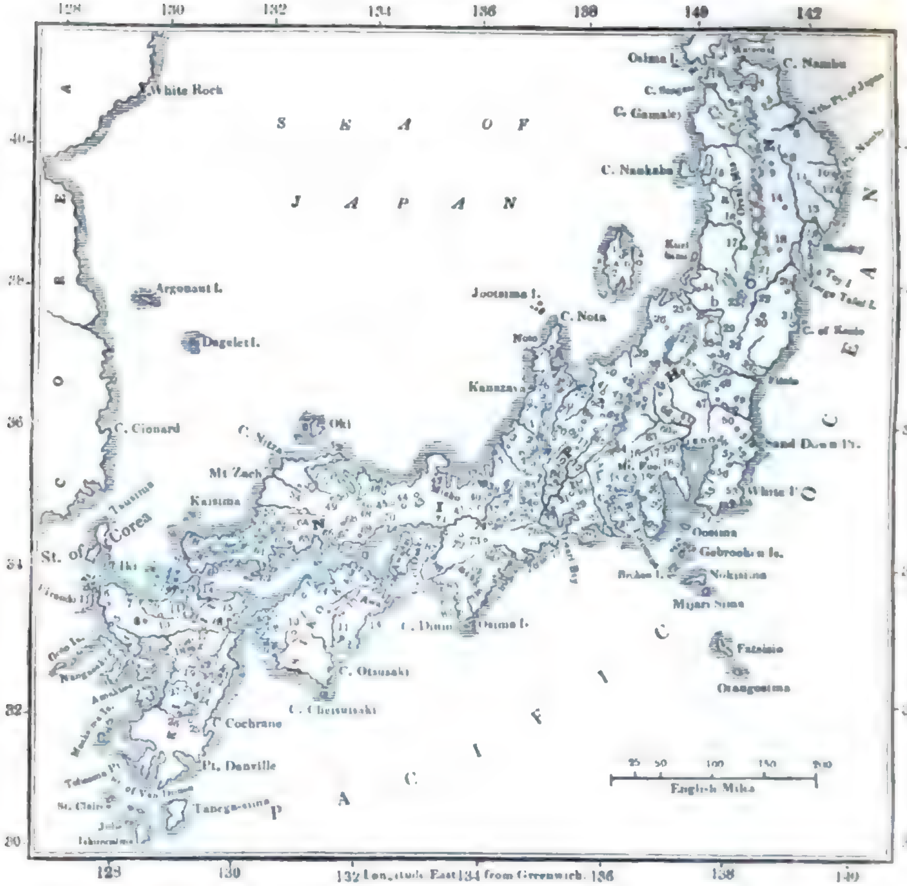
JAPAN.

4646. *Japan bears an affinity to China*, in the nature of its institutions, the character of its inhabitants, and the physical and moral circumstances which separate it from the rest of the world. Asia, in general, forms a vast continent of broad and unbroken dimensions; but to the east and south-east, it presents archipelagoes of islands, so large as to constitute entire kingdoms. The three which constitute Japan have, not without plausible grounds, claimed the title of *empire*. The empire of Japan is in fact so great, so populous, and marked by such striking and peculiar features, that, notwithstanding the complete state of insulation in which it holds itself from other nations, it justly attracts a large share of the curiosity of Europe.

Sect. I. *General Outline and Aspect.*

4647. *Japan* consists of three islands, one very large, and two smaller, which, being separated from each other only by narrow channels, form altogether one long, winding, irregular range of territory. The entire length, in an oblique line, from point to point, scarcely falls short of 1000 miles; while the breadth, in some places not more than forty or fifty, seldom exceeds 100, and never, unless in its most expanded central point, amounts to 200. Niphon, by much the largest, is about 800 miles long; Kiusiu, 150 miles long by 120 broad; Sikokf, 90 long, by 50 broad. The other islands are mere detached and local objects. The southern part of the large contiguous island of Jesso, comprehending all of it that is valuable and improvable, is completely colonised and possessed by the Japanese.

4648. *The stormy seas which dash around Japan* form the most prominent feature in its *geographical position*. To the east it faces the entire breadth of the Northern Pacific; which, with the intervention of scarcely a single island, reaches fifty degrees across to the coast of America. The south-western point of the range comes almost in contact with Corea, from which it is separated only by a strait of about eighty miles. Proceeding to the north-east, it recedes continually from Asia, till it leaves an expanse, nearly 700 miles broad, called the Sea of Japan. At the northern extremity this sea is narrowed by the large islands of Jesso and Saghalien, till it is formed into a species of close bay.



References to the Map of Japan.

ISLAND OF NIPHON.

NORTH PART.

1. Firnjaki
2. Sugaru
3. Mimaja
4. Sedaki
5. Ooda
6. Aidat
7. Yamasawa
8. Kimbasa
9. Azu
10. Nabo
11. Kadsinda
12. Sibatta
13. Aizu
14. Jumadsukuri
15. Kubota
16. Shidaybama
17. Ottama
18. Minaka
19. Shanday
20. Madrusara
21. Oonato
22. Fasikani
23. Magami
24. Nigata
25. Kof
26. Kabigi
27. Ivafune
28. Ascara
29. Sanada
30. Asomma
31. Genki
32. Saningata
33. Fitats
34. Kusi
35. Tsuga
36. Kura
37. Aso
38. Ofara
39. Cambara
40. Tonomi
41. Fotas
42. Imidsu
43. Usui
44. Sertta
45. Gumma
46. Fyki
47. Gisma
48. Jenjoko
49. Saida
50. Otanda
51. Toiko
52. Amafa
53. Nacaba
54. Awa
55. Fecuri
56. Musa
57. Mooki
58. Tsubba
59. Jeddo
60. Jetaza
61. Canaca
62. Jrkomi
63. Arecusa
64. Jamanasira
65. Fannisinia
66. Mitsuz
67. Mebu
68. Tkenda
69. Nibo
70. Oona
71. Nomi
72. Nacava
73. Oyama
74. Shiyo
75. Noto
76. Jenne
77. Kanazava.

SOUTH PART.

1. Kilanesio
2. Tsikavos
3. Mirala
4. Cammo
5. Onibu
6. Jekisamokori
7. Anzuquiama
8. Mottos
9. Kakuri
10. Gutso
11. Futa
12. Taisagatta
13. Jana
14. Tsikumma
15. Udo
16. Tsabe
17. Juringi
18. Kanagava
19. Totska
20. Kowara
21. Odowara
22. Bandel
23. Farra
24. Icelj
25. Katsgava
26. Midske
27. Famumats
28. Sosida
29. Okasoki
30. Twati
31. Amabe
32. Nirva
33. Owari Nagaja
34. Iso
35. Komano
36. Sigga
37. Oits
38. Tokis
39. Tbarunga
40. Nara
41. Meaco
42. Kaki
43. Kuwadi
44. Totteri
45. Ooha
46. Kumano
47. Aneri
48. Eudsit
49. Inaka
50. Oofara
51. Semani
52. Jodsomo
53. Kanto
54. Akisika
55. Oosi
56. Oosima
57. Misima
58. Misaima
59. Amu
60. Amanguchi
61. Muko
62. Moriza
63. Camiro
64. Takamidja
65. Caminagari
66. Mitaret
67. Tomu
68. Kinogurae
69. Minnje
70. Ako
71. Osaka
72. Kawatsa
73. Aiska
74. Kutats
75. Tokaits
76. Iga
77. Toriba
78. Nisiki
79. Ponga
80. Namanda
81. Tooni
82. Samaria
83. Kuno
84. Feguri
85. Wakajamma
86. Oiamura
87. Idsumi.

Rivers.

a Zubaki
b Nigata
c Tenrio.

SIKOKF ISLE.

1. Awa
2. Kanda
3. Taka
4. Fuke
5. Imabari
6. Kurisima
7. Matsjamma
8. Kuma
9. Siwabo
10. Tosa
11. Ojen
12. Nangasaima
13. Mina
14. Simaguino.

KIUSIU ISLE.

1. Nangasaki
2. Simabara
3. Isafara
4. Oumura
5. Osimokubi
6. Awo
7. Nagaja
8. Titwa
9. Tacata
10. Kasanki
11. Favda
12. Nosima
13. Mosa
14. Nagacari
15. Vokinofama
16. Funai
17. Vonki
18. Tabino
19. Mike
20. Saccussi
21. Oakata
22. Koisja
23. Aasla
24. Jamaga
25. Kosa
26. Keki
27. Jamas.

SADO ISLE.

1. Sasta
2. Umo
3. Kasma.

4649. *The aspect of Japan* is bold, varied, abrupt, and striking (*fig.* 691.), without any single feature that is very prominent. Rugged chains traverse its interior, from several of which volcanic fire is thrown up; and Fusi, the highest and most northerly, is covered with almost perpetual snow. On the whole, however, these inequalities of surface are no more than necessary to supply the moisture requisite in so hot a climate; and an ample proportion of the surface of Japan consists of rich valleys and extended plains, on which all the articles of tropical produce grow in the utmost abundance. Streams, pouring down from the interior heights, traverse the plains in endless numbers, and in every direction; but, in this narrow belt, the receptacle of the sea is every where too near to allow them to acquire the character of great rivers. There are no lakes of any magnitude; but the coast is indented with many deep and broad bays, which penetrate the interior, and afford the most important aid to internal commerce.

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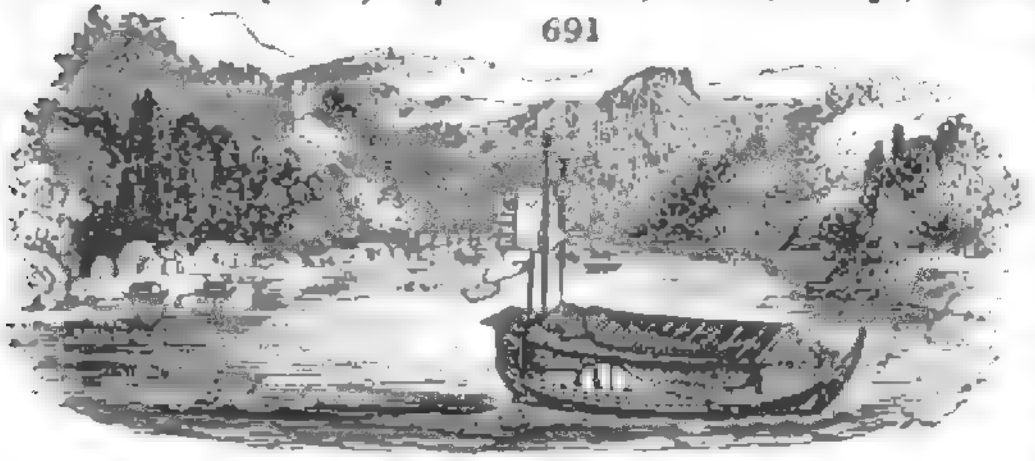

JAPANESE SCENERY.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4650. *These islands* contain several volcanoes of considerable extent, concerning which some few details have been published by travellers; but the geognostical relations of the other formations of the group are not known to us.

4651. The precious metals, *gold* and *silver*, abound in the empire of Japan. The gold is obtained principally from a pyritical ore of copper; smaller quantities are collected from alluvial soils of various descriptions. Rich mines of *silver* are said to occur in the province of Bungo, and the most northerly parts near Kattami. There are considerable *copper mines* in different districts. *Iron* is said to occur but seldom, or it is less extensively mined than copper, as the natives do not make so much use of it as most other nations. They sometimes employ it in the manufacture of arms, knives, scissors, and other necessary implements. The gold and copper are coined into money. *Cinnabar*, the ore of mercury, is also met with in Japan. *Sulphur* is found in great abundance; *coal* occurs in some of the northern provinces; beautiful kinds of *amber* were received by Thunberg from the natives; and a reddish brown *naphtha* is used for burning. *Asbestos, porcelain earth, tourmaline, schorl,* and *marble* are also enumerated among the mineral productions of Japan.

Subsect. 2. *Botany.*

4652. *Japan* *, like China, is under the influence of an Oriental clime: its temperature is much lower than that of Morocco, Madeira, and the peninsula of Spain, which lie under the same parallels. The islands of Kiusiu and Sikokf, and the southern part of Niphon, terminate, eastward, the Transition Zone. These islands are intersected by mountains, some of them of considerable height. The summers are very hot; but the thermometer sinks a great deal in winter. From observations made by Thunberg in 1775, at Nangasaki, lat. 32° 45′, it appears that the mean annual temperature is but + 16°; owing to which the Bananas, grown in the vicinity, do not bear fruit. In August the greatest heats take place, when the thermometer rises to + 36° or 37°, sometimes to + 43°. The winter begins in January and closes in February, during which the quicksilver varies between + 21° and — 2°. Occasionally snow whitens the ground, and the surface of the water is covered with ice. The island of Niphon is traversed by the northern limit of the Transition Zone. It is needless to attempt to determine precisely the line of this zone: the temperature of Niphon is unknown to us; and as to its vegetation, our only information is derived from Thunberg, who travelled in 1776 from Nangasaki to Jeddo, under the surveillance of an escort which did not permit him to deviate from the road. At Osaka (lat. 34° 5′) there is a botanic garden, containing many of the productions of the empire; and where Dracæna revoluta, Laurus Camphora, and other species which require a mild temperature, grow in the open air. The Tea plant, which, with the Camellia and Lycium barbarum, forms all the hedges in Kiusiu, grows also on the slopes of the mountains between Meaco and Jeddo; but the Tea appears to be of the number of those plants which a considerable degree of heat in summer protects against the effect of winter. It is probable that the mean temperature of Jeddo is much lower than that of Osaka and Nangasaki.

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* From Mémoires du Mus. d'Hist. Nat. vol. xiv. p. 442.

4653. *The trees on the mountains* of Niphon consist generally of northern species; such as the Lime Tree, the Scotch Fir, the Pinus Cembra and P. Strobus, the Spruce and Larch. To the north of Niphon, in the island of Jesso, at Matsmai, lat. 42° (only 7′ north of Rome), the winter is long and severe; the thermometer falls to — 18° or — 19°; and a thick bed of snow covers the ground from November to April.

4654. *Thunberg has made* us acquainted with 755 Japanese flowering plants; most of them collected in the environs of Nangasaki and some adjacent islands. This specimen of the vegetable productions of the country suffices to give an idea of its general character. It may be called an Insular Flora; and of Japan, as of many other islands, it appears probable that the vegetable population was originally very small, and has gradually increased by colonisation.

4655. *Among these* 755 flowering plants, we may observe 240 of the old continent; some from India, as Salix japonica, Eleagnus umbellata, and the Orange tree; also the Citrus Decumana and Paper Mulberry, the Camphor tree, and Bamboo, the Pride of India, &c.; some Chinese species, as Podocarpus macrophylla, Cupressus patula, Thuja orientalis, Ficus pumila, Quercus dentata, Bladhia japonica, Olea fragrans (*fig.* 692.), Sophora japonica, Ailanthus glandulosa, the Sasanqua and Camellia, the Anise tree (*Illicium anisatum*), the Hydrangea (*fig.* 693.), Cycas revoluta, Raphis flabelliformis, &c.: others belong to the western portion of the Transition Zone, as the White and Black Mulberry, the Oleander, the Pomegranate, Zizyphus vulgaris, Tamarix gallica, Ilex aquifolium, Cercis Siliquastrum, some species of Prunus, Pyrus, Amygdalus, Ficus, &c.; some, again, which are common to all the northern parts of Europe and Asia, as the Yew, the Juniper, the Scotch Fir and Larch, the Spruce and Pinus Cembra, the Chestnut, Birch, Alder, Ash, Elder, and White Willow. There are, likewise, about 30 North American kinds; among which are Rhododendron maximum, Sambucus canadensis, Bignonia Catalpa, Magnolia glauca, Æsculus Pavia, Pinus Strobus, Juniperus bermudiana and barbadensis, Juglans nigra, Amorpha fruticosa, Vitis Labrusca, &c. To a botanist, the combination must be very interesting of these various types, belonging to the vegetation of such distant lands, here growing on the same soil. In the more southern part of Japan, the plants of warmer districts are not unfrequent; as the Camelliaceæ, Ternströmiaceæ, Sapindaceæ, Magnoliaceæ, Bignoniaceæ, Ardisiaceæ, Gardeniæ, Begoniæ, Amoma, Epidendra, and Commelinæ; one Palm and one of the Cycadeæ, &c.; but, in general, the prevailing generic types are those of the other parts of the Transition Zone in the old continent.

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OLEA FRAGRANS.

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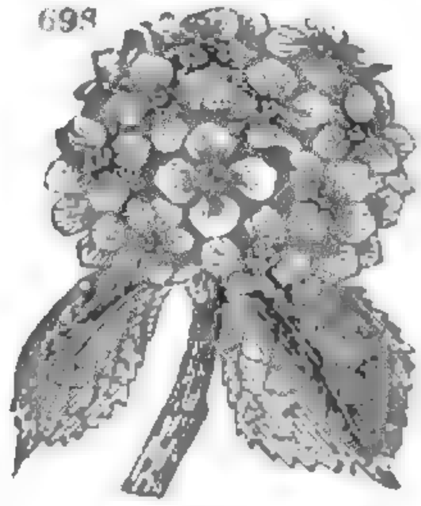

HYDRANGEA.

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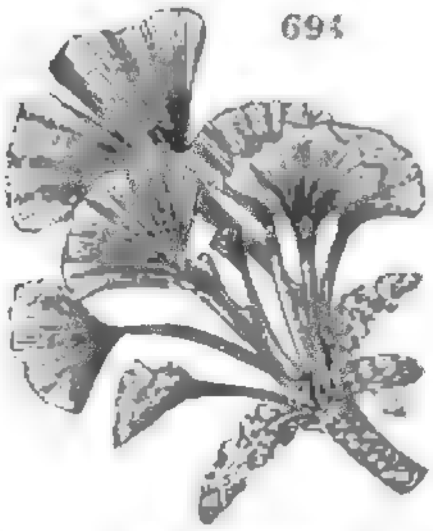

SALISBURIA ADIANTOIDES.

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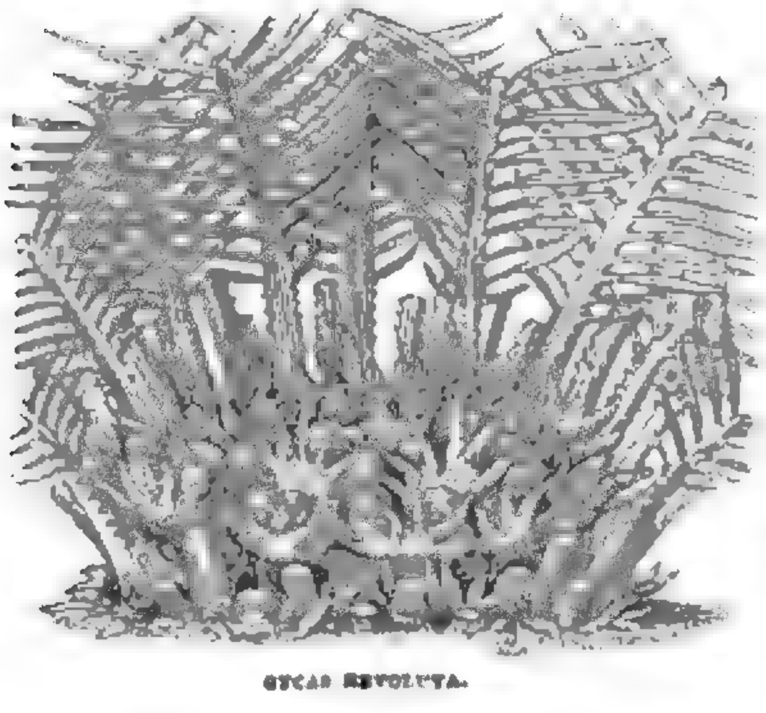


CYCAS REVOLUTA.

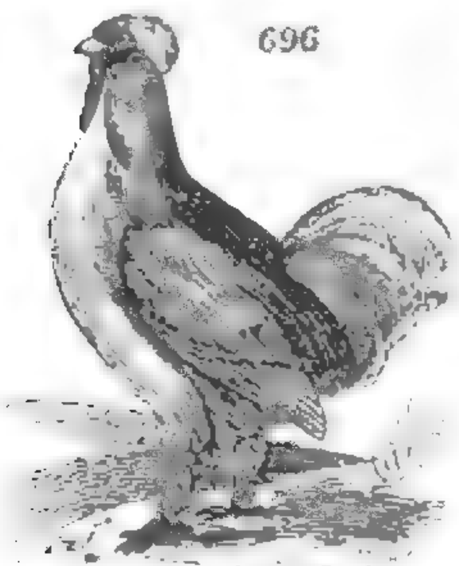
4656. *The most remarkable* shrubs and trees hitherto seen in Japan are, Salix integra, Betula japonica; Quercus glabra, glauca, acuta, cuspidata, and serrata; Cupressus japonica, Thuja dolabrata, Salisburia adiantifolia, Podocarpus Nageia, Taxus nucifera and verticillata, Celtis orientalis, four or five Eleagni, four Laurels, Osyris japonica, Nerium divaricatum, Diospyros Kaki, Syringa suspensa, Callicarpa japonica, Volkameria japonica, Vitex rotunda, Clerodendrum dichotomum, Paullinia japonica, Magnolia obovata and Kobus, Citrus japonica, six species of Acer, three of Vitis, six of Ilex, several of Prunus and Cratægus, &c.

4657. *To Japan*, as well as China, the gardens of this country are indebted for some of their choicest, though not most numerous, treasures; of which several are quite hardy, as the Hydrangea hortensis, Pyrus (*Cydonia*) japonica and Mespilus (*Eriobotrya*) japonica, the Anise tree (*Illicium anisatum*), and that favourite evergreen, Aucuba japonica, the Salisburia adiantoides (*fig.* 694.) and Sophora japonica; while the deliciously scented Olea fragrans, and the useful Cycas revoluta (*fig.* 695.) require the protection of our greenhouses.

Subsect. 3. *Zoology.*

4658. *Our zoological information* of this remote and little known empire remains nearly as imperfect now as it was fifty years ago, when the celebrated botanist Thunberg visited Japan. It seems that neither sheep nor goats are esteemed by these curious people; very few swine are seen, and the only use made of the cattle is to draw the ploughs. If the population is as great as travellers represent, the wild quadrupeds must long ago have been diminished, or nearly extirpated.

4659. *A few Birds* of unusual splendour, or of singular structure, appear peculiar to this part of Asia. The Japan peacock is a totally distinct species from that of India, although about the same size. For a long time this superb creature was only known to naturalists by a painting sent to the Pope, and even its existence began to be doubted, until the celebrated Le Vaillant, by great good fortune, met with a living specimen in a menagerie at the Cape of Good Hope, and thus established the truth of its actual existence.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SILK COCK

4660. *Among the Domestic Fowls* of Japan are two most singular races, said also to be inhabitants of the native forests. One is the Crisped Cock (*G. crispus* Tem.), having the whole of the feathers curled up in such a manner as to appear, at a little distance, like wool; its colour is usually white. The other is the Silk Cock (*fig.* 696.) (*Gallus lanatus*), and presents an equally strange deviation from the usual course of nature; the webs of the feathers being so entirely disunited that the bird appears covered only with silky hairs; this also is white: the flesh is considered so delicate as to exceed that of the best ordinary capon.

Sect. III. *Historical Geography.*

4661. *Japan was entirely unknown to the ancients,* and is not mentioned by any of their historians. The empire, however, has records, which affect to detail its revolutions for a period long anterior to that which we are justified in assigning to the origin of human society. Of the seven celestial spirits, who ruled it for more than 1,000,000 years, nothing need be said. The second dynasty, though it commenced 15,000 years before the creation, includes, probably, a considerable admixture of truth. The emperors were mere human beings, and they are represented, according to the probable course of things, as having come from China, and introduced, among a yet barbarous people, the useful arts, medicine, and a tincture of the sciences. The third period, which may be considered as fundamentally genuine, is referred to the sixth century before the Christian era. It was marked by the accession of the *dairis,* who laid claim, not, indeed, to divine attributes, but to a descent from the early celestial rulers; and they, as "sons of heaven," and ministers of the Deity, continued to exercise over Japan a mingled civil and ecclesiastical sway. It appears probable, however, that their power over the greater part was little more than spiritual; and that its varied districts were held by civil princes in almost independent possession. The dairis, as they sunk into voluptuous indolence, devolved into the hands of the *cubo,* or general, that military power which can with such difficulty be prevented from becoming paramount. This, in the course of the sixteenth century, gave rise to a complete revolution in the political situation of Japan. A succession of brave and able cubos found means to reduce all the petty princes under subjection to the general government, and at the same time to monopolise the supreme direction of affairs. The profound veneration, however, entertained by the nation for the dairi, and the sacred character with which they supposed him to be invested, rendered it impossible that he should be wholly superseded. He still enjoyed ample revenues to maintain his dignity, with an absolute control over all spiritual concerns, leaving the solid and temporal power to the cubo, who has ever since maintained it without interruption on the part of the dairi, and, by a course of severe and determined measures, has held all the formerly independent princes in a state of complete vassalage.

4662. *The intercourse of Europeans with Japan* is to us the most interesting part of its history, though it has scarcely affected the destinies of the empire itself. The Portuguese, who were the first explorers of this as well as of every other part of the Asiatic coast, did not at first encounter that deadly jealousy with which Japan was afterwards closed against Europeans. Not only were they allowed to establish a factory, and carry on a great trade at Firando, but no opposition was made to the introduction of missionaries, for diffusing the

Catholic religion. St. Francis Xavier, the celebrated apostle of the East, made Japan the great theatre of his preaching. After some obstacles, considerable progress was made; several of the princes or tributary kings, with a considerable proportion of their subjects, embraced the new faith; and an embassy was even sent to Philip II. and the pope. In no long time, however, these fair promises began to be clouded. The nobles became impatient of the restraints imposed by their new profession; and the perpetual jealousy of a despotic government was kindled by the introduction of new doctrines, habits, and ideas, from a foreign nation, who might employ this change as a prelude to conquest. Some rash steps taken by the missionaries, and, probably, the report of Portuguese proceedings in other parts of Asia, raised this hostile disposition to the utmost pitch A general persecution was commenced against all, both native and foreign, who held the new faith; and it was carried on with an unrelenting severity characteristic of the nation. The series of studied torture employed was not, perhaps, surpassed by that which the Roman emperors inflicted on the early converts. The Japanese Christians suffered long, with a constancy peculiar to themselves; but at length, having to do with a government which knew not pity, they were either exterminated or overawed. The Portuguese, at the same time, were put to death or expelled. That nation, in 1640, made a last attempt, by sending an embassy of seventy-nine individuals, to open a new commercial intercourse. But these, by orders from the Japanese court, were all put to death, with the exception of thirteen, whom the magistrates sent back with the following mandate: — "You are to inform your fellow citizens, that henceforth the citizens of Japan will not receive either money, merchandise, or presents from them; you see that we have burnt the very clothes of your dead countrymen. Let your people use in the same manner any of ours who may fall into their hands; we make them welcome, and desire they will think no more of the Japanese than if there were not such a nation in the world." And on a chest containing the dead bodies was written: — "Henceforward, so long as the sun shall shine upon the earth, let not any Christian be so daring as to set his foot in Japan."

4663. *The Dutch* were too fully possessed with the spirit of commercial enterprise to be checked by these deadly warnings. Assuming the most submissive deportment, and, as has been alleged, denying the faith on account of which their predecessors had been expelled, they succeeded in establishing a factory at Firando. This being soon considered too wide a field, they were removed to the smaller spot of Nangasaki, where they have ever since been allowed to remain under restrictions progressively severe. They have at length been circumscribed as in a prison; allowed, indeed, to carry on a certain portion of trade, but without ever passing the allotted boundaries. All attempts made by other European states have completely failed. The most persevering have been those of Russia, which, after the possession of Kamtschatka and the Kuriles, became the immediate neighbour of Japan. Russia was exceedingly desirous of opening this intercourse, and even established a school at Irkoutsk, for the education of Japanese youth. In 1804, Captain Krusenstern sailed to Nangasaki on an official mission. Although a Dutch vessel was just sailing for Batavia, the two nations were not allowed to speak to, or even look at, each other. The Russians were well supplied with provisions and repairs, but were allowed to land only after a long interval, and then upon a narrow neck of ground, where they were watched as closely as they would have been in the Seven Towers at Constantinople (*fig.* 697.). After being detained for many months, and their solicitations for permission to proceed to court evaded under various pretexts, a deputation came down from the capital, announcing the irrevocable decision, that no Russian vessel could be allowed to enter Japan. Some years afterwards, a Japanese vessel having been saved from shipwreck on the coast of Asiatic Russia, hopes were entertained that this circumstance might open the way to friendly communication. With this view, Captain Golownin was sent to Matsmai, the Japanese capital of Jesso. If he was invited on shore, however, it was only to be thrown into close and rigorous durance, in which he was detained for many months. Orders were then sent to liberate him; but, as might be expected from such a prelude, they were unaccompanied with the slightest concession in favour of Russian commerce or intercourse. Golownin learned, during his confinement, that the utmost jealousy was felt at the court of Jeddo respecting the progress, both of Russia by land through northern Asia, and of the English by sea along the southern coast. Impressed with an extravagant estimate of their own importance, the Japanese imagined that the ultimate object of both these movements was to reach and finally conquer their empire.

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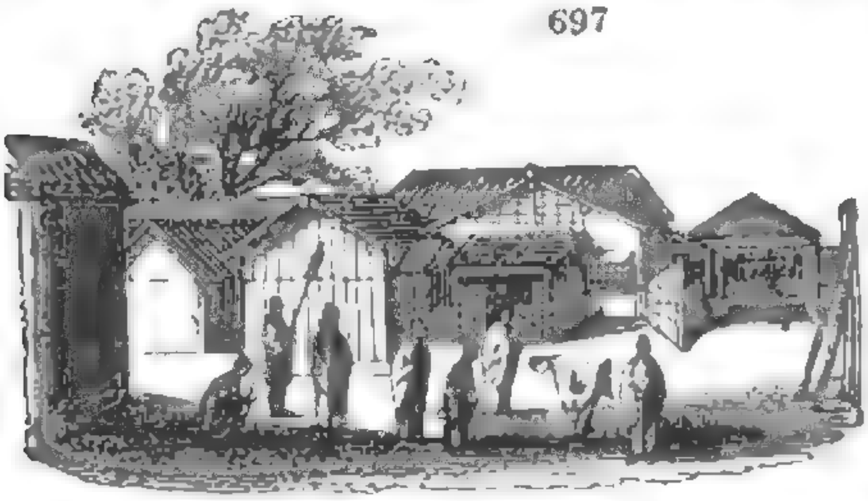

AMBASSADOR'S HOUSE AT NANGASAKI.

Sect. IV. *Political Geography.*

4664. *The division of power between the ecclesiastical and the military potentate* is the most remarkable peculiarity in the government of Japan: the one holds the highest rank, and the first place in the veneration of the whole nation; the other absorbs all the solid realities of power. In this relative position they have remained for several centuries, wishing, but not venturing, the one to recover the lost reins of sovereignty, the other to dispel the phantom which holds dominion over the minds of the people.

4665. *The dairi,* who resides at Meaco, appropriates the whole revenue of that city and its rich adjoining territory. In order, also, that he may maintain the full pomp of a sovereign, a liberal allowance is held due to him out of the general revenue. This, however, is all in the hands of the cubo, who often finds it inconvenient to make the payment, and has recourse to apologies which, whether satisfactory or not, the other has no means of disallowing. Thus, a proud poverty reigns in this sacred court, which is greatly increased by the circumstance, that all the members of the blood royal, sprung from the early divine rulers of Japan, now amounting to many thousands, must be so maintained as not to bring contempt upon the race. A considerable number find employment in religious functions, and in the numerous monasteries; but others are reduced to great straits, and the descendants of the celestial spirits are obliged to support their outward dignity by privily manufacturing straw hats, horseshoes, and other humble handicraft productions. Every nerve, however, is strained that all around the dairi himself may present the most imposing aspect of magnificence. Fantastic attributes are ascribed to him, which may appear to raise him above every tincture of mortal imperfection. His foot is never to be profaned by touching the ground, and he is never to be moved from one place to another, unless upon men's shoulders. It is considered unlawful for him to cut off his hair, nails, or any thing which can be held as forming part of his person; but the extreme inconvenience of this rule has led to the somewhat poor evasion of taking them from him during sleep. On his death the next heir succeeds, whether male or female, at whatever age. Yet the strictness of this hereditary principle did not prevent disputed succession, while the sovereign power centred in the dairi; but, in his present humbled state, the courtiers are studious to adjust all discussions in a quiet manner, in order to prevent any external interference.

4666. *The cubo*, or temporal sovereign of Japan, rules with an authority which admits, in principle, of no limitation. In fact, however, it stands on a very different footing from that of the despotic monarchies of Asia. The provinces are ruled, not by satraps appointed and removable at pleasure, but by princes, once warlike and independent, and only reduced, after a hard struggle, to bend to the will of a conqueror. They thus form a sort of feudal aristocracy, residing in large and strongly fortified castles; but have no right to meet in council, nor any legal control over the actions of the monarch. They retain, however, lofty sentiments of independence, to guard against which, the most rigorous precautions are taken. They are obliged to leave the greater part of their family at court as hostages, and themselves to reside there for a great part of the year. When discovered or believed to be engaged in any measure hostile to the government, death is the immediate and irrevocable sentence; and the only mitigation granted is that of being allowed to procure it by their own hands.

4667. *The laws of Japan*, in general, may be said, even more emphatically than those of Draco, to be written in blood. They seem to struggle against a spirit in the nation hostile to the despotic principle, and which is made to bend to it only by the most powerful impulse of terror. Cutting in pieces, piercing the belly with a knife, immersion in boiling oil, are common modes of punishing the guilty. The parent suffers for the crime of the child, and the child for that of the parent. A remnant of republican constitution is preserved in the division of cities into wards, to which the maintenance of the police is intrusted, but under the penalty that each ward must be responsible for the crime committed by any of its members. Of these violent measures, however, the result really is, that the security of person and property is very complete, and that capital punishments are even rendered more rare than in most other nations. Around Nangasaki only, examples of this unrelenting severity continue more frequent, in order to extirpate every remnant of Christianity, and also to punish the instances of contraband traffic which private interest prompts, in the face of the most rigorous prohibitions.

Sect. V. *Productive Industry.*

4668. *The Japanese rank with the richest and most industrious nations of Asia*, though they confine themselves so entirely to their internal resources. In particular, their fertile *soil*, and even those parts of it to which nature has been least bountiful, are *improved* with the most exemplary diligence. Thunberg, in travelling through tracts the site of which was most favourable for the production of rare and curious plants, flattered himself with ample means of indulging his taste for botany; but his hopes were completely baffled by the laudable exertions of the Japanese farmers, who, classing all such productions in the rank of weeds, had waged a successful war of extermination against them. The basis of their culture is Chinese; and they resemble that people in the extreme care with which manure is collected. The husbandmen, must, indeed, be hardly treated, if, according to Kæmpfer's statement, they are obliged to pay to the landlord six parts out of ten. Rice is the pride of Japanese agriculture, and the main staff of life. That which is raised on the best soil is said to be finer, whiter, and more easily preserved, than any other in Asia. Next in utility ranks the *daid-zu*, a species of large bean, which, being made into a pulp, serves like butter as a condiment to season many of their dishes. Wheat and barley are also standard grains, though not to an equal extent. Turnips are the culinary product which serves most for the support of the people. Of trees, the mulberry is considered the most valuable, and affords the material of the staple manufacture, though none of it is equal in quality to the finest produced in China. Tea, being in as universal demand as in that country, is cultivated all over Japan, but with care that it do not encroach on any more essential product; for which reason it is planted only in hedges, or in spots unfit for the spade or plough. One of the most valuable trees is the arusi, from which distils the precious varnish employed by the Japanese in the rich lackered ware peculiar to the country. The fig and chestnut are their principal fruits. Fir and cypress furnish the timber chiefly employed for ships; but the bamboo, for the beauty of its growth, and the various forms into which it can be manufactured, is the wood most prized by the Japanese.

4669. *Quadrupeds*, both wild and tame, are the property with which this empire least abounds. The wild animals, in a country where every spot of ground must be turned to account, are studiously extirpated; and room is found for the tame only in so far as they may be necessary instruments in cultivating the ground. Even this is performed much more than in Europe by mere manual labour. Oxen, and a large species of buffalo, with a hunch on the back, are chiefly used for carriage and ploughing. Horses, usually of a small size and not very numerous, serve for state and travelling. There are neither asses, mules, camels, nor elephants. Only a few hogs have been brought over from China; and the very few sheep and goats introduced by the Portuguese at Firando have never multiplied. The economical habits of the Japanese combine with their religious principles in interdicting the use of animal food; and milk, cheese, and butter form no part of their diet. Dogs, by imperial favour, have been allowed to multiply till they have become almost a nuisance, though they are little used in hunting.

4670. *Fishery* forms a very extensive source of Japanese subsistence. Besides the species known in India, they have whales which come down in large numbers from the Polar seas, and are caught, as in Greenland, with the harpoon. They are highly prized, less for the oil than as articles of food: every part, — the flesh, the skin, the intestines, even the cartilage of the bones, — is boiled, roasted, fried, and eaten. The rocky coasts which surround Japan are covered with tortoises, crabs, oysters, and shell-fish of all descriptions, which are eagerly collected for food.

4671. *Minerals, however, form the peculiar wealth of Japan.* Gold is found in a quantity amply sufficient, at least, for internal supply; though some of the rumours respecting its abundance appear to be fabulous. The mines having, of late, shown some marks of exhaustion, it has become the policy of the emperors to economise them, and to prevent the export of gold. Silver is considered to be rather scarcer. But copper is the metal which Japan produces most plentifully, and of a quality finer, more malleable, and fitter for use than any other in the world. A considerable quantity of gold is often combined with it. Though iron ore abounds in one part of the empire, it is not generally diffused, and is, on the whole, both scarcer and dearer than copper. This last named metal, therefore, is usually employed in household vessels, the fitting up of ships, and other works elsewhere made of iron. Pearls and amber are found in considerable quantities on the shores. Submarine plants, corals, corallines, mushrooms, sea fans, occur in singular beauty and variety, but are little valued by the natives.

4672. *The manufacturing industry of the Japanese*, though not so remarkable as that which they display in agricultural pursuits, is still considerable. It is exerted on the same branches, and after the same models, as with the Chinese, — silk, cotton, porcelain; but none of them is carried to equal perfection. There is one process, however, that of covering their vessels with a rich dark varnish, and raising above it artificial flowers and ornaments, which derives its name from Japan, and in which that nation excels all others. They are well acquainted with the art of working metals, and particularly the fabrication of arms; and also with the making of glass.

4673. *Perhaps no nation so large and so rich* is so great a stranger to *foreign trade*. The Chinese, though so much limited as to intercourse with strangers, have yet huge junks, which sail through all the Oriental Islands; but nowhere is a Japanese flag ever seen. Their vessels, little better than boats, and of a clumsy construction, are unable, notwithstanding the use of the compass, to do more than creep along their own coast. The Chinese alone are allowed to visit the more considerable ports of the empire, and to exchange raw silk and some of the finer manufactures, for metals and lackered ware. The Dutch have only a corner of the port of Nangasaki, where, enclosed in a sort of prison, and subject to every humiliation, they are allowed to dispose of two annual cargoes. They import various articles of colonial produce, spices, and hardware, in return, chiefly, for the unrivalled copper which this country produces, with some lackered ware and other trifling articles. As they make, however, a profit of 20,000*l.* a year, they continue, notwithstanding some menaces, to brave all the mortifications, and even dangers, which attend this traffic. Commerce, thus confined almost entirely to the interior of the empire, is very active within that sphere. All the shores and bays appear crowded with barks, conveying from place to place the various products of the provinces. The roads are excellent, and thronged in an amazing degree; they are kept clean by the mere anxiety of the people to collect the mud as manure. The broad and rapid torrents in the mountainous districts are crossed by handsome bridges of cedar, well fenced, and always kept in the most perfect repair.

Sect. VI. *Civil and Social State.*

4674. *The population of Japan* cannot be estimated on any precise data. Its superficial extent has been rated at about a tenth of that of China, and, according to all appearance, the population must be nearly as dense. If China, then, contain 200,000,000, Japan will have 20,000,000.

4675. *The Japanese seem, in personal appearance*, to be a somewhat altered and improved variety of the Mongols and Chinese. Their eyes are even in a greater degree small, pointed, oblong, sunk in the head, with a deep furrow made by the eyelids; they have almost the appearance of being pink-eyed. Their heads are in general large, and their necks short; their hair is black, thick, and shining from the use of oil. They are, however, robust, well made, active, and easy in their motions. Their complexion, yellow and passing into brown, appears to be entirely produced by the climate; since ladies who are constantly protected from the heat of the sun are as white as in Europe.

4676. *The national character* is strikingly marked, and strongly contrasted with that which generally prevails throughout Asia. The Japanese differ most especially from the Chinese, their nearest neighbours, notwithstanding the resemblance in form and lineaments. Instead of that tame, quiet, orderly, servile disposition, which makes them the prepared and ready subjects of despotism, the Japanese have a character marked by energy, independence, and a lofty sense of honour. Although they are said to make good subjects, even to the severe government under which they live, they yet retain an impatience of control, and force of public opinion, which renders it impossible for any ruler wantonly to tyrannise over them. Instead of that mean, artful, and truckling disposition so general among Asiatics, their manners are distinguished by a manly frankness, and all their proceedings by honour and good faith. They are habitually kind and good-humoured, when nothing occurs to rouse their hostile passions, and they carry the ties of friendship even to a romantic height. To serve and defend a friend in every peril, and to meet torture and death rather than betray him, is considered as a duty from which nothing can dispense. Good sense is considered, by Thunberg, as a prominent feature; and it appears particularly in their dress, which they seek only to render substantial and suitable, despising those glittering ornaments which are so eagerly sought over all Asia. The greatest defect seems to be pride, which runs through all classes, rises to the highest pitch among the great, and leads them to display an extravagant pomp in their retinue and establishment, and to despise every thing in the nature of industry and mercantile employment. It has the still worse effect of giving rise, on any injury, real or supposed, to the deepest and most implacable resentment. This passion, which decórum and the rigour of the laws prevents from breaking into open violence, is brooded over in silence, till the opportunity of vengeance arrives. Forced often to bend beneath a stern and powerful government, they are impelled to suicide, the refuge of fallen and vanquished pride. Self-murder here, like duelling in Europe, seems to be the point of honour among the great; and the nobles, even when condemned to death by the sovereign, reserve the privilege of executing the sentence with their own hands.

4677. *This people differs also from the Chinese* in being of a deeply religious character. There are two religions in Japan; one native, called the Sintos, at the head of which is the dairi; the other, the Boodh, called here Budso, the same which prevails over all eastern Asia. The Budso gains ascendency by mingling with the original system those attractive accessories which it possesses in common with the Catholic, — monasteries, processions, beads, drums, noisy music, and the belief of purgatory; which, though condemned by the pure and orthodox Sintoists, has a general influence over the people. The Sintos profess to believe in a supreme ruler of the universe, and among their number is distinguished a class of pure and philosophic worshippers, who entertain lofty conceptions of the Deity, and cultivate the practice of virtue as the chief means of gaining his favour. Their belief, however, being thought to resemble the Christian, fell into some discredit, when the latter became the object of such deadly persecution. The mass of the nation, for whom such tenets were far too refined, have always been addicted to gross and varied superstition. Deified kings and heroes, rulers of the respective elements, local genii, who preside over woods, form the usual and natural elements. Amid the paucity of real animals, they have invented also a number of fanciful and mythological creatures, who are the objects to them of a species of worship. The dragon, also a Chinese monster; the *kirin*, a winged quadruped, and the *foo*, a beautiful bird of paradise, are all accounted peculiarly sacred. The religion of the Japanese deals much in festivals, of which they have five great annual ones, besides three smaller, celebrated every month, rather with visiting, eating, drinking, and somewhat disorderly mirth, like the bacchanals of the ancients, than with any observance that can properly be called religious. But pilgrimage is the custom to which they adhere with the greatest zeal, and from which they promise themselves the greatest benefit, temporal and spiritual. No one can be accounted at all eminent in sanctity, or have any assurance of the forgiveness of his sins, who has not been once a year at Isje, the grand temple of the *Tensio Dai Sir*, or first of the celestial spirits, situated in a province of the same name. The roads in summer are completely choked with the crowds of devout worshippers, on their way to the sacred shrine. As many have not the means of paying their own way, a large proportion betake themselves to begging, and, prostrate on the ground, call out to the rich passengers, "A farthing to carry me to Isje!" In order to draw notice and favour, they exhibit images of a many-headed idol, called Quanwan; of Amida, the judge of departed souls; of Temacco, keeper of the prison of condemned souls; of Driso, supreme commander of purgatory; and of other deities. Others seek to gain acceptance by praying, singing, playing on fiddles, guitars, and other musical instruments, or by the performance of juggling tricks. On meeting with success in any of these departments, they often betake themselves wholly to the pursuit, and make a permanent increase to the crowds of beggars with which the country is infested. Such a step they consider themselves fully privileged to take, after they have shaved their heads, and devoted themselves to a particular religious order. Among these shaved beggars are prominent a class of *bikerni*, or nuns, who appeared to Kæmpfer the handsomest females he had seen there. Many of them had exchanged for it an employment the least honourable to their sex, which they were suspected not to have wholly relinquished. Isje, the object of all these pilgrimages, presents nothing that corresponds to its fame, or the magnificence of the empire. It is rather held forth as a monument of antique poverty and simplicity. It is a mere low wooden hut, with a flat thatched roof, and the interior contains only a looking-glass of cast metal, and some cut paper, to both of which a mythological import is assigned. In the surrounding plain are about 100 chapels, equally of poor materials, and so small that a man cannot stand upright in them. To each of these is attached a *canusi*, or priest, under one of whom the newly arrived pilgrim places himself. After a due round of prostrations, supplications, and, above all, of gifts, to the utmost amount of his real or supposed ability, he is presented with an *ofarrai*, or indulgence, consisting of a small oblong box, filled with little pieces of wood wrapped in white paper, which is supposed to ensure the pardon of sins, and exemption from temporal evil for a year to come; at the end of which period, no zealous Sintoist is satisfied unless he can undertake another pilgrimage. Even those who are not so fortunate carefully preserve their *ofarrai*, and consider it through life as a valuable possession. The Budso temples are much more magnificent than those of the Sintos. They are placed usually on an elevated spot, surrounded with beautiful groves. Their ornaments, but for the peculiar form of the idols, would make the traveller imagine that he was in a Roman catholic cathedral.

4678. *Of the progress of the Japanese in arts and sciences our knowledge is very scanty.* Their language, their mode of printing, and their ideas on speculative subjects, are fundamentally Chinese. They are far, however, from displaying that proud indifference and disdain of every thing foreign, which bars all approach to improvement. Their minds are active, and imbued with the most eager curiosity on all subjects. On the few occasions allowed to them by the jealous rigour of their government, they have harassed Europeans with multiplied questions, respecting those branches of knowledge in which they felt and admitted their superiority. Their attention seemed peculiarly devoted to astronomy, and the calculation of eclipses. According to M. Titsingh, they have herbals drawn and coloured with taste; maps and plans carefully designed, though destitute of the important particular of latitudes and longitudes. Poetry is held in honour; but no specimens have yet been afforded that can enable us to judge of their proficiency in this noble art.

4679. *The buildings in Japan* are of excessively slight materials, — the walls of clay; so that a smart kick would beat a hole through them. The interior is divided into partitions with pasteboad, and the walls covered with paper, which, in the houses of the great, is elegantly painted and varnished. As the natives sit on the floor, there is no occasion for chairs, tables, or that variety of furniture which graces a European apartment. Pomp is chiefly displayed in the number and beauty of the mats with which the floor is spread; and the great imperial hall is called "the hall of the thousand mats." Every thing is kept nicely clean and fresh as if new. Such habitations, however, are little better than matches to kindle fire; so that, notwithstanding a large depôt of water kept at the top of every house, the cities are often desolated by the most dreadful conflagrations.

4680. *The diet of the Japanese* is remarkably simple. They surpass the Hindoos in abstinence; not only avoiding animal food, but even milk and its productions. Hot rice cakes are the standard food, and are kept ready at all the inns, to be presented to the traveller the moment he arrives, along with tea, and occasionally *sacki*, or rice beer. Tobacco affords the chief and constant social indulgence. Their dress is equally plain. It consists merely of a large loose robe, resembling our bed-gown, made of silk or cotton, and varying in the different ranks only as to the degree of fineness. They have straw shoes, which they put off at the door. They shave their head, leaving only a tuft on the crown, and usually have it bare, unless on their journeys, when they cover it with an enormous cap, made of plaited grass or oiled paper. (*fig.* 698.)

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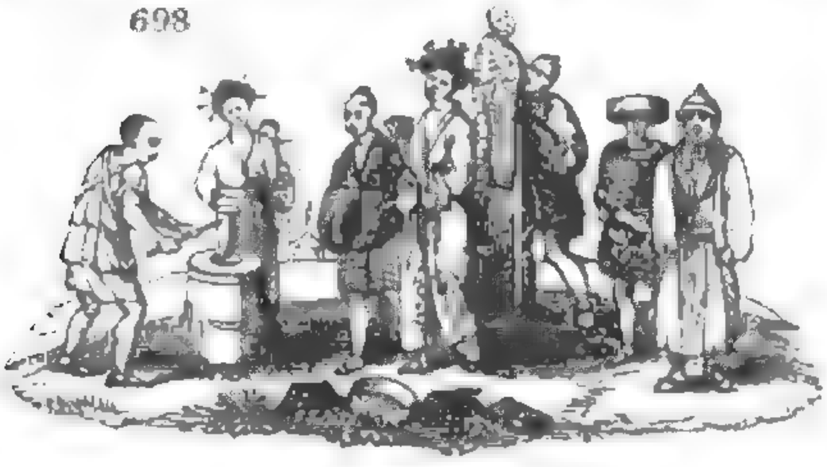


JAPANESE COSTUME.

4681. *In travelling*, the Japanese spend more time than perhaps any other nation. The *tokaid*, or main road, is described by Kæmpfer to be usually as crowded as the streets of the most populous city in Europe. This is owing to their numerous pilgrimages; to the extent of their inland trade; and, most of all, to the immense retinues which attend the princes in their annual journeys to and from the court of the cubo. The retinue of one of the very first rank is computed to amount to 20,000, and covers the roads for several miles. First appears a crowd of outriders, cooks, clerks, and other inferior functionaries. Behind is the heavy baggage, which is followed by a number of secondary nobles, also attended with numerous retinues. The prince then appears, surrounded by a varied and splendid train, composed of led horses, servants richly dressed bearing lackered chests, pikes ornamented with feathers, rich scimitars, and other arms. The household officers, with considerable trains of their own, close the procession. That such a retinue may pass without inconvenience or collision, all the inns are engaged for a month before; and in all the towns and villages on the route, boards are set up to announce that, on such a day, such a great lord is to pass through.

Sect. VII. *Local Geography.*

4682. *Japan must, no doubt, comprise many interesting local features;* but these being shut with such jealous care against Europeans, and all hope being excluded of viewing or visiting them, they are to us almost as if they existed in another planet. Something must, however, be said of the two capitals, civil and ecclesiastical, Jeddo and Meaco.

4683. *Jeddo*, now the seat of the ruling power, and the real capital of Japan, lies at the head of a deep bay on the eastern coast of Niphon, and at the mouth of one of the few rivers which possess any considerable magnitude. It is seven miles long and five broad, and contains many splendid palaces of the great lords, all of whom must reside in it for a great part of the year. These mansions are surrounded by wide enclosed courts and extensive gardens; yet they cannot be said to possess much architectural grandeur, since they are only one story high; the walls of clay, the partitions of paper, and adorned merely with painting, varnishing, and fine mats spread on the floor. The palace, however, though equally low, is built of freestone, and is five leagues in circumference, including a wide exterior area occupied by the spacious mansions of the princes and great lords of the court. Its grand apartment, the hall of the thousand mats, is said to be 600 feet long by 300 broad, and is brilliantly adorned by pillars of cedar, painted papers, and gilded dragons on the roof. The city is subject to dreadful fires, one of which, in 1703, consumed 100,000 houses. It is the seat of varied branches of industry, and carries on also a great internal trade.

4684. *Meaco* is at a considerable distance from Jeddo, near the southern extremity of Niphon, at a little distance in the interior. This spiritual capital of Japan is still the chief seat of polished manners, refined arts, and intellectual culture. The finest silk stuffs flowered with gold and silver, the richest varnishes, the best painted papers, and the most skilful works in gold, silver, and copper, are here manufactured. It is likewise the centre of literature and science, and most of the works which are published and read in Japan issue from its presses. Although there is no longer the means of supporting the same display of pomp and wealth as at Jeddo, yet there is a grander display of architectural ornament. The palace, or enclosed city, of the sovereign is on a similar plan; but the religious structures, though built only of cedar, are some of them truly splendid, richly gilded, and placed in the most picturesque and commanding situations. Kæmpfer calculates that there are, in and around Meaco, not less than 3893 temples, served by 37,093 *suikku*, or priests. Of these, however, the greater part are only wooden huts, and have nothing within but a looking-glass and some cut white paper. The lay inhabitants, according to the last enumeration, were 477,000, and the ecclesiastical, including the court, 52,000; making in all, 529,000.

4685. *Osaka*, at the mouth of the river on which Meaco is situated, is a flourishing sea-port, intersected, like Venice, by numerous canals, which are connected by bridges of cedar.

4686. *The Japanese*, as already observed, have now occupied all the southern parts of the great island of *Jesso* which are accessible and improvable. Matsmai, the capital, is supposed, by Golownin, to contain 50,000 souls.

4687. *Nangasaki*, that interesting point at which alone this empire comes in contact with any European nation, must be noticed in closing our account of Japan. It is a large, industrious, trading town, containing sixty-one streets, arranged without much beauty or order. On the small adjoining island of Desima, separated from it only by a narrow channel, the Dutch are allowed to carry on their scanty commerce. They have here a space of 600 feet long by 120 broad, on which they have erected several large storehouses, and rendered them fire-proof. The most unheard-of precautions are taken to prevent any contraband transaction, commercial or political. The pockets of the officers and crew are turned inside out, and the hands passed over the clothes, and through the hair. The trunks and chests are emptied, and the boards struck, lest they should contain any secret cavity. Long wires or pikes are thrust through the cheeses, butter tubs, and jars of sweetmeats. Dezima is to the Dutch a complete prison, the gates of which are locked every night, and a guard set over them. Buried in this dungeon, they remain ignorant of all that is passing in the world, and gradually lose all curiosity on the subject. Even the faculty of the will becomes extinct, for want of exercise; so entirely are they under the control of the Japanese. Yet it is confidently asserted that these accumulated precautions are insufficient to guard against the powerful impulse of self-interest, and that contraband trade is carried on to a considerable extent.

4688. The little that is known respecting the *peninsula of Corea* may, with propriety, be appended to the account of the Japanese islands. From them it is separated by the Straits of Corea, and by the Yellow Sea from China. The country, 400 miles long by 150 broad, is traversed from north to south by a chain of mountains; and, though some parts are sterile and rugged, it contains a considerable extent of fertile and well-cultivated plains. A great part of what was once supposed to be main land was found by the expedition of Captains Hall and Maxwell to consist of an almost innumerable archipelago of small islands, extending along the western coast. Corea is ruled by a sovereign who pays homage and a small tribute to China, but in his general sway is entirely independent. The people are very little known, but appear to be tall, handsome, and brave. The British expedition, as it sailed along, was treated with the utmost courtesy; but the same jealous anxiety to debar strangers from any access into the interior was conspicuous, as in China and Japan. The arts and letters of China have been to a great extent imported, and Corea has the same written language, though its spoken one is entirely different. Men of letters undergo similar examinations, and hold the same conspicuous place as in that country. Quelpaert, off the southern coast, is distinguished by its lofty mountain, beautifully covered with cultivation. The capital is Kingkitao, an inland town, situated nearly in the centre of the country.

Chap. XIV.

EAST INDIAN ARCHIPELAGO.

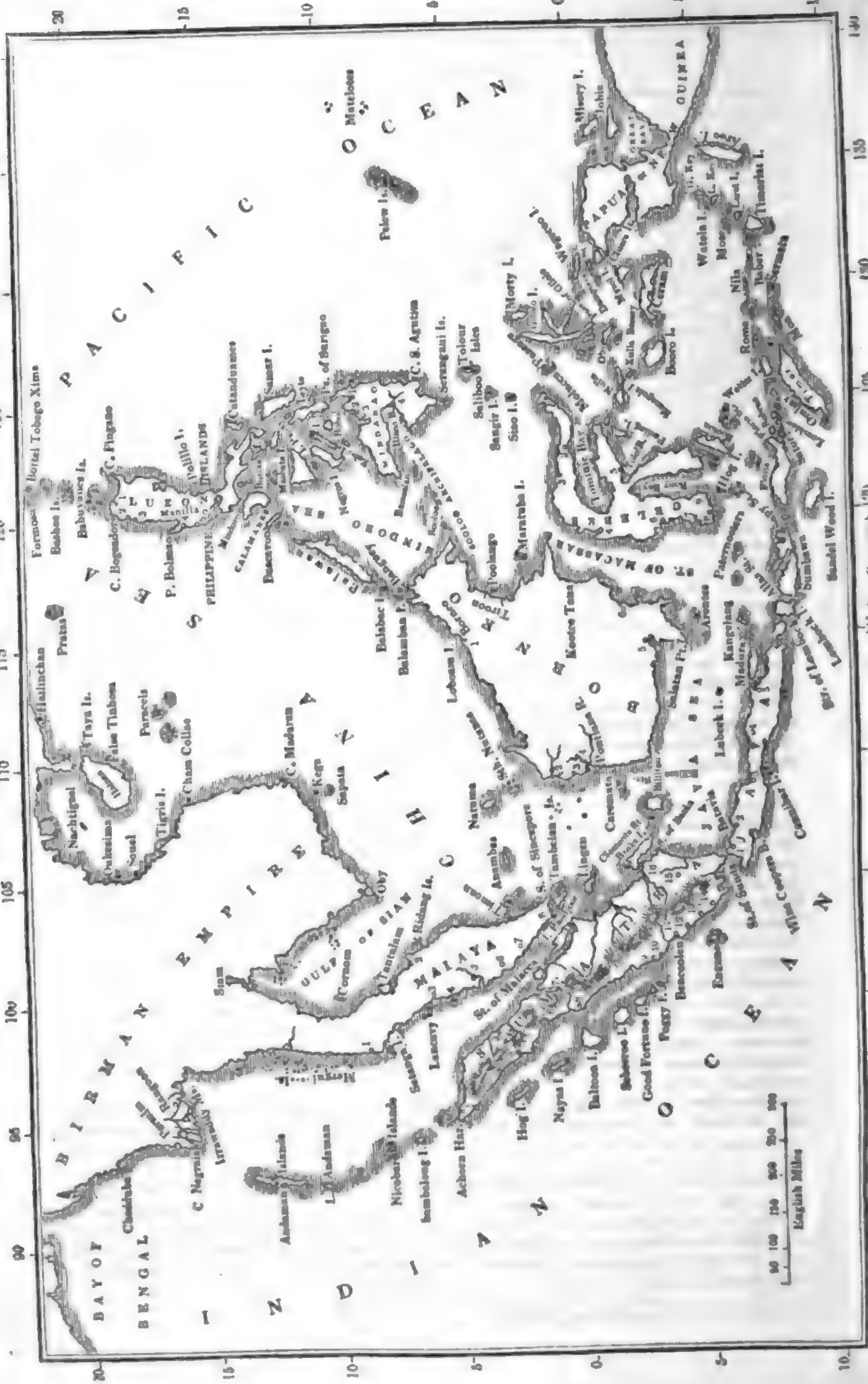
4689. *The East Indian Archipelago* is the name usually given to a range of fine and large islands, lying east of Hindostan, and south of the Indo-Chinese countries and of China. Although they have few political ties with each other, and each island is even subdivided into separate states, the aspect of nature, the state of civilisation, the peculiar character of the people, present such a similarity, that they may be advantageously treated under one head.

Sect. I. *General Outline and Aspect.*

4690. *The principal islands* of this range are Sumatra, Java, Borneo, the Molucca or Spice islands, and the Philippines; and it includes, also, several smaller islands and groupes. The archipelago, in general, has, on the east the Pacific, on the west the Indian Ocean; and seas and straits, connected with these, separate it on the north from the Indo-Chinese countries and China, on the south from the great islands of New Holland and New Guinea. Situated almost directly beneath the equator, it extends from east to west somewhat more than thirty degrees, or 2100 miles.

4691. *Mountains*, in lofty ranges, and bearing often a volcanic character, traverse the interior of all the great islands. Mount Ophir, in Sumatra, according to the measurements of Captain Nairne, rises to the height of 13,842 feet. The peaks of this tropical region, however, seldom exhibit that dreary and desolate aspect usual at so great an elevation. On the contrary, they are crowned almost to their pinnacles with lofty forests, luxuriant shrubs, and aromatic plants, presenting the most varied and picturesque scenery.

4692. *Rivers* cannot attain any great magnitude, in a region thus broken into islands, each of which has a high chain of mountains extending through its length, which leaves only a plain of moderate breadth between it and the sea. The streams are numerous, and highly beneficial for irrigation. They are perennial, produced by rains which, in countries so near the equator, fall constantly throughout the year; while those of Hindostan are dry during six months. Many of them form at their mouth commodious harbours, and minister to the purposes of trade; but, from the causes above stated, can be only of limited and local importance. *Lakes*, from the same structure, are comparatively few; though some, imperfectly known, exist in the interior of the mountain regions, particularly of Sumatra and Luconia.


PACIFIC OCEAN
INDIAN OCEAN
BIRMAN EMPIRE
CHINA SEA
BAY OF BENGAL
GULF OF SIAM
MALAYA
SUMATRA
BORNEO
JAVA
JAVA SEA
CELEBES
PAPUA or NEW GUINEA
PHILIPPINE ISLANDS
LUZON
Manilla
MINDORO SEA
MINDANAO
ST. OF MACASSAR
SOOLOO ARCHIPELAGO
St. of Malacca
S. of Sincapore
Siam
Tringano
Borneo
Pontiana R.
Sambas
Banjar
Batavia
Sunda Straits
Bencoolen
Achem Hd.
Nicobar Islands
Andaman Islands
L. Andaman
C. Negrais
Cheduba
Formosa
Bashee Is.
Babuyanes Is.
C. Bogeador
C. Engano
P. Bolinao
Polillo I.
Catanduanes
Samar I.
C. S. Agustin
Serangani Is.
Tolour Isles
Saliboo
Sangir I.
Siao I.
Morty I.
Palos Is.
Matelotes
Pratas
Paracels
Hainan
Tonquin
Pulo Condore
Pulo Sapata
Cham Collao
C. Padaran
C. Varela
C. Cambodia
Pulo Obi
Natunas
Anambas
Tambelan Is.
Lingen
Banca
Billiton
Caramata
Lubeck I.
Madura
Bali
Lombok
Sumbawa
Flores
Timor
Sandal Wood I.
Gilolo
Ceram
Bouro I.
Amboyna
Banda
Timor Laut
Kangeang
Salayer
Bouton
Tomini Bay
Zebu
Palawan
Balabac I.
Balambangan I.
Labuan I.
Nias
Siberoo
Engano
Pulo Pinang
Mergui
Tenasserim
Tavoy
Rangoon
Irrawaddy R.
Martaban
English Miles
0 50 100 150 200 250 300
110 Longitude East 115 from Greenwich 120

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

4693. *The geology* of the Indian Archipelago is so very imperfectly known, that we cannot lay before our readers more than the following notices.

4694. *Sumatra.* Four volcanoes, one of them called Gunong Dempo, rising about 12,000 feet above the level of the sea, are described as existing in this island. Granite and other primitive rocks are enumerated as products of Sumatra; and trap, limestone, and clays, probably of tertiary formation, form the lower parts of the country.

4695. *Java.* Several ranges of volcanic mountains and hills, some of them 12,000 feet high, exist in this island. Extending from these are considerable tracts of low and flat country composed of limestone, clay, marl, and salt, which may be of tertiary formation. In these tertiary districts there occur *salses* resembling those at the foot of the Apennines, and also numerous salt springs.

4696. *Banca.* The principal mountains in this island are composed of granite, with its generally associated gneiss and mica slate. These are said to be immediately bounded by a formation of red ironstone; but Crawfurd, who makes this statement, gives no description of the formation. The low tracts are deeply covered with alluvium, which abounds in tinstone.

4697. *Borneo* appears to abound in primitive and alluvial formations; the secondary and tertiary, and those of volcanic origin, have not as yet been accurately described. This great island is traversed by several chains of mountains, of which the principal one ranges north and south, not far from the east coast. These mountains abound in primitive rocks, which in many places afford numerous and large rock crystals. The lower districts contain various secondary formations, more or less deeply covered with alluvium. Volcanoes are mentioned as occurring in different quarters. The island is celebrated for its gold and diamonds.

4698. *Philippine Islands.* These islands are represented as very mountainous, and abounding in volcanoes and sulphur.

4699. *Molucca Islands.* The largest island of the group, Celebes, is said to be very rugged and mountainous. It contains several volcanoes in a state of activity; and primitive rocks, of various descriptions, more or less richly impregnated with gold, and diversified with cavities lined with rock crystals, occur in many quarters. The volcanic tracts afford immense quantities of sulphur. The smaller islands of this group are principally of volcanic formation.

4700. *The Indian Archipelago,* as Crawfurd remarks, so remarkable for the rich variety of its vegetable and animal productions, is hardly less distinguished for its *mineral wealth.* The mineral products which particularly deserve notice, in a commercial point of view, are the following: — tin, gold, copper, iron, salt, sulphur, and the diamond.

1. *Tin.* Here, as in Europe, the only ore of this metal is the oxide of tin, or *tinstone.* In geographical distribution, tin is confined to the island of Banca, the Malayan peninsula, and the islets on its coasts, with *Junkceylon.* It exists either in greater abundance, or is obtained with least labour and difficulty, in the island of Banca, which affords at present by far the greater quantity of the tin of commerce of the Archipelago. In Banca, the principal mountains are of granite; while those of inferior elevation, according to Crawfurd, are of red ironstone. In the low tracts between these the tin ore is found, and hitherto always in alluvial deposits, seldom farther than twenty-five feet from the surface. The strata in which it is found are always horizontal. The tin of Banca and the other Indian islands finds its way into almost every part of the world; but China and the continent of India are its principal markets.

2. *Gold.* Next to tin, gold is the most valuable of the mineral products of the Archipelago. It is universally distributed throughout the Archipelago, but abounds most in those countries which are composed of primitive and transition rocks. It is most abundant in those islands which form the western and northern barriers of the Archipelago, and exists but in small quantities, rarely worth mining, in the great volcanic range extending from Java to Timor-laut. Borneo affords by far the largest quantity. Next to it is Sumatra, and, in succession, the *peninsula,* Celebes, and Luçon. In the great island of

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References to the Map of the East Indian Archipelago.

LUÇON.
1. Masi
2. Budec
3. Pueblo de Sina
4. S. Cruz
5. Masingloc.

MINDANAO.
1. Butuan
2. Cagayan
3. Misamis
4. Mindanao.

BORNEO.
1. Borneo
2. Montradock
3. Mompava
4. Pontiana
5. Banjarmassin
6. Passir Town.

CELEBES.
1. Kemar
2. Goonong Tella
3. Bool
4. Palos
5. Waja
6. Tannete
7. Maros
8. Macassar
9. Boola Comba.

JAVA.
1. Bantam
2. Batavia
3. Cheribon
4. Samarang
5. Surabaya.

SUMATRA.
1. Acheen
2. Soosoo
3. Deli
4. Assahan
5. Bacongong
6. Tappanooly
7. Rawa
8. Nattal
9. Ippoo
10. Ayrpoor
11. Bencoolen
12. Manna
13. Cawoor
14. Croce
15. Tulang Bawang
16. Palembang.

MALAYA.
1. Bangri
2. Patani
3. Quida
4. Prince of Wales's Island
5. Dutch Factory
6. Salangore
7. Malacca
8. Singapore.

New Guinea gold occurs, but in what quantity is not known. In the Indian islands gold occurs either in fixed rocks or in alluvial deposits: the fixed rocks, mentioned by Crawfurd, are granite, gneiss, mica slate, and clay slate. The gold is never absolutely pure; always containing silver, and frequently copper. The gold of Banjar-laut, for example, usually contains, in 100 parts, gold 90 parts, silver 4 parts, and copper 6 parts. The gold of Larak, in the same island, affords, in 100 parts, gold 86 parts, silver 6 parts, and copper 8 parts. The gold of Pontianak, in 100 parts, contains 83 parts of gold, 16 of silver, and about 1 of copper. A small part of the gold of commerce of the Indian islands is obtained by mining in the solid rocks; some from washing the sand and mud of brooks and rivers, but by far the greater portion by washing deposits of gold in alluvial districts. The annual amount of gold thus collected throughout the Archipelago is estimated by Crawfurd at 658,176*l.* sterling.

3. *Iron and Copper.* Iron and copper are, besides tin and gold, the only metals found in the Indian Archipelago. Iron occurs but in small quantity. Copper ores are met with in Sumatra, Timor, and in the territory of Sambas in Borneo. Copper is found in its native state in Sumatra and Timor.

4. *Diamond.* Borneo is the only Indian island which affords the most precious of all known minerals; and there the diamond is confined to the south and the west coast, principally in the territories of the princes of Banjarmassin and Pontianak. The principal mines are at a place called Landak, from which the diamonds of Borneo, to distinguish them from those of Hindostan, are usually designated. It is the same country that is most remarkable for the production of gold, in which the diamond is found. The diamond is in great repute among all the natives of the Indian islands, and, indeed, is the only gem in much esteem, or much worn by them. One of the largest known diamonds is now in Borneo, in the possession of the prince of Matan, and was found in the mines of Landak about a century ago. It is still in its rough state, and weighs 367 carats. Its real value is 269,378*l.*

5. *Sulphur.* There is no volcanic mountain in Java that does not afford sulphur, but the best and most abundant supply is obtained from the great mountain of *Banyuwangi*, at the eastern extremity of the island. Here, and in similar situations in Java, and other volcanic islands of the Indian group, sulphur is obtained without difficulty, and in such a state of purity as to require no preparation for the market.

6. *Salt.* Salt springs occur in several of the islands, more especially in Java, where they are very abundant. Much of the salt of commerce is obtained from these spring waters by evaporation.

Subsect. 2. *Botany.*

4701. *Tropical Islands of Asia.* — Under this head we include Ceylon, with the islands of the Malay archipelago; a country eminent, from the earliest times, for the splendour of its vegetable productions, and more especially for their fragrance. But of all their wonderful productions, the most remarkable yet discovered is the Rafflesia Arnoldii (*fig.* 700.); a plant without stem, without leaves, with roots so minute that they are embedded in the slender stem of a species of vine, and as it were incorporated with that stem, yet bearing a flower of the most enormous dimensions. It is a native of Sumatra, and is one of the surprising novelties detected there by Sir Stamford Raffles, and his friend and medical attendant, Dr. Arnold. The first appearance of this extraordinary flower, upon the stem of the vine on which it grows parasitically, and where the seeds happen to alight, is that of a small tubercle, which almost resembles a swelling in the bark. This gradually enlarges, still preserving its rounded form, till the bud has attained its full size. It then considerably resembles a large cabbage. At length, the flower (the entire plant, indeed) expands, and presents a blossom of the most gigantic stature. Its diameter is three feet and a half, its weight fifteen pounds, and the hollow in the centre is of the capacity of fifteen pints, English measure. The thickness of the petals is not less than an inch and a half near the base: the colour a brick red, inclining to orange, wrinkled or embossed on the surface, and marked with deeper blotches of the same colour as the ground, and with white spots. The plant is diœcious. The stamens form a sort of beaded circle around a central abortive pistil; which is itself a large fleshy excrescence, flat at the top, and beset with elongated pro-

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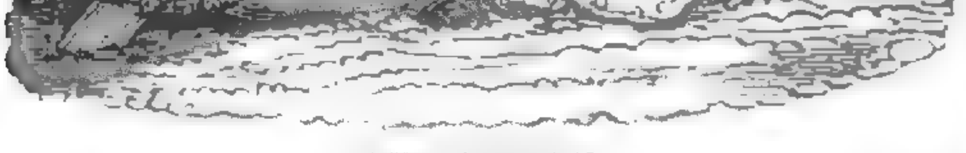

RAFFLESIA ARNOLDII.

jections, which Dr. Arnold declares resembled cow's horns. This superb flower soon decays, and is endowed with a most powerful but disagreeable odour, which, like that of the Stapelias, attracts flies in great abundance. The plant has been admirably illustrated by the learned Brown, in the twelfth volume of the *Linnean Transactions*; yet, notwithstanding his excellent description, and the accurate explanatory figure with which it is accompanied, from the pencil of M. Bauer, clearly showing its title to a place among the Phænogamous or flowering plants, Sprengel, in his *Systema Vegetabilium*, has, strange to say, arranged it along with the Cryptogamic plants, and near to the Fungi! It is undoubtedly the largest known flower in the world.

4702. *Scarcely less interesting*, if we consider the structure of its foliage, is the famous Nepenthes distillatoria (*fig.* 701.), or Pitcher plant, a native of a considerable portion of Southern India, especially the islands, and formerly supposed to be peculiar to Ceylon. Other species, and even more curious in the nature of the leaves, are found in Java; but we shall confine our remarks to the species above mentioned, which has now attained to great perfection in the stoves of our botanic gardens, especially those of Mr. Loddiges, and the Royal Gardens of Edinburgh and Glasgow.

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PITCHER PLANT.

4703. *There is not a more interesting spectacle* of the kind, perhaps, in all Britain, than to behold the fine plant of Nepenthes which exists in the stove of the Botanical Garden at Edinburgh. Planted in a tub, whose soil is kept constantly moist by a covering of living Sphagnum and other Mosses, its stem, 18 to 20 feet long, rises from the midst of these; it is branched, and climbs among the wires that traverse the rafters of the roof, supporting itself by means of its tendrils, bearing, especially towards the extremity, very many leaves, which look more like the contrivance of art than a production of nature. The whole leaf, including the petiole or stalk, is two feet and more in length. The petiole itself is, below the middle, winged with a very broad margin, to that degree that it is commonly taken for the leaf itself; upwards, it forms a long, stout, filiform cirrhus, or tendril, which is more or less spirally twisted, even when it does not catch hold of any surrounding object to support the parent stem. Its extremity hangs down, and is terminated by the true leaf, or leafy portion; but which, from its remarkable appearance, is called an *appendage* to the leaf. Instead of being flat, it is hollowed out, like an elongated pitcher; it is six to nine inches long, attenuated at the base, where it is curved or arched, and then it suddenly turns upward. It is obscurely striated, and on each side, at the front, marked with two prominent wings or membranes; it is ventricose upwards, slightly expanding at the mouth, which is oblique; in a young state completely and firmly covered by a lid or operculum, which is flat, and marked with two winged nerves, and fixed by the back to the upper margin of the mouth. After a time, this lid opens, still continuing attached by a point at the back; but which, though in the act of opening it supplies the place of a hinge, is not capable of any further movement: the mouth of the pitcher, which is heart-shaped, is now quite exposed to view, and exhibits a remarkably thickened margin, which is closely, transversely, and most beautifully plaited. The colour of the pitcher is pale green, often tinged and spotted with red, purple within, where it is glandular, especially near the base.

4704. *As if the better* to deserve the appellation of a pitcher, this curious leaf contains a watery fluid, which is secreted by the plant itself; for it is often most abundant while the lid is perfectly closed, and when the water could not be received by any external agency. Neither is this fluid of the nature of common water. In each of the unexpanded pitchers of the Edinburgh plant was about a drachm of limpid fluid. "This," says Dr. Graham, in his description of the plant, in the *Edinburgh New Philosophical Journal*, for 1827, "had a subacid taste, which increases after the rising of the lid, when the fluid slowly evaporated. My friend, Dr. Turner, perceived it to emit, while boiling, an odour like baked apples, from containing a trace of vegetable matter, and he found that it yielded minute crystals of superoxalate of potash, on being slowly evaporated to dryness. The pitcher whose contents Dr. Turner analysed was a large one; it had not opened, and the whole fluid weighed only sixty-six grains."

4705. *In the plants* at the Glasgow Royal Botanic Garden, there is generally a very considerable quantity of this fluid, after the lid is expanded and the pitcher has attained its full developement; and, whether in pursuit of that liquid or from any other cause we are not able to say, insects are attracted thither in great quantities, and ants in particular; so that the pitchers are often found quite black within, from the accumulation of the dead bodies of the latter; and the quantity thus destroyed is very great.

4706. *In Ceylon*, in China, and the other parts of India, where this plant is a native, it is probable that the secretion is far more abundant than when cultivated in our stoves; and, if we may credit the narration of travellers, the pitcher is generally filled with a clear limpid fluid, and the lid is then closed; the latter opens during the day, and the water is reduced by one half; but this loss is repaired during the night, so that next morning the pitcher is replenished, and anew closed by the lid. This alternate closing and opening of the lid is at variance with what we have observed in our plants. Small aquatic shrimps, too, Rumphius tells us, inhabit the fluid.

4707. *In some parts of India*, Rumphius and Flacourt assure us that the natives entertain some curious and superstitious notions respecting this plant. They believe that if they sever the pitchers and pour out the water, it will not fail to rain during the day. When they dread this state of weather, they are very careful not to cut the pitchers. On the other hand, in periods of great drought, they hasten to the woods, sever the pitchers of the Nepenthes, and pour out the liquid, firmly persuaded that rain will then ensue.

4708. The generic name *Nepenthes* is derived from two Greek words, signifying, without sorrow. Homer speaks of an Egyptian plant called Nepenthes, which was employed by Helen to dispel grief from her guests: in the same way, probably, Linnæus, who applied the name in the present instance, might suppose that the liquid contained in the pitcher was calculated to allay the thirst and consequent misery of the traveller. The word *distillatoria*, it will be immediately perceived, implies the secretion and concentration of the fluid in the pitcher. Thus we see how admirably are the names of plants calculated, in many cases, to characterise some property residing in the plant itself, or to impress some portion of its history on our minds!

4709. *We have a striking instance*, in the plant cultivated at the Edinburgh Botanic Garden, of the importance of the stamens and pistil of plants. We have already observed that the *Nepenthes* is diœcious. The Edinburgh plant was a staminiferous one, and flowered annually; but, of course, bore no fruit. In the stove of Professor Dunbar's garden was a pistilliferous one; which, standing by itself, was equally barren. The blossoms of the latter were dusted with the farina from the former, when the germen ripened into perfect fruit.

4710. *The appearance* of the germinating plant is most curious. The minute seeds, produced by the process just mentioned, readily vegetated on being sown in the spring in pots of peat earth, covered with a plate of glass, and standing in pans of water. They began to sprout in April and May. The plumule rises before the cotyledons are expanded: when the latter takes place, the first little pitcher appears in the centre; then the radicle pushes through the arillus in the opposite direction from the plumule. In a rather more advanced state, three pitchers are evolved, each with its closed lid, which is slightly muricated; and there are, upon the body of the pitcher, two prominent and ciliated wings. The cotyledons now begin to wither and to become deflected. Five pitchers are formed. These little pitchers, destitute of the broad leafstalks, present a truly extraordinary appearance, rising a little above the surface of the ground, and of the most beautifully delicate texture.

4711. *If the islands* now under consideration astonish us by the singularity of some of their vegetable products, the importance of others, in a commercial point of view, renders them equally interesting. A large group of them is especially termed the *Spice Islands;* a denomination which, though usually limited to part of the Malay Archipelago, may with equal justice be extended to Ceylon. Linnæus, who has drawn a beautiful, though too highly coloured, picture of the vegetation of Ceylon, while comparing it with that of northern Europe, says of it, — "A delicious climate has afforded plants of such rarity and value to this island, that scarcely any other soil can vie with it in the abundance of its aromatic productions. While Pine forests occupy our cold and sterile regions, in Ceylon Cinnamon trees constitute whole groves; in such plenty, indeed, that the inhabitants are accustomed to employ the wood for household furniture, for fuel, and for cooking. Our gardens are planted with apples, pears, plums, cherries, and other similar trees; but in Ceylon, nothing save the lofty Palms are esteemed, among which the Cocoa nuts chiefly afford the needful food, utensils, and every thing necessary to mankind. The Caryota there yields a wine, called *sury*. The Coryphæ (*fig.* 702.) extend their broad, smooth, and plaited fronds, which serve for shade and shelter, here most requisite for

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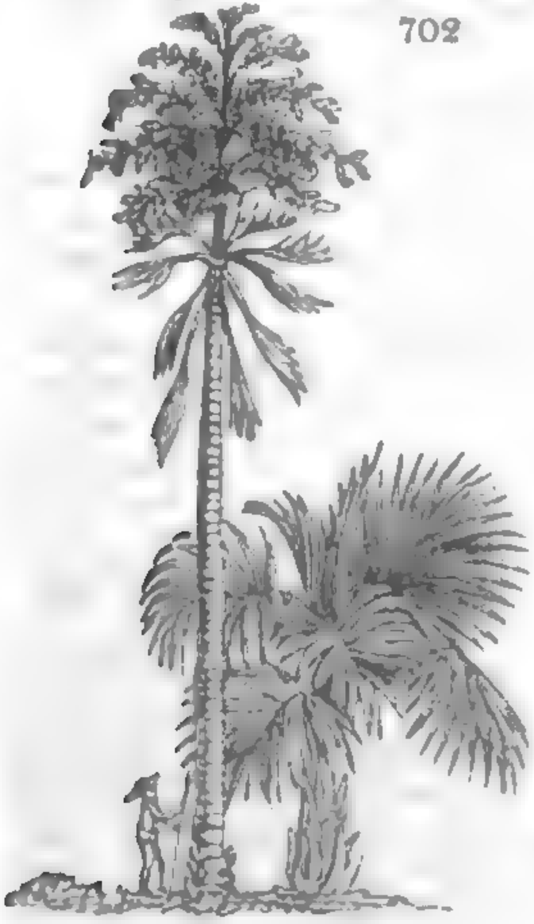

CORYPHA.

protection from the sun's rays, as well as from sudden showers, to the natives, whose only garment is a small piece of linen. Date Palms, and the superb Bananas, decorated with wide-spreading and glossy foliage, yield, in great profusion, racemes of the most delicious fruit; to say nothing of the more valuable productions with which the soil every where abounds, such as Mangoes, the Jack, Malay Apples, Psidia, Oranges and Citrons, Cashew nuts, Averrhoas, &c. Our fields are sown with common Barley and Rye; but those of the Cingalese receive nothing but Rice, which affords them flour and bread. Our marshes are covered with Callæ; theirs with the pungent Amoma. Persicarias occupy our waste places; but with them grow different species of Pepper. In our meadows spring the Ranunculus, Plantain, Convallariæ, and many other neglected plants; in theirs, numerous kinds of Hedysarum, Galega, Hibiscus, Justicia, Cleome, Impatiens, Amomum, Myrtle, and Ricinus; besides numerous climbers, as Ipomœa, Dioscorea, Basella, Aristolochia, Ophioglossum, Phaseolus, Momordica, Bryonia, Vine, Cissus, Pothos, Loranthus, and Acrostichum. In the room of the Meadowsweet and Mints, the meadows in Ceylon are covered with Basil, and the woods with Cinnamon. Every where occur the most precious aromatics. Ginger, Cardamom, Galanga, Costus, Acorus, Schœnanthus, Calamus aromaticus, and flowers of the most exquisite structure and colour and fragrance, such as Crinum, Pancratium, Poinciana, Gloriosa, as well as those plants which saturate the night air with their delicious odour, such as Polyanthes and Nyctanthes." Most of these are equally natives of the islands of the Archipelago.

4712. *The Cinnamon*, for which Ceylon is so famous, is the bark of a species of Laurel (*Laurus Cinnamomum*) (*fig.* 703.), remarkable, with some other species possessing similar properties, for its coriaceous leaf, marked with three strong nerves. It was originally found wild, only, and there in very small quantities, at the south-western district of the island; but when the Dutch first obtained a settlement in Ceylon, they found so many inconveniences to arise from this limited supply, that they began to cultivate the cinnamon in four or five very large gardens, under the auspices of the enterprising Governor Falck. The extent of these plantations may be inferred from the fact, that the quantity of spice annually obtained from them exceeded 400,000 lbs., and that from 25,000 to 26,000 persons were employed in the cinnamon department.

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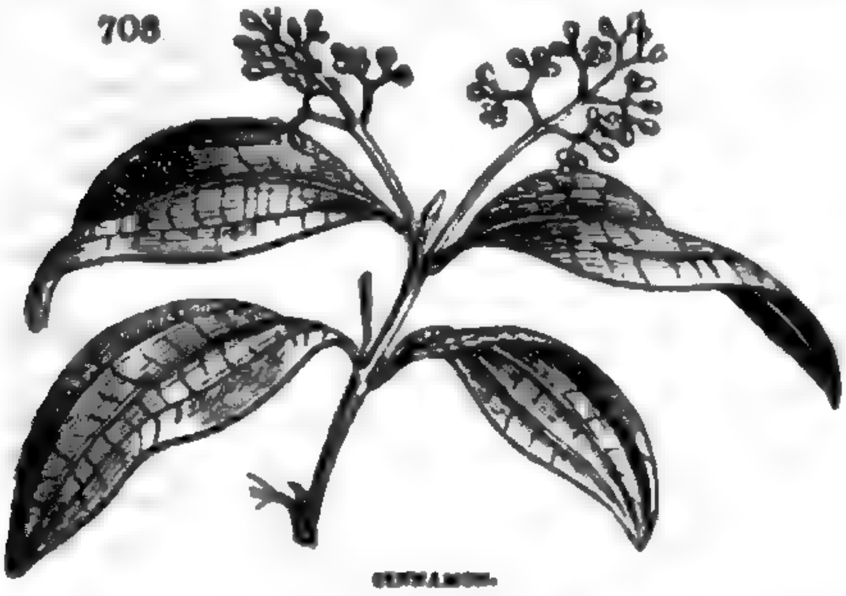

CINNAMON.

4713. *The rigour* with which the Dutch enforced the regulations by which they kept the monopoly of cinnamon to themselves is truly revolting, and forms a blot on their national character. Death was the punishment awarded, and mercilessly inflicted, on any person who should wilfully injure a cinnamon plant, or even sell or give away a single stick of it, or extract the oil from the foliage, or peel off any of the bark. In order to keep up the high price of the spices, the Dutch government used to have them destroyed, when the stock had accumulated, sometimes by throwing them into the sea, and sometimes by burning them. On one occasion, in the year 1760, a pile of these aromatics was consumed near the stadthouse, at Amsterdam, of which the price was estimated at 8,000,000 livres, and a similar wanton destruction took place on the following day. The air was perfumed with this incense, and the essential oils were distilled, and flowed in a spicy stream down the street, to the regret of the spectators, who were not permitted to appropriate the smallest portion of the valuable substance.

4714. *The cinnamon tree* grows, in a natural state, to twenty or thirty feet high, and sends out large spreading branches, clothed with thick foliage. The leaves are first quite pendent, of a delicate rose colour, and most tender texture: they soon, however, turn yellow, and then green. The flowers are borne in panicles, and are small and white; partaking, as well as the foliage, of the peculiar fragrance of the tree. The fruit yields an oil, which becomes waxy and solid, and of which a kind of candles is made, whose agreeable odour caused them to be appropriated, in the kingdom of Candy, to the use of the court.

4715. *When the cinnamon tree* is three years old, it affords one shoot fit to yield bark: but eight years of growth are needful before it can be freely cut. At ten or twelve years old, the tree is strongest, and those plants which grow in dry and rocky spots produce the most pungent and aromatic bark. The shoots are cut when nearly an inch thick, and two or three feet long; they are immediately barked, and the epidermis scraped off, during which process a delightful fragrance is diffused around. The bark is dried in the sun, when it curls up, and acquires a darker tint, and, the smaller portions being rolled within the larger ones, the whole is packed, and considered fit for exportation. Two harvests are sometimes obtained annually from the same trees. Cassia, or Laurus Cassia, is in its botanical characters scarcely different from the true cinnamon. In quality it is much inferior, though often surreptitiously sold for it. It is commonly known under the name of Bastard Cinnamon.

4716. *Camphor* is equally the produce of a species of Laurel (*Laurus Camphora*) (*fig.* 704.); but its leaves do not exhibit the three strong parallel nerves of the L. Cinnamomum and L. Cassia. The whole tree has a strong odour of camphor, and this substance is obtained by the distillation of the roots and smaller branches. They are cut into chips, and distilled within an iron pot, in which they are suspended above boiling water; the steam of which, penetrating the twigs, causes the camphor to fly off, and it becomes concreted on straws which are placed in the head of the still. Camphor is much employed in medicine as a stimulant and cordial.

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CAMPHOR

4717. *The Sumatran Camphor* is found concreted in the clefts of the bark of Dryobalanops Camphora. This is said to be more expensive and fragrant than the Japanese kind, and does not so soon evaporate on exposure to the air. It is sent, therefore, to China and Japan, where it is more highly valued than the native produce of these countries: this last, however, and not the Sumatran, is the camphor usually imported into this country.

4718. *The Clove* (*Caryophyllus aromaticus*) (*fig.* 705.) is one of the most precious commodities of the East, and one of the most valuable in commerce. Almost every part of the plant is covered with minute dots or glands, which contain the essential oil that gives the aromatic odour to it. These abound, particularly, in the substance of the germen, near the epidermis. The Clove was introduced to the Kew Gardens, in 1797, by Sir Joseph Banks. Its native country is the Moluccas; but, from its value as a spice, its culture has extended to the East and West Indies; and we must endeavour to lay before our readers some details respecting a plant of such importance, that it was once the staple commodity of some of the East India Islands, particularly Amboyna.

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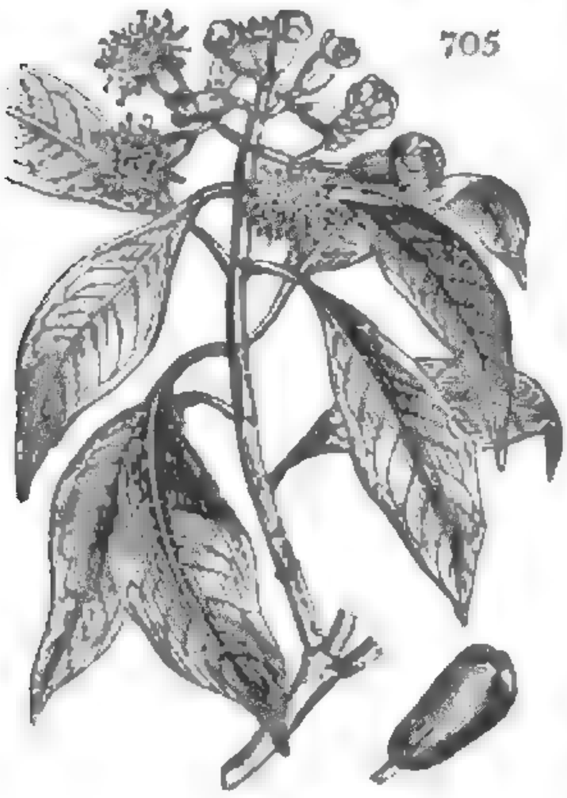

CLOVE.

4719. *The clove of merchandise is the unexpanded flower;* the corolla forming a ball or sphere on the top, between the teeth of the calyx: thus, with the narrow base or germen tapering downwards, giving the appearance of a nail; a similarity, indeed, much more striking in the dry than in the fresh state of the bud. Hence the Dutch call it *naghel;* the Spaniards, *clavo;* the Italians, *chiodo;* and the French, *clou;* from which the English *clove* is evidently derived. The uses of cloves are well known, as giving flavour to dishes and wines; and as stimulant, tonic, and exhilarating in medicine. These properties, with the acrid and burning taste, depend on the essential oil, which is obtained from them by distillation.

4720. *The cloves are gathered by the hand,* or beaten with reeds, so as to fall upon cloths placed under the tree, and dried by fire; or, what is better, in the sun. The fully formed berries, which are about an inch long, pear-shaped, and of a beautiful violet colour, are preserved in sugar, and eaten after dinner, to promote digestion.

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NUTMEG.

4721. *The true Nutmeg tree* (*Myristica officinalis*) (*fig.* 706.) is, as well as the Clove, a native of the Molucca or Spice Islands, and principally confined to that group called the Islands of Banda, where it bears both blossom and fruit at all seasons of the year. In their native country, the trees are almost always loaded with blossoms and fruit. The gathering of the latter takes place at three periods of the year: in July and August, when the nuts are most abundant; but the Mace is thinner than on the smaller fruits, which are gathered during November, the second time of collecting: the third harvest takes place in March, or early in April, when both the Nutmegs and Mace are in greatest perfection, their number not being so great, and the season being dry. The outer pulpy coat is removed, and afterwards the mace, which, when fresh, is of a beautiful crimson colour, and covers the whole nut. The nuts are then placed over a slow fire, when the dark shell which, immediately beneath the mace, coats the seed, becomes brittle; and the seeds, or nutmegs of commerce, drop out: these are then soaked in sea water, and impregnated with lime, a process which answers the double purpose of securing the fruit from the attacks of insects, and of destroying the vegetating property. It, further, prevents the volatilisation of the aroma. The Mace is simply dried in the sun, and then sprinkled with salt water, after which it is fit for exportation. The uses both of nutmegs and mace are well known, whether in a medicinal or economical point of view. The whole fruit, preserved in sugar, is brought to table with the dessert, but not till after the acrid principle has been, in a great measure, removed, by repeated washings. An essential oil is obtained from both these spices, by distillation, and a less volatile one, by expression.

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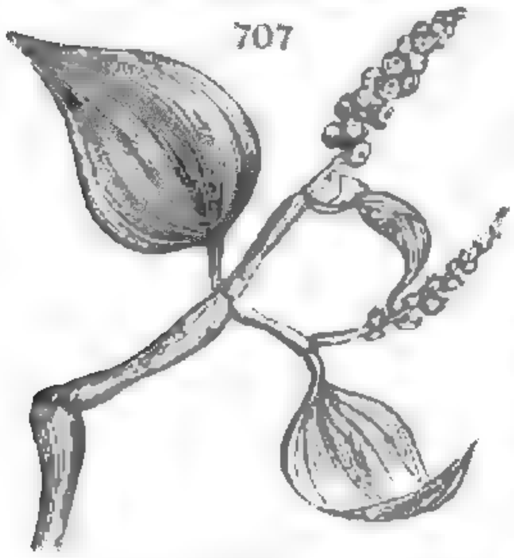

PEPPER

4722. *Pepper*, the seeds of Piper nigrum (*fig.* 707.), is another spice, which is extensively cultivated in the islands in question, as well as on the coast of Malabar, and forms an important article of trade. It was known to the Greeks in the time of Theophrastus and Dioscorides, who, as well as the Romans, distinguished between the white and black pepper. And whilst the use of Betel Pepper, to which we shall next allude, is confined almost wholly to the Eastern nations, the common pepper is an article of general use throughout the civilised world. Still, it is in Asia, where the stomach is weakened by excessive perspirations, produced by the heat of the climate, by a humid atmosphere, and a too general addiction to vegetable diet, that it is employed as a powerful stimulant. Thus, in a medical point of view, it has been found to act as an excellent tonic, calculated to create appetite and promote digestion. The Pepper plant, or Pepper vine, as it is commonly called, is a weak climber, which attaches itself by small fibres to other bodies, or to the ground, like ivy; it bears large heart-shaped, veiny leaves, and long slender catkins of flowers, succeeded by the berries, which we term peppercorns. These, when covered with their natural husk or coat, constitute black pepper. White pepper is the same fruit, deprived of its outer covering, which is accomplished by soaking the grains in water, when the coat swells and bursts. It is afterwards dried in the sun, and, by friction and winnowing, cleared of the husk. It is then of a paler colour; but, as the shell or bark contains a powerful principle, it is evident that white pepper loses much of its stimulating property, and is inferior to the black. Mr. Marsden informs us, that as soon as any of the corns on a bunch change from green to red, it is considered fit for gathering; for, if pulled ripe, many of the seeds would drop off. It is collected and spread to dry in the sun; nor are the vicissitudes of weather that may occur during its exposure thought to injure it. In this situation it becomes black and shrivelled, as we see it in Europe, and is hand-rubbed, to separate the grains from the stalk. That which is pulled at the most proper stage of maturity will shrivel least; if plucked too soon, it falls into dust. Thus, weight is the great test of goodness in pepper, and machines are constructed for the purpose of separating the light kind from the sound. Two crops are generally produced in one year; the culture is attended with some trouble, as it is necessary to keep the pepper gardens scrupulously free from weeds, and to give them sufficient irrigation. In the small island of Penang, the crop of pepper, in 1802, was estimated at about 216,000 dollars. Sumatra also yields this spice; but the quantity is inconsiderable when compared with the produce of the coast of Malabar, whence no less than ten full cargoes, amounting to 8,000,000 or 9,000,000 lbs., might be annually exported. But half this quantity is carried over the mountains to the coast of Coromandel, to the north, to the Deccan, and farther on, to different parts of Hindostan. This pepper is esteemed the best in all Asia, and is most sought after by foreign nations.

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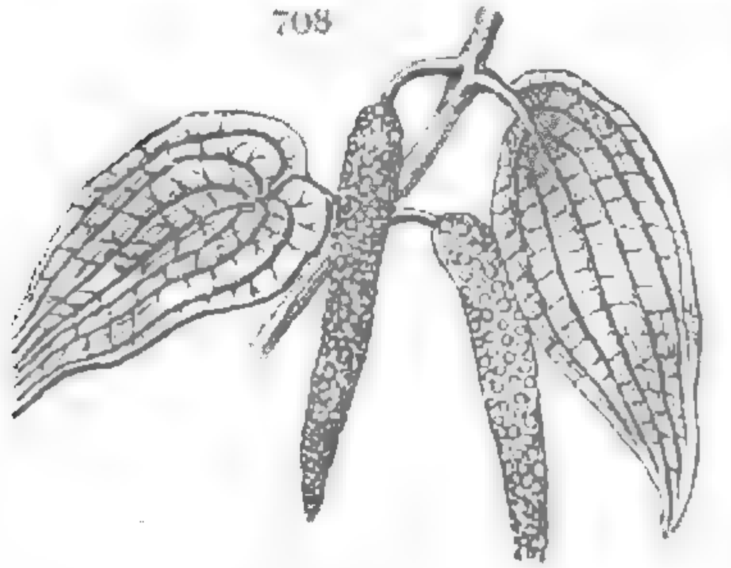


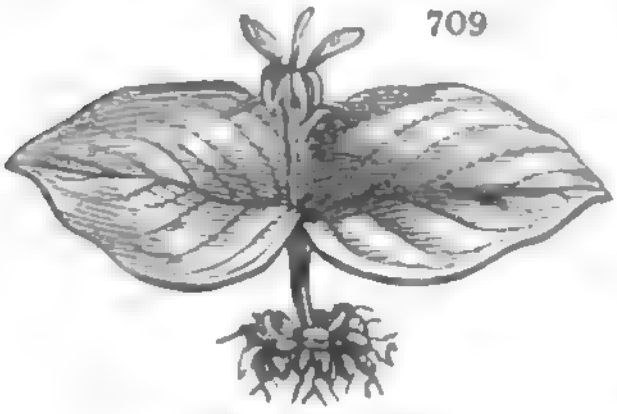
BETEL PEPPER.

4723. *Another kind of pepper* in general cultivation and repute throughout India, is the Piper Betle, or Betel pepper (*fig.* 708.). Its use may be traced to a very remote date; for, in an ancient Sanscrit inscription on stone, published in the *Asiatic Researches*, this plant is reckoned among the greatest blessings of the country; "in its towns are numerous groves of mangou, plantations of luxuriant betel, and fields of rice; channels of water, and wells; opulent men and beautiful women; temples of gods and of the saints; and men blessed with vigour of body and every virtue."

4724. *The habit of this plant* resembles black or common pepper; but the leaves and catkins are much larger, the former of an oblong shape, and more oblique, and the corns or seeds infinitely bigger. In the East Indies, and especially the Malay islands, the inhabitants have, almost from time immemorial, considered the Betel Pepper as a necessary of life; and this, not by itself, but with the use of lime and the Areca nut, together constituting a masticatory, employed by both sexes, and at all ages. Various travellers relate particulars of the use of this plant; but we shall confine ourselves to those of Marsden, in his *History of Sumatra;* the custom of chewing the Betel-leaf being, perhaps, more prevalent among the Malays than any other nation. "Whether," he says, "to blunt the edge of painful reflection, or owing to an aversion our natures have to total inaction, most nations have been addicted to the practice of enjoying, by mastication or otherwise, the flavour of substances possessing an inebriating quality. The South Americans chew the Cocoa and Mambeco, and the Eastern people, the Betel and Areca; or, as they are called in the Malay language, the Sirih and Pinang. This custom is universal among the Sumatrans, who carry the ingredients constantly about them, and serve them to their guests on all occasions; the prince in a gold stand, and the poor man in a brass box or mat bag. The betel-stands of the better ranks of people are usually of silver, embossed with rude figures. The Sultan of Moco-moco was presented with one by the East India Company with their arms on it; and he possesses another, besides, of gold filigree. The form of the stand is the frustum of an hexagonal pyramid reversed, about six or eight inches in diameter. It contains many smaller vessels, fitted to the angles, for holding the nut, leaf, and chunam, which latter is quicklime made from calcined shells; with places for the instruments employed in cutting the first, and spatulas for spreading the last. When the first salutation is over, which consists in bending the head, and the inferior's putting his joined hands between those of the superior, and then lifting them to his forehead, the betel is presented as a token of politeness, and an act of hospitality. To omit it on the one hand, or to reject it on the other, would be an affront; as it would be likewise, in a man of subordinate rank, to address a great man, without the precaution of chewing it before he spoke. All the preparation consists in spreading on the Sirih, or Piper Betle leaf, a small quantity of the chunam, and folding it up with a slice of the Pinang nut. From the mastication of these proceeds a juice which tinges the saliva of a bright red, and which the leaf and nut, without the chunam, will not yield. This hue, being communicated to the mouth and lips, is esteemed ornamental; and an agreeable flavour is imparted to the breath. The juice is usually (after the first fermentation produced by the lime), though not always, swallowed by the chewers of betel. We might reasonably suppose that its active qualities would injure the coats of the stomach: but experience seems to disprove such a consequence. It is common to see the teeth of elderly persons stand loose in the gums, which is probably the effect of this custom; but I do not think it affects the soundness of the teeth themselves. Children begin to chew betel very young, and yet their teeth are always beautifully white, till pains are taken to injure them, by filing and staining them black. To persons who are not habituated to the composition, it causes a strong giddiness, astringes and excoriates the mouth and fauces, and deadens for a time the faculty of taste. During the Pausa, or fast of Ramadan, the Mahometans among them abstain from the use of betel whilst the sun continues above the horizon; but, excepting at this season, it is the constant luxury of both sexes from an early period of childhood: till, becoming toothless, they are reduced to the extremity of having the ingredients previously reduced to a paste for them, that without further effort the betel may dissolve in the mouth. Mixed with the betel, and generally in the chunam, the Sumatrans have a practice of conveying philtres, or love-charms. How far they prove effectual I cannot take upon me to say; but I suppose they are of the nature of our stimulating medicines. The custom of administering poison in this manner is not followed in later times; but that the idea is not so far eradicated as entirely to prevent suspicion, appears from this circumstance; that the guest, though taking a leaf from the betel-service of his entertainer, not unfrequently applies to it his own chunam, and never omits to pass the former between his thumb and fore-finger, in order to wipe off any extraneous matter. This distrustful procedure is so common as not to give offence."

4725. *Among those plants* which are natives of the islands of the Indian seas are several belonging to an extensive natural family which has been ably and splendidly illustrated by the lamented historian of Leo X.; we mean the Scitamineous plants; and so peculiarly do they inhabit the countries just mentioned, that these are denominated by M. Schouw, *par excellence,* "the region of Scitamineæ." Among them are reckoned some species of Canna or Indian Shot, of Arrowroot (*Maranta*), of Phrynium, Hedychium, Roscoea, Alpinia, Ginger, Costus, Kæmpferia or Galangale, Amomum, Turmeric (*Curcuma*), Globba, Mantisia, &c.

4726. *True Ginger* is afforded by the roots of Zinziber officinale; a plant so easy of cultivation in tropical countries, that imported into the New World it is extensively grown in the West Indies, and on the continent of South America. Edwards, in his *History of the West Indies*, assures us that, as early as 1547, its culture was so diffused in New Spain, that 22,053 cwt. were thence exported to Europe in one year.



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KÆMPFERIA GALANGA.

4727. *Kæmpferia Galanga* (*fig.* 709.), the officinal Galangale, and K. angustifolia are both employed as medicinal plants, and are stomachic and cephalic.

4728. *Curcuma Zerumbet* or *Zedoary* is likewise a celebrated Indian plant belonging to this family.

4729. *Rice* (*Oryza sativa*), though cultivated in all warm climates throughout the world, is considered of Asiatic origin, and is nowhere more extensively raised or more valued, than throughout the islands of the East Indies.

4730. Among the numerous fruits of these islands, we shall only now mention the Guava (*fig.* 710.) (*Psidium pyriferum*), the Mango (*Mangifera indica*) (*fig.* 711.), the Mangoostan (*Garcinia Mangostana*) (*fig.* 712.), the Durion (*Durio Zibethinus*) (*fig.* 713.), and the Malay Apple (*Eugenia malaccensis*), which, highly as they are prized in their native country, the utmost skill of British Horticulture has never been able to bring to any thing like perfection in the stoves of our island, where indeed it is exceedingly difficult to cultivate many of them at all.

710

GUAVA.

711

MANGO.

712

MANGOOSTAN.

713

DURION.

SUBSECT. 3. *Zoology.*

4731. *The Zoology of the Indian Archipelago* is so remarkable for the variety, splendour, and singularity of its forms, that it is difficult to say in which department it is most interesting. Flourishing beneath a tropical sun, and nourished by marine vapours in a soil naturally humid, vegetation here attains a luxuriance inconceivably magnificent. Animal life equally partakes in this exuberance, and exhibits, under every form, the most singular shapes, and the most brilliant combinations of colours. It is in these distant and little known islands that the great satyr-like Apes dwell in the solitude and the security of their native forests; while the surpassing beauty of the Birds of Paradise, and the numerous variety of superb-coloured Lories, are among the most striking features in their ornithology. As most of the large islands possess many animals hitherto undiscovered in others, we shall notice them under distinct heads.

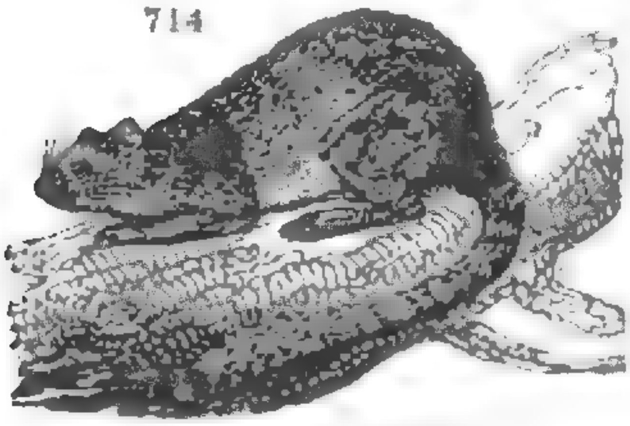
4732. JAVA. *The Zoology of Java* derives peculiar interest from having been investigated by two of our most eminent naturalists, the late Sir Stamford Raffles, and Dr. Horsfield. Under the liberal auspices of the East India Company, the researches of the latter have been given to the public. We are thus enabled to put aside the vague and erroneous accounts of travellers, on which, unfortunately, we are too often obliged to depend; and can confidently enumerate the chief peculiarities in the zoology of Java, one of the most important islands in India.

4733. *The great number of native quadrupeds* belonging to this island will become apparent from the following list: —

Semnopithecus maurus. Negro Monkey.
Nycticebus javanicus. Javanese Lemur.
Megaderma trifolium. Three-leaved Bat.
Rhinolphus, six species.
Nycteris javanica. Javanese Bat.
Vespertilio, five species.
Nyctinomus delatus. Delated Bat.
Nyctinomus tenuis. Slender Bat.
Cheiromeles torquatus. Collared Bat.
Pteropus edulis. Eatable Bat.
Pteropus minimus. Little Bat.
Tupaia javanica. Javanese Tupaia.
Tupaia ferruginea. Ferruginous Tupaia.
Gulo orientalis. Oriental Glutton.
Putorius nudipes. Java Polecat.
Mephites meliceps. Telegon Polecat.
Viverra Rasse. Rasse Civet.
Genetta indica. Indian Genett.
Mangusta javanicus. Javanese Ichneumon.
Prionodon gracilis. Slender Gennet.
Felis javanensis. Javanese Cat.
Felis undata. Waved Cat.
Felis Diardi. Diard's Cat.
Phalangista rufa. Red Phalanger.
Mus javanus. Javanese Rat.
Mus setifer. Bristle-bearing Rat.
Sciurus Leschenaultii. Jeralang Squirrel.
Sciurus bicolor. Two-coloured Squirrel.
Sciurus bilineatus. Two-rayed Squirrel.
Sciurus nigrovittatus. Black-banded Squirrel.
Sciurus Finlaysonii. Finlayson Squirrel.
Pteromys genibarbis. Bearded Flying Squirrel.
Pteromys nitidus. Bright Flying Squirrel.
Pteromys sagitta. Barbed Flying Squirrel.
Pteromys lepidus. Long-tailed Squirrel.
Lepus nigricollis. Maused Hare.
Moschus javanicus. Javanese Musk.
Moschus napu. Raffles's Musk.
Moschus Pelandoc. Pelandoc Musk.

4734. *The following quadrupeds,* from their rarity or singularity, deserve a more detailed notice. The Javanese and ferruginous Tupaia; the Wild Cat of Java, the Long-armed Ape, and the Genett or Coffee Rat. The Two-coloured Squirrel (*fig.* 714.) is a peculiar species confined to this island, where it lives only in the deepest forests: the colour above is brown, but the fur on the under parts is of a golden yellow: it is a great favourite with the natives, who keep it in confinement.

714



TWO-COLOURED SQUIRREL.

4735. *The Javanese Tupay* (*Tupaia javanica*), one of the many interesting discoveries of Dr. Horsfield, is an animal peculiar to this island, and constitutes a distinct species from either of those two found in the other Indian islands. It is a small animal, somewhat resembling a squirrel in the gracefulness and agility of its form, no less than in carrying its broad tail, like a plume, on the back. The fir is thick-set, close, and clothed at the base with a soft down; that on the under parts being remarkably delicate and silky: the colour above is brown, variegated with grey, having a regular narrow streak extending from the neck, over the shoulder: the lower parts are dirty white. This appears to be a rare, or at least a very local animal; as Dr. Horsfield met with only two individuals in the extensive and almost inaccessible forests of Blambangan. (*Zool. Res.*, No. 3.)

4736. *The chestnut* or ferruginous Tupay (*Tupai Press* of the Malays) (*fig.* 715.), is a singular little animal, possessing all the tameness and sprightliness of the squirrel. The length of the body is about six or eight inches; the tail, which is not quite so long, is like that of a squirrel, except in being rounder. The back and sides are rusty brown, the belly whitish. This is the only species of Tupaia of whose habits and manners we possess any positive information. Sir S. Raffles remarks (*Lin. Trans.*, vol. xiii. p. 257.): —"This lively playful animal I first observed tame in a gentleman's house at Penang, and afterwards found wild at Singapore, and in the woods of Bencoolen: it was suffered to go about at perfect liberty, ranged in freedom over the whole house, and never failed to present himself at the breakfast and dinner table, where he partook of fruit and milk."

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CHESTNUT TUPAY.

4737. *The Javanese Wild Cat* (*Felis javanensis* C.) is considerably larger than the Bengal Cat, measuring above two feet seven inches, of which eight inches and a half are occupied by the tail. In its shape it exhibits that elevation of the legs, comparative shortness of the tail, and number of grinders (which are only three), which separate these smaller beasts of prey from the more powerful of their congeners; while its small ears, placed much more distant from the eyes, give it an appearance very dissimilar to the domestic cat. The general colour is light greyish brown, nearly white beneath; on the back are four dark brownish stripes, which, although broken, are continued the whole length of the animal; while the oblong spots on the sides are in like manner disposed, with some regularity, in four series: the limbs and tail are similarly marked. The Felis javanensis is met with in all the large forests of Java, concealing itself during the day in hollow trees, but roving about at night, committing depredations on the poultry yards. Dr. Horsfield tells us, that the natives ascribe to it an uncommon sagacity; asserting that, in order to approach the fowls unsuspected, and to surprise them, it imitates their voice. Its natural fierceness is such as to render it perfectly untameable. Like the wild cat of Europe, it feeds chiefly on small birds and quadrupeds; but when pressed by hunger, it is said to devour even carrion. (*Horsf.*)

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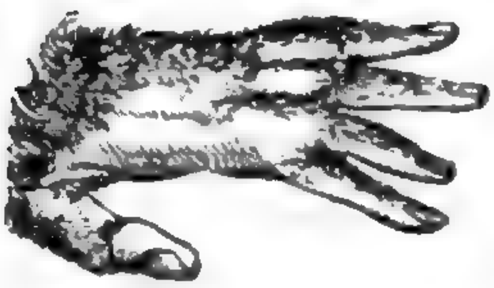

HAND OF THE SIMIA SYNDACTYLA.

4738. *The Long-armed Black Ape* (*Simia syndactyla* Horsf.) is upwards of three feet high, of a strong muscular form, and throughout of a jet black colour: it has no tail, but its long arms touch its feet: its peculiar character lies in the fingers being joined together at their base (*fig.* 716.). These apes abound in the forests of Bencoolen, living in large companies, and making the woods echo with their loud and peculiar cry. In captivity they are remarkably tractable.

4739. *The Javanese Genett or Viverra* (called by the natives *Luwak*), appears to be a mere variety of the Viverra Musanga (*Raff.*) or the Musang of Mr. Marsden. The usual colour of this animal in Java is light grey, with three distinct stripes along the back, and two paler ones on the sides; the extremity of the tail alone being white. Another variety also occurs where the back is variegated with grey and black, the stripes very obscure, and the limbs and tail nearly black; the latter (as represented in Dr. Horsfield's figure), being without the white tip. This animal, in size and colour, so nearly resembles the Genett, that it was long considered to be the same species. It is abundant near the villages adjoining the large forests; rambling, during the night, in the gardens and plantations in search of fruits of every description, preferring the more delicate and pulpy kinds, and causing much devastation among the pine apples. Its fondness for coffee is so great, that it is called by many the Coffee Rat. In this repast it likewise shows a very delicate taste; for the little pilferer selects only the ripest and most perfect fruit, the seeds of which, as Dr. H. relates, being discharged unchanged, are eagerly collected by the natives, as the coffee is thus obtained without the tedious process of shelling! Its nest is constructed, like that of the squirrel, in hollow trees. If taken young, it soon becomes gentle and docile, and readily subsists on either animal or vegetable food; the latter is indeed its natural subsistence; but if pressed by hunger it is known to attack fowls and small birds. "The injurious effects," observes Dr. H., "occasioned by the ravages of the Luwak in the coffee plantations, are, however, fully counterbalanced by its propagating the plant in various parts of the forests, and particularly on the declivities of the fertile hills. These spontaneous groves of a valuable fruit, in various parts of the western districts of Java, afford to the natives no inconsiderable harvest, while their accidental discovery surprises and delights the traveller, in the most sequestered parts of the island." (*Horsf. Res.*, No. 1.)

4740. *The appearance of the Bats is striking*, both from their size, and their strange conformation. The *Cheiromeles torquatus*, or Tippet Bat (*fig.* 717.), measures, in extent of wing, two feet, having a head not much unlike that of a dog, with a tuft of hair on its toe nails. The head of another species, the *Pteropus rostratus*, or Long-snouted Bat (*fig.* 718.), resembles that of a greyhound. The animal itself lives in large societies, and feeds entirely upon fruits; hence causing the greatest damage to plantations.

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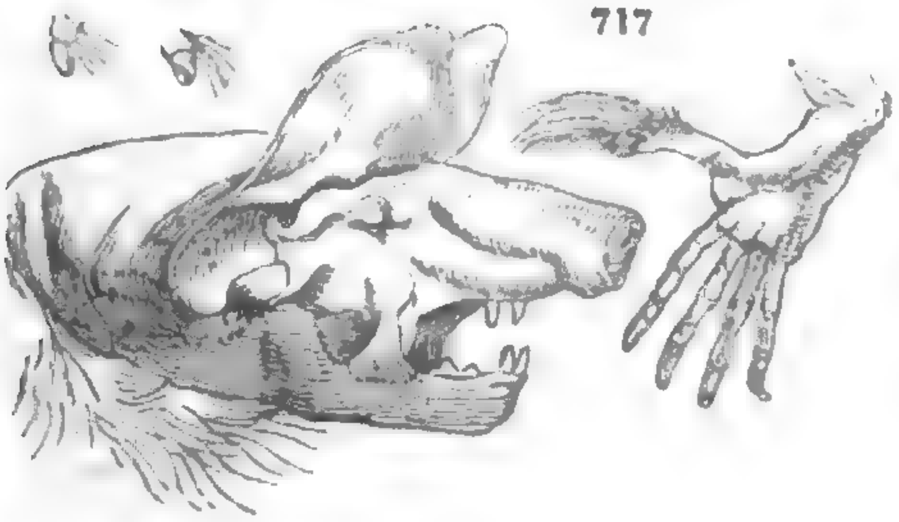

TIPPET BAT.

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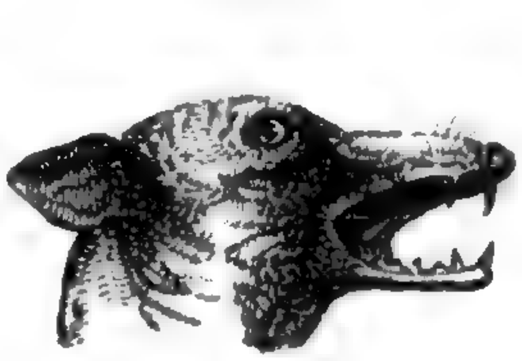

LONG-SNOUTED BAT.

4741. *The Ornithology* appears more interesting than beautiful, as comparatively few species of Parrots or other richly coloured birds of India are contained in the descriptive catalogue of Dr. Horsfield: little is known of their natural economy, and technical descriptions of colours will not interest the general reader. A glance at some of the most remarkable will, therefore, be sufficient. Near the mountain streams of the interior is seen the rare and delicate *Enicurus speciosus*, or Crested Wagtail (*fig.* 719.), running on the ground, like the European Wagtail. The deep forests are the favourite resort of two peculiar species of Wild Cock (*Gallus Bankiva* and *javanicus*), and likewise afford a beautiful Peacock, unknown to other parts of India. Dr. Horsfield enumerates ten distinct Pigeons, and eight Woodpeckers, different from those of the continent. The colours of the rare *Calyptomina viridis*, or the Green Fruit-eater (*fig.* 721.), so exactly harmonise with those of the trees which it frequents, as to render the bird undistinguishable by a near bystander. The Flycatchers are not numerous; and the Great-

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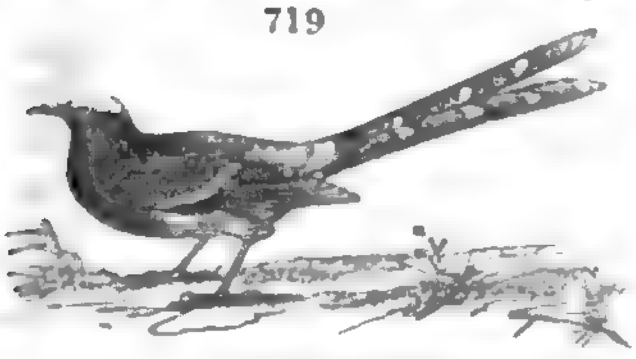

CRESTED WAGTAIL.

billed Tody (*Eurylamus Horsfieldi*) (*fig.* 721.) is a rare inhabitant. The Javanese Crested Swallow (*Macropteryx longipennis*) is one of the most elegant of its tribe, and the *Pogardus javanensis*, or Great Javanese Goatsucker, is particularly rare, even in its native island.

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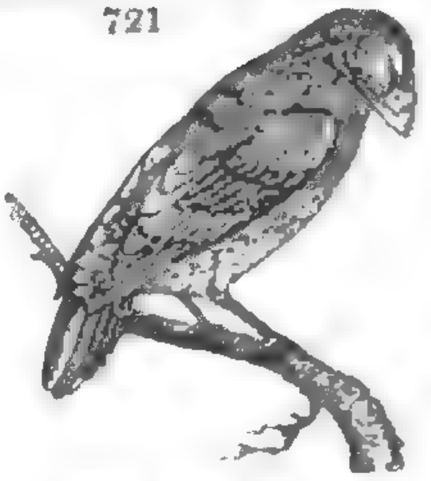
GREEN FRUIT-EATER.

721



GREAT-BILLED TODY.

4742. *Upon the whole*, the ornithology of Java may be considered as very rich, since Dr. Horsfield, as the result of his individual researches, furnishes us with a list of 206 native species, and many others have been since discovered by the French naturalists.

4743. *The Insects* are numerous and splendid, but a long list of names may be dispensed with. Little attention has yet been paid to the marine productions, so that a vast and interesting field for discovery still lies open to the Oriental naturalist.

4744. Sumatra. — *The Zoology* of this luxuriant island has been partially but ably illustrated by the late Sir Stamford Raffles, who to the wisdom of a statesman united the learning of science, and a thirst for knowledge rarely equalled. The government of India might well be proud of such a man, whose high attainments shone forth in every thing he planned or executed.

4745. *The quadrupeds* yet discovered are among the most singular of those found in the Indian Archipelago; while the vast unexplored forests of the interior appear to contain others of imposing size, as yet but imperfectly known from the general accounts of the natives. Some idea may be formed of the zoological riches of Sumatra, by the following list of such quadrupeds as are ascertained natives: —

Hylobates syndactyla. Siamang Gibbon.
Hylobates agilis. Active Gibbon.
Presbytis mitrata. Capped Monkey.
Semnopithecus maurus. Negro Monkey.
Semnopithecus melalophus. Simpai Monkey.
Semnopithecus pruinosus. Villose Monkey.
Semnopithecus comatus. Tufted Monkey.
Semnopithecus Femoralis. Black-handed Monkey.
Cercopithecus albocinereus. Grey Monkey.
Tupaia Tana. Sumatran Tupaia.
Lutra leptonyx. Javanese Otter.
Canis sumatrensis. Sumatran Dog.
Felis nebulosa. Clouded Tiger.
Felis sumatrana. Sumatran Cat.
Sciurus affinis. Allied Squirrel.
Sciurus tenuis. Slender Squirrel.
Sciurus insignis. Bokall Squirrel.
Sciurus bivittatus. Two-banded Squirrel.
Hystrix longicauda. Long-tailed Porcupine.
Hystrix fasciculata. Fascicled Porcupine.
Rhinoceros bicornis var. Sumatran Rhinoceros.
Rhinoceros sumatranus. Raffles's Rhinoceros.
Tapirus malayanus. Malay Tapir.
Cervus Rafflesii Sw. Malay Stag.
Cervus Muntjak. Muntjak Doe.
Nemorhedus sumatrensis (Smith). Cambing Antelope.

4746. *To these must be added several others*, mentioned by the natives, but still unknown to Europeans. "Native information," observes Sir S. Raffles, "gives reason to believe that the Orang Utan exists in the interior of Sumatra. It is frequently confounded with the Orang Kubu and Orang Gubu of Marsden, which, though often the subject of fable and exaggeration, appear to exist on the island as a distinct race of men, almost as hairy and wild as the real Orang Utan." The natives seem acquainted with several sorts of Tigers, equal in size, but different in colours and habits, from that of the Continent, as the Rimau kumbang, or Black Tiger; the Rimau samplat, and others. They further describe another ferocious animal, apparently a kind of Lion. Their Rimau Dahan is said to be the size of a leopard, but darker and less regularly spotted. The king of Acheen assured Sir Stamford, that an animal called Jumbing was found in the eastern parts of his dominions, nearly the size and make of a horse, but having two unequal horns. These notices, from their very imperfection, are calculated to excite the curiosity and stimulate the enquiries of future travellers; at the same time they convey to the general reader some idea of the formidable and imposing animals which still remain hid from science in the primeval forests of India.

4747. *A curious little animal, the Tupaia Tana* (the Sumatran name, adopted by Sir Stamford Raffles) (*fig.* 722.), is nearly seventeen inches long. In form it bears some resemblance to the squirrel, but the snout is narrowed, and proportionably lengthened, like that of a sorex, or shrew-mouse. The fur is soft and delicate, of a dark-brown or blackish colour above, and reddish beneath; the back of the head is marked by a narrow transverse band of black, which forms an obscure crest. The great elongation of the snout places this species as the type of this highly singular genus. The natives affirm it is always found on or near the ground, but its scarcity prevented this account from being verified.

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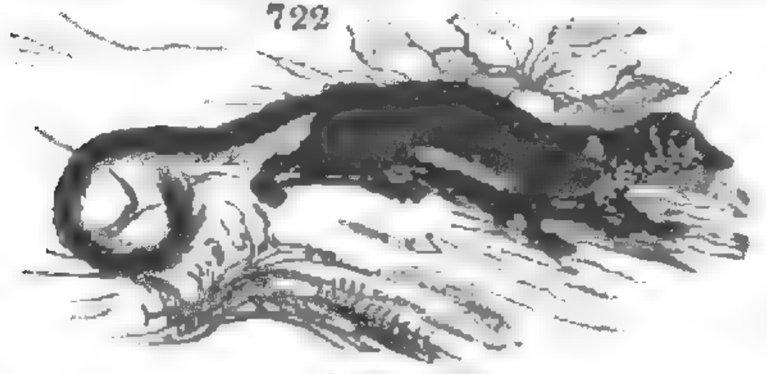

TUPAIA TANA.

4748. *Two distinct species of Rhinoceros* inhabit the interior. One of these, the *R. sumatranus* Raff. has two horns. The other is well known to the natives, but never yet seen by Europeans; they call it Tennu, and describe it as having but one horn, and being marked with a narrow whitish belt encircling the body.

4749. *The Malay Tapir* (*fig.* 723.), although a quadruped of nearly the first magnitude, is a recent discovery of the late Major Farquhar. It is nearly equal in size to the buffalo; and is particularly distinguished by its colour, the fore and hind parts being glossy black, while the body has a broad and well-defined belt of white, extending circularly round it, resembling a piece of white linen thrown upon the animal. Its disposition is so mild and gentle, that it will become as tame and familiar as a dog.

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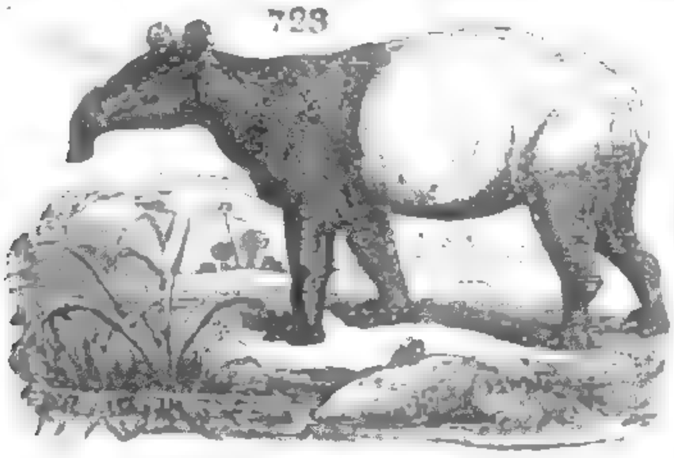

MALAY TAPIR.

4750. *Of the Domestic animals,* Sir Stamford furnishes us with some interesting and authentic information, particularly on the Elephant, Horse, Ox, Dog, and Cat.

4751. *Regarding the Elephant,* few attempts have been made to catch and domesticate the wild troops, which are extremely numerous in the forests: as at Acheen alone is this animal trained to the service of man. The Sumatran horses are small, strong, and hardy, those of Acheen are the most prized; but the Batta Horses, although larger and stronger, are not so handsome. There is a very fine and peculiar breed of cattle, of a short, compact, and well-made form, without a hump: they are almost without exception of a light fawn colour, relieved with white: they are kept in excellent condition, and are universally used in agriculture. This breed is quite distinct from the *Banting* of Java and the more eastern islands. Reddish white Buffaloes are common at Bencoolen.

4752. *The Dog of Sumatra* is wild and untameable; numerous packs inhabit the interior forests, where they hunt in unison. The tail is brushed, like that of a fox; the ears short and erect, and the whole conformation resembles that of the Dingo, or Australian dog.

4753. *Even the Cats* partake of the peculiar interest attached to Sumatran zoology. There is one breed having a knobbed or twisted tail, and another with no tail at all!

4754. *On the Birds,* our limits compel us to be concise. Vultures are rare on the west coast, but are occasionally seen on the Malay peninsula. Parrots, as in Java, are less numerous than in the more eastern islands, particularly the Moluccas: but six distinct kinds of Hornbill are mentioned by Sir Stamford. Among the Cuckoos is that called the Yellow-billed (*C. xanthorhynchos*) (*fig.* 724.); the throat and upper plumage is of a rich glossy violet, the body being white, with black lines.

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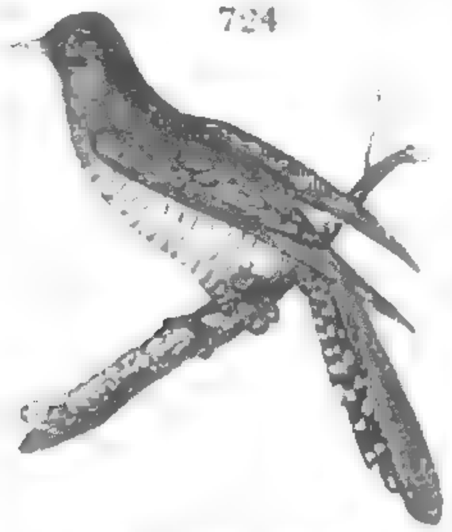

YELLOW-BILLED CUCKOO.

4755. *The Doves* are of beautiful colours. The magnificent Argus Pheasant, the pride of the Malayan forests, in elegance of form and richness of attire, is, perhaps, unequalled in the feathered race. They are found, generally in pairs, in the deep forests of Sumatra, and are said, by the natives, to dance and strut about each other, in the manner of peacocks: four other species of this splendid family inhabit the same situations, besides numerous Thrushes, Warblers, Flycatchers, Barbuts, and other birds whose scientific names have not yet been ascertained. There are, of course, no true Humming-birds in India.

4756. *Of Serpents,* twenty species have been discovered; the most venomous being the well-known Cobra de Capello, or Hooded Snake. Another, much resembling the Coluber mysterizanus, has the terrifying power of suddenly elevating the scales of the neck, and thus producing a variation of colours which disappear when the animal is at rest. The gigantic Pithon, long considered the same as the Boa Constrictor of America, is occasionally met with of an immense size. One sent to England measured eleven feet and a half long; but they are sometimes more than twenty inches in circumference. Crocodiles, as might be expected, are abundant, and often attain to a fearful size.

4757. **Borneo.** — *The Zoology of this little-known island* presents a vast field for future discovery; nor do we believe any region on the face of the earth would furnish more novel, splendid, or extraordinary forms than the unexplored islands in the eastern range of the Indian Archipelago. Ignorance, therefore, compels us to be concise. The forests of Borneo are said to be the principal habitation of the famous Orang Utan (*Simia satyrus*), which is here reported to attain to the human size; while the Pongo Ape, supposed by former writers to be the same, is stated to be considerably larger, and much more powerful. The singular Nasalis larvatus, or Proboscis Monkey (*fig.* 725.), is distinguished from all others, by having a long and projecting nose, giving to the head of the animal the appearance of a ludicrous mask.

725

HEAD OF THE PROBOSCIS MONKEY.

4758. *The Pongo Ape* of Buffon has been proved to be an imaginary animal; but much light has recently been thrown on the nature of another, probably the true Pongo of Baron Wurmb, by an observing naturalist of our own country. Dr. Harewood has recently stated the existence, in the Hull museum, of a pair of gigantic feet (or hind hands), belonging to some extraordinary ape of this kind. These feet were presented, in 1821, to an individual by the native sultan of Pontianna, in Borneo, "in whose family they had remained, as a great curiosity, during 154 years." Notwithstanding considerable contraction in their circumference over the knuckles, Dr. Harewood found that the middle toe of these feet, when measured from the knuckle, were of the enormous length of seven inches and three quarters. The adult animal must, therefore, have been considerably larger than the largest Orang Utan described by Dr. Abel, which yet measured seven feet and a half in height. In short, the further details of Dr. Harewood clearly prove that these feet belonged to some enormous ape, truly distinct from any which has yet been recorded; but which, in all probability, still exists in the impenetrable forests of Borneo.

4759. Amboyna. — *The Zoology of Amboyna*, notwithstanding the old accounts of Valentin, is involved in much obscurity, and even fable. Although the vast botanical labours of the old writers in this island are not only comprehensible, but useful to modern naturalists, we can scarcely assign one quadruped to this immense island as an authenticated native: we once, indeed, received from thence many skulls of the Babyroussa Hog, a highly curious animal, but of which there is no complete specimen in Europe.

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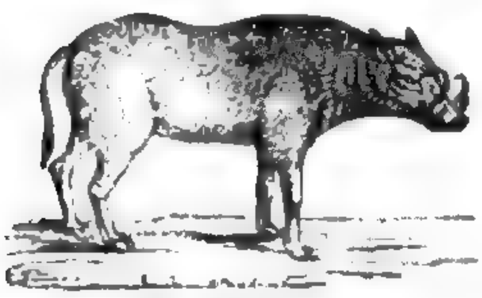
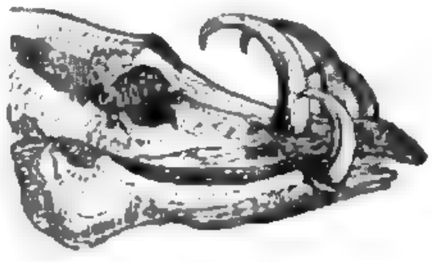


SUS BABYROUSSA.

727



TUSKS OF THE SUS BABYROUSSA.

4760. *The Sus Babyroussa* (*fig.* 726.) has much of the manners of the pig: it is said to swim remarkably well, and even to pass, in the Indian Archipelago, from one island to another. The tusks (*fig.* 727.) are enormous, and appear more like curled horns, rising out of the jaws, than teeth.

4761. *The Conchology* appears richer and more splendid than that of any part of India. Here is found the beautiful and rare Rostellaria rectirostris, of which only two perfect specimens are known in British cabinets, one of which we ourselves received from this island. The Paper nautilus grows to an astonishing size. The variety of beautiful Cones, Cowries, Pectens, and other Oriental genera, are almost innumerable: and we have been told that the pearl fisheries are not inconsiderable.

4762. *The Insects are splendid*, and exhibit the most singular forms, and the most surpassing brilliancy of colours. The matchless Amphrisius Priamus *Sw.* (*fig.* 728.), the glory of Oriental entomology, seems a peculiar native of this island; some of the Locusts (as *L. amboinensis* Don) (*fig.* 729.), are near five inches long, and of a lovely citron green colour; while the Mantis siccifolia more resembles a leaf than an insect. Another species, the Giant Mantis (*M. gigas*), exceeds seven inches in length, exclusive of its antennæ. Such are a few of the riches which lie for the most part hidden from scientific research.

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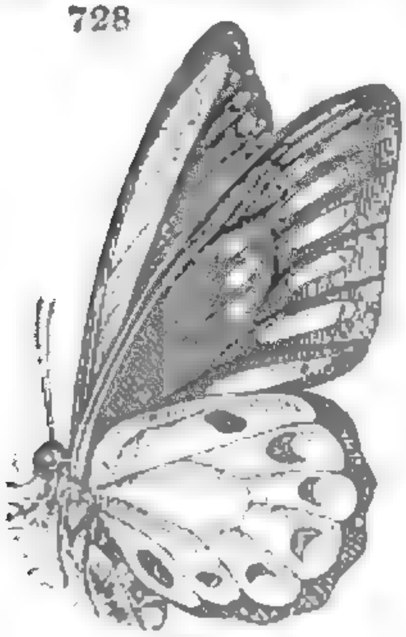
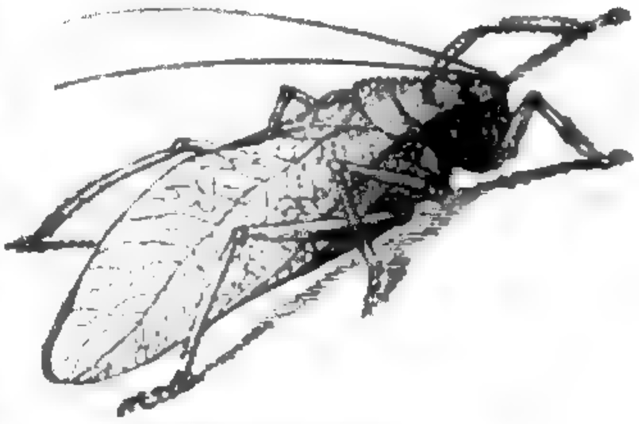


AMPHRISIUS PRIAMUS.

729



LOCUST OF AMBOYNA.

4763. Timor. — *The Zoology of Timor* presents us with several animals which have not yet been discovered in the neighbouring islands. The following list, supplied by the researches of the famous navigator and naturalist Peron, is therefore interesting: —

Ronolphus speoris.	Pitnosed Bat.
Ronolphus diadema.	Diadem Bat.
Plecotus timoriensis.	Timor Bat.
Pteropus griseus.	Grey Rousette Bat.
Pteropus amplexicaudatus.	Long-tailed Bat.
Pteropus stramineus.	Lesser Ternate Bat.
Cephalotes Peronii.	Peron's Bat.
Cervus Peronii.	Timor Stag.

4764. *The Rousette Bats*, commonly called Vampires, are principally from Timor, where they appear to inhabit either the trunks of trees, or the hollows of rocks: but the larger species retire to the deepest and most obscure caverns. The Timor Stag is but imperfectly known, the head only having been brought to Paris by the French navigators; judging from this, the animal must be rather smaller than our fallow deer.

4765. *Timor is proverbial for its innumerable shells and marine productions*, which strew the shores at low water, and present an endless variety of forms and colours. Nor are the land shells insignificant: a most elegant species of Bulimus, banded with buff and purple, is thought to be peculiar to this island.

4766. New Guinea. — *The Zoology* of New Guinea and its neighbouring islands has long been the astonishment and delight of the naturalist; while its surpassing splendour must awaken corresponding feelings, even among the ordinary observers of nature. These regions may, indeed, be termed the Elysium, the earthly Paradise, the fairyland of the ornithologist; for they have given to the ravished eye forms of such exquisite beauty, that the imagination cannot conceive things more lovely or more gorgeous. Here, in truth, are birds of gold, and of every coloured gem; for in these "spicy islands of the East" are found the whole family of Paradise Birds, literally so called; to describe which, both the pen and the pencil become insufficient. Strange, that the most beauteous of nature's works should be assigned to countries whose natives are the most savage and ferocious of the human race!

4767. *The native quadrupeds*, in such a vast and uncleared island, must be numerous; but so imperfectly are they known, that we can scarcely extend the following meagre list: —

Phalangister papuensis. Papuan Phalanger.
Phalangister ursina. Bear-like Phalanger.
Phalangister chrysorrhos. Yellow-tufted Phalanger.
Sus papuensis. New-Guinea Pig.
Cuscus maculatus. Spotted Cuscus.
Cuscus macrourus. Long-tailed Cuscus.
Cuscus albus. White Cuscus.

The four latter quadrupeds have just been figured in the splendid atlas of zoological subjects discovered during the short stay of the French expedition at this island, by MM. Garnot and Lesson. The completion of this valuable work, now in course of publication, will put us in possession of those details which we are now obliged to omit.

4768. *Many new and highly interesting birds* were for the first time discovered by these zealous naturalists: among these may be mentioned, as the most remarkable, the following: —

Barita Keraudrenii *Lesson*, of the size of a crow, with the contorted windpipe of a gallinaceous bird: it has a small horn-like crest of pointed feathers over each eye, and its whole plumage is black, with green and blue glossy reflections of metallic brightness. The Whiskered Swift (*Macropteryx mystaceus* Swains.) is nearly the largest of its tribe, being almost double the length of the European swallow: the wings are excessively long. The beautiful Tiger Bittern of New Guinea (*Ardea heliosyla* Lesson) is banded all over with brown, upon a very pale ground; and is the most lovely species of its tribe. To these new acquisitions may be added Megapodius Duperreyi, Eurylamus Blainvillii, Psittacus Desmarestii, Mino Dumontii, Corvus senex, Talegallus Cuvieri, and several small but most superb Flycatchers and Honeysuckers.

4769. *The true Paradise Birds* (*Paradisidæ* Swains.) deserve a more particular notice. To this magnificent family the following species, described by authors, appear strictly to belong; several others have been named, but they are now referred to distinct families.

Paradisea major. Great Paradise Bird.
Paradisea minor. Smaller Paradise Bird.
Paradisea sanguinea. Sanguine Paradise Bird.
Paradisea niger. Black Paradise Bird.
Paradisea nigricans. Black-bodied Paradise Bird.
Paradisea magnifica. Magnificent Paradise Bird.
Paradisea superba. Superb Paradise Bird.
Paradisea sexsetacea. Six-shafted Bird.
Paradisea regia. Royal or King Paradise Bird.

4770. *The King Bird of Paradise* (*fig.* 730.) is the smallest, not exceeding the size of a starling: it is a much rarer species than the Great Paradise Bird, but, like all those that are supposed to breed in New Guinea, it migrates thence into the small isle of Arua, or Aroo, during the dry monsoons. The upper part of its plumage is a most intense and beautiful red or purplish chestnut: on the breast is a broad gold green zone, and immediately on each side is a bunch of lengthened feathers tipped with the same brilliant colour; there are two long wire-like feathers in the tail, curling round at the ends, where they are emerald green.

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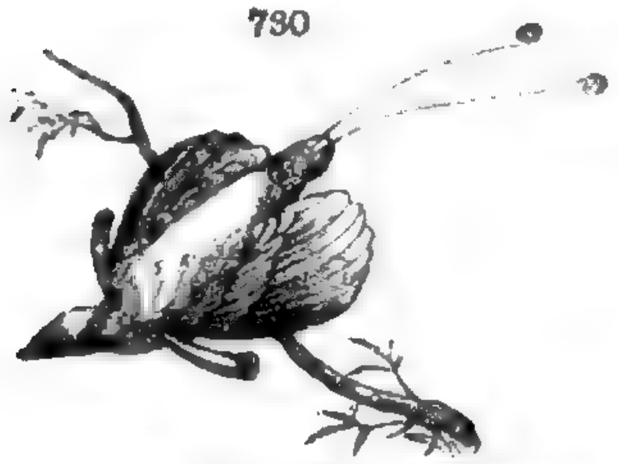
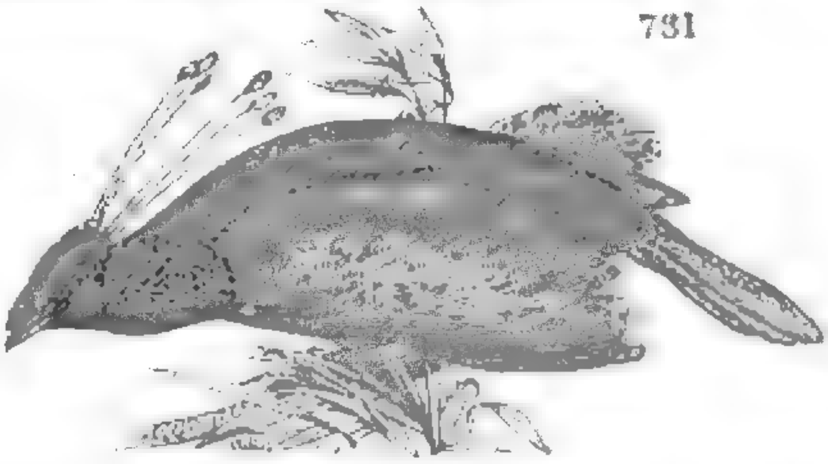


KING BIRD OF PARADISE.

731



SIX-SHAFTED BIRD OF PARADISE.

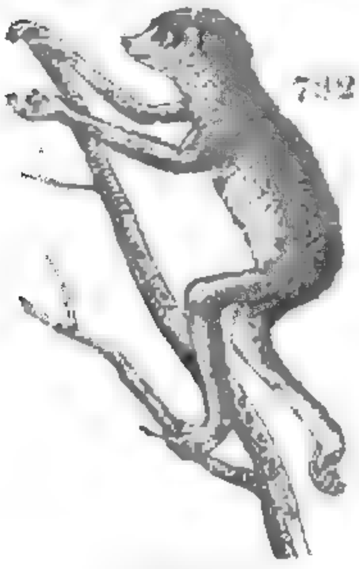
4771. *The Six-shafted Paradise Bird* (*fig.* 731.) is still more extraordinary: the general colour is velvet-black, but the breast is of the most splendid gold green, changing in different directions of light into every colour of the rainbow: on each side of the head are three long feathers with naked shafts, but tipped with a rich metallic lustre of deep violet purple: the side-feathers of the body are excessively lengthened.

4772. Ceylon. — *The Zoology* presents some few characters different from those belonging to the continent, and which deserve notice.

4773. *The following quadrupeds* seem peculiar to this island: —

Cercocebus Silenus. Lion-tailed Baboon.
Cercocebus sinicus. Chinese Monkey.
Stenops gracilis. Slender Loris (*fig.* 732.).
Stenops ceylonicus. Ceylon Loris.
Vespertilio pictus. Painted Bat.
Sciurus ceylonensis. Ceylon Squirrel.
Moschus Memina. Ceylon Musk.
Cervus unicolor. Ceylon Stag.

732



SLENDER LORIS.

4774. *The Slender Loris*, as its name implies, is remarkable for the delicacy of its body and limbs; and is stated to be possessed of great agility and liveliness. The Lion-tailed Monkey is so called from the tail being tufted at its extremity; and there is a white ruff of long hairs on each side of the forehead. It is a rare animal, and has been said to be excessively malicious. The Memina, or Ceylon Musk Deer, has never been found beyond the jungles of this island: it is a pretty animal, about seventeen inches long, greyish-olive above, and white beneath, with the tail very short. The Ceylon Stag is a remarkable and little known species, of which no specimen has yet reached Europe. Major Smith describes it, from the drawings and notes of that excellent artist the late Mr. Daniell, as the largest species on the island, surpassing the European stag in size. It is called by the natives *Gona*; they describe it as very bold and fierce, and as living only in the deepest forests.

4775. *Among the Birds* we may notice an extraordinary species of wild cock, called the Tailless Cock (*Gallus ecaudatus* Tem.) (*fig.* 733.), as being destitute of even the rudiments of that member; the comb on the head is not toothed. It seems confined to the deep forests of Ceylon, and to be very wild. There are besides many small birds of elegant plumage, as the Phœnicornis malabaricus *Sw.* Muscipeta paradisea, &c.

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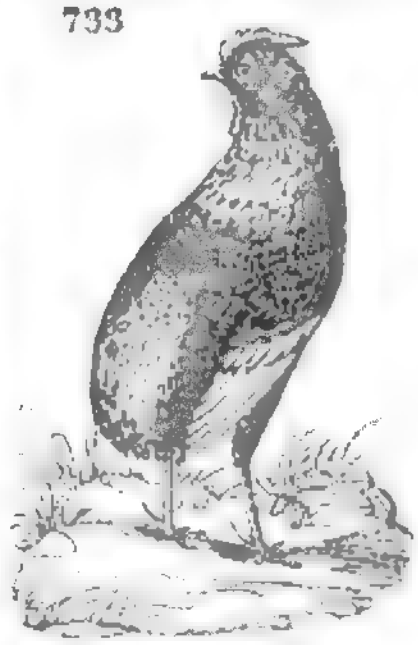
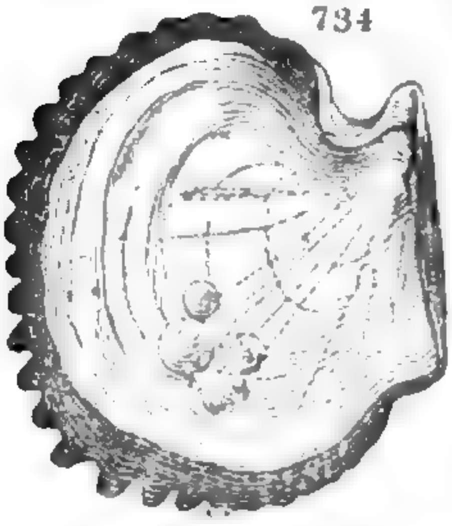


TAILLESS COCK.

4776. *The pearl fishery* of Ceylon has long been famous: The shell furnishing this precious gem is the Margarita sinensis? of Dr. Leach (*fig.* 734.). The fishery lasts from February to April. The divers go down by fives, and usually remain under water two minutes; but some have been known to continue four or even five. The shells are all placed in pits, where the fish are left to die and rot before the pearls are searched for; these, as is well known, are morbid concretions formed in the shell by the animal when diseased. The divers are hired, and are either paid in money, or by a portion of Pearl Oysters before they are opened: they generally prefer the latter. Besides the Pearl Oyster, Ceylon is particularly rich in other shells, particularly those called chanks, which are much worn by the Hindoos as rings and ornaments.

734



CEYLON PEARL OYSTER.

Sect. III. *Historical Geography.*

4777. *The condition of these islands during the classic ages,* appears enveloped in impenetrable obscurity. Ptolemy, who shows some knowledge even of China and the continent beyond India, describes indeed some islands scattered through this sea, and, in particular, Jaba-diu, which is probably Java; but his delineation corresponds with the real position and magnitude neither of this nor the other islands. The deficiency is not supplied by any native records.

4778. *Considerable revolutions* seem to have taken place, about the twelfth century, in the principal of these islands. Hindoo colonies had by this time introduced into Java the religion and literature of Boodh, mixed with that of Brahma, and several powerful empires, ruled by Hindoo sovereigns, were, during this and the following centuries, established in different parts of the island. Among these, Brambanan, Janggolo, and Pajajaran appear to have been at different periods extensive and powerful; but the dynasty of Mojapahit, both from tradition and surviving monuments, must have been extensive beyond all the others, stretching its sway even over part of Sumatra. About the twelfth century, also, the Malays, making an extensive migration from the plain of Menangkabao, in the interior of Sumatra, spread themselves over Malacca, Singapore, and Borneo, and rendered themselves, what they have ever since been, the most conspicuous people in the Archipelago.

4779. *The conversion to the Mahometan faith* of Sumatra and Java, the two most important and improved of the India islands, made an important change in their political condition. It appears to have taken place, in the former island about the beginning of the fourteenth century; but, in Java, not till about 150 years later. This conversion was effected, not by priests or warriors, but by merchants from Arabia, who had been long attracted to these islands by the commerce in spices. Having settled there in considerable numbers, they at length began propagating their faith, first by persuasion, but, when a number of converts had once been made, they spread it, as usual with the votaries of this faith, by persecution and the sword. These mercantile apostles became chieftains and princes, and, after a series of bloody struggles, had established in both islands a number of petty kingdoms, in all of which they either ruled or held a considerable influence.

4780. *The arrival of the Portuguese* by the Cape of Good Hope caused a memorable revolution in the whole Eastern world, and was peculiarly felt by the islands of this archipelago. In 1511, fourteen years after the voyage of Gama, that people conquered Malacca, and in the same year penetrated to Bantam and the Moluccas. They made repeated attempts upon the maritime states in Sumatra; but, these being then vigorously ruled, the invaders were unable to make any permanent impression. Their chief object was to obtain full possession of the Spice Islands, on account of their rich products; but they were encountered by the Spaniards, who had established themselves in the Philippines. After some sharp contests, however, the latter people agreed to waive their claims, in consideration of a payment of 350,000 ducats. The oppressions of the Portuguese roused a general confederacy against them, which was, however, baffled by the heroism of Galvan; and that virtuous governor introduced a conciliatory system, though it was ill supported by his successors.

4781. *The Dutch,* a new power, who in the course of the sixteenth century sprung up from beneath Spanish oppression, were, after the union of Spain and Portugal, placed in an attitude of regular hostility with both these countries. It was only, however, by timid and cautious steps that attempts were made to dispute Spanish supremacy in the Indian seas. But the maritime power of Holland continually increased, while that of her antagonists diminished, so that she at length first contended on equal terms, and then gained the superiority. Her ambition was peculiarly attracted by the Indian islands, and she successively drove her antagonists from all the positions which they had occupied. Soon she herself had to contend with a new rival, the English, who, under Lancaster, Middleton, and other bold navigators, made peculiar efforts to obtain settlements in these islands, and a share in the spice trade. A most violent series of rivalry, plunder, and piracy was for many years carried on between these two great maritime states, in the course of which the Dutch were impelled to that bloody transaction, the massacre of Amboyna. A treaty was at length concluded, on the principle of mutual equality and compensation; but since that time, the attention of the English company has been almost wholly engrossed by their vast acquisitions on the continent of India, while the Dutch, continuing to devote themselves to their insular possessions, have acquired there a decided preponderance. This was, indeed, suspended during the last war; when England by her superior navy obtained possession of all the principal islands; but, at the peace, which rescued her ancient ally from the thraldrom of Napoleon, she, with a generosity which has been considered excessive, restored all the captured settlements. By a convention, in 1825, she even exchanged her possessions in Sumatra for Malacca, which was valuable to her from its connecting together Singapore and Prince of Wales's Island.

Sect. IV. *Political Geography.*

4782. *The political constitution of these states* is mostly simple, and even rude. There are some wandering tribes, in the infancy of society, who present scarcely any vestige of law or subordination. In general, however, the system of village republics, the affairs of which are conducted by elective and sometimes hereditary officers, prevails here, as throughout the continent of India. These little associations, however, are oppressively domineered over, sometimes by a feudal aristocracy, sometimes by princes almost completely despotic. The aristocratic system prevails chiefly among the states less advanced in civilisation; Celebes, Sooloo, and part of Sumatra. Here the chiefs, having reduced the body of the people to a state of almost complete vassalage, unite in a species of confederacy, electing a king or head, rather as a servant than a master, to carry on their general concerns. They have also elective councils, consisting in Boni of seven, in Wajo of forty officers, who have not only the command of the public treasure, but the decision of the questions of peace or war. Among the Goa Macassars, there is a very extraordinary officer, who has the power of removing the king, and calling upon the council to elect another. In Java, on the contrary, and others of the more advanced districts, the sway of the sovereign is entire and undisputed; and the subjects vie with each other in indications of the most abject submission. They approach him creeping on all-fours, and retire in the same humiliating attitude: to stand upright before him is considered an insult. The "royal feet," or "the royal slave," are the appellations by which they designate themselves when addressing him. He is loaded with the most extravagant flattery: his eyes are two gems; his face is the sun. Yet, even under these regular despotisms, the body of the people are less oppressed than where the feudal aristocracy prevails. Personal slavery is unknown in them, and even the village governments enjoy a greater share of independence. In all these states, however, there are two orders of nobles, out of which the higher and the lower classes of public officers are respectively chosen. Slavery is often produced by war, and Mr. Crawfurd mentions 10,000 Bugis at one time held in bondage by the Macassar nation, and employed in public works, without distinction of rank. Debt is another source either of temporary or perpetual slavery; and the atrocious practice of kidnapping is by no means unfrequent.

4783. *The Dutch* claim, in a certain sense, *the sovereignty* of all there islands except the Philippines. In fact, they hold the leading positions in a state of military occupation, and generally triumph in contests with the natives. Their sway is neither mild nor popular. Oppressive exactions, commercial monopolies, and sometimes bloody severities, have rendered their yoke odious, and given rise to violent insurrections. They appear also never to have made any effective efforts to improve and civilise the people; and have not followed up the attempts made by Britain for this purpose during her temporary sway. Under the late administration of Van Capellen, however, some improvements took place.

4784. *The Spaniards*, whose colonial system has been generally considered the worst of any, have administered the Philippines in a manner decidedly better, and more salutary. They have established a mild control over the natives, who, when the power of their European masters was in danger, have even taken up arms in their defence. This improvement has been in a great measure effected through the missionaries, who, without any violent means, have converted and gained the attachment of the people. Still, little has been done to develope the vast natural capacities of these fine islands.

Sect. V. *Productive Industry.*

4785. *As to soil and climate,* the Indian islands rank with the most favoured regions on the globe. Situated almost immediately beneath the equator, and beat by the sun's intensest rays, they must, had moisture been deficient, have been converted into arid and sandy deserts. But the vicinity of the sea, their varied surface, and the lofty mountains that traverse their interior, afford a copious supply of waters, which, combined with the heat, produce the utmost luxuriance of vegetation. They yield in abundance not only all the ordinary products of a tropical region, but also peculiar and exquisite spices and fruits, which cannot be transplanted with advantage into any other soil. The Archipelago, according to Mr. Crawfurd, may, *as to climate and productions,* be divided into five parts, of different character, yet these appear to us all reducible to two, modified by, and passing into, each other. These are, the eastern and western, bordering, one on the Pacific, and the other on the Indian Ocean, and exposed to the respective monsoons which blow from these vast seas. The western quarter is more fruitful in the staple and useful productions of the soil; rice is raised in abundance, and forms the food of the great body of the people; noble forests of teak and other valuable timber cover the plains; but the finer spices are not raised in any perfection, and even its pepper is inferior to that of Malabar. The eastern islands, on the contrary, are less fitted for the production of rice or of any grain; the subsistence of the inhabitants is derived from the pith of the sago tree, a mode of support unknown to any other great nation; but they contain the native country of the clove and the nutmeg, the finest of aromatics. The Philippines, however, notwithstanding their easterly position, agree rather with the opposite quarter, being fruitful, not in spices, but in rice, sugar, and tobacco.

4786. *Agricultural operations*, even in the most improved of these islands, are extremely simple. A team is estimated by Mr. Crawfurd to cost 2*l.* 18*s.* 6*d.*; of which the plough is 2*s.* and the harrow 1*s.*, the chief expense being the pair of buffaloes, which are worth 2*l.* 10*s.* Irrigation is the most costly process; it is not effected by those extensive tanks which diffuse fertility over Hindostan, but by damming up the streams as they descend from the mountains, and distributing them over the fields; and for this purpose the slopes of the hills are often formed into terraces. As the raising of rice by artificial irrigation does not depend upon the seasons, it is often seen, within the compass of a few acres, in every state of progress. "In one little field, or rather compartment, the husbandman is ploughing or harrowing; in a second, he is sowing; in a third, transplanting; in a fourth, the grain is beginning to flower; in a fifth, it is yellow; and in a sixth, the women, children, and old men are busy reaping." When ripe, the head is cut off with a species of sickle, with only a few inches of the straw; it is then dried, and carried to market in the ear. Maize, like oats and barley in Europe, is raised for the use of the lower ranks. The yam, though indigenous, is not much valued, the sweet potato being preferred. The grains of Europe and the common potato are produced only in small quantities. The cocoa nut, the ground pistachio, the palma Christi, and sesamum are largely cultivated for the production of oil, a favourite food among the islanders.

4787. *The sago palm* is a production peculiar to part of this region, growing chiefly under the most boisterous influence of the eastern monsoon. It is only thirty feet high, but so thick that a man with outstretched arms can with difficulty embrace it. It is reared only in marshes, so that a plantation forms a bog knee-deep. The sago is considered ripe in fifteen years, and is then cut into segments, and the pith extracted, which soon dries into a farinaceous powder, eaten either in the form of cakes, or of a species of pap. The produce is prodigious, 500 or 600 pounds being often drawn from a single tree, and one acre may, it is supposed, yield 8000 lbs. annually.

4788. *Spices*, however, form the production of those islands most peculiar and most valued by foreigners. These, with the coffee tree recently introduced, occupy in agriculture the same place which the vine does in Europe, being generally cultivated in the hilly districts of each country. Pepper grows plentifully in its western districts; but Mr. Crawfurd considers it as introduced from the hills of Malabar, whose produce continues still superior. It is best raised, also, not on the rich plains of Java, but on the hilly districts of Sumatra and Borneo. The *clove* has, perhaps, the most limited geographical distribution of any plant, being confined originally to the five small Molucca islands, whence it has been transplanted to Amboyna, to which the Dutch have sought to confine it. The tree is of beautiful form, about the size of the cherry, bears fruit at a period between seven and ten years, and has an average duration of 75 years, though sometimes it has lasted for 100, or even 130. The fruit is first green, then a pale yellow, and lastly blood red, when it is ripe; and, being gathered, is dried upon hurdles, and then acquires the black colour which we see it bear. Some trees have been known remarkably productive, and one is even asserted to have borne 1100 lbs. in one year; but Mr. Crawfurd does not consider the annual average to exceed 5 lbs., and the produce of an acre 328 lbs. The nutmeg is much more widely distributed, being found of good flavour in all the Spice Islands, and even on the coast of New Guinea; but the Dutch have sought with tolerable success to extirpate it every where, unless in three of the Banda islands. The tree grows to the height of forty or fifty feet, somewhat resembles the clove, and has nearly the same duration. The fruit, also, is prepared in a manner somewhat similar, though requiring greater care, and with the additional operation of stripping off the mace, which merely requires to be dried in the sun. One tree produces, in mace and nutmegs together, nearly ten or twelve pounds; but, from the distance at which they must be planted, the average of an acre does not exceed 266 lbs.

4789. *Among other products* of these islands may be mentioned the sugar cane, which is indigenous, but is eaten by the natives merely as an esculent vegetable; the Chinese express the juice in the form of clayed sugar. Indigo is indigenous, of excellent quality, but ill prepared for use. Coffee has been introduced from Arabia, and cultivated to a considerable extent in Java. Cardamoms and gum benzoin, the Eastern frankincense, are articles of some importance.

4790. *Forests*, in extraordinary luxuriance, cover a great extent of the Indian islands. The teak, so remarkable for its strength and durability, flourishes only in the rich soils of Java, and there not to the same extent as in Malabar and the Birman empire. There are also a considerable number of ornamental woods, and of others, from which precious gums distil. Bamboos and rattans overspread the whole country wherever not rooted out by cultivation; they serve for building, for cordage, and other important purposes. The mangosteen and the durion are generally considered the most delicate fruits produced in any quarter of the world; though, in the latter, the stranger must overcome the aversion inspired by its unpleasant scent.

4791. *The mineral wealth* of the Archipelago is brilliant and valuable. The lead is taken by gold and diamonds, the most splendid productions of this kingdom of nature. Of the former, these islands, next to South America and Central Africa, contain the most extensive deposit on the globe. It is found chiefly in the south-western islands, whose rocks are mostly composed of primitive strata; and its central position is in Borneo and the adjacent parts of Sumatra. In the fertile volcanic range reaching from Java to Timor inclusive, the quantity is too small to be of any commercial importance. It is found in veins and mineral beds, in the sand of rivers and streamlets, and deposited in alluvial lands. From the first it is drawn only by the Malays and others of the more civilised tribes in the interior of Sumatra. They employ, however, very rude tools, and effect only slight excavations, clearing the mine of water by buckets and manual labour. Yet there are said by Mr. Marsden to be no less than 1200 of these petty mines in the single district of Menangkabao. The sand of the rivers is searched only by the more savage tribes; but the drawing of gold from alluvial deposits, carried on almost entirely by Chinese settlers in the island of Borneo, is by much the most copious source from which the metal is supplied. The mines are situated chiefly at about two days of inland navigation from the western coast, towards the foot of the mountains. The Chinese colony, according to Mr. Crawfurd, consists of 36,000, of whom only 6000 are employed directly in the working of the mines, the rest in branches of industry subservient to it. There are said to be, in the principal district, thirteen large and fifty-seven small mines; of which, the former employ from 100 to 200, the latter from ten to fifty men. The excavations are longitudinal, and the golden earth drawn from them is put into a trough, and a stream of water passed over it, while it is agitated by a hoe, until the metallic grains separate. Mr. Crawfurd reckons the annual value of the gold of the Archipelago at 658,000*l.*, which is more than a fourth of that of the mines of America in their most prosperous state, and four times that of all the European mines. Of this amount, 375,500*l.* is from Borneo, 131,600*l.* from Sumatra; the rest is the estimated produce of all the other parts of the Archipelago.

4792. *The diamond* is found only in Borneo; being confined to that island, to Hindostan, and to Brazil. The Indian islanders prize highly this stone, and cut it with skill chiefly into the table form; but it is not valued by the Chinese, whose industry might otherwise have improved the rude processes employed in extracting it by the Dayaks, or aboriginal savages. Almost the largest diamond in the world is in possession of one of the princes of Matan in Borneo. It weighs, in its present rough state, 367 carats; which, by the process of cutting, would be reduced to one half; consequently, it is not quite so large as that purchased by the Empress Catherine, which, when cut, weighed 193 carats; but it considerably exceeds the Pitt diamond, which was only 137 carats. Its value, according to the principles established by diamond-dealers, is 269,000*l.*, though it might be very difficult at such a price to find a purchaser.

4793. *Of other metals, tin* is a rare one of considerable use, and, though discovered in these islands only about the beginning of last century, has become an important and characteristic production. It exists in various parts of the Malay peninsula and of the islands between it and Java; but in none of these is it worked to any extent unless in the small island of Banca, near the eastern coast of Sumatra, which, in Mr. Crawfurd's conception, is almost entirely filled with this metal, in the form either of veins or of alluvial deposits. The latter, on account of the facility of working, is almost exclusively resorted to. The process is, first to cut down a portion of that vast primeval forest with which nearly the whole island is covered; then to remove the alluvial strata in order to reach the ore, which is then washed in a manner similar to gold, and smelted by machinery, simple though not unskilful. About the middle of last century, the mines yielded 3870 tons, being nearly as much as those of Cornwall. Anarchy, mismanagement, and other causes, had reduced them, previous to the British conquest in 1813, to less than a sixth of the above amount; but in 1817 they rose to 2083 tons, about half the produce of Cornwall. Nothing can more strongly prove the effects of skill and machinery, since "Cornish tin is obtained with vast labour, by mining through obdurate granite, often to the prodigious depth of many hundred fathoms; Banca tin, by digging through a few soft strata of sand and clay, and seldom to more than three or four fathoms." The produce has since continued nearly the same, being two thirds of that of all the mines in the Malay peninsula. Like gold, tin is worked chiefly by the industry of Chinese settlers. Copper is found and worked in several of the islands, particularly Sumatra, though not to any very important extent. Iron is scarce, and occurs in considerable quantity only in the small and rocky island of Billiton. No silver mines of any value have yet been discovered. Sulphur is found abundant and pure on the volcanic mountains of Java; but the transportation to the coast is difficult. Salt, in favourable situations, is easily produced through the evaporation of sea water by the heat of the sun.

4794. *Fishery* is pursued by the islanders with considerable activity; and its produce, used generally in a dried state, forms a considerable article of food and internal commerce. Important objects of exportation are afforded by certain gelatinous marine productions, of a singular character, which bear a high price in the markets of China. Such are sharks' fins, and above all the tripang, sea slug, or *biche de mer*, an ugly shapeless substance, of a dirty brown colour, with scarcely any appearance of life or motion. It is found chiefly on coral shores to the eastward of Celebes, including those of New Guinea and Australia. The chief market is at Macassar, whence upwards of 8000 cwt. are annually sent to China, where it brings from six to ninety Spanish dollars per cwt. The Chinese, who imagine it possessed of some peculiar nutritive and stimulating qualities, divide it into no less than thirty different species, the various qualities of which are understood only by themselves. Here, too, for the want of a more appropriate place, we may notice that kind of edible birds' nests which forms a similar fantastic luxury. These nests are the produce of a peculiar species of swallow (*Hirundo esculenta*), which, by some process not fully understood, constructs its nest, not of the usual materials of hair, straw, and feathers, but of a substance resembling a fibrous ill-concocted isinglass. They are found in the deep damp caves of solitary rocks, at a distance from any human habitation, and chiefly, though not always, on the sea-shore. The adventurer often, by ladders of bamboo or rattan, descends the face of perpendicular cliffs, till he reaches the mouth of the cavern, and must frequently enter it by torchlight over slippery fragments of rock, where a false step would be instantly fatal. According to the nice distinctions made by the Chinese, the value of these nests varies from 2*l.* to nearly 7*l.* per lb.; at which last price they are equal to about double their weight in silver.

4795. *Commerce*, among the nations of this archipelago, has always been carried on with considerable activity. Their country yielded valuable materials, and the insular positions and great variety of seas and coasts afforded ample opportunities. At the time of the first discovery by Europeans, the three most civilised tribes, the Javanese, the Malays, and Bugis, carried on a very active traffic. That of the first two has been in a great measure crushed by European dominion and rivalry. The Bugis, however, who have remained in a great degree independent, are still active traders throughout all these seas. The Chinese, again, under the protection, as Mr. Crawfurd conceives, of the regular order established by the European governments, have formed extensive colonies, and carry on a constant intercourse by means of their huge junks, some of 600 tons' burden, but so unwieldy that they can only make one annual voyage to Batavia. They furnish to the islanders tea, cotton stuffs, and porcelain, all somewhat coarse; receiving in return tripang, birds' nests, sharks' fins, tortoise-shell, spices, and various minor articles. The tonnage employed by the Chinese and native states is together estimated at 30,000. The trade with Europe is carried on chiefly through the Dutch capital of Batavia, and the British settlement of Singapore. The exports to Europe consist mostly of spices, pepper, cloves, nutmeg, mace, with camphor, rattans, tortoise-shell, &c. The imports are cotton manufactures, particularly chintzes of moderate fineness, and of red, green, and other bright colours, with running-flowered patterns; also white cottons, cambrics, imitation bandana handkerchiefs, and velvets. Notwithstanding the tropical situation of these islands, the mountains which diversify them, and the influence of the sea-breezes, cause a considerable demand for woollens, which should be the light cheap cloths of Yorkshire, with gaudy patterns. Glass-ware, mirrors, lustres, and common earthenware, at low prices, find a good market.

4796. *Interior commerce* is carried on with considerable activity along the rivers and creeks, which, though not generally of long course, are extremely numerous, descending from the inland mountain barriers. The roads are mere footpaths, unfit for a waggon of any description, and the commodities are conveyed on the backs sometimes of animals, but more frequently of men. On one much frequented road, in Java, no less than 5000 porters are said to be constantly employed.

SECT. VI. *Civil and Social State.*

4797. The population of none of these islands has been ascertained by any species of *census*, except Java and the Philippines. Java has been found to contain about 6,000,000, and the Philippines about 2,500,000 people. In the rest of the Archipelago, a judgment can only be formed by considering their extent, in combination with the apparent density with which they are occupied. An estimate has been communicated to us by Mr. Crawfurd, the historian of the Archipelago; and though it differs somewhat from those usually formed, yet the extensive opportunities of observation enjoyed, and ably employed, by that gentleman, lead us to believe that it will make a nearer approach to the truth than any hitherto published. He supposes Sumatra to contain 2,500,000; Borneo, 500,000; Celebes and its appendages, 1,000,000; Bally, Lombok, Sooloo, &c., 500,000; the Spice Islands, Timor, &c., nearly 500,000. The entire amount will thus be 13,500,000.

4798. The people of the Indian archipelago are divided into *two races*, distinct in origin, language, aspect, and character, and irreconcilably hostile to each other; the *brown* and the *black* races. They bear the same analogy that the white and the negro bear in the western regions; the former, superior in intelligence and power, driving the other before him, oppressing and reducing him to bondage. Thus, in all the great islands the brown race has now established a decided and undisputed superiority.

4799. *The black race*, called often the Papuas or Oriental Negroes, appear to be a dwarf variety of the negro of Africa. They are of low stature and feeble frame. Mr. Crawfurd never saw one who exceeded five feet. The colour is sooty rather than black, the woolly hair grows in small tufts, with a spiral twist. The forehead is higher, the nose more projecting, the upper lip longer and more prominent. The under lip is protruded, and forms indeed the lower part of the face, which has scarcely the vestige of a chin. This degraded class of human beings is generally diffused through New Guinea, New Holland, and other large islands of the Pacific. Their habits have been very little observed, Europeans having only had occasional individuals presented to them as objects of curiosity. Little is recorded except the ferocity with which they wage their ceaseless war with the brown races, who have driven them from all the finer parts of this region; but, if we may believe Mr. Hunt, the wrongs by which this hostility has been provoked are of the most aggravated description.

4800. *The brown tribes* differ essentially in their appearance from any others in southern Asia. They are short, squat, and robust, being reckoned on an average four inches lower than the European standard. There are considerable varieties of colour, which Mr. Crawfurd thinks cannot be accounted for by the climate; though, perhaps, he does not sufficiently allow for the change produced by elevated sites. The tint of virgin gold is considered the standard of beauty, which the poets ascribe to the damsels whose praises they celebrate. These islanders are rather an ugly race; their frame is deficient in symmetry, their lower limbs large and heavy. The face is round; the mouth wide, but with fine teeth; the cheek-bones high, the nose short and small; the eyes are small, and always black. The hair is long, lank, harsh, always black, and, except on the head, extremely deficient; so that the Mahometan priests vainly attempt to attain any portion of that venerable aspect which an ample beard is supposed to confer.

4801. This part of the population, by far the most numerous and important, appears *the most uncivilised of all the great nations* who inhabit the south of Asia. Some seem justly charged with cannibalism, the most dreadful atrocity of which human nature is capable. Yet this original rudeness is mingled with features characteristic of the most highly civilised people in Asia, the Arabs, Hindoos, and Chinese, who entered for purposes either of commerce or colonisation. The Javanese and Malays, the principal of these tribes, are destitute of the polished and courteous address which distinguishes the Hindoo and the commercial Arab. When they wish, as they often do, to be obsequious courtiers, they act their part with a bad grace. In return, they are comparatively frank and honest; and much greater reliance can be placed on their word. They show also sympathy in the distresses of their fellow-creatures, and will exert themselves to relieve them, on occasions when the Hindoo manifests a callous indifference. Strong attachment is often displayed to their family, their kindred, and their chief. Though generally subject to a power more or less despotic, they retain strong and even lofty feelings of personal independence. Each man goes armed with a *kris* or dagger, which he regards as the instrument both of defending himself and avenging his wrongs. The right of private revenge is claimed by every individual for injuries received either by himself, his family, or tribe. When circumstances deprive him of any hope of avenging himself with ease or safety, he has recourse to that dreadful outrage peculiar to these islanders termed running *amok*, or a *muck*. The individual under this impulse draws his dagger, and runs through the house, or into the street, stabbing without distinction every one he meets, till he himself is killed or taken. This movement is always perfectly sudden, indicated by no previous looks or gestures, and from motives which it is often difficult to discover. The police officers, in contemplation of these violences, are provided with certain forked instruments, with which they arrest and secure the offender. A predatory disposition, exercised especially upon strangers, is shared by these islanders with all the uncivilised tribes of Asia; but while the Arabs and Tartars carry on their depredations by land, the Malays, inhabiting the shores of straits and narrow seas, through which rich fleets are perpetually passing, have become notorious for piratical exploits, which are practised with peculiar activity on the coast of Borneo, and in the islands of the Sooloo Archipelago.

4802. *The religious belief and observances* of the East Indian islanders, at least of the most civilised portion, have been almost exclusively derived from the great nations in the south of Asia. The first great and effective colony appears to have come from Telingana in southern India; and the creed which they introduced, though now nearly obliterated, is still attested by the remains of splendid temples and by numberless images scattered throughout the island of Java. From them we discover that here, as in all the countries around India, the prevailing worship has been that of Boodh. His images, of which the principal one in the temple of Boro Budor is shown in the annexed cut (*fig.* 735.), are much the most numerous. Those of Siva and the deities connected with him are by no means unfrequent; but few or no representations have been found of Brahma or Vishnu. This system, once so widely diffused, scarcely survives, unless upon the small island of Bali, which adjoins to Java, but is rendered almost inaccessible by its entire want of harbour. Here the Hindoo institutions flourish in full vigour, and the worship of Siva is much more prevalent than that of Boodh; the distribution into four castes is fully established; and the same merit is attached to abstinence from animal food, though it is scarcely practised, unless by the priests. The sacrifice of widows takes place on a great scale, chiefly at the death of any of the great men; and the extent of the practice of polygamy renders its effects there very tragical. Mr. Crawfurd plausibly suspects it to be not wholly imported from Hindostan, but to be a remnant of the custom general in savage communities, where the chiefs enjoy extraordinary influence.

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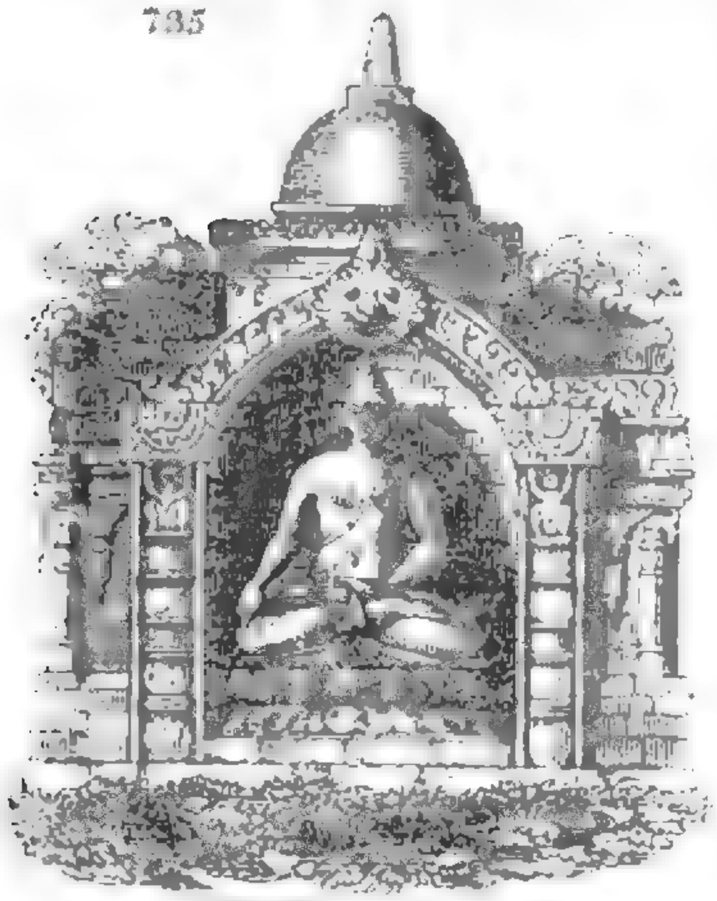

REPRESENTATION OF BOODH.

4803. *The Mahometan creed*, introduced from Arabia nearly four centuries ago, completely supplanted the Hindoo system among the Javanese and Malays. By this channel it came in the form deemed orthodox, and there has never been any mixture of sects. The practice here, however, is exceedingly lax; and it is allowed very little to interfere with the ordinary occupations and enjoyments of its votaries. They hold the festivals with considerable zeal, practise some measure of prayer and fasting, and set high value on performing the pilgrimage to Mecca. But they pay little regard to the prohibition of wine and other intoxicating liquors, and by no means immure their females with that jealous rigour which is usual among Mahometan nations. Seclusion takes place only among the great; and even they, instead of being offended by enquiries after their wives, consider it as a compliment, and usually introduce them personally to gentlemen with whom they have become intimately acquainted.

4804. After the arrival of the Portuguese, *the Christian nations* soon became the ruling powers in the Indian archipelago. The only extensive conversion, however, has been that effected by the Spaniards in the Philippine islands; of which Luconia, the principal one, has, through the efforts of the missionaries, become almost entirely Christian; and though their instruction has not been conveyed in the most enlightened form, it is generally allowed to have effected a very important improvement upon the rude natives. The Dutch colonists, inspired by a spirit almost entirely commercial, have not made the same exertions, and their monopolising and tyrannical spirit was little calculated to recommend their belief.

4805. *The intellectual character* of the Javanese ranks lower than that of almost any other people who have made equal progress in the external accommodations of life; and their literature, like their religion, is almost entirely imported from Southern Asia. "In the Javanese schools," says Mr. Crawfurd, "a smattering of Arabic, with a religious view, is the only branch of instruction. Javanese literature itself is nowhere taught as a branch of education, but left to be picked up as occasion offers. Its acquisition seems not to be considered as a thing of utility or necessity, but rather as an accomplishment which it may be agreeable to possess, but which it is no discredit to be ignorant of. I have seen many a chief of rank who could neither read nor write; and out of the whole population of an extensive village, you cannot always be sure that you can find an individual that can do so. As far as concerns the women, literary education may be said to be altogether unknown. When one is seen that can read and write, she is looked upon as a wonder. I do not think that, during my extensive intercourse with the Javanese, I saw half a dozen that could do so. The palace of the sultan of Java afforded but a single example." Both the Malay and Javanese languages are uncommonly copious; but it is in a superfluous profusion of terms to express individual objects, while there is a total absence of those relating to general and abstract ideas. The dialects, especially the Malay, are distinguished by the prevalence of the smoothest liquid and vocalic sounds, and the exclusion of all harsh consonants. The Malay, in adopting a large portion of Arabic, has smoothed it down so as to harmonise with the original; and, being written in Arabic characters, which are considered sacred throughout the East, has acquired a general currency among the people of the Archipelago. The language of the Javanese, on the contrary, has an alphabet of its own, the characters of which are peculiarly neat, though seldom carefully written. This people have also a learned and sacred language, called Kawi, which, from the large infusion of Sanscrit, appears evidently to be derived from India, and is employed chiefly in abridgments of the Mahabarat, Ramayana, and other Hindoo compositions. The literature of Java is almost entirely metrical, yet does not display those high efforts of fancy and passion which often distinguish the effusions of a ruder people. According to a late author, they contain neither sublimity, pathos, tenderness, nor humour; but, on the contrary, bombast, puerility, or utter inanity. History was unknown previous to the introduction of the Arabic religion and literature, since which time there has been a tolerably connected narrative of public events; yet the imperfection of this may be estimated when we state, that it is always composed under the eye of the prince whose actions it records, and who employs the writer merely as a servant whose only qualification is that of being able to string events into verse. Malay literature is chiefly in prose; and its largest portion consists in romances, or fragments of real story so disfigured as to be little better. They have the same tame character with the works composed in its brother dialect. The best compositions in both seem to be little songs, the effusions of natural feeling. — Celebes has a language and literature of its own; ruder, though in some respects more energetic, than the Javanese or Malay.

4806. *Dramatic entertainments*, of a very peculiar nature, are cultivated with ardour, particularly in Java. They seem to be only a step beyond the practice of common story-telling, which is so general throughout the East. The *dalang*, or leading personage, sits in front of

the stage, and reads in a chanting tone one of the national romances. The performers behind, covered usually with grotesque masks (*fig.* 736.), accompany his recital with corresponding movements. Their place is frequently supplied by puppets, many of which are of that very peculiar description called *scenic shadows*, — monstrous and grotesque figures, of about twenty inches long, cut out of a stiff untanned buffalo hide, and commonly very highly gilded and painted.

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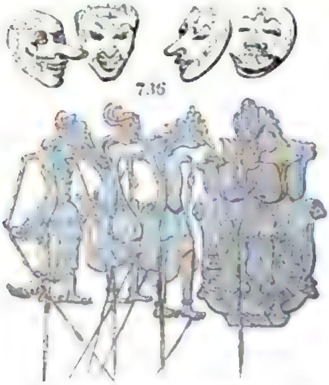
JAVANESE MASKS AND SHADOWS

4807. *Of ruder amusements the chase* is pursued with ardour by the natives of Celebes on their large grassy plains, with small active horses, lightly harnessed, which they ride with great swiftness. This diversion is carried on with much less ardour in Java, and only in its unimproved districts; the natives possessing an inferior breed of horses, which they ride ill. Their most active chase consists in attacking the tiger by a circle of spearmen, while the prince often looks on as a spectator. The islanders in general are not fond of games where much bodily exertion is requisite, and take more pleasure in sitting and contemplating the combats between pugnacious animals. Cock-fighting is a universal passion; the quality and exploits of game-cocks are celebrated in their poems and romances. They delight also to view the conflict between the tiger and buffalo, an arduous and equal struggle, in which, contrary to what might be expected, the buffalo is generally victorious. They take pleasure also in quail-fighting, and even in contests among a peculiar species of crickets. Games of hazard are also pursued with passion, even the lower orders squandering their hard-earned wages, and reducing themselves to destitution, by an excessive indulgence in them. This has suggested a singular expedient to those who employ Javanese to watch during the night over valuable property, and seek to overcome their almost irresistible propensity to forget their charge and fall asleep: a small sum given to them to gamble for completely secures their vigils. Dancing is also a favourite amusement, or rather occupation: it is solemn, stately and slow, performed less with the legs than with the body and arms, and expressing feeling and passion rather than gaiety. The Javanese prince not only trains his concubines to dance, but causes them to exhibit in public. The messenger or ambassador, who approaches the royal presence, enters and retires dancing. In this position is taken the vow of friendship or of enmity, and even he who, in the extremity of despair, terminates life running a muck, performs this frantic deed in measured postures and movements.

737

MALAY HOUSE.

4808. *The habitations* of the East Indian islanders are of very simple materials and construction. The art, by which those magnificent structures were reared, the remains of which adorn the interior of Java, is entirely lost. They appear to have been constructed by the Hindoo settlers, and to have departed with them. The humble and mercantile character of the adventurers who introduced the Moslem faith is the supposed cause why the mosques, instead of the splendour which they display in other parts of the Mahometan world, are here coarsely and inelegantly constructed of temporary materials. The natives have lost even the art of turning an arch. Their very best houses are slight structures of bamboo, rattan, palmetto leaf, and grass. Those of the peasantry (*fig.* 737.), simply constructed of these materials, and surrounded with trees and a little garden, produce a very pleasing effect. Those of the higher classes are called *pandapas* (*fig.* 738.), and consist chiefly of a roof supported by four pillars, both often highly carved and painted. The public halls of the towns, the mosques, and even the monarch's state hall of audience, consist only of such structures on a greater scale. To make one the commodious residence of a chief, it is enclosed by palings, or divided into apartments, by light partitions (*fig.* 739.). The abodes of the great chiefs, and even the palace of the prince, are only distinguished by the greater number and size of these pandapas. The palace, however is enclosed by walls, composed formerly of hewn stone, but at present only of bad brick, yet which form the only structures of masonry now reared in the country.

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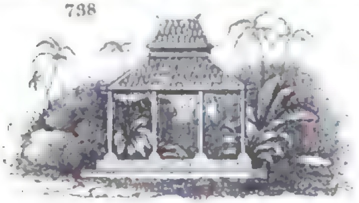
A PANDAPA.

739

HOUSE OF A CHIEF.

4809. *The dress* of these islanders presents a medium, not very commodious or elegant, between the light close garments of the European, and the long flowing robes of the Asiatic. The principal part is the *sarang*, or long robe, not fastened to the body, but loosely wrapped round the lower part, and fastened by a zone or sash. The coat, the other principal part of the dress, is only a loose frock. The Mahometans wear a cap resembling a turban; but the other inhabitants have the head naked (*fig.* 740.). The rest of the body is either uncovered, or enveloped in vest, boddice, or pantaloons, according to the taste of different tribes. In the court dress, on the contrary, all the upper part of the body is naked, smeared with a yellow cosmetic, and loaded with gold ornaments (*fig.* 741.). In the war dress, again, the coat, indeed, is laid aside; but the robe is wrapped close round the whole body; while besides the *kris*, or dagger, which is worn at all times, by every islander, a sword is stuck in the belt, and a long spear is brandished (*fig.* 742.).

4810. *The diet* of the islanders is simple, consisting chiefly of rice and fish, with little mixture of other animal food. It is eaten greedily, with little ceremony, and lifted to the mouth by the hands, according to the general practice of the East. The people display a remarkable propensity to the use of narcotic stimulants. Wine and still more the spirits of their own manufacture are liberally used, in defiance of Mahometan injunction; yet it is not in these that the chief excess is committed. It is in bang, a substance extracted from hemp; in tobacco, and of late above all in opium. The islanders, reversing the general practice of Asia, chew tobacco, and smoke opium.

740

JAVA COMMON DRESS.

741

JAVA COURT DRESS.

742

JAVA WAR DRESS.

Sect. VII. *Local Geography.*

4811. *The local details* of this extensive range of islands, especially as respects their interior districts, are in many respects imperfectly known, and many of them not very interesting; so that they will not detain us so long as the general description. We shall begin with the western islands, and proceed eastward.

4812. *Sumatra,* the most westerly of the great islands, extends from north-west to south-east, above 1000 miles in length, and 160 of average breadth. It is situated immediately beneath the equator, which divides it into two nearly equal parts; yet it is protected from the evils incident to this position by chains of mountains, which extend along the whole of the interior, sometimes in several successive ranges, enclosing between them fine valleys and lakes. Of these Goonong-Pasama, which Europeans, upon a very crude theory, have called Mount Ophir, exceeds 13,000 feet: while Goonong-Kasumbra is upwards of 1000 feet higher. These high chains so copiously water the plains and coasts beneath, that, instead of being in any degree parched and arid, they are overspread with too luxuriant a vegetation. The ground is almost choked with dense forests, and with canes, rattans, and other species of tropical underwood; and a great part of the southern shore consists of a forest of mangroves growing out of a morass. Culture has but partially and rudely cleared these encumbrances, and directed the fruitfulness of the soil to useful objects. Sumatra does not produce so many objects for exportation as smaller and even less fertile islands. The most important is pepper, produced in considerable abundance, yet not equal to that of Malabar. This island, however, excels all other countries in the abundance and excellence of its camphor. This substance consists of the concrete juice in the heart of a species of tree, which, however, is becoming daily scarcer, being cut down by the natives for its valuable wood. In Europe, camphor has only a limited use as a medicine and cosmetic; but the Chinese value it highly, and pay a much larger price for that of Sumatra than of Japan.

4813. *The kingdom of Acheen* occupies the most northerly part of this island, extending opposite to the coast of Malacca. At the first arrival of Europeans, it held dominion over divers states both of the island and continent, and was dignified with the title of empire. Though now greatly reduced, and restricted within its original limits, it has always, amid violent internal dissensions, remained independent of any European power. The Acheenese are a seafaring race, bold, stirring, and often piratical, but inspired by no inconsiderable share of commercial spirit. The capital city of Acheen presents a complete specimen of the sea-ports of these countries. It consists of about 8000 bamboo habitations, raised on posts above the marshy shore, and so completely enveloped in wood, that from the sea it appears like an extensive forest.

4814. To the south of Acheen, but to the east of the great range of mountains, extends *Menangkabao,* which also, at an early period, held many states under its dominion, and was dignified with the title of empire. It was the original country of the Malays, whence they spread to other parts of Sumatra, to Malacca, and Borneo, till they became the ruling people in the Indian seas. This country is watered by a large lake, said to be thirty miles in length, though the precise situation is not ascertained; it abounds in gold, and is under very tolerable cultivation. The inhabitants appear to have made greater progress in the arts than any of the other islanders. The gold and silver filigree work, the only fine manufacture in the Archipelago, is executed by them almost exclusively. They supply all the rest of Sumatra with arms; and, since the introduction of those of Europe, manufacture very good muskets and gunpowder. They were very early converted to the Mahometan religion; and their country and capital possess still a sacred character even among their neighbours the pagan Batta. The country was entirely independent of Europeans till recently, when the Dutch, taking advantage of intestine dissensions, penetrated into it, and established their supremacy.

4815. *The Battas* occupy the country and coast on the opposite or western side of the mountains. This extraordinary race display in some respects a degree of civilisation not to be found among the surrounding states. Their country is fertile, and cultivation generally diffused. They have an alphabet of their own, distinguished by the singularity of being written from the bottom upwards; and the characters are rudely stamped with the point of a dagger on the surface of a bamboo or branch; sometimes even upon a growing tree. In this rough manner, however, the majority of the people can both read and write. But with these attainments they combine habits which have been considered as belonging to the most extreme barbarism. Anthropophagy is not only practised in the heat of victory, to gratify deadly vengeance, but prescribed as a regular part of their laws and institutions. For all who are guilty of robbery, adultery, unlawful marriages, or other high crimes, the penalty is, to be publicly eaten by their countrymen. The officers of justice and the injured parties assemble at the place of punishment, with a provision of salt, pepper, and citron; the individual most wronged selects the first morsel, cuts it off, and eats it; the rest follow according to their rank, till the leader of the assembly severs the head, and carries it off as a trophy. Authors of good repute have asserted that they ate their aged and infirm relatives, after various ceremonies, among which was that of dancing round a tree, calling out, "When the fruit is ripe it must fall;" but, if this most unnatural practice ever prevailed, it is now entirely discontinued. The number of little tribes into which this people is divided, and who wage almost ceaseless war against each other with deadly enmity, appears to be the circumstance which chiefly keeps alive among them this spirit of ferocity. They are assimilated to savage life also in the treatment of their women, who are regarded as little better than slaves, and on whom the labour of cultivating the ground and other hard tasks are devolved. The Battas are pagans, and their religion little known. From their ports of Barous and Tappanoula they export a large quantity of camphor, with gum benzoin and a few other commodities.

4816. *The kingdom of Siak* occupies the eastern coast of the territory, of which the inland and western parts belong to the two states now described. A broad river, rising in the mountains of Menangkabao, traverses the territory, and is navigable sixty-five miles up to Siak the capital; but the chief trade is carried on at the sea-port of Campar. The navy and commerce of Siak were once great, and are still considerable. The Dutch, besides the ordinary commodities of Sumatra, draw from it a considerable quantity of timber; but they have not formed any settlement upon its coast.

4817. *The southern quarter of Sumatra* is on the whole the least improved, a great extent being marshy, uncultivated, and overgrown with dense forests. On its hills, however, is the most abundant growth of pepper, the commodity which Europeans principally seek in this island; and here their chief settlements have been formed. Palembang, on the eastern side, and Bencoolen, on the western, have long been the capitals: the first of the Dutch, the second of the English settlements in Sumatra. The sultans of Palembang generally encouraged commerce; and their country has been the chief mart both for pepper and for the tin of the neighbouring island of Banca. The pepper is brought from a considerable distance in the interior. The Dutch long contented themselves with maintaining a fort at the capital, a town of 25,000 inhabitants, with a mosque and a palace handsomely built of stone; but in 1821, being involved in a quarrel with the sultan, they deposed him, and erected the territory into a province or *residence*. Great efforts were made by the English East India Company to raise Bencoolen into a place of importance: in 1714 they founded Fort Marlborough; and in 1810, their property there was estimated at 314,000*l.* The settlement, however, never paid its expenses; and the trade, instead of increasing, dwindled away; so that in 1824 it was considered advantageous to exchange it with Holland for Malacca, and some small possessions on the coast of India, which, though of no great importance in themselves, served to connect and consolidate other settlements. The Dutch then annexed Bencoolen to the province of Padang, fixing at the town of that name the seat of their administration, and their principal trade. To complete the picture of this part of Sumatra, we may mention the Lampongs and the Redjangs; interior tribes, under a rude feudal system, less improved on the whole than the Battas, yet having, like them, a language and alphabet, and not being guilty of the same savage enormities.

4818. *Sumatra is begirt by ranges of isles* which, though comparatively small, present peculiarities that deserve some notice. On the western side, beginning from the southward, we may number Engano, the Poggy or Nassau group, Seeberrow, Nyas, Bali (or Hog). These islands have a rugged and mountainous aspect, and Seeberrow is even the seat of an active volcano. The face of the country and the inhabitants have no affinity with those on the great island, but bear more analogy to the eastern part of the Archipelago, and even to the islands of the South Sea. Sago, instead of rice, is the staple food; the inhabitants, called by the Malays Mantaway, tattoo their skins, and speak a language quite different from that of Sumatra. The Poggy Islands are the chief seat of the rudest of these races, who are unacquainted with the use of metal, have no weapons but bows and arrows, and in many of their customs resemble the people of Otaheite. The natives of Nyas are much more frugal and industrious, rearing with success the hog and the sweet potato. Yet they are fierce and sanguinary, the country being partitioned among about fifty little chieftains, who wage deadly wars with each other. Nearly a thousand prisoners of war are annually sold as slaves, in which capacity the Dutch find them useful, though dangerous, as their fierce pride often impels them to the violent deeds familiar to those islanders.

4819. *The groups of the Nicobar and the Andaman islands* may, for want of a more appropriate place, be here introduced. They extend northwards in almost a continued group from about 100 miles N. W. of Sumatra, where the Nicobar islands begin, to about 400 miles farther, where the Andamans terminate. The Nicobar islands are twelve, of which the principal are Sambelong, Carnicobar, and Nancowry. They are generally hilly and woody, abounding in cocoa-nuts. The inhabitants are of the brown or Malay race, and are peaceable and well-disposed. The Danes, who called these Frederick's Islands, formed first a commercial settlement in 1756, and then a missionary establishment in 1768; but both were abandoned on account of the sickliness of the climate. They have recently renewed the attempt, but, it is said, with no promise of better success. The Andamans consist of two long islands, the principal of which is about 140 miles from north to south. They are mountainous, woody, and in some parts very picturesque. The inhabitants, who are a variety of the Oriental negro, appear to be among the most degraded beings in existence. They go quite naked, live in hovels composed of twigs, never cultivate the ground, but subsist on fish; which, however, they shoot and spear with great dexterity. They have been accused of cannibalism, but perhaps without sufficient grounds. The English, with a view to the refreshment and shelter of their ships, attempted settlements first at Port Chatham in the large island in 1791, and then at Port Cornwallis on the smaller one in 1793; but both these stations were abandoned on account of the unhealthy climate.

4820. *Pulo Pinang*, a small island of seven or eight leagues long, separated by a narrow strait from the coast of Malacca, was only one uninterrupted forest till 1786, when the English East India Company purchased it from the King of Queda, and formed a settlement there, with a view to the refreshment of their China ships. In 1805 it was made a regular government, subordinate only to that of Calcutta. The expectations of its becoming a grand ship-building arsenal have not been fulfilled; but it soon acquired commercial importance by becoming the depôt for the produce of all the neighbouring districts, as well as a place where all the vessels touched that passed between India and China; though in this respect it has been lately in a good measure supplanted by Singapore. George-town, the capital, consists of airy and spacious streets, and its markets are well supplied with provisions, but its ill-constructed fort is incapable of defence.

4821. *Off the eastern coast*, Pandjoor and Rupat, almost immediately contiguous to Malacca, form dependencies on the kingdom of Siak. Lingen and Bintang, farther out at sea, are the centre of a numerous group of islets of the most varied form and aspect; some mere naked rocks, others covered with trees and verdure. They have been long, to the Malays, a great seat both of commerce and piracy. They are ruled by a sultan resident in Lingen, who acknowledges the supremacy of the Dutch, and has lately ceded to them in full sovereignty the islet of Rhio, separated from Bintang by a narrow channel. Rhio, being made a free port, has acquired great importance both as an entrepôt and a place of refreshment; and its population amounts now to about 6000.

4822. *The island of Banca* derives its sole importance from the mines of tin, already described. It was a dependency of Palembang till the Dutch lately erected it, with Billiton, into a separate residence or province. The latter is distinguished by its mines of iron, the most valuable in the Archipelago, and nails made from which are exported to the neighbouring islands.

4823. *Java*, the great island which next follows, is separated from Sumatra only by the Straits of Sunda, one of the main entrances into the interior seas of the Archipelago. It extends from east to west about 600 miles, with an average breadth of about 100. From its eastern extremity there extends a succession of smaller isles, Bali, Lombok, Sumbawa, and Flores, separated from it and each other only by narrow channels, and forming, as it were, a prolongation of Java. This island, then, with its attendant group, shuts in on the south all the islands and seas of the Archipelago, and can hold with most of them a direct and ready communication. The English and Dutch, while they contended with each other for supremacy in these seas, placed the centre of their commerce and dominion on the northern coast of Java. This island also surpasses all the others in fertility, population, and general improvement. It does not indeed excel in the finer spices, and even in pepper is inferior to Sumatra. But it is fruitful in the staples of tropical produce, rice, sugar, coffee; and has extensive forests of teak. According to Mr. M'Culloch, the island yields 3,000,000*l.* of revenue to the Dutch government, who maintain there 15,000 troops, of which not less than 8000 are European.

4824. *Batavia* (*fig.* 743.), the capital of Java, and of the Dutch possessions in the East Indies, is situated on the northern coast, and not far from the western extremity of the island. Several islets surrounding the bay on which it is situated, afford secure anchorage to vessels of 500 tons. A small river runs through the town, the facilities afforded by which are increased by navigable canals. These, multiplied to a superfluous extent, aided in producing that extreme insalubrity for which Batavia was long notorious. Vessels which entered the port either for trade or refreshment, left it often with the loss of more than half their crews. By accounts accurately kept for twenty-two years from 1730 to 1752, the number of deaths in a population of 70,000 amounted to 1,100,000; and in the year 1751 alone there died 58,600. Yet the obstinacy of Dutch avarice still adhered to this fatal spot; but, within the last thirty years, Batavia has been much changed. General Daendels conceived the design of transferring the seat of government to Sourabaya; and, though unable to effect this object, he demolished a great part of the fortifications, and transferred the barracks and official residence to the heights of Weltevreden. The English, during their occupation, were prompted by a national taste to desert entirely the town, and cover with their rural seats the neighbouring districts, particularly that of Buitzenzoorg. When the place, however, was restored to the Dutch, the governor Van der Capellen applied himself to restore the town; and, by filling up useless canals, opening and widening the streets, he effected such an improvement, that it is now as healthful as any place in Java. The population, by a census in 1824, amounted, exclusive of troops, to 53,800. Of these 23,100 were Javanese or Malays, 14,700 Chinese, 12,400 slaves, 3000 Europeans, and 600 Arabs.

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BATAVIA.

4825. *The commerce of Batavia* is not only that of the island, but of nearly the whole Archipelago, with the exception of the Philippines. In 1828, the exports consisted of coffee to the value of 8,024,000 florins; mace, 96,000; cloves, 229,000; nutmegs, 221,000; rice, 1,194,000; tin, 866,000; sugar, 456,000; birds'-nests, 521,000; piece goods, 499,000; Java tobacco, 401,000; pepper, 151,000; rattans, 141,000; salt, 119,000; various other articles, 3,372,000; treasure, 1,209,000: in all, 17,499,000 florins. The imports consisted of cotton manufactures, 4,778,000 florins; woollens, 263,000; provisions from England, 522,000; brandy and Geneva, 322,000; wines, 1,154,000; opium, 1,062,000; lead, 76,000; copper, chiefly from Japan, 1,034,000; steel, 41,000; iron, 206,000; India piece goods, 787,000; Chinese silk and cotton goods, 367,000; terra japonica, 478,000; rattans, 224,000; tripang, 381,000; marine stores, 264,000; various other articles, 3,431,000; treasure, 2,616,000: in all, 17,976,000. For further interesting particulars on this subject, our limits oblige us to refer to Mr. M'Culloch's valuable *Dictionary of Commerce*, art. *Batavia*.

4826. *The interior details of Java* cannot, consistently with our limits, be described at great length. It is divided by the Dutch into twenty provinces, which they call residences. Of these, Batavia, Bantam, Buitenzoorg, Preangers, Krawang, and Cheribon, compose the western part; while Tagal, Pekkalongang, Kadou, Samarang, Japara, Rembang, Grissé, Sourabaya, Passarouang, Besukie, Bangouwangui, Saurocarta, Djocarta, Madura, and Samanap, form the eastern. The two parts are divided from each other by the vast mountain forest of Dayou Loukhour, on the frontier of Cheribon, composed of impenetrable woods intersected by foaming torrents and deep ravines. The western side of the island is in general more level and capable of very general cultivation. It is almost entirely subjected to European influence, and new modes and objects of culture have, under European auspices, been introduced. The eastern part bears a different character; it is mountainous, wooded, and romantic, yet diversified with rich and beautiful valleys, carefully cultivated upon the native system. This part of the island has always been occupied by the most powerful native princes, ancient and modern, the latter of whom still maintain a large measure of independence, and pay only homage and tribute to the Dutch. Here, too, in consequence, are all the monuments of ancient greatness, and of the faith which formerly prevailed in Java.

4827. *In the western quarter, Bantam*, next to Batavia, is the most celebrated district, having been long the capital of the English settlements, not only in the islands, but in all the Indian seas. The sultan has lately been dethroned by the Dutch, who have taken the administration entirely into their own hands, and have, it is said, introduced considerable improvements. The town of Bantam is now almost deserted in consequence of its unhealthy situation, and the transference of the trade to Batavia. Ceram is now the principal place, and the residence of the governor. The rest of this division is almost entirely partitioned among little princes, held in strict subjection to the Dutch. Tjanjor, one of the chief interior towns, has been described as composed of broad alleys bordered with hedges of bamboo, the houses surrounded by fruit trees and odoriferous flowers, and communicating with each other by shaded footpaths.

4828. *The eastern part of Java*, of which the general character has already been described, contains the kingdoms of Souracarta and Djojocarta, fragments of the dominion which, under the title of the empire of Mataram, held sway formerly over the greater part of Java. The former is estimated by Sir S. Raffles to contain 972,000, the latter 685,000 inhabitants. The loftiest mountains and the finest valleys are found in this region. The two capitals, bearing the same name with the kingdoms, are estimated to contain each about 100,000 inhabitants; but are merely collections of large straggling villages. The residences of the sovereigns are only clusters of various edifices surrounded by brick walls. The Dutch maintain well-constructed forts and strong garrisons to overawe the natives.

4829. *The ancient structures*, already alluded to as distinguishing this part of the island, deserve some more particular mention. Mojapahit, the capital of the greatest princes who formerly ruled over Java, may still be traced in the district of Sourabaya by extensive ruins of walls and temples, built only of brick, yet displaying often considerable beauty. But the most complete example of a temple is that of Boro Budor (*fig.* 744.), situated in the mountainous and romantic, yet fertile, territory of Kadou, immediately to the east of Cheribon. It is a square structure of hewn stone, each side 520 English feet long, and the height 116 feet. It is built on the summit of a small hill, and consists of a series of six enclosing walls, crowned by a dome. The outer and inner side of each wall is covered with a profusion of sculpture, including between 300 and 400 images of Boodh, from whom the temple, perhaps, received its name. But the most extensive display of ancient architecture is at Brambanan, in the district still called Mataram, between Souracarta and Djojocarta. The temples, though built of hewn stone, are small, but clustered in extensive groupes, of which the largest is that called the Thousand Temples. It occupies a space nearly square, 600 feet in length by 550 in breadth, within which are four rows of small edifices, surrounding a large central one. The whole group has four entrances, each facing a cardinal point, and guarded by two gigantic statues, of the form here represented (*fig.* 745.), and which are nine feet high though kneeling, and eleven feet in circuit. Singhasari, also, in the district of Malang, once the seat of a powerful monarchy, presents a wonderful multitude of temples and images. In general these structures are profusely covered with minute and often elegant ornaments and sculptures; but they are broken into too many similar parts, and consist only of sculptured walls, without columns, arcades, or any thing which can make them combine unity with relief and variety.

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TEMPLE OF BORO BUDOR.

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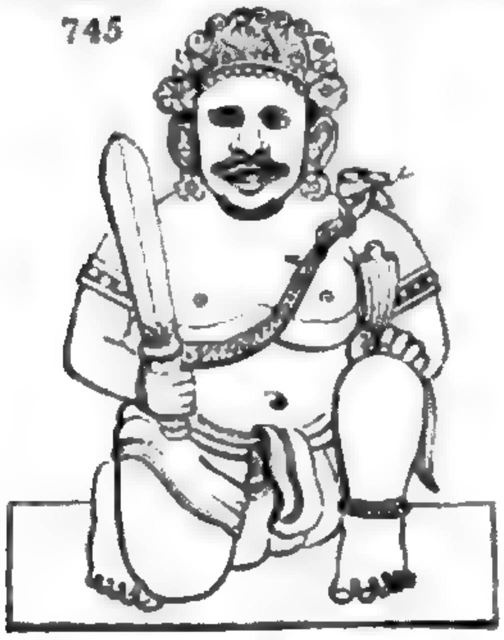

GIGANTIC STATUE, BRAMBANAN.

4830. *The sea-ports of Samarang and Sourabaya*, on the northern coast of the eastern division, though quite subordinate to Batavia, are still considerable. The former is the seat of government for the principal eastern provinces, including the two great Javanese kingdoms. It has a flourishing commerce, and a population of nearly 40,000. Sourabaya, still farther east, in a very fine country, the seat of the ancient empire of Mojapahit, is still more flourishing, both as a mart for the products of the surrounding country, and as a place of refreshment for vessels bound to China and the Philippines. Its road is spacious and safe, and its fine naval arsenal derives ample materials from the forests of teak by which it is surrounded. The population is estimated at about 50,000.

4831. *The island of Madura* has been erected by the Dutch into one of their twenty residences; and they exercise almost entire control over the three native princes. The people still profess, to a great extent, the Hindoo religion, practise the burning of widows, and are accused of using poisoned arrows. Samanap, the capital, is only a large village, partly inhabited by Chinese. Bali is almost entirely independent, under eight native princes, and is chiefly distinguished, as already observed, by the complete prevalence of the Hindoo creed and institutions.

4832. *Of the range of smaller islands extending eastward from Java, Lombok*, with high wooded mountains in its centre, is fertile and well cultivated by an industrious race, who irrigate the lands by means of tanks, carry on a considerable trade, and afford refreshments to European vessels passing eastward. Sumbawa is of greater extent, being 190 miles long, and containing in its eastern quarter the powerful kingdom of Bima, tributary to the Dutch. This island affords a large supply of sapan wood for the Chinese market. It contains a very active volcano, which in 1815 committed dreadful ravages.

4833. *The large islands of Flores and Timor*, extending in the same direction, may be considered as the link between the Oriental and South Sea islands, to which last, both in customs and language, the natives bear a close analogy. Flores is very little frequented by Europeans, and has ceased to afford, as formerly, a supply of sapan wood. On Timor, however, the Dutch have formed the settlement of Coupang, with the view of procuring provisions from the Moluccas, and, by making it a free port, have raised it to some importance. It has become a great mart for the tripang, which is collected both on the neighbouring shores and on those of New Holland. The Dutch, with difficulty, hold in vassalage the native states, of which the principal are

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those of Veali, Luka, and Samoro; and their influence is shared with the Portuguese, who, in their settlement of Dieli, retain still some remnant of that power which formerly extended so wide over this region. The smaller islands between Floris and Timor; Simao, Rotti, Dao, Savou, Sumba, governed by rajahs, partly vassals of the Dutch, partly independent, call for little particular notice.

4834. *Celebes*, to the north of Flores, is one of the most remarkable portions of the Archipelago. Its position, between 2° N. and 5° S. lat., 118° and 125° E. long., would indicate very large dimensions; but it is so indented by the deep bays of Boni in the south, Tominie and Tolo on the east, as to form only a cluster of long peninsulas, while the distance from sea to sea nowhere amounts to 100 miles. The people are less advanced in civilisation than those of Java, though they possess more of a bold energy of character. The native government is monarchy, combined with a very turbulent aristocracy. The troubles by which it was agitated are attested by the very names of the princes, taken from the manner in which they died; as "the throat-cutter;" "he whose head was cut off;" "he who ran a muck;" "he who was beaten to death on his own staircase," and even the epithet "he who died reigning" strongly intimates the rarity of the occurrence. The Hindoo faith and institutions found little place in this island. It was not till the beginning of the seventeenth century that the Mahometan religion was introduced by the mingled power of force and persuasion. The Macassars of Goa were then the most powerful tribe, and held wide sway over this and even the neighbouring islands; they at one time fitted out against the Dutch a fleet of 700 vessels and 20,000 men. About the middle of the seventeenth century, however, the state of Boni, supported by the Dutch, acquired a complete ascendency, and that of Goa sunk into a reduced and vassal condition.

4835. *The Macassars and the Bugis* are the two tribes who hold the leading place in this great island. The former, as already observed, are now completely fallen from their ancient supremacy, and closely confined within their original limits. The Dutch have extorted the cession of the city of Macassar, and its surrounding district, and have changed its name to Ulaardingen, erecting for its defence Fort Rotterdam. The sovereign continues to reside at Goa. The Bugis are divided into those of Boni and Waju. The former are much the most powerful, being able to muster 40,000 fighting men, and forming thus, at present, completely the ruling native state. But the Bugis of Waju are decidedly the most civilised and improved, and are, indeed, the most active commercial people in the Archipelago. Their vessels with cargoes which, according to Sir S. Raffles, are often worth 50,000 dollars, are seen in all the seas from New Holland to Siam. The entire population of the island is estimated, by Mr. Hunt, at about 1,000,000. The Dutch maintain their influence rather as the head of a numerous confederacy than as sovereign rulers. Besides the states already named, we may mention Sopeng, Mandhar, Souhon, and Panete.

4836. *Borneo, if we exclude New Holland*, as a continent, will rank as *the largest island* in the world, being between 800 and 900 miles from north to south, by 700 from east to west. It is also well gifted by nature. Though placed directly beneath the equator, the mountains of the interior, some 8000 feet high, with the large and numerous streams, entirely secure it from aridity; and though the soil, formed from primitive rocks, is by no means uniformly fruitful, yet rice and the usual tropical grains are raised with facility: pepper, cinnamon, cotton, coffee, grow wild. This island, according to Mr. Hunt, enjoys a singular felicity in the absence of any ferocious animal, though the dense woods would afford shelter, and they actually harbour the singular species of the oran-outang. The mines of gold, the most copious in the East, and those of diamonds, in which it is second only to Golconda, have been already described. Notwithstanding these advantages, Borneo is the rudest and least improved territory in this quarter of the world. The want of any deep bays and inlets, to facilitate communication and the access of foreigners into its interior, is probably the chief cause of its backward position. The inland tracts are now the chief haunt of the savage race of the Oriental negro, called here in different districts Dayak, Idaan, Maroot, &c. The Malays and other tribes, who have occupied generally the coasts and navigable rivers, describe these their inland neighbours in the darkest colours. They are represented as considering a man unfit for matrimony or any important function of life, till he has imbrued his hands in the blood of at least one fellow-creature; as so devoted to human sacrifice, that a number even of the poorer class will club together to purchase the cheapest man they can find, and offer him as a victim; that they devour the flesh of their enemies, drink their blood, use their bones and skulls as ornaments, and even as money. Through hollow wooden tubes they blow poisoned arrows, the wound of which is said to be mortal. Yet it is certain, that many of them cultivate the ground, rear domestic animals, and carry on some trade; and a tribe called Biajoos are active navigators, roaming from shore to shore, amid the perpetual summer of the tropic. Mr. Hunt accuses the Malays of exaggerating the offences of these poor savages, whose enmity they have justly incurred by driving them into the interior, and seizing every opportunity of catching and selling them as slaves.

4837. *The local features of this island*, with the exception of the gold and diamond mines already described, do not require very detailed notice. Borneo, or Bournu, capital of a kingdom which, during its greatness, gave name to the whole island, is built upon piles on the swampy banks of a large river; canals run through its streets, and the communication from house to house is partly by boats. It has much declined, and is said to contain less than 3000 houses, and only 10,000 or 12,000 inhabitants. Succadana, a great commercial place in the middle of the western coast, was, in the end of last century, subverted by an Arab named Abdul Rachman, assisted by the Dutch, who, in conjunction with him, founded Pontiana. This place, according to Mr. Hunt, is now the most flourishing in the island, and its population, therefore, is probably under-rated by M. Balbi at 3000. In the southern quarter, the trade centres chiefly in Banjermassin, a port of 6000 or 7000 inhabitants, capital of a kingdom almost entirely under the control of the Dutch. In the interior, the chief states are Matan, the most central district, which once assumed the title of empire, and held Succadana and a great part of the western coast; but the sovereign is now confined to his inland possessions, Sambas and Mumpawa; celebrated, especially the last, for gold mines worked by Chinese, who form the chief inhabitants of Montrado, its capital.

4838. *The Sooloo*, called by some the Suluk Islands, off the eastern coast of Borneo, and closely connected with it, may be properly introduced here. They are twenty-seven in number, the great Sooloo being thirty miles long and twelve broad, and the population of the whole is estimated at about 300,000. The people are almost entirely devoted to piracy, for which their situation, on one of the most frequented routes of the Eastern Sea, affords ample facilities. Mr. Hunt, in the *Friend of India*, has drawn a striking picture of this "Algiers of the East." From 300 to 400 vessels, whose crews amount to 10,000, are continually issuing forth on this fierce and perilous occupation. It is carried on under the sanction of the sovereign, who draws twenty-five per cent. of the proceeds. Yet the same people are animated by an active spirit of commerce, which in one direction they seek to destroy, but in another cherish and protect it. The vessel which, encountered in the open sea, would have been instantly seized, plundered, and the crew sold as slaves, from the instant it has anchored in the road of Sooloo, enjoys perfect security. We presume, though our authority does not expressly say so, that proof of being bound to or from this destination will place the vessel in safety. The banks of pearls already noticed, and the supplying of China with tripang and birds' nests, afford scope to a considerable traffic.

4839. *Singapore* (*fig.* 746.), become the centre of the commerce of all the islands now described, may now be treated of in connection with them. It is situated on an island at the southern extremity of the peninsula of Malacca, at the eastern opening of the straits bearing that name. It was founded only in 1819 by Sir Stamford Raffles, in a position so happy that all the commercial tribes of those seas immediately made it their emporium. In 1824, its population amounted to 10,683; in 1827, it had increased to 13,732; and on 1st January, 1830, to 16,634. Of the census of 1827, there were 10,307 males, 3425 females; and the division as to nations was into 6088 Chinese, 4700 Malays, 1242 Bugis, 1021 natives of India, &c. There were only 87 Europeans, who, however, were at the head of the chief mercantile houses. About 5000 Chinese arrive annually by the junks; of whom 1000 remain, the others disperse among the neighbouring settlements. The Bugis with their proas arrive not only from their own but the neighbouring islands. The number in 1829 was reckoned at 190; of which 90 came from the west coast of Borneo, 50 from the east coast and Celebes; 40 from Bali, Lombok, and Sumbawa. The imports in 1827 and 1828 amounted to 1,458,000*l.*, and the exports to 1,387,000*l.* The amount is said to have since nearly doubled. The articles dealt in are all those of China, the Oriental islands, and the Indo-Chinese countries, with British cottons and other manufactures.

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SINGAPORE.

4840. *The Moluccas, or Spice Islands,* derive their great celebrity from producing the precious commodities of cloves, nutmegs, and mace, which have been already described. In other respects they present few objects of much interest. Gilolo, the largest, broken, like Celebes, into a cluster of peninsulas, presents the usual spectacle of a rude people governed by a number of turbulent chieftains. Ceram is nearly similar, except that the greater part is under the power of a single sultan, dependent on the Dutch, who take vigorous measures to check the disposition to piracy among the natives. Small islands, contiguous to these great ones, occupy, in this group, the most conspicuous place. Ternate and Tidore, off the western coast of Gilolo, the one twenty-five, and the other twenty-one miles in circuit, have always held a sort of political supremacy. The early European navigators found them contending for the sovereignty which they still hold over the greater part of Gilolo, though in subordination to the Dutch. Amboyna, an island near Ceram, thirty-two miles long and twelve broad, is distinguished as the chief settlement of the Dutch, and the only place where, till lately, they permitted the clove to be reared. They have divided it into cantons, where this precious spice is cultivated, under the superintendence of native chiefs, who are responsible for delivering the whole to the government. The town of Amboyna is neatly built in the Dutch style, and contains a population of about 7000. Fort Victoria, built by the Portuguese, still defends it. The ten small Banda islands, of which the principal are Neira, Pulo Ay, and Lantour, are distinguished by the growth of nutmeg, raised under the same exclusive system. Nassau, the residence of the Dutch governor, is a small town, with 1000 inhabitants, on the island of Neira.

4841. *The Philippines* form an extensive group of two large and nine smaller islands, situated at the north-eastern extremity of the Archipelago. Few countries are more favoured as to soil and climate. Though placed immediately beneath the equator, the height of the mountains, and the ocean breezes, preserve them from suffering under any severe or scorching heat. The moisture derived from their exposure to the vapours of the Pacific is somewhat excessive; yet, combined with the heat, it produces a most luxuriant vegetation. Still these islands are rather rich in the staple tropical productions, rice, sugar, &c., than in those aromatics for which some of the other islands are celebrated.

4842. Among *the natives* there are a considerable number of the negro race; yet, long before the arrival of the Europeans, these had been driven into the mountains by the Bisayans, a branch of the brown oriental race. These cultivated the ground with considerable diligence, and had raised themselves above the completely savage state; yet they had not, like the other islanders, received colonies, or imported any high civilisation from the great Asiatic kingdoms. The most improved tribe were the Tagalas, inhabiting the sea-coast of Luçon, who constructed and navigated vessels of some magnitude with considerable skill, and had a language which was considered classical throughout the islands.

4843. *The Spaniards early took possession of the Philippines*, and, if we except the English expedition of 1762, possessed them without interruption from any of the other European powers. This people, who labour under severe reproach as to the management of their other colonies, seem to have deserved less blame here. They imposed, indeed, on the natives a heavy poll tax, but did not cramp their industry; and the missionaries assiduously communicated to them, along with the true religion, a tincture of European arts and knowledge. Hence Mr. Crawfurd conceives that, while in all the others the character of the natives has been deteriorated, in the Philippines it has been decidedly improved by European intercourse. They took arms, accordingly, in defence of these masters, when attacked by another power. The foreign trade, however, was subjected to those jealous restrictions imposed by the prevailing policy of Spain. It was limited to a single galleon, despatched annually from Manilla to Acapulco. Notwithstanding the circumstance of there being only one, yet the mystery and the splendid ideas attached to the very word galleon diffused an impression that Manilla was a place of immense wealth; and the British expedition which captured it in 1762 imposed a contribution of 1,000,000*l.* sterling, which the city was wholly unable to pay. When exact information was obtained of its commercial transactions, they proved to be very limited. They have materially increased since the Spanish revolution, which, loosening the ties with the mother country, threw open the trade to other nations, and the monopoly has never since been re-established. In 1827, the exports in indigo, sugar, tripang, birds' nests, sharks' skins, sapan wood, ebony, rice, dried flesh, pepper, mats, cloths, &c. amounted to 938,000 dollars, with 110,000 in treasure; the imports to 937,000 dollars, with 156,000 in treasure. The trade appears, by Mr. M'Culloch's statements, to have since increased nearly one half, though it is still very inferior to the vast capacities of the country.

4844. In regard to *local features*, the island of Luçon is covered to a great extent with high mountains, among which are several active volcanoes, with hot springs in their vicinity; and violent shocks of earthquake have been felt at Manilla and in other quarters. The city is built at the mouth of a fine river, on a noble bay, and three leagues to the southward is a good and safe harbour at Cavita. On opposite sides of the river, connected by a noble bridge, are the war town and the trade town; the latter much the larger, but the former better built, the seat of government, containing some handsome edifices, and churches richly decorated. The population has been very variously estimated, chiefly because some do and others do not include its extensive suburbs. M. Balbi thinks that with these it may contain 140,000 people, which would make it the greatest city in the Archipelago. Mindanao, a large island, 300 miles long, is little occupied by the Spaniards; whose chief settlement, Samboangan, is used only as a place of banishment. On the eastern side is the large kingdom of Mindanao; the rest is occupied by various tribes, among whom 20,000 are Mahometans, and 61,000 almost savage. Similar observations will apply to Mindoro, a fine island, but little known, and respecting which we need not refute the report of the early navigators, that its inhabitants had tails. We may mention, also, Samar, where the missionaries have made pretty extensive conversions; Zebu, which derives a dark celebrity from the death of Magellan; Panay, Marinduque, Negros, Mesbate, Bohol, and Leyte.

BOOK III.

AFRICA.

CHAP. I.

GENERAL SURVEY OF AFRICA.

4845. *Africa, a spacious continent,* comprising nearly a third of the world known to the ancients, composes a peninsula about 4320 miles in length from north to south, and 4140 in breadth from east to west. Its shape is an irregular pyramid, at the southern extremity diminishing almost to a point; so that it has, properly speaking, only three sides. Its western coast, by far the most extensive, faces the Atlantic, which on the other side is bounded, at several thousand miles' distance, by the parallel coast of America. To the east, Africa looks upon the southern Pacific, but chiefly that mighty portion of it called the Indian Ocean, which has for its remote opposite boundaries Hindostan, the Eastern Archipelago, and New Holland. From Europe, Africa is separated by the Mediterranean, and from Asia by the Red Sea. Both these gulfs communicate with the ocean by narrow straits, at which Africa comes almost in contact with the opposite continents; but it is at their interior extremities that they are separated by that celebrated isthmus, only sixty miles in breadth, which connects this vast continent with that of Asia.

SECT. I. *General Outline and Aspect.*

4846. *Africa,* in all respects except its vast extent, is the least favoured portion of the globe. Its prevailing aspect is rude, gloomy, and sterile. The character of desert, which elsewhere is only partial and occasional, belongs to a very great proportion of its widely extended surface. Boundless plains, exposed to the vertical rays of a tropical sun, are deprived of all the moisture necessary to cover them with vegetation. Moving sands, tossed by the winds, and whirling in eddies through the air, surround and continually threaten to bury the traveller, in his lengthened route through these trackless wilds. The watered and cultivated districts consist of little more than belts, with which this huge expanse of desert is begirt. The best known, and perhaps the finest, is that which borders the northern coast along the Mediterranean, and stretches for 50 or 100 miles inland. The famous range of mountains called Atlas, which ancient fable represented as supporting the heavens, with numerous chains branching from it across the continent, diffuses moisture and fertility over sands which would otherwise have been totally unproductive. Then follows the immense ocean of desert, nearly 3000 miles in length, and 1000 in breadth, reaching across the whole continent from east to west, and from north to south, between lat. 15° and 30°. The sterility of the scene is only interrupted by a narrow line, of not above half a mile, formed by the course of the Nile through Nubia, and by a few islands, or, as they are termed, oases, scattered at wide intervals over this immeasurable waste. These spots, affording springs, verdure, and a few dates, support a scanty population; but are chiefly valuable as affording places of rest and refreshment for the caravans. The traveller who has crossed this dreary interval is cheered by the view of a long line of territory exhibiting a different and much more smiling aspect. Lofty ranges, celebrated under the name of the Mountains of the Moon, cross the central part of the continent, and form perhaps an almost unbroken girdle round it. Thence descend many rivers of the first magnitude; the Nile of Egypt, the Senegal, the Gambia, and the famed mysterious stream so long sought under the name of the Niger. These set bounds to the empire of sand, which would else overspread nearly all Africa; they inundate their banks, and fertilise extensive regions, which are covered with rich harvests, and peopled with nations that have made considerable advances in civilisation. A great part of this tract has been recently explored, though much still remains for discovery; but farther south, the greater part of the interior, as far as the Cape of Good Hope, a space of 40° of lat., has never been trodden by any European. The districts on the east coast, however, are very well known, and still more those on the west. They present a totally different aspect from that of northern Africa; profusely watered by great rivers, in many places luxuriant with tropical products; in others inundated and swampy, overgrown with huge forests and underwood. Some late observers, however, in travelling inland from the Cape, have caught a glimpse of vast expanses of desert, reported almost to rival those at the opposite extremity of the continent. Lastly, the southern angle presents to the stormy seas of the Pacific broad table rocks and high rude plains, covered, however, in many places, with good herbage and vegetation.

Sect. II. *Natural Geography.*

Subsect. 1. and 2. *Geology and Botany.*

4847. The *Geology and Botany* of a continent so extensive and varied as Africa can only be treated with advantage under its respective regions.

Subsect. 3. *Zoology.*

4848. *The Zoology of this vast peninsula* assimilates in many respects to that of Asia; while its northern provinces, as we have already seen, present us with many of the European animals. As we recede, however, from such regions as border upon these two continents, the peculiarities of African Zoology become apparent, and show us the necessity of treating it as one of the principal provinces of Physical Geography. That Nature has been far less prolific, both in the number and in the variety of her forms, in this continent, than in any other of equal extent, may be readily inferred from its peculiar formation. Vast deserts, equal in extent to the whole dominions of the most powerful European sovereigns, intersect this continent in various directions, affording neither "green herb or limpid stream," nor even the bare sustenance necessary to life for either man or beast. These deserts are indeed depopulated; they are only passed by the wandering savages, or occasionally visited by migratory troops of quadrupeds. The fecundity of animal and vegetable life is generally equal: hence, on the western and southern coasts, bordering the line of the great virgin forests, numerous animals of the largest dimensions become abundant, the air resounds with the notes of birds, and innumerable insects are sporting on the flowers.

4849. *In giving the following rapid sketch of African zoology*, it appears natural to arrange our observations under three heads: considering, first, Northern Africa, which includes that portion of the continent to the north of the Great Desert, and washed at its confines by the Mediterranean and the Red Sea; secondly, Tropical Africa; and thirdly, Southern Africa.

4850. *The Zoological features of Northern Africa*, so far as regards its ornithology, have been already dwelt upon; and in this department a much greater approach is made towards the European Fauna than in any other. The quadrupeds, however, are eminently distinct. The Lion is occasionally seen. Hyenas are not uncommon; but the Jackalls stated to inhabit these parts are unknown in Egypt, Nubia, and the adjacent countries. A few species of Antelope range over the arid tracts of Barbary, and are probably peculiar to this side of the great sandy ocean; while several quadrupeds of Western Asia appear to propagate and extend their range in the countries bordering on Arabia and Egypt. The northern Giraffe (Camelopardalis antiquorum *Sw.*), which, from very recent researches, we now consider as unquestionably a distinct species from that of Southern Africa, whose food seems to render him nearly independent of herbage, has recently been found towards Nubia by that enterprising and able naturalist, M. Rüppell. The few genera of birds which occur in the Barbary states are neither remarkable for their beauty nor their singularity; nor does the Fauna of Northern Africa, in general, possess so much interest as might be imagined.

4851. *The Great Desert* forms a natural and marked separation between the northern and the tropical Fauna, although we may include in the latter Senegal, and the whole range of that thickly wooded coast extending towards Guinea. The pestilential nature of the climate to the European constitution opposes an insurmountable barrier to the investigation of these countries, no less than to the establishment of maritime colonies: hence, a few gleanings that have been made near Sierra Leone, and the more industrious attention of the French to the productions of Senegal, comprise the scanty materials upon which our knowledge at present rests. Of all those ardent but ill-fated travellers, who have sunk beneath the poisonous atmosphere of this accursed country, the name of Bowdich will long be remembered with peculiar regret by the naturalist; as being the only one whose previous studies and acquirements had peculiarly fitted him for reaping that harvest of unknown forms with which nature has filled the vast and interminable forests which belt the coasts of Western Africa. In these impenetrable recesses live the Chimpanzees, the largest of apes, representing the Orang Otang of India; troops of large baboons and monkeys, of unknown species, together with numbers of those ferocious and ruminating animals so peculiarly characteristic of the African continent. Nor are the birds less remarkable. That singular bird, unique in its genus, the Prionops plumatus, or Ground Shrike (*fig.* 749.), whose forehead is tufted with a loose thick

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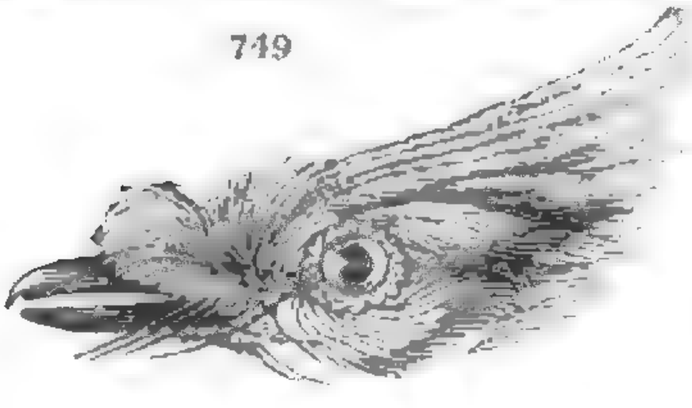


HEAD OF THE GROUND SHRIKE.

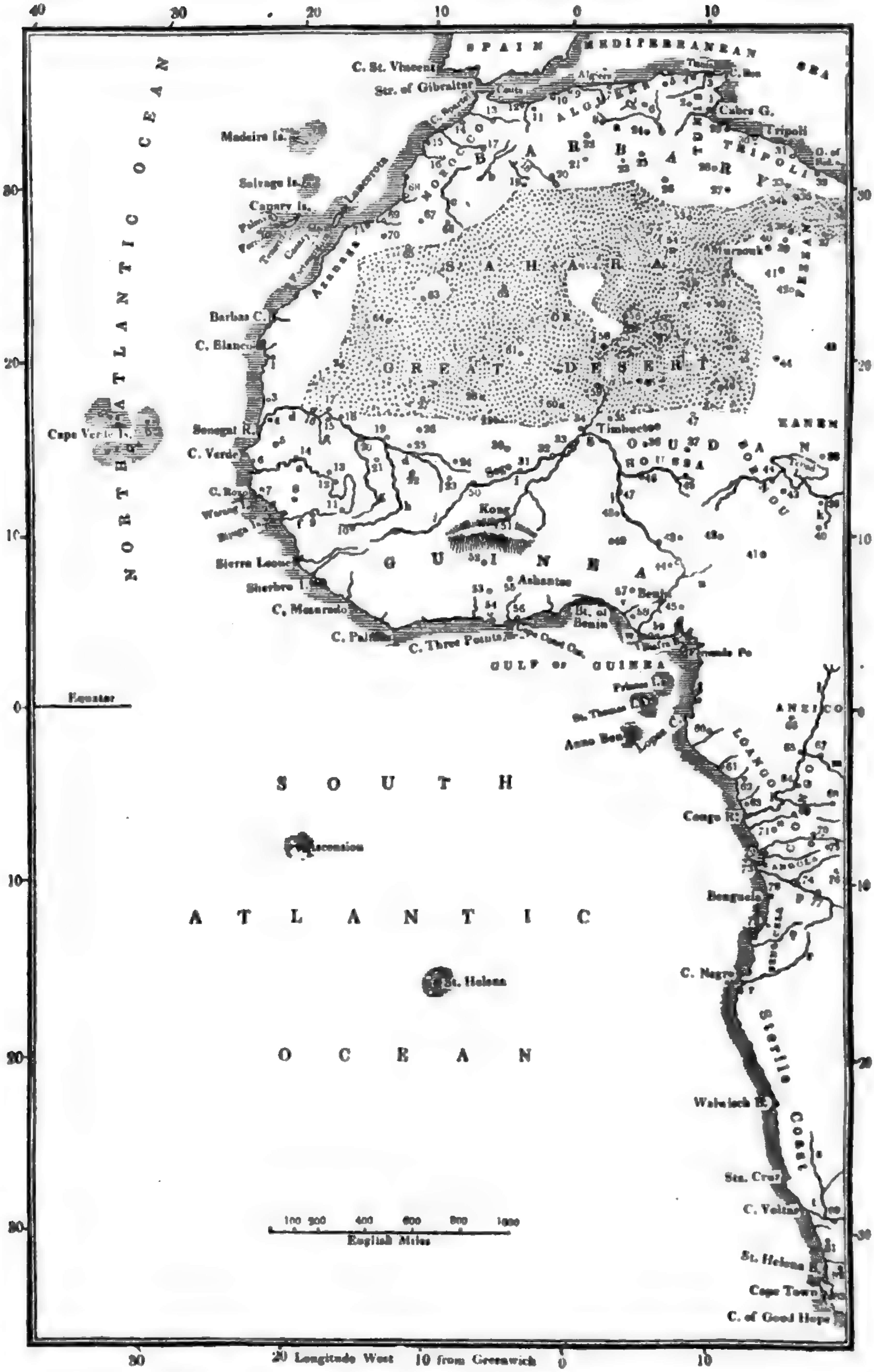
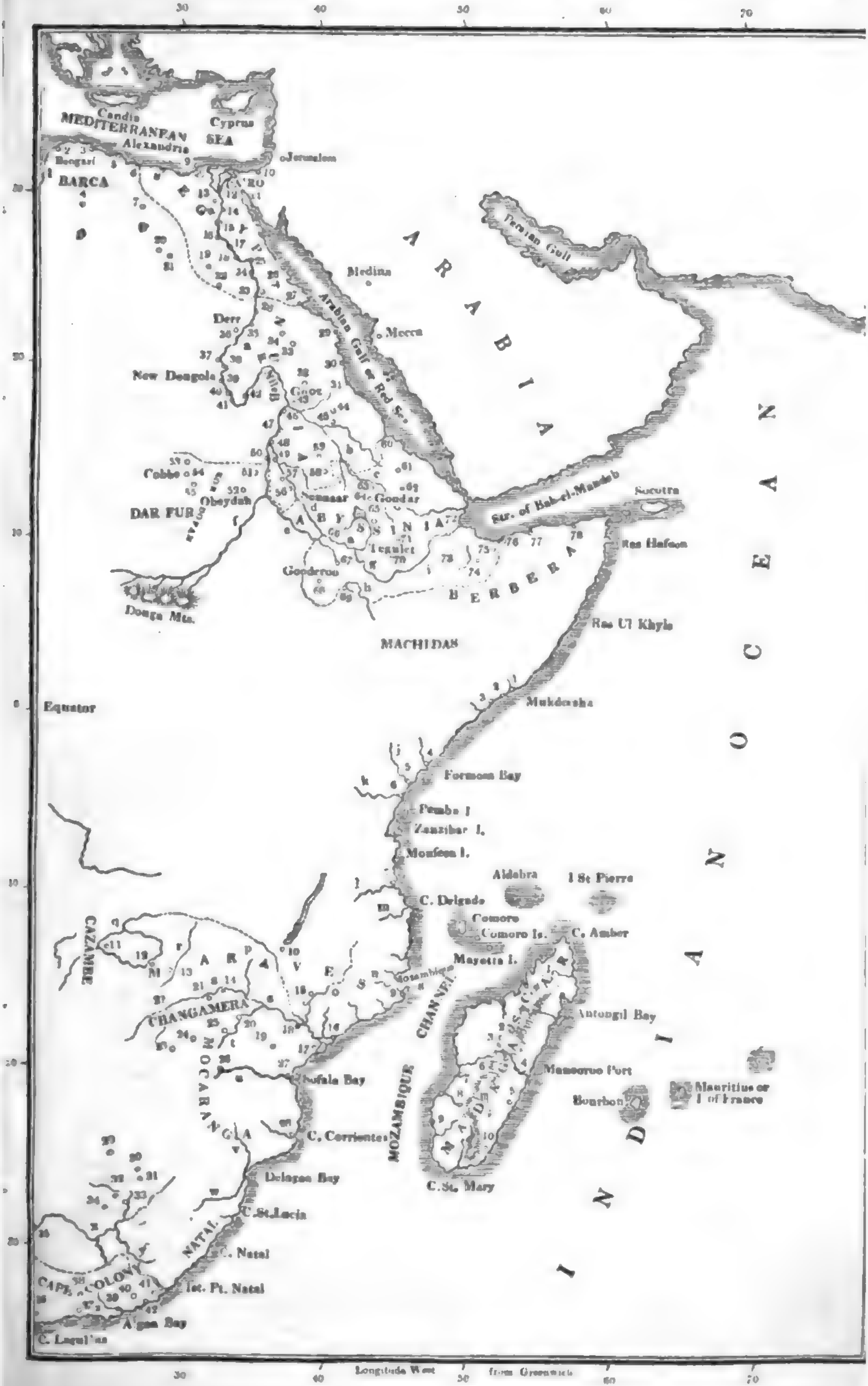

40
30
20
10
0
10
SPAIN
MEDITERRANEAN SEA
C. St. Vincent
Str. of Gibraltar
Algiers
Tunis
C. Bon
Cabes G.
Tripoli
G. of Sidra
TRIPOLI
ALGIERS
MOROCCO
BARBARY
FEZZAN
Mourzouk
Madeira Is.
Salvage Is.
Canary Is.
Lancerota
Azenaga
Barbas C.
C. Blanco
SAHARA OR GREAT DESERT
Senegal R.
Cape Verde Is.
C. Verde
C. Roxo
Bissagos Is.
Sierra Leone
Sherbro I.
C. Mesurado
C. Palmas
C. Three Points
Kong
GUINEA
Ashantee
Benin
Bt. of Benin
Timbuctoo
KANEM
HOUSSA
SOUDAN
BORNOU
Tchad
GULF of GUINEA
Fernando Po
Prince I.
St. Thomas
Anno Bon
C. Lopez
LOANGO
ANZICO
Congo R.
ANGOLA
Benguela
C. Negro
Sterile Coast
Walwich B.
Sta. Cruz
C. Voltas
St. Helena B.
Cape Town
C. of Good Hope
NORTH ATLANTIC OCEAN
Equator
SOUTH ATLANTIC OCEAN
Ascension
St. Helena
100 200 400 600 800 1000
English Miles
30
20
10
0
10
20
30
20 Longitude West 10 from Greenwich

Fig. 748. MAP OF AFRICA.—EAST PART.



mass of bristly feathers, appears peculiar to Senegal, where it is by no means uncommon. From the same region we receive numerous little sun-birds (*Cinnyris* Cuv.) of the most superb plumage, many species of Drongo Shrikes, with Orioles, Rollers, Fantailed Grakles (*Lamprotorni*); and other richly coloured birds. Towards Sierra Leone the ornithological features of Central Africa become more prominent. The rare and lovely Plantain-eaters (*Musophagidæ*) seem restricted to these unhealthy regions, from whence also we derive the Guinea fowl; while those curious birds the bristled-necked Thrushes, forming the genus *Trichophorus* (*fig.* 750.), are almost peculiar to the forests of Guinea and Sierra Leone. Serpents of gigantic size are mentioned by travellers; and tremendous crocodiles swarm in the rivers. The Insects are no less numerous; and, by the arduous labours of Smeathman, who immortalised his name by discovering the wonderful economy of the White Ant, we know more of this department of West African zoology than of any other. Among hundreds of species discovered by this traveller near Sierra Leone, not one has yet been found in the same parallel of latitude either of Asia or America. The conchology of Senegal was most ably explored by Adanson during 1749–53; his work being the last, or rather the only one of any authority, on this branch of African zoology. It appears that the Marine *Testacea* are in much variety and in great profusion; strikingly contrasting in this respect with the opposite coasts of America: the genera, however, do not differ from those of the Indian Ocean, although most of the species are perfectly distinct. The fish, and the rest of the invertebrated marine animals, are as little known as if they were not in existence. Such is a summary statement of the insignificant knowledge we yet possess of the Zoology of Central and Western Africa; yet, trivial as it is, we see enough to convince us how distinct are its characteristics, when compared with either that of the northern or the southern division. Beyond Sierra Leone, the whole of that region which intervenes between Guinea and the boundaries of the Cape of Good Hope is nearly as perfect a terra incognita to the naturalist as it is to the geographer.

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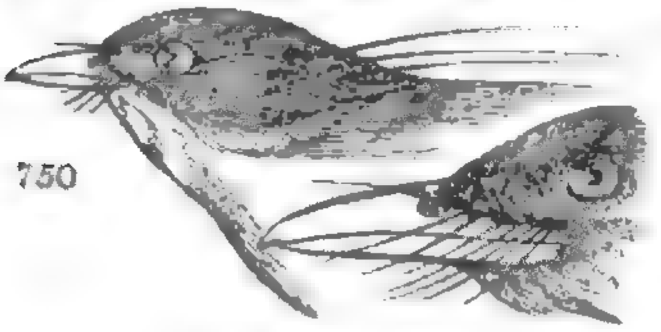

BRISTLED-NECKED THRUSHES.

4852. *The Zoology of Southern Africa* forms the third division of our subject. Its northern extent may be traced to the farthest point, in that direction, yet reached by European travellers. At the head of these we must place Mr. Burchell; not only as being the one whose researches have been pushed far beyond all others, but whose general scientific knowledge gave him advantages which none other of our countrymen have laid any pretensions to. The general salubrity of this part of Africa, and the facilities which its long subjection to European powers has thus given to travellers, renders our knowledge of its animals and plants much more perfect than would otherwise have been the case; and the names of Sparrmann, Le Vaillant, and Lichtenstein are familiar to the naturalist, as the chief of those foreigners who have elucidated this portion of African natural history. The most striking peculiarity, indeed, of the whole continent is eminently displayed in the southern division, where the variety of quadrupeds is truly surprising, while the vast herds into which they

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References to the Map of Africa. — West Part.

NORTH PART.
1. Cabes
2. Gaffsa
3. Tunis
4. Tabarca
5. Constantina
6. Tutmah
7. Algiers
8. Dimidde
9. Mostagan
10. Oran
11. Tlemsan
12. Melila
13. Fez
14. Sallee
15. Mogadore
16. Morocco
17. Tedla
18. Sigilmessa
19. Sugahila
20. Beni Cromi
21. Gardeia
22. Tegorarin
23. Wergala
24. Tuggurt
25. Engousah
26. Necan
27. Gadamis
28. Tieret
29. Zarzine
30. Tripoli
31. Isa
32. Medina Sultan
33. Bonjem
34. Sockna
35. Wadan
36. Zella
37. Tibesty
38. Zejhan
39. Zuela
40. Mourzouk
41. Tergerhy
42. Ghad
43. Tibboos
44. Tahya
45. Seggedem
46. Ashenn
47. Agdass
48. Tuaricks
49. Taboo
50. Wargela
51. Ghraat
52. Hoobaree
53. Telliaguess
54. Tafilet
55. Jarman
56. Esala
57. Akkably
58. El Walen
59. Tafeelalet
60. Ezawen
61. Taudeny
62. El Taressa
63. Lakeneigh
64. El Kahla
65. Woled Adrialla
66. Tatta
67. Akka
68. Macas
69. Nun
70. Sukassa
71. Amsally.

SOUTH PART.
1. Arguin
2. Hoden
3. Porlandik
4. Niakra
5. Ouamkrore
6. Joal
7. Cacheo
8. Geba
9. Kade
10. Teemboo
11. Bendela
12. Konomba
13. Bule
14. Medina
15. Agmani
16. Gheranghed
17. Cahede
18. Goumel
19. Koonlakary
20. Tafaliaga
21. Bambouk
22. Koorna
23. Kamalia
24. Bangassi
25. Kemmoo
26. Benowm
27. Timbeet
28. Shingarin
29. Walet
30. Geosorre
31. Sego
32. Jinné
33. Jimbala
34. Timbuctoo
35. Affnoo
36. Aadar
37. Tagama
38. Coria
39. Kussery
40. Loggun
41. Adamowa
42. Jacoba
43*. Rabba
44*. Kacunda
45*. Kirree
43. New Bornou
44. Old Bornou
45. Kashna
46. Sackatoo
47. Youri
48. Boussa
49. Eyeo or Katunga
50. Hammakoo
51. Kong
52. Briquante
53. Yammy
54. Gura
55. Ashantee
56. Cape Coast Castle
57. Benin
58. Waree
59. New Calabar
60. Settie
61. Mayamba
62. Loango
63. Hacongo
64. Pango
65. Concobella
66. Mossul
67. Canga
68. S. Salvador
69. Congo
70. Pemba
71. Banga
72. Masula
73. St. Paul de Loando
74. Massingaco
75. Ovando
76. Matamba
77. Cabaso
78. Benguela
79. Novo Redondo
80. Zebra Fort
81. Twee Fort
82. Clanwilliam
83. Cape Town

Rivers.
a Adjedee
b Filiely
c Draha
d Senegal
e Gambia
f Grande
g Paleme
h Bafing
i Joliba, or Niger
j Niger, or Quorra
k Shary
l Zaire, or Congo
m Congo, or Barbela
n Setunda
o Loza
p Coanza
q Guboro
r Bembaroughe
s Koussp
t Orange
u Tahadda
v Benin
w Nun.

congregate, but for the attestation of travellers, would be almost incredible. Elephants, Rhinoceroses of two species, Antelopes, Giraffes, and Ostriches traverse the arid plains of the interior, browsing on the scanty herbage afforded by the heaths and coarse grass, or on the thin foliage of the Mimosa trees; while the huge Hippopotamus, peculiar alone to Africa, (*fig.* 751.), is still numerous on the banks of the great rivers. Lions, Hyenas, Jackals, and some other ferocious quadrupeds, are dispersed throughout the country, but fortunately are not very frequent. The birds are more interesting than beautiful or elegant. The rapacious order presents us with many Vultures, and several Falcons peculiar to this part of the world: many of the Shrikes are richly coloured; the beautiful Paradise Fly-catcher (*fig.* 752.) is not uncommon, and several others, equally remarkable for their long tail-feathers, have been noticed by Le Vaillant. Hornbills of various species, and of a large size, abound in Southern Africa; yet the Parrots are confined to one species. But the most remarkable birds are the Honey-guides (whose economy we shall subsequently notice), and the Weavers, which live in vast republics under one common roof. The Sun-birds are very splendid, and present a refulgence of plumage surpassed only by the Humming-birds of the New World. Reptiles are not very numerous, but Insects according to Barrow are particularly abundant in the wooded districts. The other classes of Zoology have been much neglected.

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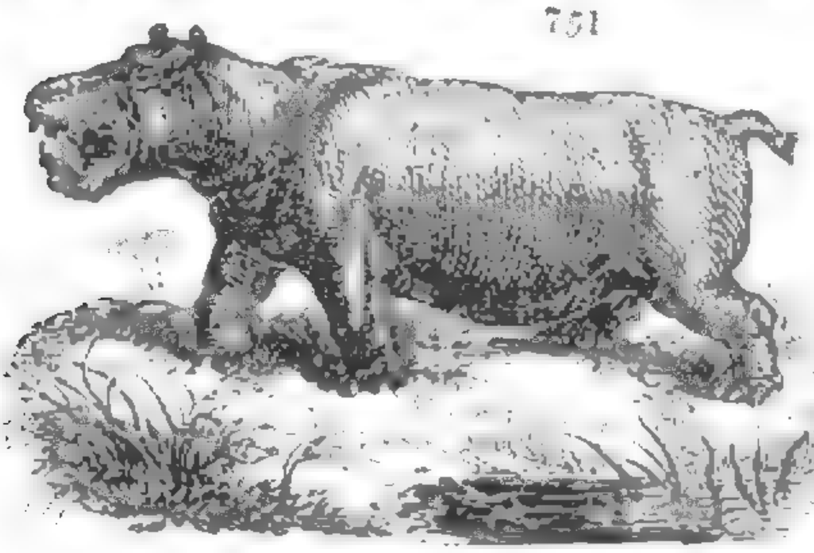

HIPPOPOTAMUS.

752

PARADISE FLY-CATCHER.

4853. *The Mammiferous groups* of Africa have been arranged, by modern systematists, under the following genera and sub-genera. Many are peculiar to this continent, and others (*) extend to Asiatic India. Those of Madagascar are thus designated (†).

Simiadæ. Apes.
Troglodytes *Geof.*
Colubus *Ill.*
Cercopithecus *Ill.*
Cercocebus * *Geof.*
Cyanocephalus * *Briss.*

Baboons.
Papio * *Cuv.*

Lemuridæ. Lemurs.
Lichanotus *Ill.* †
Lemur *Ill.* †
Otolicnus *Ill.*
Cheiromys *Cuv.* †

Vespertilionidæ. Bats.
Pteropus * *Briss.* †
Nycteris *Geoff.*
Rhinolophus
Taphozous *Geoff.*

Chrysochloris.
Centenes *Ill.* †
Macroscelides *H. Sm.*
Ratellus * *Cuv.*
Putorius *Cuv.*
Lutra *Auct.*
Megalotis *Ill.*
Viverra
Mangusta *
Rhyzæna *Ill.*

Proteles *Is. Geoff.*
Hyæna *Auct.*
Otaria *Péron.*
Arvicola *
Myoxus *
Dipus
Bathyergus *Ill.*
Pedetes
Orycteropus *Ill.*
Manis *L.*

Phascochœrus
Styrax.

Antilopes.
Aigocerus (sub-genus) *H. Sm.*
Oryx *H. Sm.*
Gazella * *H. Sm.*
Antilope * *H. Sm.*
Redunca *H. Sm.*

Tragulus *H. Sm.*
Cephalophus *H. Sm.*
Neotragus *H. Sm.*
Tragelaphus *H. Sm.*
Capra
Ovis
Damalis *H. Sm.*
Catoblepas *H. Sm.*
Bos *Auct.*

4854. *The Ornithological groups of Africa*, distinct from those of Europe, furnish the following genera and sub-genera, many of which occur (generally with some modification of structure) in Southern India, and are designated thus (*).

References to the Map of Africa. — East Part.

NORTH PART.
1. Bengazi
2. Barca
3. Bomba
4. Augela
5. Meraya
6. Ablem Larcea
7. Siwah
8. Al Barcton
9. Alexandria
10. El Arish
11. Suez
12. Cairo
13. Medina
14. Feshn
15. Souadi
16. Sioot
17. Saifeh
18. Girgeh
19. El Chargeh
20. El Cazar
21. Tenida
22. Chebba
23. Kalabcch
24. Luxor
25. Gheneh
26. Coseir
27. Berenice
28. Kobban
29. Aidhab
30. Sulakah
31. Suakin
32. Amour
33. Chiggre
34. Terfoni
35. Derr
36. Serra Gharby
37. Sedenga
38. Tinareh
39. New Dongola
40. Handech
41. Old Dongola
42. Merawe
43. Gooz
44. Arewad
45. Fililik
46. Damer
47. Shendy
48. Sudkim
49. Kamilee
50. Gimmoe
51. Abu Hadid
52. Obeydah
53. Haimer
54. Coble
55. Ril
56. Sennaar
57. Usheta
58. Imgellatit
59. Mandera
60. Arkeeko
61. Genaler
62. Antalo
63. Tamano
64. Gondar
65. Aiata
66. Sinasse
67. Gooderoo
68. Gonee
69. Bosham
70. Tergules
71. Hayk
72. Zeyla
73. Hurrur
74. Dande
75. Somauli
76. Burburra
77. Somauli Vil
78. Soomaulee.

SOUTH PART.
1. Mukdeesha
2. Torra
3. Brava
4. Patta
5. Maleeda, or Melinda
6. Mombas, or Mombaza
7. Keelwa, or Quiloa
8. Mozambique
9. Mokumba
10. Maravi
11. Mucnepanda
12. Moogrove
13. Parusoka
14. Emboque
15. Fort Zumbao
16. Quillimane
17. Lubo
18. Fort Sena
19. Reported Capital of Mocarango
20. Ludanze
21. Chacova
22. Zumbo
23. Zimbaoe
24. Dembarare
25. Mazappa
26. Manica
27. Sofala
28. Inhambane
29. Bakarrikarri
30. Melita
31. Mashoo
32. Lattakoo
33. Malapeetzee
34. New Lattakoo
35. Pella
36. Zwellendam
37. George
38. Graaf Reynett
39. Uitenhage
40. Graham's Town
41. Fredericksburg.

MADAGASCAR.
1. Narreenda
2. Mohamba
3. Tananarivo
4. Tantamene
5. Manansari
6. Ancove
7. Mourondava
8. Ambatamb
9. Ticar
10. Macambateo South.

Rivers.
a Nile
b Mareb
c Angrab
d Bahr el Azergue or Blue River
e Maleg
f Bahr el Abiadh, or White River
g Beloo
h Zebee
i Hawush
j Killeef
k Mombaza
l Quisimafugo
m Mongallo
n Tembo
o Checlere
p Mangaza
q Murucura
r Aroveranga
s Tambezi, or Cuama
t Mazoa, or Aroanha
u Sofala
v King George's
w Mapoota
x Orange
y Nu Gariep
z Camtoos.

Halcyon* *Sw.* Crab-eater.
Muscipeta* *Cuv.* Flycatcher.
Edolius* *Cuv.* Drongo.
Trichophorus* *Tem.* Hairneck.
Malaconotus *Sw.* Bush Shrike.
Prionops *Vieil.* Ground Shrike.
Ceblepyris* *Cuv.* Caterpillar-catcher.
Drymoica Sw. Warbler
Macronyx *Swains.* Longclaw.
Certhilauda Sw. Creeper Lark.
Brachonyx *Sw.* Shortclaw.
Ploceus Cuv. Weaver.
Euplectes Sw. Silkweaver.
Vidua Cuv. Widow Bird.
Amadina* *Sw.* Finch.
Estrelda* *Sw.* Finch.
Dilophus *Vieil.* Doublecrest.
Lamprotornis *Tem.* Grakle.
Buphaga *L.* Beefeater.
Colius *L.* Coly.
Pogonias *Ill.* Toothbill.
Bucco* *L.* *Barbet.*
Geocolaptes *Burch.* Groundpecker. (*North. Zool.* ii. 315.)
Leptosomus *Vieil.* †
Indicator *Vieil.* Honey Guide.
Centropus* *Ill.* Lark Cuckoo.
Corythaix *Ill.* Touraco.
Musophaga *Isert.* Plantain-eater.
Buceros* *L.* Hornbill.
Cinnyris* Cuv. Sun-bird.
Promerops* *L.* Hoopoe.
Vinago* Cuv. Pigeon.
Numida *L.* Crane.
Ortygis* *Ill.* Quail.
Struthio *L.* Ostrich.
Anastomus* *Ill.* Openbill.
Ibis* *Antiq.* Ibis.

Sect. III. *Historical View of Africa.*

4855. *Africa, bold, rude,* and perilous to the traveller, has always been held in the other quarters of the globe as a region of wonders, which only the most daring enterprise durst attempt to explore. The Greeks were well acquainted with the tracts on the Mediterranean, containing the once flourishing regions and states of Egypt, Carthage, and Cyrene; but whenever they reached their southern limit, they saw nothing but boundless sands scorched by the intensest rays of the sun. Hence it appears that the ancients drew the early hypothesis of a torrid zone, within whose limits it was impossible for men and animals to exist. Historians mention several attempts to penetrate it, which had the most disastrous issue. The first were prompted by views of conquest. Cambyses, after subduing Egypt, endeavoured to cross the Nubian desert into Ethiopia. He soon, however, experienced a failure of means for the support of his army. Elated with victory, and obstinate in his purpose, he refused to retreat; and the troops, after killing all their cattle, and then feeding on such scanty herbage as the ground afforded, came at last to the region of pure sand, on which was seen neither shrub nor blade of grass. In this dreadful extremity they began to devour each other; and at length Cambyses, struck with horror, renounced his enterprise. Another expedition, sent against the oasis of Ammon, never returned nor was heard of, and was believed to have been buried entire in that vast ocean of sand. These examples struck the world with terror, and prevented all further attempts, till the wild and enthusiastic daring of Alexander impelled him to seek a divine character at the shrine of Jupiter Ammon. The march was accomplished, but not without dreadful sufferings and extreme peril on the part of the army, and the danger of perishing before they reached the verdant groves and flowing rivulet which enclosed that celebrated temple.

4856. *If the mightiest monarchs* were thus baffled in their attempts to overcome the barrier of these awful solitudes, it was not likely that private adventurers should be more fortunate. Yet the natural desire of man to penetrate into what is unknown and mysterious seems early to have had a powerful influence even upon individuals. Herodotus gives the narrative of an expedition undertaken by some young Nasamonians of distinction, inhabitants of a territory occupying part of the modern Tripoli. They described themselves as passing successively through cultivated tracks, then through a region inhabited by wild beasts, and lastly arriving at the great desert of sand. Having reached one of its verdant oases, and begun to pluck the fruit which was growing on the trees, they were surprised by a party of little black men, who took them prisoners, and conveyed them to a city far in the interior, traversed by a river flowing from west to east. These particulars, notwithstanding the sceptical comments of M. Gosselin, seem strongly to point at central Africa and the course of the Niger.

4857. *The Romans,* when they had accomplished the final overthrow of Carthage, and established their empire over Northern Africa, would doubtless be impelled both by ambition and curiosity to make some enquiry as to what lay beyond. Their expeditions, however, having gained for them no extension of power, have escaped the notice of history. There occurs only in Ptolemy an incidental notice that a detachment under Septimius Flaccus, and another under Julius Maternus, had reached the country of the Ethiopians, after successive marches of three and of four months; and the latter called the region Agysimba: but what they saw and what they found there is nowhere reported.

4858. *The efforts made to explore the coast of the African continent* formed the grandest object of ancient maritime enterprise. The voyages, therefore, undertaken with that view, have been a leading feature in the first part of this work, which details the progress of geographical discovery (p. 10—21.). To the same part we must refer for the subsequent settlements formed by the Arabs, and for the expeditions undertaken in modern times to explore the interior of this continent, and the course of its great rivers (p. 51.). The chequered series of success and disaster by which this career has been marked, composes the most interesting chapter in the history of modern discovery (p. 68–9.). The successive efforts made by the African Association, by Park, Hornemann, Denham, Clapperton, and Lander, have at length lifted up, from a great portion of this continent, the mysterious veil by which it had so long been covered.

Sect. IV. *Social and Political State of Africa.*

4859. *The political constitutions of Africa* are rude, and in general despotic. The unlimited power of the sovereign is in general checked only by the turbulence of aristocratic chiefs, not by any well-regulated freedom on the part of the people. Africa, however, is divided into an almost infinite variety of states, whose political system can only be understood by considering each in detail.

Sect. V. *Industry and Commerce in Africa.*

4860. *The processes of agriculture and manufactures,* in Africa, are performed generally in a rude and imperfect manner. The soil, however, is cultivated almost throughout, to a greater or less extent; and some fine fabrics, particularly those of cotton, cloth, mats, and gold ornaments, are very widely diffused.

4861. *Africa has scarcely any trade,* except that which is carried on overland and across its oceans of desert, by caravans, consisting chiefly of camels. It is truly astonishing with what facility these companies now make their way to the remotest interior of the continent, in defiance of obstacles which might have been deemed insuperable. By these immense journeys they procure considerable quantities of gold and ivory; but the importance of these articles is merged in a cruel and iniquitous traffic, of which Africa has always been the main theatre. Other parts of the globe have for ages depended upon its oppressed and unfortunate inhabitants, for supplying their demand for slaves. Whoever, throughout Africa, has the evil power of selling any of his fellow creatures, is sure to find purchasers who will give in exchange the best products of Europe and the East. Some are condemned to slavery under a criminal code, framed by legislators who make it a study to multiply the number of such offences as may be made punishable in this lucrative manner; others are captives taken in war; but a large proportion are procured by mere slave-hunting expeditions, undertaken even by the most civilised states against neighbours whom, with little reason, they account more barbarous than themselves. The number thus conveyed across the desert, to fill the harams of Turkey and Persia, has been rated at 20,000. These, however, serve merely as domestic slaves; and, though subjected to many humiliations, they are, on the whole, mildly treated. A much severer lot awaits those who, from the western shores of Africa, are carried off by the *polished* people of modern Europe. After suffering through the passage under a confinement and pestilential air which prove fatal to a large proportion, they are sold to taskmasters whose sole object is, under a burning sun, to extract from them the utmost possible amount of labour. It is calculated that, during the flourishing period of the slave trade, 80,000 were annually transported across the Atlantic. At length, however, the wrongs of Africa were heard; Britain, roused by the voice of some generous philanthropists, took the lead in the cause of humanity. The resistance was powerful, and it occasioned many years of debate, signalised by the long labours of Wilberforce, Clarkson, and other friends of Africa, till, in 1806, Mr. Fox moved and carried the bill for the final abolition of the trade of importing slaves into the British colonies. It has since been declared felony for a British subject to engage in this trade. America and France afterwards followed the example; and thus the export of slaves from the northern part of Guinea has been in a great measure prevented; though the numbers still procured from the southern quarters of Benin and Congo, by the Spaniards and Portuguese, are but little diminished.

4862. *This vast continent* is almost universally in a state of *barbarism:* yet in ancient times its northern states rivalled Europe in civilisation. Egypt and Carthage, when in their glory, ranked among the most civilised and opulent states then existing. Even after the first ravages of the Saracens, learning and science distinguished the splendid courts established in the west of Barbary. The continued influence, however, of a gloomy superstition, and the separation caused by it from all the refined modern nations, have induced among these states a general relapse into barbarism. The population of the continent may now, in a large view, be divided into Moors and Negroes. The Moors, including the descendants of the original Arab invaders, and those whom conquest and religion have assimilated with them, fill all northern Africa and the Great Desert. They reach the banks of the Senegal and the Niger, which may be considered as the boundary of the two races, though they mingle and alternate on the opposite sides, where sometimes one, sometimes another, hold the chief sway. The Moors are a rough roving race, keeping numerous herds, chiefly of camels, with which they perform immense journeys through the most desolate tracts, and across the greatest breadth of the continent. Africa is indebted to them for all the literature she possesses; at least, few of the Negroes can read or write who have not learned from them. The Moors, however, at least all that scour the desert, are a race peculiarly unamiable. A furious bigotry, joined to the most embittered hatred of the Christian name, renders them mortal foes to every European traveller who falls into their power. The Negroes, on the contrary, though inferior in arts and attainments, are generally courteous, gay, and hospitable. Like all barbarous nations, they are fond of war, and cruel to their enemies; but their domestic intercourse is friendly, and they receive with kindness the unprotected stranger. They are led away with fantastic superstitions, charms, witchcraft, ordeal, &c.; but these errors never impel them to hate or persecute those who entertain the most opposite belief. Their external aspect is well known, being marked by a deep black colour, flat nose, thick lips, and coarse hair like wool. The Moors are deeply embrowned by the influence of the sun, but have not the least of the Negro colour or aspect.

Sect. VI. *The African Languages.*

4863. A general view of the African languages may here be most advantageously introduced. For this and the two remaining divisions, a summary notice may suffice, as most of the idioms included in them are as yet too imperfectly known to admit an ethnographical classification equally definite with those of Asia and Europe. This is the less to be regretted, since few if any of the nations properly belonging to those divisions can be said to possess a literature. Indeed, what native people south of the equator can be said to have a cultivated language?

4864. The *African languages* hitherto known may be classed in five branches: — 1. The languages of the region of the Nile. 2. Those of the region of Atlas. 3. The languages of maritime Nigritia. 4. Those of South Africa. 5. Those of the Soudan, or Interior Nigritia.

1. *The languages of the region of the Nile* may be classed in the following manner, of course excluding those spoken by nations belonging to the Shemitic family, as the Abyssinians, who speak the Gheez, the Amhara, and other idioms of the Abyssinian branch; and the Turks, the ruling nation of Egypt, who are of Tartar origin: — The *Egyptian* family, including the ancient Egyptian, and the modern Egyptian, or Coptic. The *Nubian* family. The *Troglodytic* family. The *Shiko-Dankali.* The *Chillouk.* The *Dizzela.* The *Tacazze-Shangalla.* The *Cheret-Agow.* The *Agow-Damo.* The *Gafate.* The *Gurague.*

2. *The languages of the region of Atlas,* including the *Amazigh, Ertana, Tibbo, Chellouk,* and *Guanche.*

3. *The languages of Maritime Nigritia.* Under this term are comprehended all the languages spoken in the country called by the French *Senegambia,* and in Guinea. The following are the principal in this group: — 1. The *Foulah.* 2. The *Mandingo* family. 3. The *Wolof,* or *Iolof,* with various others. 4. The *Ashantee* family. 5. The *Dagwumba.* 6. The *Ardrah* family. 7. The *Kaylee* family.

4. *The languages of South Africa,* amidst the uncertainty and obscurity that still envelope them, may be classed in the following families: — 1. The *Congo* family. 2. The *Caffre* family. 3. The *Hottentot* family. 4. The *Monomotapa.* 5. *Gallas;* besides some independent languages, as the *Somauli,* and the *Mohenemougi.*

5. The principal languages of Interior Nigritia, or the *Soudan,* are, the *Tombuctoo,* the *Haoussa,* the *Mandara,* the *Darfur,* the *Wassanah,* the *Mahee,* and the *Eyeos,* or *Eyo.*

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Chap. II.

EGYPT.

4865. *The whole north-eastern part of Africa* consists of a mighty expanse of desert sand, extending for upwards of a thousand miles in each direction. The chains of arid and rocky mountains by which it is traversed give only a more rugged and dreary character to this immense waste. One vast feature alone breaks its terrible monotony. From the high chains of Abyssinia, and from the still loftier Mountains of the Moon that traverse central

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References to the Map of Egypt.

LOWER EGYPT.
1. Alexandria
2. Aboukir
3. Kouch
4. Dahartieh
5. Rahmanie
6. Sandeiah
7. Foua
8. Rosetta
9. Bourlos Fort
10. Beltim
11. St. Gemiane
12. Kadim
13. Damietta
14. Menzaleh
15. Jineh
16. Katieh
17. Beheireh
18. Ras el Kassroun
19. Mesoudiah
20. El Arish
21. Bir Mahdal
22. Ageroud
23. Heroopolis (ruins)
24. Sabba Biar
25. Abu el Cheib
26. Tel Hakheus
27. Beidah
28. Mansoura
29. Semenhoud
30. Tanta
31. Aalkam
32. Melet Ghamr
33. Tel Basta
34. Belbeis
35. Cairo
36. Boulak
37. Kelioub
38. Menouf
39. Wardan
40. Convent of St. Macaire
41. Ambabichai
42. Baramale
43. Mahhadje
44. Gezalah
45. Ghizeh, or Djizeh
46. Abousir
47. Ruins of Memphis
48. Tahmah.

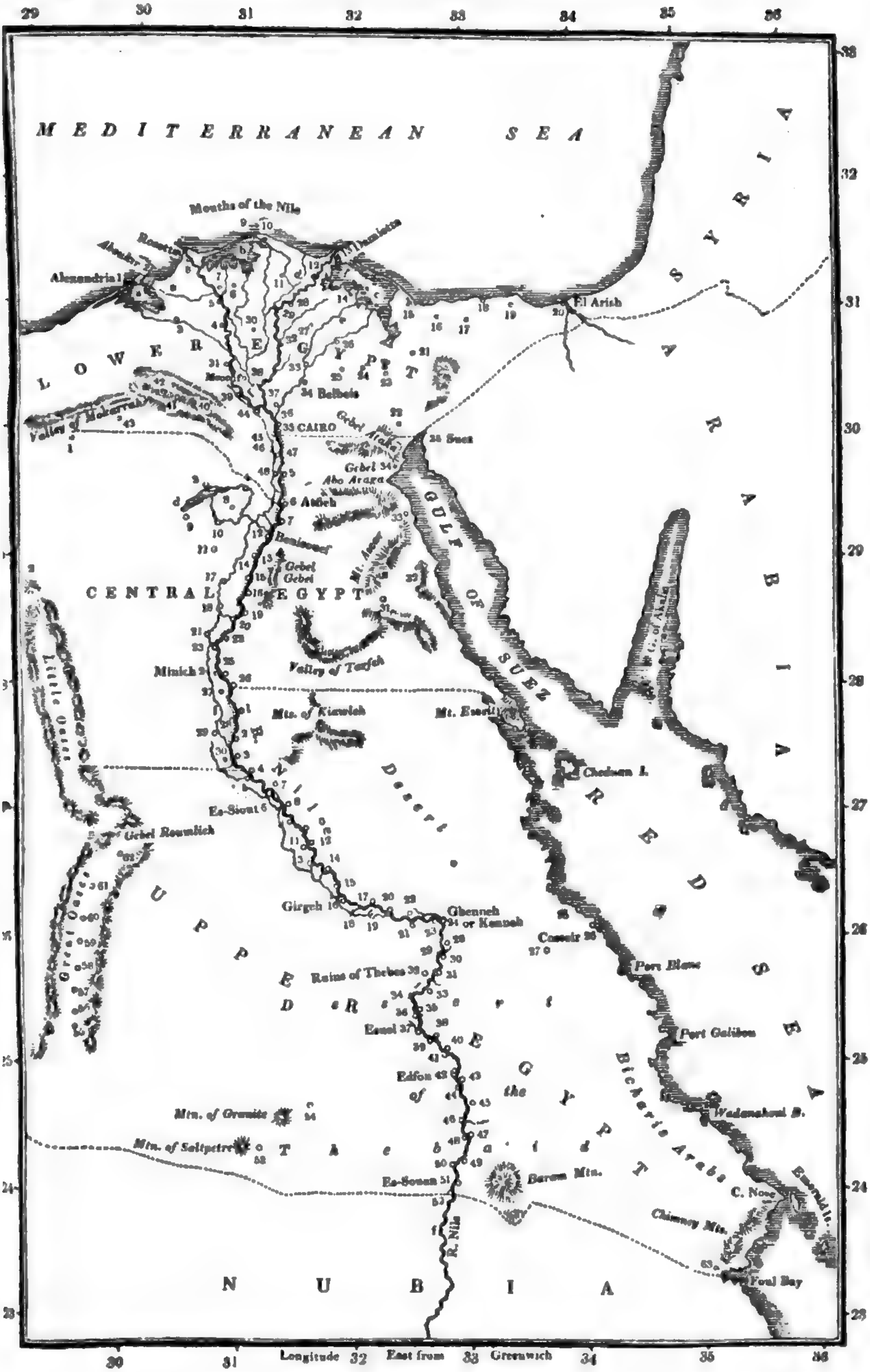
CENTRAL EGYPT.
1. Mokarrah, or Mogarra
2. Behnece
3. Medinet Nimroud
4. Tanieh
5. Kamaseh el Soghair
6. Attieh
7. St. Antony
8. Medinet el Faiouh
9. Kashr Keroun
10. Aboo Gandir
11. Ralan
12. Benisouef
13. Bible
14. Harebshent
15. Feshn
16. Sakieh
17. Barkah
18. Bahnaceh
19. Ibrahim
20. Abou Girgeh
21. Behenese
22. Sheik Hassan
23. Sameloud
24. Minieh
25. Soundi
26. Matahareh
27. Beni Obeid
28. Melawi el Arish
29. Dalgeh
30. El Comisheuse

UPPER EGYPT
1. Deir Abou Hennis
2. Hagg Kandil
3. Coudeh
4. Harabe
5. Manfalout
6. Es Siout
7. Arab Halem
8. El Motmar
9. Sadfeh, or Iddah
10. Cau el Kebir
11. Tahta
12. El Harideh
13. El Maragat
14. El Akhmim, or Ekhmim
15. El Medahieh el Nede
16. Girgeh, or Djirjeh
17. El Teheman
18. El Kerbeh
19. Samhout
20. El Gezu
21. El Wafa
22. El Gahieh
23. Dendera
24. Ghenneh, or Kinneh
25. Old Cosseir
26. Cosseir
27. El Ahmar
28. Keft
29. El Kerale
30. Ghoofr, or Kous
31. Hachachieh
32. Ruins of Thebes
33. Beladieh
34. Rizacat
35. Debabieh
36. Asfoun
37. Esneh
38. El Hiteh
39. Koum Merah
40. El Kab
41. Koum el Ahmar
42. Edfou
43. Redesieh
44. El Kasr
45. Chelcileh
46. Hesras
47. Koum Ombos
48. Bibaan
49. El Akhabeh el Sagireh
50. Koullanieh, or Abou Aziz
51. Es Souan
52. Es Thellaale-el Nil, or the Cataracts
53. Deugou
54. Gourgour
55. Moughes
56. Beiris
57. Dargachm
58. Rosettah
59. Sheik Allet
60. Boulak
61. El Kargeh
62. Ain Dizeh
63. Bernice.

Lakes.
a Mareotis
b Bourlos
c Menzaleh
d Birket Keroun.

Rivers and Canals.
a Alexandria Canal
b Asarah Canal
c Melik Canal
d Ashtoun Canal
e More Canal
f River Nile.

Fig. 753. MAP OF EGYPT.



Africa, descend numerous and ample streams, which, long before entering Egypt, unite in forming the Nile, a river of the first magnitude. Although the Nile, in its whole progress through this desert, does not receive the accession of a single rivulet, it brings so vast an original store as enables it to reach and pour a mighty stream into the Mediterranean. For many hundred miles in the upper part of its course, confined between high and rocky banks, it is merely bordered by a brilliant belt of fertility, the sandy waste stretching indefinitely on both sides: this is Nubia. After traversing the barrier of the cataracts, it passes through a broader valley between mountains of some height, and on its banks are many shaded or inundated tracts, which yield products of considerable value: this is Upper Egypt. Emerging from these mountains, the Nile enters a flat and extensive plain, where it separates, and by two great and divided streams, with various intersecting branches, enters the Mediterranean: this is Lower Egypt. In this last part of its course, the Nile is nearly on a level with the district which it intersects, and, when swelled by the autumnal rains of central Africa, overflows it entirely. The waters begin to rise about the 18th or 19th of June, attain their greatest height in September, and subside as gradually as they rise, and within about an equal space of time. The land thus covered with the fertilising alluvial deposit, collected during so lengthened a course, becomes the most productive perhaps on the face of the globe; and, notwithstanding its limited extent, and the mighty wastes on which it borders, has always maintained a numerous population.

4866. *Thus Egypt exists solely by the Nile,* and within the sphere of its action. The encircling desolation is only broken, to the west of Upper Egypt, by one large valley called Fayoum, into which the mountains open; and by several oases, or cultivated spots, which at wide distances break the uniform waste of sand.

SECT. I. *General Outline and Aspect.*

4867. *Egypt, consisting entirely of the Nile, its branches, and its banks,* must be measured in length by the course of that great river. The coast which, nearly in a straight line, unites the mouths of the two great branches, may be fixed about the parallel of 31° 30′; while Syene, beyond whose cataracts Nubia begins, is in 24° 5′. This gives an extent of 7° 25′, or about 520 miles directly north and south, and the distance is somewhat augmented by the bending of the river; Syene being about two degrees east of Rosetta, and one east of Damietta. The breadth is much more vague. The sea coast which forms the base of the Delta from Alexandria to the extremity of Lake Menzaleh, will measure upwards of 150 miles; but in ascending to Cairo, not more than ninety miles from the sea, the cultivated tract tapers almost to a point; and through the whole of Upper Egypt seldom exceeds the breadth of four or five miles. Beyond this space, the country passes, by insensible yet rapid gradations, into wild wastes, the domain of wandering Arabs. Egypt has always claimed as her own those rocky and sandy tracts, about 100 miles in breadth, which stretch from the Nile to the Red Sea. Although, however, she anciently formed a caravan route across them to the great sea-port of Berenice, it does not appear that any attempt was ever made to bring it into a civilised and cultivated form. On the west the transition has been still more abrupt, into the pathless tracts of central Africa; for even the oases, strong in the surrounding desolation, have seldom owned any permanent subjection to the power which ruled over Egypt. The boundaries of that country, like its dimensions, are very undecided. The position of this country is, in a remarkable degree, both central and insulated. It is placed amidst others which have been eminently distinguished in history, yet is separated from each of them by broad expanses of sea and desert. On the north the Mediterranean divides it from Greece, allowing its vessels, by an easy navigation, to reach the coast of Syria, of Asia Minor, and even of Italy. To the east the Red Sea separates it from Arabia, except at the desert isthmus of Suez, beyond which are Syria and Palestine, the countries with which Egypt has always maintained the most important political relations. To the south is Nubia, with all those wide tracts comprehended by the ancients under the vague name of Ethiopia. Notwithstanding its proximity and close intercourse, the thinness of its population, and the difficulty of access have prevented that region from ever being fully conquered or incorporated with Egypt. On the west, Egypt is separated from Barbary by immense wastes of trackless deserts, which prevent every approach to national union. Caravans, indeed, by indefatigable activity, have formed a route across it; but an army has never entered it without encountering the most overwhelming disasters.

SECT. II. *Natural Geography.*

SUBSECT. 1. *Geology.*

4868. *In Upper Egypt,* three geological regions can be distinguished:—

1. The most southern, the *granite region;* which extends from Philæ through the cataract district to Syene. It affords, besides granite, also *syenite* and some other crystalline primitive rocks. The finest granites and syenites are red and highly crystallised; and re-

markable for their durability and the fine polish which they are capable of receiving. Colossal statues, pillars, obelisks, and even whole temples, are constructed of these beautiful rocks. It is said that the third pyramid of Djizeh, and also that of Mycerinus, were originally cased with slabs of granite.

2. The most northern, the *limestone region*, extends some days' journey south of Thebes. This limestone was formerly much used as a building material. The catacombs of Thebes are situated in this limestone.

3. The third, or *sandstone region*, lies between the two former, and extends from Syene northwards to Esné. This sandstone is by some authors referred to the grès, or sandstone of Fontainebleau, the paving-stone of Paris; by others to the molasse of Switzerland: but all are agreed in considering it as a comparatively recent deposit. Its colours are white, grey, and yellow; it is very soft and easily worked, and the buildings constructed of it would probably not have long resisted the weather, had they not been covered with a *coloured varnish*. The great temples, and many pillars and obelisks, are of this sandstone, but it does not appear ever to have been used in building private houses.

4. The whole of Egypt to the north of the limestone, that is, the *Delta region*, is principally composed of alluvium deposited from the waters of the Nile.

Subsect. 2. *Botany of Egypt, Nubia, and Barbary.*

4869. *We shall, with Mirbel,* consider Egypt, Nubia, and Barbary, as the Southern Transition Zone, already spoken of: the Mediterranean dividing it from the Northern Zone.

4870. *From the Red Sea to the Atlantic Ocean,* and from the Tropic of Cancer to the Mediterranean, the greater part of the soil of Africa presents nothing but deserts, interspersed with oases.

4871. *Many of the springs afford only brackish water,* and the rivers and torrents rarely reach the sea; being absorbed by the sands or dried up by the heat. The Nile is the only navigable river; and the alluvial soil which its periodical overflowing deposits on the shores and over the plains of Lower Egypt, with the hills on the coast of Cyrenaica, some provinces of Fezzan, and the western part of Barbary, which is intersected by the range of Mount Atlas and its ramifications, are almost the only productive parts, and their fertility is truly astonishing.

4872. *The winter temperature* of the coasts falls as low as + 7·5° at Alexandria, Rosetta, and Damietta; but, in general, it oscillates between + 13° and 18°. At some distance from the sea, the climate of the plains is scorching at all seasons. Still it sometimes happens in winter, that the violent northerly winds do sink the temperature for a very short period to + 6°, + 5°, and even + 2°, and zero, in latitudes adjoining the tropics.

4873. *At Cairo* (lat. 30° 2′) the mean annual temperature is + 22·4°; that of winter, + 14·7°; in spring, + 23·1°; in summer, + 29·5°; in autumn, + 21·9°: in the hottest month, + 29·9°; in the coldest, + 13·4°.

4874. *At Algiers* (lat. 36° 48′) the annual mean is + 21·1°; in winter, + 16·4°; in spring, + 18·7°; in summer, + 26·8°; in autumn, + 22·5°: in the hottest month, + 28·2°; in the coldest, + 13·4°.

4875. *Westward of the Red Sea lies Egypt,* a spacious valley, bounded by mountains and deserts. At the period of the greatest heats, the traveller who for the first time visits this country, which is so celebrated for its fertility, feels great surprise: his disappointed glances only rest on a vast plain, enclosed by whitish and naked mountains, and sprinkled with a few trees and withered herbs. At the summer solstice, the swelling of the Nile commences, and about the autumnal equinox the country is so inundated as to resemble a great lake, above the waters of which appear, here and there, Date trees, Figs, Acacias, Willows, Tamarisks, &c. At the approach of the winter solstice, the waters gradually retire, and vegetation occupies, in succession, the spots that become dry. Upon this damp and muddy soil, splendid harvests rise, which have cost nothing more than casting the seed on the ground. All kinds of grain are ripe before the month of May, when returning heat destroys the verdure. By the close of December, or the beginning of January, the trees are stripped of their foliage; scarcely all the old leaves being detached, when the new ones are expanded. The exhalations that rise from the Mediterranean fall again in rain on the shore; while in the interior, the showers are few and light. The clouds which are driven by the north wind towards the high mountains of Africa, and are dissolved in the flaming atmosphere of Upper Egypt, pass away unperceived: nothing dims the clearness of the sky. "What will you say," so writes Hasselquist to Linnæus, "when I tell you that there are trees which have existed here for 600 years, on which not six ounces of water have ever fallen." The country would be uninhabitable during summer, if the sea-breeze, accompanied by abundant dews, did not moderate the heat of the atmosphere. The traveller may wander for many days in the deserts of Egypt, Nubia, Libya, and Fezzan, and the northern part of Bornou, without finding a drop of water, or the smallest trace of vegetation. The soil is sometimes formed of pebbles and gravel; but oftener of a calcareous shifting sand, coated with saline efflorescence. On its surface are shells, marine sponges, and petrified trunks of trees; all attesting the ancient revolutions of our globe. At intervals, ridges of calcareous mountains, quite destitute of vegetable soil, cut up the arid plains in different directions. Some of the districts which are during winter bedewed with rain, produce at that season, a vegetation which suffices for the nourishment of numerous flocks; but so soon as the great heats return, every appearance of verdure is lost. How, indeed, can vegetation resist an atmosphere, of which the temperature sometimes rises to + 50°? The low spots, and the beds of the torrents where humidity lingers longest, produce some shrubs and undershrubs, as the Tamarisks (*Tamarix gallica, africana*, and *orientalis*), the Caper plant, some Cassias, Acacias, Mimosas, &c. The saline soils again present the harder and thorny species, Salsolas, Traganum, Calligonum; and succulent plants with thick and fleshy leaves, as Salicornias, the Mesembryanthemum copticum, crystallinum (*fig.* 754.), and biflorum; the organisation of the latter permitting them to retain in their substance an abundant portion of moisture, even during the period of the greatest drought. These plants are cropped by the camel, that pattern of humble and patient endurance. Lastly, the oases, which are moistened by springs of living water, like fertile islands in an ocean of sand, produce the Date, the Doum (*Cucifera thebaica*), which grows as far as the coasts of the Bight of Benin, the Acacia vera, and other species of the same genus, also affording gum; with a tree of the family of Coniferæ, which many travellers have taken for the *yew*, but which is probably a species of Juniper or Thuja. The Orange, Citron, Banana, Olive, Pomegranate, Peach, and other fruit trees, with Rice, Wheat, and Barley, &c., are cultivated in these spots.

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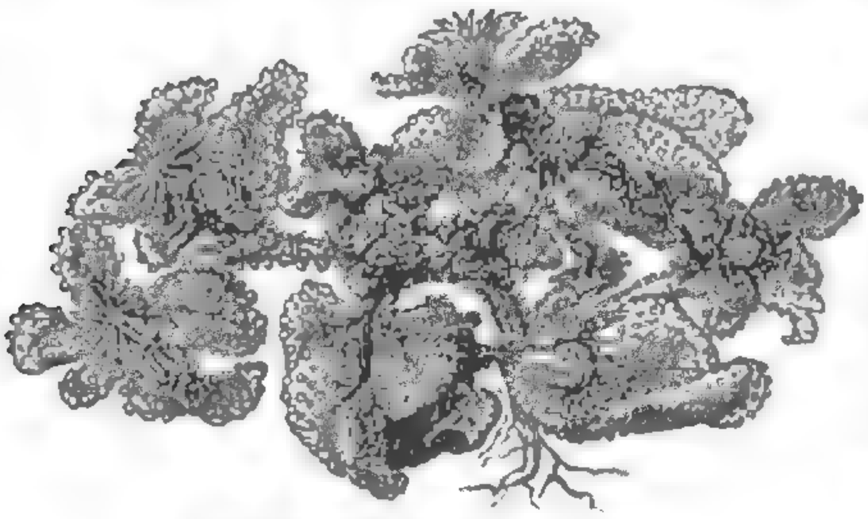


MESEMBRYANTHEMUM CRYSTALLINUM.

4876. *Egypt also produces the Christ's Thorn* (*Zizyphus Spina Christi*), the Chaste tree (*Vitex Agnus castus*), Salvadora persica, the Oleander (*Nerium Oleander*), and other woody Asclepiadeæ, the Sycamore Fig (*Ficus Sycamorus*); Acacia gummifera, nilotica, farnesiana, Lebbeck, albida, Sejal, heterocarpa, senegalensis; Mimosa Habbas, or M. polyacantha; the Prickly Fig (*Cactus Opuntia*), &c. In some of the gardens at Cairo grow the Weeping Willow (*Salix babylonica*), S. egyptiaca and subserrata, the White and Black Poplars, the Cypress, the Cassia Fistula, Anona squamosa, the Tamarind, &c., with our common Elm, which only attains the height of a shrub. Formerly the Sacred Bean of India (*Nelumbium speciosum* Willd., *Cyamus Nelumbo* Smith) displayed its broad foliage and splendid flowers on the waters of the Nile: it has now disappeared. Representations of it still exist on the ruins of ancient monuments. Can this lovely plant, which is indigenous to the East Indies, have been an exotic in Egypt, and only preserved there by cultivation? This is very probable.

4877. *The mountains of small elevation in Cyrenaica* produce abundantly the Carob tree, the Olive, Myrtle, Lentisk, Arbutus or Strawberry tree, and Juniperus phœnicea: their summits are clothed with thick forests of a Thuja, which is doubtless Fresnella Fontanesii (*Thuja articulata* Desf.). Oaks, which are so abundant upon Mount Atlas, the Date and Prickly Fig, are wanting here.

4878. *The Atlas mountains*, whose highest summits do not exceed 7000 feet according to Mirbel, 11,400 feet according to recent travellers, consist of two parallel chains, running east and west, between lat. 28° and 33°. They divide Barbary from the great desert of Sahara. The range nearest the coast, refreshed by the sea breezes and frequent showers, is covered with forests. The other, lying towards the desert, is dry and nearly barren. Some large intermediate valleys, which are watered by a great number of rivers and streams, are surprisingly fertile. In summer, the air is so hot and oppressive, in the southern districts, that the inhabitants quit their dwellings to live under the shadow of the Palm trees.

4879. *Though the plains of the northern parts be generally sandy*, they display great richness of vegetation wherever they are not quite destitute of humidity. Winter is to them the season of verdure; a gentle degree of warmth, accompanied by rain, hastens the growth of a multitude of plants, and flowers spring up in the open country, as they do in our climate at the return of spring. But when the sun draws near the tropic, rain ceases, the rivers dry up, the atmosphere becomes scorching, the leaves of the trees lose their verdure, and every plant is burnt up under foot.

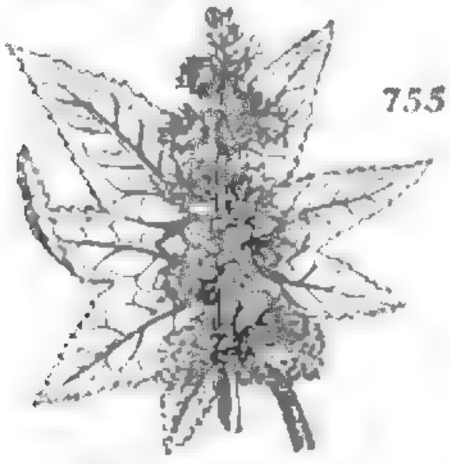
4880. *The forests of Barbary* occupy the higher ranges of Mount Atlas. They are chiefly formed of the Cork tree and Ilex, Quercus obtecta, pseudo-suber, coccifera, pseudo-coccifera, &c.; the Q. Ballota, of which the agreeably tasted acorns are eaten by the natives, the Aleppo Pine (*Pinus halepensis*), Fresnella Fontanesii, Juniperus phœnicea and lycia, and the Cypress. M. Desfontaines, to whom science is indebted for an excellent work on the vegetation of the states of Algiers and Tunis, has rarely seen the Common Oak

(*Quercus Robur*), the Alder or the Poplar, and Ash. The valleys and low hills are fringed with Wild Olives, Pistachio trees (*Pistachia Terebinthus*, *P. vera* and *atlantica*), with the Arbutus, the Shrubby Jasmine, the Bay tree, the Myrtle, Rhus pentaphyllum, Coriaria, and other species, with Zizyphus Lotos, and Spina Christi, with the Chaste tree, the Viburnum Tinus, Osyris alba, Celtis australis, &c. The streams are bordered with Tamarisks; T. gallica, germanica, and africana; Salix tridentata, pedicellata, and monandra; with the Oleander, &c. The Palmetto (*Chamærops humilis*) abounds on all the uncultivated eminences; Pinus Pinea and Pinaster grow on some parts of the coast; while forests of the Aleppo Pine (*P. halepensis*) skirt the boundaries of the kingdom of Algiers.

4881. *The vegetation of Northern Africa*, of which 2100 to 2200 species are now known, differs little from that of the northern and eastern shore of the Mediterranean. Of 344 woody plants, that is, about 284 shrubs and 60 trees, which Northern Africa possesses, about 100 are peculiar to the country; 16 to 18 are part of the equatorial Flora; the others, that is, more than two thirds of the whole, have been remarked in Southern Europe or in the Levant, before or after M. Desfontaines's expedition into Barbary; and among these are reckoned thirty-nine trees of lofty or middling stature. Many of the herbaceous plants are also common to Europe or the Levant. They are certainly mingled with a great many African species; but the latter have almost all their generic types in the Flora of Europe.

4882. *In fine*, there are no less than half the species, whether woody or herbaceous, of Egypt, Libya, or Western Barbary, but also grow in the other Mediterranean countries belonging to the Transition Zone.

4883. *The Coniferæ and Amentaceæ* contribute twenty-four trees to Northern Africa; the Leguminosæ, eleven; the Terebinthaceæ, five or six; the Rosaceæ, four or five, &c. The Ricinus (*fig.* 755.), or Castor-oil plant, which only appears a tall herb in the South of Europe, grows to a tree on the southern shores of the Mediterranean.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CASTOR-OIL PLANT.

4884. *The proportion of trees and shrubs* to the annual, biennial, and perennial plants is about one to six.

4885. *That of perennial* to annual and biennial plants is seven to nine. Here the proportion is increasing, while in the other parts of the zone it is decreasing. This anomaly is, perhaps, more in appearance than in reality, and would probably disappear if we knew all the herbaceous plants of Mount Atlas; for it cannot be doubted that, on mountains, the number of perennial greatly exceeds that of annual plants.

4886. *The plants collected by the late Dr. Oudney*, from Tripoli to Mourzouk, are, with the exception of a few species, identical with those of Barbary.

4887. *Of all the coast provinces of Africa*, Lower Egypt possesses the largest number of equatorial plants; which must be attributed, not only to the vicinity of Arabia, but to the presence of the Nile, whose waters, descending from a country very near the equator, necessarily waft, along with the valuable mud that they deposit, a great number of seeds, many of which grow and propagate themselves under the burning sky of Egypt.

4888. *Of Egypt*, Forskäl, a celebrated writer on the botany of that region, says, that it has little in common with other countries. "All that is seen in it excites admiration, whether the works of men or of nature. Lofty mountains are unknown there, and alpine productions are consequently banished. The absence of woods excludes a vast number of flowers; nor do those plants flourish which properly belong to rivers and lakes. The cold of the northern regions forbids the growth of tender exotics. Egypt, on the contrary, consumes them with unwonted heat. The same advantages of climate and soil, which favour native plants, banish foreign ones. *Every* kind of vegetable cannot subsist without rain, without the vapour of springs, rivers, or marshes, without the cool shades of mountains and woods. They are not *all* qualified to endure the diurnal heat by the periodical refreshment of the nocturnal dew. In the dry soil of some parts of Egypt, seeds of other climes quickly perish; again, plants coming from a dry soil ill endure the inundation and marshy state of other parts. The plants of Egypt are fitted to exist by a peculiar vegetative economy. Their texture is loose, and, as it were, plethoric; so that their proper aliment is prepared in continually distended veins. The widely opened mouths of the vessels receive the copious dews; and the leaves perform the functions of so many roots. Hence, great transpiration is excited; and the moist roots enable them to endure the summer sun, and to pass from the extreme drought of summer to the humidity of a three-months' flood. Besides, the inverted order of things that prevails here, covers the Egyptian fields in winter with verdure and blossom, while the plants of Europe are undergoing a state of repose. Sandy deserts, destitute of moisture, insulate the vegetation of Central Africa, and prevent its extending to Europe. Seeds, too, which drop accidentally on the earth, and are subsequently covered by the sediment of the river, are never likely to be developed. This is the reason, too, why the entomology of Egypt is so poor. The eggs and chrysalides of insects are smothered by the stagnant waters; some few families retire to the trees and loftier shrubs; but there are not enough of these sheltering spots to protect them from the scorching atmosphere. In like manner, the birds, which inhabit mountains and groves, avoid these exposed and thirsty fields.

4889. *The northern plants*, therefore, most of which belong to mountains or lakes, are entirely absent. A few only, scattered, and changed in appearance, show themselves as strangers. Egypt arms with thorns the Colutea and the Carduus; while Sweden points the leaves of the Juniper and Fir. The one abounds with Dates and Sycamore trees; the other with Willow-grounds. The Nile is clothed with luxuriant reeds; Sweden maintains an endless race of Carices. The entire absence of Fungi, in the moist soil of Egypt, is remarkable; Mosses and Lichens are extremely rare, and chiefly exotic.

4890. *The plants of Egypt* may, therefore, be distributed into two classes; of which the principal feature is the presence or absence of water.

4891. *The irriguous or cultivated plants,* all of which are exotic, owe their introduction and propagation to human industry. The number of fruit trees by no means answers to the culture and fertility of the soil. The most flourishing of these are, the Date and Sycamore; which, perhaps, have the greatest power of sending their roots deep into the ground, in quest of latent moisture. The spontaneous plants belonging to this division are seen either near the Mediterranean or the banks and islands of the Nile; or they occupy the edges of fields and gardens which are artificially irrigated.

4892. Every region, almost every province, has its peculiar *Botanic Garden,* in which plants spontaneously thrive, being particularly favoured by the soil. The peninsula Ras-et-tin is distinguished from the shore of Alexandria by eminences, fields, fig plantations, fosses, salines, and a variety of shady open places. Thus, plants of very different kinds are collected in a small space, each having appropriated to itself its own fit habitation. What is still better, in this place the botanist may pursue his researches with security; the situation defending him from the attacks of robbers. The portion of the peninsula which joins it to the land is occupied by dwellings; the rest is bounded by the sea, and the Arabs are afraid either to cross the water or to go through the city.

4893. *Of noxious and useless plants,* there are either none, or they are very few, and occupy remote spots; the reason for which is obvious; the unceasing cultivation of the more valuable plants entirely excluding the weeds. To the conveniently situated lands no rest is allowed; as crop after crop is carried away, the ground is turned up with the plough, till every weed is extirpated, and the thick growth of the cultivated plants choke the last straggling native of the soil. Should any remain, in a field not immediately sowed, they fail not to be destroyed by the heat.

4894. *The desert plants,* again, form a strong contrast to the former class; being distinguished by their poor and parched growth, which almost seems to bespeak one's compassion. Even the dreariest spots are not wholly destitute of vegetation, about fifty species having fixed their abode there, and affording a maintenance, though of the slenderest and coarsest kind, to the flocks of the wandering Bedouins. These plants seem to partake of the nature of the soil which supports them, being arid and crustaceous; their hollow leaves, however, often retain the moisture of the nightly dews and winter clouds, which periodically call them into life. They are growing till the end of March, and disseminate their seeds during April and May; but before the summer solstice arrives, they are almost all withered.

4895. *The Date* is the principal object of cultivation; the trees are planted at intervals of eighteen feet, and after six years they bear fruit. When they are young and tender, it is customary to cover them with mats, so as to cause the leaves to form themselves into a trunk; every year two rows of boughs are cut off round the tree, so that their age is easily computed.

4896. *But of the plants of Egypt,* a few, for which that country is rendered remarkable, must be here noticed: and among them none is more worthy than the Papyrus (*fig.* 756.), commonly called the Papyrus of the Nile, or of Egypt; because, though apparently of rare occurrence in that country, it was there first employed in making paper. It is the παπυρος of Theophrastus and of Dioscorides; Papyrus of Pliny, and Bera of the Egyptians; in Syria, Babier (whence come the words Papyrus and Paper); Cyperus Papyrus of Linnæus, and P. antiquorum of Link. It is not an unfrequent inmate of the stoves of our country; where, if the roots be kept constantly moist, it flourishes, and is highly ornamental. The main stem, surrounded at the base by a few short leaves, is bluntly triangular, and attains a height of ten or twelve feet, bearing a large compound umbel of slender, feathery, gracefully recurved, and very numerous flower-stalks, with inconspicuous blossoms. It is from the delicate and white pith which fills the interior of the stems of this fine plant, that the ancients prepared their paper. To accomplish this, after having removed the epidermis, they cut the spongy part into thin slices, which they steeped in the water of the Nile, or into water slightly imbued with gum; after which, two layers were placed one above another, taking care to arrange them in contrary direc-

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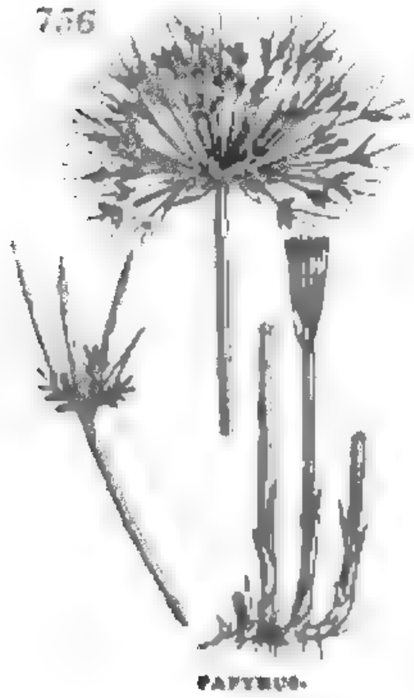

PAPYRUS.

tions, that is, alternately breadthwise and lengthwise, many layers being often required to make one sheet of paper. Then the article was dried, and subjected to a strong pressure, and finally smoothed with a tooth, or a piece of polished ivory. On this kind of paper, most of the ancient manuscripts were inscribed; especially those which have been brought to light by the excavations at Herculaneum and Pompeii.

4897. Other accounts, indeed, of *the ancient mode of preparing paper from the Papyrus* are a good deal at variance with what is above given, and with what we know of the structure of the plant in question; which is by no means composed of layers, but is an uniform mass of very cellular pith, covered by the epidermis. Thus, according to Theophrastus, "For making paper, the stoutest stems of the Papyrus were selected; the thin layers were divided, the central ones being the finest, whitest, and most esteemed. After these were spread out, and the irregularities reduced, the muddy water of the Nile, which somewhat partakes of the nature of paste, was sprinkled over them; many leaves being requisite to form one sheet of paper. It was common, after pressing them, to beat them with a mallet, to dry and polish them; all these preparations being essential, before the paper would bear writing; and for such as was destined to keep a long time, the precaution of rubbing it with cedar oil, which imparted to it the incorruptible nature of that tree, was also adopted." This account is, in all probability, applicable to the paper of the ancients made from trees inhabiting marshy situations, such as the Willow, Poplar, &c.

4898. *The sacred Lotus of Egypt* is a plant that has elicited much controversy, and it does appear that, in different and even in the same countries, the inhabitants called very dissimilar plants by the name of Lotus. According to Shaw, in the plate that represents the mosaic pavement at Præneste, relating to some of the animals and plants of Egypt and Ethiopia (and of which a full history is given in *Montfaucon's Antiquities*, v. 14.), the Lotus of those countries is unquestionably a Water Lily, of which three kinds are mentioned by M. Desfontaines, and represented on many Egyptian monuments. "Two of them," he says, "have been well described in the works of Herodotus and Theophrastus; one has white flowers and fruit like that of a poppy, full of a great number of small seeds: this is the Nymphæa Lotus (*fig.* 757.) of Linnæus. The other, called by Herodotus the Lily Rose of the Nile, and by Theophrastus the Egyptian Bean, or Lotus of Antinoüs, has a flower of a lovely red, and a fruit shaped like the rose of a watering-pot, pitted with deep hollows, each containing an oblong seed, as large as a small filbert: this is the Nymphæa Nelumbo of Linnæus, the Cyamus Nelumbo of Sir J. E. Smith, and, according to him, the κυαμος of the ancients, which has been confounded by other able writers with the true Lotus of Egypt, Nymphæa Lotus, and has probably become important in the Egyptian Mythology only as a substitute for the former (the real "Lotus of India"). This fruit, compared by Theophrastus to a wasp's nest, is represented on various Egyptian monuments.

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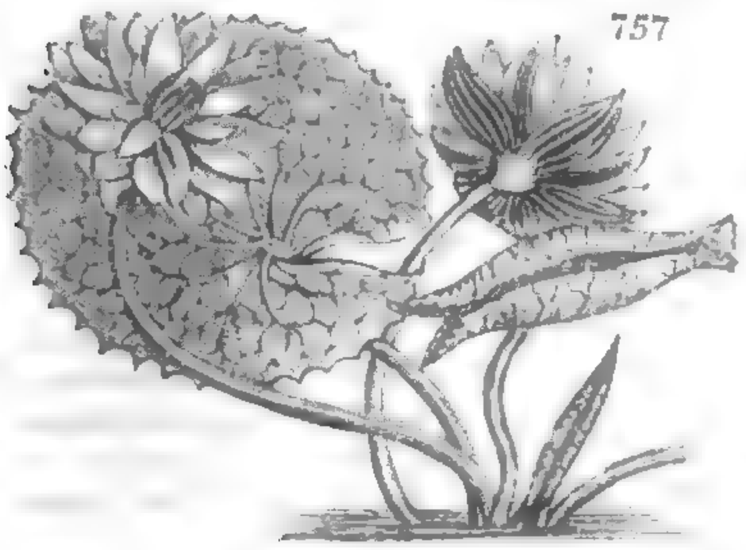

NYMPHÆA LOTUS.

4899. *The red-flowered Lotus* is common in India, but has disappeared in Egypt; its former existence there being incontestably proved by the testimony of Herodotus and Theophrastus.

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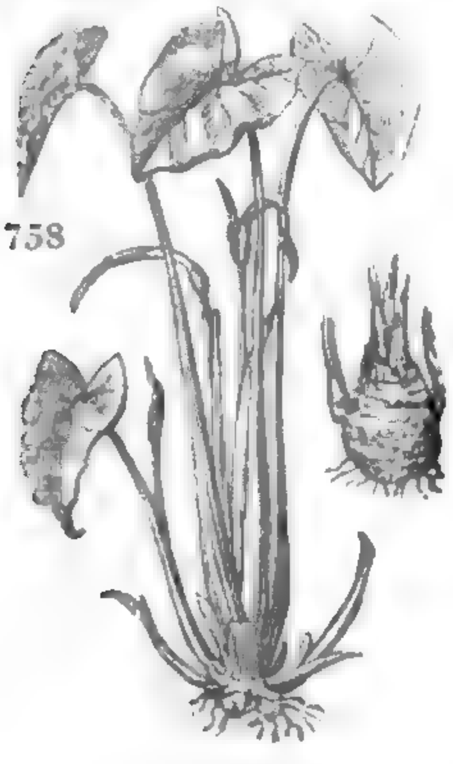

EGYPTIAN ARUM.

4900. Lastly, the third species has blue flowers, and a fruit like the first: it is likewise delineated on the monuments of antiquity, and has been noticed by Athenæus. This author says that at Alexandria the crowns worn at the festivals of Antinoüs were composed of the red or the blue Lotus. MM. Delille and Savigny observed the blue Water-lily Lotus, in Egypt, and have described it under the name of Nymphæa cærulea.

4901. The Egyptian Arum (*A. Colocasia* Linn.) (*fig.* 758.) abounds in Egypt, Syria, and the adjacent countries, and is extensively cultivated for the sake of its large esculent roots, which are no less esteemed than those of the allied Arum esculentum *Linn.* in the West Indies. The gourd and cucumber tribe are every where planted; no kind, however, being held in such favour as the Cucumis Chata, which, says Hasselquist, grows about Grand Cairo, and nowhere else, and which the grandees and Europeans in the capital eat as the most pleasant fruit they can obtain, and that from which their health is least liable to suffer.

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4902. The Carthamus tinctorius (*fig.* 759.), or Safflower, is raised in large quantities throughout the country, and is a source of much profit to the natives. Besides its valuable properties as a dye, at Cairo the young leaves are considered an excellent salad.

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CARTHAMUS TINCTORIUS.

4903. The Onion (*Allium Cepa*) is a plant, the use of which may be traced, in Africa, and especially in Egypt, to a period of very high antiquity, so far back as 2000 years before Christ. It still forms a favourite addition to the food of the Egyptians. Hasselquist, in a panegyric on the exquisite flavour of the Egyptian onion, remarks, that it is no wonder the Israelites, after quitting the land of bondage, should have regretted the loss of this delicacy as they did, with the reproachful exclamation, "we remember the fish that we did eat in Egypt, the cucumbers, and the melons, the *leeks*, and the *onions*, and the *garlic*." These roots are mild and pleasant in Egypt, though strong and nauseous in other countries. There they are soft and yielding; but in more northern regions they are hard, and their coats so compact, as to render them difficult of digestion. The Egyptians and Turks eat them roasted and cut into four pieces, with some bits of cooked meat: a preparation which they call *kebab*, and consider so delicious, that they devoutly wish it may form one of the viands of Paradise. A soup made of Egyptian onions was pronounced by the learned traveller to be certainly one of the best dishes of which he ever partook. The predilection for this savoury bulb extends in Africa beyond the country of the Nile. Major Denham, in his route south from Bornou, observed numerous gardens, in which the only vegetable cultivated was the onion. The ancient Egyptians worshipped the onion, and "shed tears at the scent of a deified leek." By the Greeks, again, this root was held in abhorrence; while the Roman soldiery and labourers almost lived upon it. In the south of Europe, the love of onions was formerly not confined to the lower classes, but extended even to the court; and it is related of Alfonso, king of Castile, who had the greatest aversion to that savoury vegetable, that, in the year 1368, he instituted an order of knighthood, by the laws of which it was enacted that those knights who had eaten garlic or onion should not appear at court, nor have any communication with their brethren, for the space of one month. So great a quantity of onions was cultivated at Albi, in France, that the tithe of them produced to the archbishop an annual revenue of 1000 crowns.

4904. The *Acacia* of the Nile (*A. nilotica*) is supposed to be the species that yields gum-arabic.

4905. *From time immemorial* the Cerealia have abounded in Egypt; and in the tombs of the Egyptian kings, which were observed by the naturalists of the famous French expedition, vessels were found, filled with wheat, perfect in form and colour, though buried for many thousand years; so that it is not improbable that Egypt may have been the native country of this grain; and for many years so great was the fertility of Egypt, that it was styled the granary of Europe.

4906. *Many are of opinion* that we are indebted to Egypt for the *Bean* (*Vicia Faba*); certain it is that the Greeks received it from that country.

4907. *The coast of Barbary* is described by Desfontaines, in his *Flora Atlantica*, as a warm but salubrious and agreeable region. Its mild winters resemble an early spring, when the Peaches, Plums, Nectarines, and Almonds are in blossom, the herbage is green, and the fields are adorned with innumerable flowers. There are Triticum durum, distinguished by its horny, scarcely farinaceous kernel, bearded spike, and solid culm; Barley, used only as food for horses; Indian Corn, Sorghum, Holcus saccharatus, Rice in the inundated grounds; Tobacco (*Nicotiana rustica* and *Tabacum*), a great variety of Olives, beautiful Oranges, Figs, Pomegranates, Almonds, Grapes, Plums, Peaches, Pistachio nuts, Zizyphus Lotus, delicious Melons and Gourds, Crocus vernus, the White Mulberry for feeding silkworms, Cotton, Sugar Cane (in gardens), Hibiscus esculentus, and many European kitchen vegetables. Opposite to Tripoli, in the Lesser Syrtis, is an island, now called Gerba, or Jerba, once inhabited by the Lotophagi, a people so termed because their chief food was a fruit called Lotos. "After the Palm," says the learned Shaw, in his account of the vegetable products of Algiers and Tunis, "we are to describe the Lotus, whose fruit is frequently mentioned in history; the Lotophagi also, a considerable people of these and the adjacent districts, received their name from the eating of it. Herodotus informs us that the fruit was sweet like a date; Pliny, that it was of the bigness of a bean, and of a saffron colour; and Theophrastus, that it grew thick, like the fruit of the myrtle tree. This shrub, which is common in many parts of Barbary, has the leaves, prickles, flower, and fruit of the Zizyphus, or Jujeb; only with this difference, that the fruit here is round, smaller, and more luscious; at the same time, the branches, like those of the Paliurus, are neither so much jointed nor crooked. This fruit is still in great repute,

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tastes something like gingerbread, and is sold in the markets all over the southern districts of these kingdoms." It appears very certain, according to M. Desfontaines, that this shrub is the true Lotos, whence the Lotophagi derived their name; and this is rendered more evident by a passage from Polybius, who affirms that he saw the Lotos himself. The lotos of the Lotophagi, says the historian, "is a stiff and thorny shrub; its leaves are small, green, and like those of a Rhamnus. The immature fruits resemble myrtleberries; when ripe, they are of a reddish colour, and equal to round olives in size, containing a stony nut." This description entirely coincides with that of Zizyphus Lotos (*fig.* 760.), and cannot be applied to any other tree of the country. Polybius has further informed us of the mode of preparing the Lotos. When ripe, the fruits are gathered, crushed, and kept in close vessels; the common sort being destined for the slaves, and the best quality for the free men. In this state the fruit is eaten, the flavour resembling figs or dates. A kind of wine is prepared from them by adding water, which is very good, but does not keep above ten days.

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ZIZYPHUS LOTOS.

4908. *Theophrastus relates* that the Lotos was formerly so common on the island now called Zerbi, and the adjoining continent, that the army of Orphellus, when their provisions failed, on the way to Carthage, lived for several days upon it. Now, the inhabitants of Syrtis, and the vicinity of the desert, still gather the fruit of this shrub; they sell it in the market for the food of man and beast, and drink the water in which it has been infused. The tradition of its having been formerly the chief food of man is still preserved among them. Homer alludes to this very plant in his Odyssey, when he says that the Lotos had so delicious a flavour, that the strangers who ate it lost all recollection of their own country. Thus were the companions of Ulysses obliged to be removed by force from the place where it grew. Doubtless the lotos fruit was a convenient resource for people who dwelt among uncultivated lands; but nothing but the glowing imagination of a poet could have conferred such exquisite flavour on a fruit which is far inferior to the dates of the same neighbourhood, as to aver that those who had once tasted it were unwilling ever to leave the favoured land that produced it. Some have considered this Lotos to be the Diospyros Lotos; but without sufficient reason.

4909. *It is much to be regretted* that the *Atlas* mountains have not been explored; and yet it would appear, from the geographical notice of the empire of Morocco, recently published in the Journal of the Royal Geographical Society of London, by Lieutenant Washington, R. N., vol. i. p. 123., that so desirable an object would not be of difficult accomplishment. This gentleman accompanied a mission that was sent by the British Consulate at Tangier, to Morocco, which is situated in a plain that extends east and west, between a low range of schistose hills to the north, and the lofty Atlas to the south, about twenty-five miles wide, and apparently a dead flat to the foot of the mountains, which rise abruptly to the height of 11,000 feet, their peaks covered with snow. This plain, which has no limit as far as the eye can reach east and west, lying about 1500 feet above the level of the sea, the soil a light sandy loam, with numerous rolled stones of crystallised quartz, agates, flints, porphyry, a green stone, carnelians, &c. &c., is, generally speaking, covered with low brushwood of the thorny plant called Sidra nebach, or Buckthorn; the bank of the streams fringed with Oleanders (*fig.* 761.) in great beauty, while to the north of the city is a forest of Palms and Olives. The river Tensift, springing at about forty miles east of the city, flows at about four miles north of Morocco, and, joined by streamlets from Atlas, reaches the Atlantic near Saffy, about 100 miles distant; the river is shallow, but rapid; the channel about 300 yards wide, but fordable almost every where. "The quarter of the city allotted to the British mission was one of the Sultan's gardens, called Sebt el Mahmônia, covering an extent of fifteen acres, planted in the wilderness style, with every variety of fruit tree, Olive, Orange, Pomegranate, Citron, Mulberry, Walnut, Peach, Apple, Pear, Vine, &c.; with Cedar, Poplar, Acacia, Rose, Myrtle, and Jasmine, forming a dense and luxuriant mass of foliage, only broken by the solemn Cypress and more stately Palm; and through which nothing was to be seen but the snowy peaks of Atlas, rising almost immediately above our heads, and the tall tower of the principal mosque, distant about a quarter of a mile. Nought but the playfulness of gazelles, and the abundant trickling of water in every direction, to break the stillness of this delightful spot, combining every thing to be desired in a burning clime, — silence, shade, verdure, and fragrance. But, as a contrast to the limited view of our garden, the terraced roof of our house commanded a prospect over the city, the extensive plain, boundless to the east and west, and the whole *dahir*, or belt, of the Atlas, girdling, as it were, the country from the south-west to the north-east, with a band of snow; and few days passed, during our stay at Morocco, that we did not spend the hours of sunrise and sunset, gazing on this beautiful and striking object, noting its masses and peaks of snow, and deploring that this mighty range, combining within one day's journey every variety of climate, from the torrid to the frigid zone, and offering such a field to the naturalist, the geologist, and the botanist, should still remain unexplored, and present an impassable barrier to civilisation. Viewed from Morocco, the frozen range of Atlas bounds the horizon from east to south-west. In January, the transition from the wooded to the snowy zone is immediate; the formation inclines more towards sharp ridges and points than to alpine peaks. The highest of these points visible from the city bears S.S.E., distant twenty-seven miles; two other remarkable masses, forming sugar-loaves, S.E. by E. and S.E., called by the Moors Glaoni. It is singular that neither Moors nor Arabs have any distinguishing name for the Atlas. It is usually called Djibbel Telj, or Snowy Mountains; but the word Atlas is unknown; whence is it derived? May it not be a Greek corruption of the Libyan Adraer, or Athraer, signifying mountain? Many of these heights were measured trigonometrically, and the highest, named by the Moors Mittsin, lat. 31° 12′ N., twenty-seven miles S., twenty miles E. of Morocco, was found to be 11,400 feet above the level of the sea. This is below the limit assigned to perpe-

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OLEANDER.

tual snow by Humboldt; yet but once in twenty years had these summits been seen free from snow." From the enchanting Jebl el Mahmônia, the travellers visited the Atlas mountains, and spent three days among them. At daylight of the 8th of January (a season of the year when the mountains of more northern latitudes are unapproachable) they bade adieu to their earthly paradise, the garden of El Mahmônia, and journeyed S.E. towards Atlas. The soil of the plain which they traversed was a light sandy loam, covered with rolled stones and shrubs of the Buckthorn, traversed by brooks, fringed with Oleanders, and large Olive groves and ruined aqueducts; at sixteen miles they entered one of the valleys of the Atlas, and, winding up a mountain torrent, encamped for the night at about 2400 feet above the plain, commanding a splendid view of the city and plain of Morocco, with the winding river, losing itself in the western horizon. Next morning, they struck their tents, and set forward by a sharp ascent; a brawling torrent was in the valley beneath them, its banks well wooded with Olive, Carooba, or Al Kharob (*Ceratonia Siliqua*), Walnut, Acacia, Cedar (the finest timber that the country affords, though not very large), and a profusion of Oleanders, and stunted Palms and Rose Trees: they were also cheered and enlivened on the march by the shouts of the Shelluh huntsmen, who, at every angle of the road, endeavoured to rouse game, every turn disclosing fresh beauties in the valley, and a more boundless view of the plain and city of Morocco, its various mosques glittering in the morning sun; the basis of the road, limestone; the soil, a stiff clay and stony, with boulders of limestone, sandstone, agate, flint, porphyry, gneiss, greenstone, and carnelian; on the brow of the hill a range of limestone, full of vertical fissures, resembling a pile of artificially placed and gigantic tombstones; and several villages near the road, perched in the most romantic situations, and inhabited by the free Shelluhs, the aborigines of these mountains. Till two o'clock in the afternoon they continued ascending, the herbage becoming more scanty, and the cedars more stunted, till they reached the limit of snow, and proceeded some way above it; when, their guides declaring they would proceed no farther, and the thawing snow giving way under their feet, our travellers reluctantly halted, gazing on the highest peaks, far beyond their reach, and the intermediate interval presenting one mass of untrodden snow. The barometer indicated an elevation of 6400 feet. Such a country as that round Morocco would indeed afford a glorious harvest to the botanist.

Subsect. 3. *Zoology.*

4910. *The Zoology of Egypt* presents that scantiness in the number and variety of its objects which might be expected from the nakedness of the country. The French government, always more attentive than ours to scientific research, even in the midst of war, commissioned some of the most able zoologists to accompany their army into Egypt; but the paucity of its animal productions prevented the results from being so important as had been expected. The more recent researches of M. Rüppell have made us acquainted with many new animals.

4911. *The following quadrupeds* appear to be the most peculiar: —

Rhinolophus tridens. Trident Bat.
Nycteris Geoffroyii. Geoffroy's Bat.
Nyctinomus ægyptiacus. Egyptian Bat.
Pteropus ægyptiacus. Egyptian Vampire.
Taphozous perforatus. Perforated Bat.
Canis niloticus. Egyptian Fox.

Mangusta Ichneumon. Ichneumon.
Arvicola niloticus. Egyptian Arvicola.
Psammomys obesus *Rüp.* Alexandrian Sand Rat.
Psammomys cahirinus. Egyptian Rat.

Gerbillus ægyptiacus. Egyptian Gerbel.
Lepus ægyptiacus. Egyptian Hare.
Felis maniculata *Rüp.* The True Cat.
Felis Chaus *Güld.* The Booted Lynx.
Canis niloticus *Rüp.* Nilotic Fox.

4912. *Of these animals,* the three latter have been recently discovered by M. Rüppell. This naturalist is of opinion that the Felis maniculata is the original stock from which the domestic or house Cat of Europe, in all probability, has sprung; the intermediate gradation being marked by the tame cats of the modern Egyptians. The wild breed is still to be met with in Nubia, and extends, in all probability, to the confines of Egypt. The Felis Chaus somewhat resembles the Booted Lynx of Abyssinia; but is distinct. The Egyptian Fox, C. niloticus, both in habits and appearance much resembles the European Fox; but has a much more slender body, and longer legs: the body also is yellowish, and the throat and belly grey.

4913. *The Egyptian Ichneumon* (*fig.* 762.), as celebrated, and even deified by remote antiquity, deserves a more detailed notice. The important services which this animal renders to mankind certainly gave it higher claims than any other to the homage of the ancient Egyptians. It presents a lively image of a benevolent power perpetually engaged in the service of man, by destroying those noisome and dangerous reptiles which are the pests of hot and humid climates. Of a small size, and without any great physical strength, the Ichneumon carries on a secret and destructive warfare against crocodiles, serpents, and lizards of every description, not, indeed, by attacking these reptiles, frequently so much larger than itself, but by seeking with the greatest perseverance and cunning after their eggs. Urged by this instinct of destruction, it may be seen at the close of day gliding through the ridges and inequalities of the soil, fixing its attention on every thing that strikes its senses, with the view of evading danger or discovering prey; its thirst for destruction, in fact, is so great, that, even after its appetite has been satisfied, it destroys every living thing within its reach too feeble to make resistance. It particularly seeks after eggs, of which it is extremely fond, and it thus proves so destructive to the race of crocodiles. It is easy of domestication, and in this state evinces great attachment both to the house and the person of its master. It never wanders from the first, and knows the person of the latter, recognises his voice, and is pleased by his caresses. Its sense of smell, as may be supposed, is particularly acute: and the ears are remarkable for their breadth and the extension of the orifice.

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EGYPTIAN ICHNEUMON.

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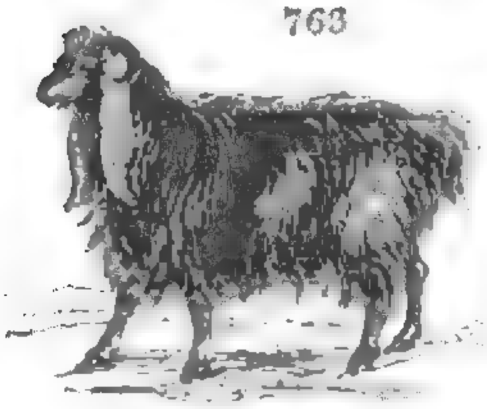

EGYPTIAN GOAT.

4914. *The domesticated animals* are of much the same breeds as those distributed in the Barbary States. The vicinity of Arabia supplies the Egyptians with the fleetest and most beautiful horses; while the ass is much stronger and more serviceable than ours: this breed attains to the size of ponies, and has long been introduced into Malta, where they command a price equal to fifteen or twenty pounds. The sheep are of the broad-tailed race, spreading, with various modifications, over Barbary and the Levant, from whence it has passed into India, China, and Southern Russia. The Goats (*fig.* 763.) are particularly elegant: the hair is sleek, the forehead arched, and the ears very long and pendulous: this breed was introduced into Malta and Sicily by the British army, on its return from Egypt; and, from personal observation, we think those countries well adapted to promote its increase.

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SACRED IBIS.

4915. *The Birds* do not materially differ from those of Europe. Vultures and Storks are held in deserved esteem, from their usefulness in devouring offal and all dead animals: hence they may be seen on the terraces of houses, building and living in perfect security even in the midst of noisy and populous cities. The Vulture percnopterus, or Slender-billed Vulture, rare in Europe, is here one of the most common birds: it also frequents the deserts, and preys upon those men and animals who have unfortunately perished in those immense wastes. Several Bustards, together with Partridges and Quails, inhabit all the sandy tracts.

4916. *The sacred Ibis of the ancient Egyptians* (*fig.* 764.) was long confounded by naturalists with other birds not even natives of the country. M. Cuvier, however, has now clearly ascertained the species which excited so much veneration from antiquity. Its colour is white, with long disconnected plumes on the wings, of a glossy blackness.

4917. *The Scarabæus sacer*, or Sacred Beetle of the Egyptians, so often seen represented on their sculptured monuments, is rather larger than our common dung beetle, and is entirely black. Of the fish and other inferior animals we have nothing of much interest to communicate.

Sect. III. *Historical Geography.*

4918. *There is no kingdom more distinguished in history than Egypt*, or the name of which excites more awful and solemn ideas. The dim records of her ancient story are coeval with the origin of social union, and of all the arts which improve and embellish human life. Yet her early dynasties are involved in deep obscurity, and the descriptions of this pomp and grandeur might even have been treated by modern scepticism as fabulous, had not such astonishing monuments remained almost entire to attest their truth. The reign most celebrated by tradition is that of Sesostris, who is represented as having subjugated Asia, even to its central regions; and in fact the sculptured monuments of Thebes are representative of triumphs, not only over the Ethiopians, Jews, and Syrians, but over the natives of Assyria, Persia, and even of Bactriana. Greece has always owned herself indebted to Egypt for her civilisation, which began much later, though it proceeded with more rapid steps, and rose to a much loftier height. At length, in 525 A. C., Psammenitus, the last native king, yielded to the arms of Cambyses, who endeavoured, but with little success, to push his own conquests into Ethiopia and the Oases. Egypt, however, proved a turbulent member of the Persian empire, the authority of which was disputed by Nectanebis and other usurpers. This antipathy to the Persian yoke caused Alexander to be welcomed as a deliverer. That great monarch appears to have highly estimated the importance of Egypt, especially in a commercial view, which his comprehensive mind could fully appreciate. Alexandria, the most celebrated of all the cities founded by him, proved by its subsequent greatness the judgment with which its site had been chosen. The benefits projected by that conqueror were, even after the partition of his empire, in a great measure secured by the dynasty of the Ptolemies, which was established in 430 A. C. Its intelligent princes rendered Egypt the main seat of Grecian learning; and, by promoting every species of public improvement, made her probably more flourishing and enlightened than she had been amid the tyrannic pomp of the Pharaohs. The subjection to Rome, therefore, which was completed in 29 A. C., was a misfortune to Egypt; though industry and civilisation were still protected, and Alexandria continued a great seat of learning, and the second city in the empire. A harder fate awaited her in the seventh century, when she was over-run by the Saracen hordes. The ferocious bigotry of Omar impelled him to exult in the destruction of that library which had been the pride of the Ptolemies, and unrivalled in the ancient world; and it led him to inflict upon Egypt evils still more deeply felt. By degrees, however, the conquerors imbibed the arts and humanity of their new subjects; the Saracens became a polished people; and, under Saladin, the soldans of Egypt held the first place, as to power and splendour, among Mahometan princes. An unfortunate reverse, however, awaited this dynasty. The Mamelukes, a race of slaves whom they had imported from Georgia and Circassia, revolted against their masters, and set up a lawless and turbulent sway, which long crushed in Egypt all the seeds of order and improvement. They were destined, indeed, to bend beneath the dominion of the Turks, after the capture of Constantinople had rendered them masters of the Eastern Empire. In 1516, Selim subdued and put to death the Mameluke soldan, and appointed a pacha in his room. The Mamelukes, however, retained many privileges, particularly that of bearing arms; and, as they formed the bravest cavalry in the empire, they were always the rivals of the Turks, and often their masters. From that time Egypt continued to vacillate between this tumultuary aristocracy and the gloomy despotism of the Porte. The extraordinary and unjustifiable invasion of the French in 1798 had no permanent effects; and gave only an opportunity for British valour to display itself in their expulsion. The new order of things, however, afforded to the Turks an opportunity of establishing their power more firmly than before. The Pacha, Mohammed Ali, succeeded, certainly by very violent means, in cutting off the principal leaders of the Mamelukes, and expelling the rest from Egypt. That chief has since rendered himself independent of the Porte, and has governed the country with such vigour, and in such a spirit of improvement, as promises in some degree to restore to Egypt the prosperity of her best days. He has even sought to extend his dominion over other parts of the Turkish empire, and is at present (1833) master of both Palestine and Syria; which the Porte by a recent treaty has been obliged to cede to him.

Sect. IV. *Political Geography.*

4919. *Egypt, since the earliest ages,* has been governed *despotically.* As soon as the Turks obtained possession of it, they claimed the right of ruling it by a pacha, invested with all the prerogatives of the Sultan, and responsible to him. It has, however, as we have already observed, been always a loose and turbulent appendage of the Ottoman empire. This insecurity was occasioned, not only by its distance, and the difficulty of communication, but by the share in the administration still left to its former rulers, the Mamelukes. This share was, in theory, vague and slight, but in practice extensive; since they composed the best cavalry in the empire, and were ever ready to enforce with the sabre their own claims, just or unjust. The undefined limits between their power and that of the Pacha necessarily caused a constant collision. Sometimes the Pacha was expelled by the Mamelukes; and the Porte, when pressed by other concerns, was obliged to connive at the revolt. If the people were ever able to mingle in these contests, it was in a tumultuous manner, which produced no benefit to themselves, and only augmented that reign of disorder, which was so fatal to all improvement and regular industry.

4920. *The Mamelukes* now belong to history. They appear to have made their final exit from the political scene; and, notwithstanding some brilliant qualities which they possessed, their fate can be no object of regret. Their expulsion left Egypt almost wholly subject to the sway of Mohammed Ali, who had received from the Porte the appointment of pacha, but who, profiting by the distractions of the Ottoman empire, has established a power wholly independent. His administration has hitherto been a blessing to Egypt. He has established a better system of law and order than that unfortunate country had for centuries experienced; he encourages every species of industry, and is studying to introduce the arts and improvements of Europe. Actuated by the usual ambition of monarchs, he attempted conquest, and extended his dominion southward along the Nile as far as Sennaar, and even to Darfour; but tracts so distant and difficult of access can never be held without much difficulty, and are said to have already eluded his sway. In Arabia he has completely crushed the power of the Wahabees, and added to his domain the sacred territory of Mecca and Medina. For some time Mohammed Ali ceased not to own the supremacy of the Porte, and sent to Constantinople a tribute in money and grain. Now, however, he has established his complete independence, and has even threatened the overthrow of the Ottoman power, which was only saved by the interference of Russia.

4921. *Besides these supreme authorities,* there is a sort of interior political system, existing particularly among the Arabs, who form the chief population of the villages, especially in Upper Egypt. These, with their surrounding territory, are governed each by its sheik, whose office is hereditary. The accession of a new sheik, indeed, must be confirmed by the Pacha, who requires on this occasion to be propitiated by a large sum of money. When, however, these sheiks pay their tribute, and perform the military services demanded, they are little molested in their internal administration. Like the rest of the Arabs, they are divided among each other by deadly feuds, and sometimes carry on private war.

4922. *The revenues of Egypt* arise from three sources, the lands, the *miri* or poll tax, and the customs. All the lands are judged to belong to the Grand Signior, and this claim has been made good by Mohammed Ali, who has in a great measure abolished the prescriptive rights which many individuals claimed to them. The poll tax is levied only upon Christians and Jews, and is not nearly so considerable. It is paid by all males arrived at the age of sixteen, and varies, according to their property or favour, from 2½ to 11 dollars. The next branch consists of the customs on all goods imported at Alexandria, Damietta, and Suez, and also at Cairo, on their transit to Upper Egypt. Pococke reckoned the land tax at 480,000*l.*, the miri at 64,000*l.*, the customs at 118,000*l.*: in all, 662,000*l.*; of which he understood that only 16,000*l.* along with a tribute in grain and other commodities, was remitted to Constantinople. General Reynier, during the occupation of the French, supposed that the amount might approach 1,000,000*l.* It is understood that the present ruler, by a rigorous levy of the duties, by the improvement of the country, and by the tribute exacted from the conquered territories, has considerably enlarged the sums, which by the most recent writer is estimated at 2,250,000*l.* while the ordinary expenses are not supposed to exceed 1,760,000*l.*

4923. *The army*, which formerly consisted only of an undisciplined and turbulent though brave militia, has been placed by Mohammed Ali on the most efficient footing. By the aid of French officers, he has disciplined a large body of troops in the European manner, and rendered them decidedly superior to any force which the East can oppose to them. In 1826, the troops thus trained were reckoned at 48,000, and since that time it is probable they have been considerably augmented. The Pacha has founded at Cairo a military college, in which 1400 boys are educated by numerous European teachers, and in which he expends monthly about 6000 dollars: he has also established there a cannon foundery, and a manufactory of arms and gunpowder.

Sect. V. *Productive Industry.*

4924. *Egypt* was distinguished at an early period for the cultivation of the useful as well as of the fine arts. Agriculture, the primary art, for which her situation and soil peculiarly fitted her, appears to have been carried to great perfection, at a time when the finest of the bordering countries were under common and pasturage. Those earliest authentic records of the human race, contained in the sacred writings, represent Egypt as greatly resorted to, in times of scarcity, for a supply of grain. When high cultivation has once been established in a country, it is scarcely eradicated, even by long periods of anarchy and misgovernment. After all the calamitous revolutions through which Egypt has passed, and notwithstanding her deep political degradation, her fertile lands continue to be cultivated with skill and care, and to yield copious harvests.

4925. *In all hot countries*, but more especially in Egypt, irrigation is the first resource of agriculture. The periodical inundation of the Nile, when swelled by the rains of Abyssinia and central Africa, is the primary cause on which her fertility depends. This is so fully admitted, that, in the years when the Nile does not rise beyond a certain height, the *miri*, or tribute, is not exacted. The whole of the Delta, during the autumnal season, is laid entirely under water. To effect this object, a number of intersecting canals were formed by the provident care of the ancient government; and the utility of these is so urgent, and the consequences of their interruption so immediately fatal, that they have not been wholly neglected, even by the supineness of modern administration. The number of canals in Egypt has been stated at 6000; but this, at all events a loose estimate, cannot be true, unless we include those minor channels conducted by private industry through every tract, and almost every field. The great canals, which are maintained by the public, do not exceed eighty or ninety. In a great part of Upper Egypt and of Fayoum, machinery is employed to convey the water to grounds which, from their elevation above the river, cannot, without artificial means, be inundated. Buckets raised by pulleys are sometimes sufficient; but at other times recourse is had to more operose and ingenious machines moved by oxen (*fig.* 765.). This successive rise and retiring of the waters produces a singular variation in the aspect and surface of Egypt. According to the description of Amrou, in his report to the Caliph Omar, it presents in succession an appearance of a field of dust, that of a freshwater sea, and that of a flower-garden.

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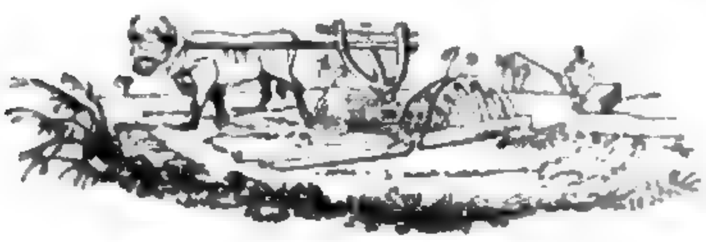

WATERING MACHINE.

4926. *Few countries unite in a greater degree than Egypt the products of various and opposite climates.* On the borders of the tropical and temperate zones, it yields, in almost equal abundance, the vegetable productions proper to each; while the variation from overflowing moisture to extreme dryness greatly extends the range of cultivation. Rice, which was introduced by the Saracens, has been found peculiarly adapted to those lower lands which at one season are thoroughly submerged by the Nile. On these it is sown in June, grows amid the water, and yields a harvest in October. Wheat and barley grow better in the higher grounds, and particularly on the well-watered districts of Upper Egypt. Those tracts which obtain but scanty irrigation by artificial means are only fit for the coarser product of the *Holcus dhourra*, the grain generally consumed in Nubia, which combines the qualities of a shrub with that of bread corn. Its stalk contains a juice which the natives suck, and which, when dried, serves the purpose of fuel; above grow leaves, which afford food for the cattle. Oats are not an Egyptian product; but beans are raised for the use of the camels. Maize, flax, and sugar are also objects of some culture; and, in a smaller degree, indigo. Cotton, which, till lately, was scarcely ranked as a product, has, through the exertions of Mohammed Ali, become an article of the greatest importance, supplying the home manufactures, and affording the materials of a large export. Since 1822, a continually increasing quantity has been imported into Britain; in 1828, this amounted to 6,454,000 lbs. It bears a higher price than any other except that very finest American species called "Sea Islands." The soil requires little labour, besides that of irrigation. Being softened to a species of thick mud, it receives the grain without farther preparation; and even where dry, its quality is so loose and sandy that it may be worked with very little trouble.

4927. *Egypt, in its fertile tracts*, exhibits a blooming and verdant aspect; yet it is not, on the whole, a *wooded* country. The foliage which embellishes it, is derived chiefly from fruit and garden trees. The palm, the sycamore, the tamarisk, and some species of acacia, are the most prevalent. For timber and firewood it is almost entirely dependent upon Syria. Some Egyptian wines were celebrated in antiquity, though the country seems by no means well adapted for this product; at present the vine is cultivated chiefly for its grapes. Fruit is generally abundant, but apt to be watery. The apricot, the citron, the lemon, are reckoned the best.

4928. *Domestic animals* are not numerous in Egypt. Cultivation is peformed by the aid of cows and oxen of a large breed, and also a species of tame buffalo, which is sometimes excited to fury by the strange vesture of Europeans. A small number of cattle suffice for the easily cultivated soil; and, as Egypt is nearly destitute of natural grass, they are fed upon clover. The great have very fine horses, imported chiefly from Barbary; though, since the expulsion of the Mamelukes, who took especial pride in these animals, their numbers must have diminished. Their paces are only suited for military manœuvres: they can do nothing but walk or gallop. In Egypt, as in Syria, the animal used for travel is the ass, of which there is a breed very superior to any seen in our climates. As the Orientals ride much, asses are very numerous; there are said to be in Cairo 40,000. Camels are seen in great numbers; but they are rather for journeying over the vast surrounding deserts, than for the interior of the country. Large swarms of bees are bred in Upper Egypt; while Lower Egypt is remarkable for a process of hatching fowls by artificial heat, of which, however, it is difficult to perceive the advantage, and which does not produce such sound or healthy chickens as the natural process. The bordering deserts contain the lion, the hyena, the antelope, and other wild animals generally found throughout Africa; and in Upper Egypt a considerable number of crocodiles and hippopotami are found in the Nile.

4929. *Egypt is not, and never was, a great manufacturing country.* With the produce of her soil she purchases the fabrics of neighbouring nations, particularly at Constantinople; and, generally speaking, every thing which is imported thence is better and more valued than what is made in the country. There are, however, extensive manufactures of linen, though not of that fine linen for which Egypt was anciently famous. Muslin and cotton dresses are now preferred, as more suited to the climate. The linen at present manufactured consists chiefly of the coarser kind, for sheets, curtains, towels, and sackcloth. The large towns of Lower Egypt, particularly Damietta and Mehallet, are the main seats of this manufacture, which is also carried on at Cairo, Fayoum, and Siout in Upper Egypt. These are produced, not merely for internal consumption, but large quantities are exported to different parts of Turkey and the Mediterranean. The Pacha has introduced the cotton manufacture, which he successfully carries on by European machinery, and even the steam engine. There are also manufactures of carpets for sofas at Benisuef, and of embroidered silk handkerchiefs at Cairo; but none of the articles there produced equal those brought from India or Asia Minor. The potteries of Egypt are extensive, the mud or slime deposited by the Nile being well fitted for this purpose. From it the Egyptians fabricate a species of porous jars, which are highly prized for the property ascribed to them of cooling and clarifying the water; every thing which tends to improve that simple beverage being held in these climates especially valuable. These jars appear to have been used from the earliest ages, representations of them being found on the most ancient monuments.

4930. *Egypt is more favourably situated for foreign commerce* than most other countries, as it may be said to form the connecting link between Africa, Europe, and Asia. It is only, however, at particular periods that its government has afforded the necessary encouragement and protection. The Pharaohs, like the other Oriental despots, were averse to navigation and foreign intercourse of every description. The Persian policy was similar. The sovereigns of the Greek dynasty were the first who turned their attention to the means of improving the vast natural capacities of Egypt. Alexander, in founding the city to which he gave his name, had evidently formed the design of making it a grand commercial emporium, which it soon became. Under the Roman empire the supply of the capital of the world, and its rich dependencies, with the commodities of central and eastern Africa, and still more of India, occasioned an immense traffic; but on this the conquest of the Saracens inflicted a blow from which the country never recovered. The Venetians and Genoese, indeed, who first revived commercial enterprise in Europe, formed factories in Egypt, which they made the entrepôt for Indian goods. But the natives had no share in these transactions; and, after the discovery of the passage by the Cape of Good Hope, the land carriage, the difficult navigation of the Red Sea, the exactions and persecutions to which Europeans were exposed, rendered it no longer possible to compete with those who conducted the traffic even by that circuitous route. Egypt, however, possesses natural advantages, which, under an improving and protecting administration, might again enable it to engross a large share of the communication between Europe and India. Some efforts, though yet in their infancy, are understood to be actually making by the Pacha to renew this intercourse. As yet its maritime trade is nearly confined to the Mediterranean. From Damietta it exports, to Syria, Asia Minor, and Turkey in Europe, large quantities of grain, in which shape the tribute was sent to Constantinople; also coarse linens in considerable quantity. The commerce with what are called the Frank nations is carried on entirely from Alexandria, and by European merchants resident there; but in the course of the last two centuries it greatly declined, though it has been much augmented by its present ruler. He commits, however, the great error of interfering in every branch, and even becoming himself a partner, demanding often unreasonable advantages. The internal trade is entirely carried on by the Nile and its branches, natural and artificial, which penetrate to all the great cities and cultivated tracts of Egypt. The communication of Alexandria with the interior was, in earlier times, usually maintained by a canal reaching direct from that city to Foua. After the negligence of its modern rulers had allowed that communication to be choked up, the European goods landed at Alexandria were conveyed in boats to Rosetta, and up that western branch of the Nile. The present Pacha, however, has restored this canal, forming a channel forty-eight miles long, ninety feet wide, and about eighteen feet deep. This important work was executed in 1819, in the course of little more than six weeks, by the labours of 250,000 men, who were violently impressed for that purpose.

4931. *The most active branch of Egyptian commerce*, and that which has remained unaffected by political vicissitudes, is carried on by caravans with the interior of Africa. The journeys on every side must be made through immense tracts of desert, where they could penetrate only by the aid of the camel. The caravans which go westward from Cairo do not penetrate beyond Fezzan, at which emporium they obtain, imported by the merchants of that country itself, the varied produce of Soudan. This caravan goes annually, unless prevented by peculiar circumstances, and performs its journey in fifty days. Those which proceed southwards depart chiefly from Siout; and their destination is Darfour and Sennaar. The caravans to the former country are the most numerous and frequent, though still inferior to the Fezzan caravan. Their departures are very irregular: sometimes there are two in the year; at other times, two or three years pass without one. A caravan is reckoned large if it numbers 2000 camels; some amount to no more than 500, or even 200. The imports from all these quarters are much the same. Gold, ivory, senna, ostrich feathers, gum, are secondary objects; but the main staple is always slaves. Egypt supplies with this unlawful commodity not only its own harams, but those of Turkey, Persia, and all the East. These slaves, being employed chiefly in a domestic capacity, are not doomed to the same severe and oppressive labour as those transported to the West Indies and America; and though the services in which they are employed are often of a nature peculiarly degrading, yet, being brought near the persons of the great, they are often raised to favour, and even to power.

4932. *The pilgrimages to Mecca and Medina*, from the Mahometan states of the West, form another branch, or at least an auxiliary, of commerce. Those from the interior, indeed, go by Nubia, and cross the Red Sea at Suakim; but from Barbary, and particularly Morocco, the most populous and zealous Mahometan countries, the direct route is by Cairo and the isthmus of Suez. In all the countries where pilgrimages are customary, it seems the system that they shall be so far turned to profit, as to pay their own expenses. Traffic becomes, thus, a joint object with religion, and is carried on probably for more moderate gains than if its dangers and hardships were undertaken solely for the benefits accruing from itself. The hostile occupation of the holy cities of Mecca and Medina, by the Wahabees, interrupted for some time this intercourse, which has been reopened, however, since the occupation of that territory by the viceroy of Egypt.

Sect. VI. *Civil and Social State.*

4933. *The estimates* of the population of Egypt have been extremely various; nor are we aware that it has ever been the subject of any accurate census; but the most careful recent estimates seem to fix it at about 2,500,000. The most detailed one, which seems to have been made with diligence, makes, of Copts, 160,000; Arab Fellahs, 2,250,000; Bedouin Arabs, 150,000; Arabian Greeks, 25,000; Jews, 20,000; Syrians, 20,000; Armenians, 10,000; Turks and Albanians, 20,000; Franks, or European Christians, 4000; Mamelukes, 500; Ethiopians, 7500.

4934. *Egypt* has long been occupied by races of various origin, who have retained their distinguishing characteristics with the constancy peculiar to Oriental nations. The Mameluke, making his boast of being a purchased slave, lived for centuries by the side of the Arab, proud of his freedom and ancient family. The Mamelukes, however, are now expelled; and the leading races consist of the Copts, the Arabs, and the Turks.

4935. *The Copts*, though not supposed to exceed 160,000 individuals, and of no political importance, are by much the most ancient, and, strictly speaking, the only native race. The sculptures on the most ancient monuments represent under the same form and features the original Egyptians, when that country was ruled by its native kings. The word Copt seems even a corruption of the middle syllable of the word Egyptian. Some authors, and Volney among the rest, have represented their features to be substantially the same with those of the negro; but this seems refuted by the observation of Brown, and the minute anatomical examination of Baron Larrey. The latter considers them as exhibiting, with a few variations, the characteristic features of the Nubian and Abyssinian — their skin of a dusky yellow; their countenance, full without being puffed; their eyes fine, limpid, opening in the form of an almond, and with a languishing look; the nose almost straight, rounded at the tip; the nostrils dilated; the mouth middle-sized; the lips thick, but less so than those of the negroes, and not, like theirs, thrown back; the beard and hair black and bushy, but not woolly. (*Description Historique, Etat Moderne*, ii. 3.) In their character, they too much resemble those who, being treated with scorn by others, can with difficulty learn to respect themselves. As usual with degraded races in barbarous countries, they are employed in those branches of trade and accounts which are repugnant to the turbulent pride of the ruling people. For want of others who possess the requisite capacity or application, their oppressors are under the necessity of employing them as stewards, superintendents, collectors of the revenue, keepers of registers, &c.: and various branches of trade are in their hands. They cannot, however, be expected to exercise these functions in the same honourable and respectable manner as if the employments, and those who practised them, were the objects of public esteem. The Copts are represented as crafty, covetous, cringing, and addicted to mean sensual indulgences. They are, however, a peaceable race, and are said to be remarkable for the warmth of their domestic attachments. Though they are found in every part of the country, their chief seat is in Upper Egypt, where whole towns are peopled by them.

4936. *The most numerous part of the population*, being that almost exclusively employed in agriculture, consists of Arabs, whom the fertile soil of Egypt has attracted from all the surrounding regions of desert. Lower Egypt has been peopled chiefly from Arabia and the shores of the Red Sea; Upper Egypt from the tracts of Africa which lie to the west and south. These cultivating Arabs, called Fellahs, retain much both of the features and character of their original tribes; an oval countenance, dark skin, large forehead, and small sparkling eyes. Neither have they, by any means, lost that pride, attachment to kindred and ancestry, and vindictive spirit, which distinguish the independent sheiks of the desert. On the whole, however, their conduct is much more settled and peaceable; indeed, in the large towns of the Delta, they have contracted dissolute and irregular habits, which seem to have prevailed from antiquity in that part of Egypt.

4937. *The Mamelukes* can claim little notice here, since the vigorous though cruel policy of Mohammed Ali has finally rooted them out of Egypt, and scarcely allowed them to find refuge in the remotest depths of the African continent. This extraordinary race, without kindred, without progeny, consisting of slaves imported from a remote country, and raised by the ill-earned favour of their masters to the most distinguished posts, formed the most prominent part of the Egyptian population. Their bravery, their splendour, their incessant conflicts with each other and with the Turks, gave to Egypt a stirring and picturesque aspect, which no other part of the Ottoman empire exhibited. This sort of interest, however, very poorly compensated for the licence and disorder with which they continually afflicted the country, and for the interruption which they occasioned to all regular industry. Their extinction, therefore, may well be considered as a fortunate circumstance, and an omen of better times.

4938. *The Turks,* though the least numerous part of the population, are highly important, as having been always nominally, and as being now really, the masters of the country. In their general features they do not differ from those who inherit the rest of the empire. This small portion, however, the instruments of a despotic government, and who all either possess or aim at political power, do not afford a favourable specimen of the Turkish character. Among no description of men, perhaps, exists a more entire disregard of principle, than among the officers of a despotic government, who, in seeking to rise, are accustomed to resort to every means of violence or fraud. Spending most of their time in a gloomy retirement, they brood in silence over their dark machinations, and are continually revolving schemes for circumventing and destroying each other. The present Pacha has not much to boast in regard to the means by which he attained his actual supremacy; though he has certainly used it in a great degree for the benefit of those placed under his government. The troops by which Egypt is held in subjection have consisted chiefly of the turbulent race of Arnauts, or Albanians; but the Pacha has recently recruited his armies from all classes, particularly the Arabs, and even the negroes brought from the interior.

4939. *There are Jews, Greeks, and Armenians in Egypt,* but scarcely in sufficient number to be considered otherwise than as strangers settled in the country. The Jews are, in a great measure, supplanted by the Copts, a similarly oppressed race, in all those branches of traffic which usually devolve upon them in Mahometan countries.

4940. *The religion of Egypt* is the Mahometan, exercised with all its accustomed bigotry and intolerance. The Copts, who profess Christianity, are subjected to a special tribute or poll tax, and are excluded from all public employments, except those in which their exclusive qualifications render it absolutely necessary to employ them. They belong to the Eutychian sect, or that of the Jacobites, who differ in several respects from those professing the Greek religion, whom they regard with peculiar antipathy. The patriarch of Alexandria is considered as the head of this sect, the religion of which is also that of Abyssinia. The Copts have a considerable number of convents, particularly in Upper Egypt and the desert of the lakes of natron. Celibacy, however, is not absolutely required of the inmates. Pococke seems to have rated very low their practical religion, alleging that it consists merely in reciting their long services, without the least appearance of understanding or devotion, and in the strict observance of their frequent fasts. The Jewish rite of circumcision is retained.

4941. *The only language peculiar to Egypt* is the Coptic. Unlike the Oriental tongues, which appear little more than dialects of one original language, the Coptic has only faint analogies with any other. Its basis appears to be that of the ancient Egyptians, who in every respect were much insulated from the surrounding nations. It ceased to be spoken in the middle of the seventeenth century, and was supplanted by the Arabic, but it is still used in the liturgy and sacred books of the Coptic church. The Coptic differs from the ancient Egyptian only by the great admixture of Greek and Arabic, with some Latin, introduced during the successive domination of the Greeks, the Romans, and the Arabs.

4942. *Science and literature* throughout Egypt were lately at the lowest ebb. In their loftiest flights the Egyptians made no higher attainments than those of reading, writing, and casting accounts. Even these humble elements were disdained by the ruling powers, and only taught to a few of their domestic slaves, in order to fit them for transacting certain branches of business. Some improvisatory reciters of tales and verse, and some practitioners in astrology, formed the only members of the society who employed themselves in any thing that partook of intellectual exertion. Of late the Pacha has made great efforts to introduce European knowledge, particularly in the mechanical arts; printing-presses have been established under his direction, and even a newspaper has begun to be published.

4943. *Oriental manners,* by the gloomy seclusion which is inherent in them, greatly circumscribe what are called public *amusements.* The coffee-houses are much resorted to by the middling classes, who there spend their time in listless indolence, beguile it by occasional conversation, or by listening to the story-tellers, with which Arabia supplies all the countries on which it borders. The baths (*fig.* 766.) are places of habitual resort, both for health and pleasure, and the ablution, being accompanied with skilful and gentle friction, has been described as producing the most voluptuous sensations. The women here chiefly mingle in society with each other, and sometimes, as is alleged, find opportunities for intrigue. In the large towns, particularly of Lower Egypt, the *almés,* or dancing-girls, attract numerous audiences by their exhibitions; the grace and skill of which are variously reported, but they are universally said to manifest a total disregard of decorum. The great seldom appear in public, unless on occasions of public procession; and their leisure is spent chiefly in the indolent seclusion of the haram.

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EGYPTIAN BATH.

4944. *The Egyptians are not much encumbered with dress.* The most common and seemingly the most ancient article of apparel, consists of a linen or cotton shirt with wide sleeves, over which is a brown woollen cloak or coat. The rich throw over all a fine white vestment, of the form of a surplice, which, being worn on solemn occasions, is supposed to have served as a pattern for the upper vestment of the Christian priesthood. Among the ancient Egyptians, linen was the only material used for stately and sacred apparel; but cotton now, to a great extent, supplies its place. Some of the poorer classes wear nothing but a blanket or wrapper of wool or cotton cloth. The dress of the women is nearly similar; but much of it is made of silk, and they cover the greater part of the face with a gauze veil. The usual head-dress is the turban, confined, however, to the higher ranks, and not allowed to be worn by the inferior classes, who merely cover their heads with the red woollen caps common all over Barbary.

4945. *The Egyptians of every class are temperate* in respect to food, and even the richest take no pride, nor perhaps much delight, in the luxury of the table. Their dishes consist of pillau, soups, stews, made particularly of onions, cucumbers, and other cold vegetables, mixed with meat cut in small pieces. The Barbary cuscosoo, which is a dish of this description, is not unfrequent. On great occasions, however, a whole sheep is placed in the middle of the festive board. The poorer classes content themselves with dipping their bread in oil or sour milk. The fasts in general are rigidly observed, and, during several of the hottest months, even the rich restrict themselves almost entirely to vegetable food. The use of opium, so general in Turkey, is superseded in a great measure by that of wine, in which the people in this country, even the Turks, indulge with much less scruple than those of other parts of the empire. The lower ranks make a preparation from the buds of hemp, which produces effects nearly similar to those of opium. They prepare also from barley a species of beer called *bouza*, to which, as an ancient Egyptian liquor, an allusion of Herodotus seems to apply.

Sect. VII. *Local Geography.*

4946. *The only division of Egypt* which can be considered as permanent or important is that made by nature into three great portions: — 1. Bahireb, or Lower Egypt, composed of the Delta, or territory on the coast, and including the great sea-ports of Alexandria, Rosetta, and Damietta. 2. Vostani, or Middle Egypt; where the Nile, though no longer spreading into branches, flows through a broad and fertile valley. In this quarter are situated Cairo the capital, the Pyramids, and Fayoum. 3. The Said, called partly also the Thebaid, or Upper Egypt, where the Nile, bordered by hills, flows through a narrow valley, containing not any great cities, but the most remarkable of the ancient edifices and monuments.

Subsect. 1. *The Delta, or Lower Egypt.*

4947. We shall begin our survey with *Alexandria* (*fig.* 767.), once the splendid capital of Egypt, and one of the most celebrated cities of the ancient world. Even now it forms the link by which Egypt is united with the states of Europe. Its founder, the celebrated conqueror whose name it bears, chose this site as the most favourable for commerce; and it became the emporium of the most splendid and important of the then existing branches, that with India. The merchandise being brought up the Red Sea to Berenice, thence transported across the desert, was carried down the Nile to Alexandria, and thence distributed throughout the West. Alexandria, when it became the splendid and polished capital of the Ptolemies, almost superseded Athens as a literary metropolis. Even when subjected to the yoke of Rome, it was still the second city in the empire, and a grand centre of religious and political faction. It received a mortal blow from the invasion of the Saracens, who not only crushed the general civilisation of Egypt, but showed an early preference for Cairo, which connected them with Syria, Arabia, and their other Eastern kingdoms. Alexandria, however, still continued to flourish, so long as it was the channel of the Indian trade; but when this took the direction of the Cape of Good Hope, it sunk altogether, and exists now only as the medium of that limited intercourse, carried on between

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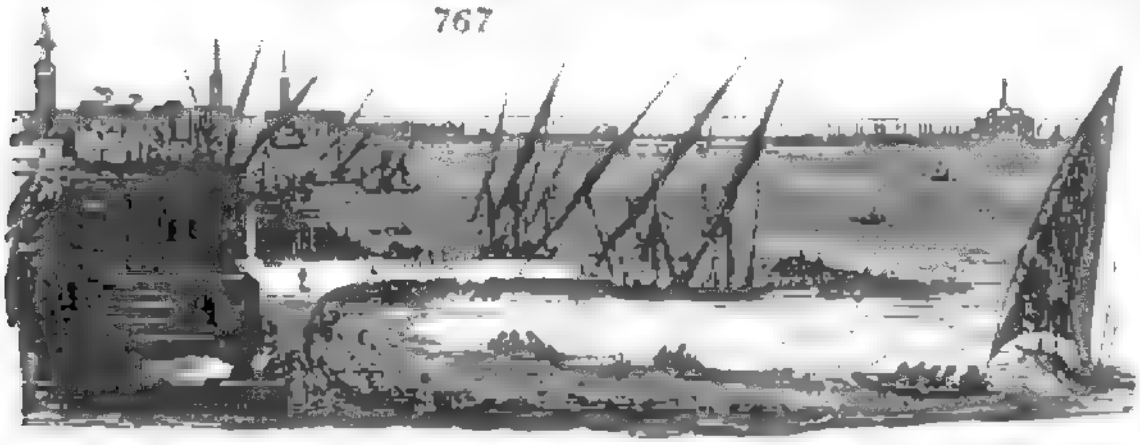

ALEXANDRIA.

Egypt and the Frank or Christian states. Its population, once estimated at 300,000, is dwindled so low, that some do not suppose the amount of inhabitants to exceed 5000. This, however, was doubtless too low, even before the late improvements of the Pacha, who has re-opened its water communication with the Nile, and established an arsenal, in which 1600 carpenters, and other artisans, are said to be employed. The present number is supposed not to fall short of 17,000. Notwithstanding this limited population, it presents a sort of epitome of the East. Its traffic draws to it, as to a common centre, the different classes, not only in Egypt, but in Syria, and all the Levant; who all retain their own costume and habits of life, without the least mixture or accommodation either to each other, or to the Europeans with whom they here meet.

4948. *The approach to Alexandria* from the west is attended with some danger, on account of the flat and uniform character of the coast, which affords no objects to guide the mariner. The first landmark is formed by two turreted eminences called Abousir, or the tower of the Arabs. On a nearer approach, Pompey's pillar affords a more precise mark. There are no longer any traces of the celebrated Pharos, and even its site is doubtful. Two harbours are found, the old and the new; the former is commodious, though of somewhat difficult entrance; but it is exclusively reserved for the followers of the prophet; and Europeans must content themselves with the new harbour, which has a rocky bottom, and affords very imperfect shelter. The new Alexandria is built entirely outside the walls of the old city, to which it forms only a suburb. The traveller finds here nothing correspondent to those magnificent ideas which history had led him to form. Its aspect is mean, gloomy, and dirty; and it presents no striking or ornamental edifice. A number of granite pillars have, indeed, been brought thither from the ancient Alexandria; but they are only employed to adorn the interior courts of the principal houses. Immediately on quitting these modern precincts, however, all the grandeur of ancient Alexandria bursts upon the view. A vast plain is seen covered with its ruins; broken walls, fronts crumbled down, roofs fallen, battlements decayed, ancient columns, and modern tombs. These objects are intermingled with palm trees and nopals; while owls, bats, and jackals are the only living creatures to be met with. The remains may still be traced of those immense reservoirs which supplied the city with water, both for drinking and for gardens. The whole ground on which Alexandria stood was excavated to form them, and the waters of the Nile were at a particular season solemnly admitted into them. Only twelve now remain, which are sufficient for modern supply. From the extremity of the old city extends for upwards of a mile along the coast a range of tombs cut in the rock, each of which appears to have contained three bodies. These monuments, however, to which has been applied the name of Necropolis, or City of the Dead, have been almost entirely stripped of their contents, probably by the Arabs, inspired with the hope of finding treasure.

4949. *Amid the general ruin which ancient Alexandria presents, three objects*, remaining still entire, arrest the attention. The most celebrated is Pompey's pillar (*fig.* 768.). It seems clear that this title is modern, and that it was probably erected under one of the emperors; perhaps Diocletian. The general impression of its loftiness seems in a great measure owing to its insulated position on a level plain. Pococke does not reckon the height at more than 117 feet; and more modern estimates reduce it to 94 or 95. The pedestal, the shaft, and the capital consist each of a mass of the finest granite. Some travellers have described it as the finest column in the world as to workmanship; but Denon rates it much lower in this respect; conceiving that the only beauty is in the shaft, and that neither the pedestal nor the capital have any peculiar merit. The other objects worthy of particular notice are the two obelisks, fancifully called Cleopatra's Needles, of which one only (*fig.* 768.) is standing. They consist each of a single block of granite, about fifty-eight feet high, and are entirely covered with hieroglyphics, whence it has been inferred that they could not originally belong to a Greek city, but were brought down from some of the ancient capitals of Upper Egypt.

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CLEOPATRA'S NEEDLE. POMPEY'S PILLAR.

4950. Alexandria is situated upon a long narrow ridge of land, separating the large *lake Mareotis* from the Mediterranean. This lake, of a very irregular figure, is upwards of fifty miles in length, and about twenty in its extreme breadth; but its western part, running parallel to the sea, is not above three or four miles broad. It was nearly dry when the English, in the campaign of 1801, admitted the sea into it, with the view of cutting off the French army from Cairo. It is still very shallow, and is passed in many places by fords, or upon causeways constructed by the Arabs. This lake, on the west and south, is surrounded by extensive deserts, abandoned to the Arabs, which insulate Alexandria from the inhabited part of Egypt. It was otherwise in ancient times. This tract formed then the *Mareotic nome*, within the precincts of which a considerable number of towns are enumerated by Ptolemy. Under the Roman empire, it was peculiarly crowded with convents, the inmates of which sought this as a retired situation, and as affording refuge from the persecutions of the Arians and other sectaries. The Emperor Valens, when he compelled the monks of Egypt to military service, is said to have levied in this district no less than 5000 recruits. Gratien le Père, in making a survey round the lake, found the territory every where covered with verdure and shrubs, and capable of culture. (*Description de l'Egypte Moderne*, ii. 10—20.) He found also the remains of cities, bearing indications of former importance. Among these were two, at a little distance from each other, on the neck of land between the lake and the sea. They appear to be those to which the ancients gave the common name of Taposiris, and are situated near that well-built column, called Koum Abousir, or Tower of the Arabs, which serves still as a beacon. They found also a large ornamented building, about 260 feet square, the destination of which seemed uncertain. In the valleys at the western extremity of the lake appeared the remains of four towns, distant a very few miles from each other. On the southern shore of the lake, near a spot called Abou-el-Kheyr, a double wall, large and well-built moles, and an extensive surface covered with fragments and rubbish, mark the site of an important commercial city, which was doubtless the ancient Marea. Nothing but culture, and the restoration of some of the old canals, seems wanting to restore fertility and population to this district. The great obstacle would arise from the Arabs, large bodies of whom are now in full possession of it, and whose habits of restless and desultory warfare would render it very difficult either to drive them back, or to fix them as cultivators.

4951. *The province of Bahireh*, the most western of the Delta, is traversed by the canal of Alexandria, which separates from the Nile, near Rahmanieh, a town of some magnitude, surrounded by a wall, and which the French, in 1801, converted into a fortified post, but were obliged to surrender it to the British army under

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General Hutchinson. This district is less watered than other parts of the Delta; and its chief product is cotton; the market for which gives some importance to Damanhour, situated in the heart of the province. In ascending the Nile, the canals derived from it cease, and cultivation is nearly confined to its immediate banks. Terane, affording the nearest point of water communication to the lakes of natron, exports from 3500 to 4000 tons of that article, chiefly to Marseilles. Woordaun is the most southerly port, whence vessels may reach Cairo in twenty-four hours.

4952. From Alexandria, *the ridge of land between Mareotis and the sea* extends eastward, and is prolonged by the *lake Maadie* till it reaches the castle of Aboukir, on the other side of which is the bay of that name. This line of coast, and this bay, are rendered illustrious by glorious events in British history; the victories of Nelson and Abercromby. Near the termination of Lake Maadie commences that of Edko, about fifteen miles long, communicating with the sea at its western point, but afterwards separated from it by a long line of barren coast composed of shifting sands. The path through them is pointed out to the traveller by columns at regular distances of half a mile, within each of which is placed, for his refreshment, a vase of water. After accomplishing this dreary journey, he arrives at Rosetta.

4953. *Rosetta* is situated at the mouth of the most westerly of the two branches of the Nile, which enclose the province of Garbieh, the only portion of Egypt which is now strictly Deltaic. While the canal of Alexandria ceased to be navigable, Rosetta became the only medium of communication for that city with Cairo and Upper Egypt; the goods landed at Alexandria being conveyed thither in boats. The town itself, being situated on the western bank, is surrounded by barren sand hills, which here form the boundary of the sea; but it enjoys on the other side the view of the blooming groves and rich gardens of the Delta. Rosetta is better built than Alexandria; the materials are of brick; and though the streets are, as usual in Egypt, narrow and gloomy, it has, on the whole, when compared with other Oriental towns, a neat and pleasing appearance. A considerable manufacture of striped and coarse linens is carried on; but its wealth and population (supposed about 15,000) are rather on the decline. Even the recent improvements, including the restoration of the canal of Alexandria, have rather tended to remove the commerce which formerly centred in it.

4954. *In ascending the Rosetta branch*, we come first to Metoubis, a large town, noted for the dissolute character of its inhabitants. Farther up is Foua, once distinguished as the entrepôt between Alexandria and Cairo. In consequence of the neglected state of the canals, it has been supplanted by Rosetta in this trade; and having greatly declined in consequence, only a small part of its wide circuit is now inhabited. The canal of Hashabi, derived from the head of the Damietta branch, and ending at the lake Bourlos, runs nearly parallel to that branch at the distance of five or six miles, and communicates with it by several channels. On this branch, at a village, still called Sa el Hadjar, are the ruins of the ancient Sais, once the residence of the Pharaohs, and the original seat of the colony by which Athens was founded. An enclosure of more than half a mile square, covered with rubbish and fragments of every description, still attests its ancient grandeur.

4955. *Farther to the south*, about ten miles east from this branch of the Nile, is *Tanta*, considered the most populous town of the Delta, though it does not contain above 10,000 inhabitants. It is chiefly supported by the pilgrims frequenting the tomb of Seid Ahmed el Bedaouy, who died in the thirteenth century, in such an odour of sanctity as rendered his shrine one of the most sacred in the estimation of Oriental devotees. There, at a particular season, an assemblage takes place, from Egypt, Barbary, Abyssinia, and even from Darfour, of not less than 150,000 persons. According to Eastern custom, trade is combined with superstition; and, when the acts of devotion terminate, a most extensive fair succeeds. A tumultuous and often disorderly festival closes the scene. The mosque, built by the Sultan Melik el Nasser, in honour of the saint, is one of the most splendid edifices of modern Egypt. This city is observed to be nearly at an equal distance from Cairo, Damietta, and Rosetta.

4956. *The upper extremity of the Delta*, consisting of the angular space formed by the junction of the two branches, is called Menoufich, and forms one of the most agreeable and fertile portions of Egypt. It is traversed by a broad canal from one branch to the other; and though at each inundation it is completely overflowed, the waters do not remain so long, or prove so injurious to health, as in the lower districts. Menouf, the capital, is a town of some importance.

4957. *In descending the branch of Damietta*, we find it, like that of Rosetta, accompanied by a parallel canal, called, in its early course, that of Karinein, and afterwards that of Melyg. At this last village, it throws a branch across the Delta, and finally loses itself in the lake Bourlos. It appears to be the ancient Sebennytic branch, and, in fact, presents no appearance of having been formed by art. The shores of the Nile are still more fertile and beautiful here than on the opposite branch; and at the distance of every two or three miles occurs a large town or village, embosomed in palm trees. Among these may be noticed Benalhassar, to the north of which appear traces of a large ancient city, enclosed between two circular mounds, defending it against the inundation of the Nile; the site, as Pococke supposes, of the ancient Bubastis. The next place of importance is Abousir, a well-built town, where considerable remains give some support to the opinion of D'Anville, who pronounces it to be the site of Busiris, celebrated anciently for a magnificent festival held in honour of Isis. About five miles below is Semenhoud, a very flourishing town, carrying on an extensive trade, for which its situation upon the Nile, and connection by several channels with the canal of Karinein, and with Mahallet, is very favourable. It appears to contain 4000 or 5000 inhabitants. It is usually considered as the ancient Sebennytus; on which, indeed, Pococke observes, that the latter might be on the Sebennytic branch, but Boys-Aymé remarks, that the adjacent ruins actually extend westward as far as the canal of Karinein. On that canal, about four miles to the west of Semenhoud, is Mehallet, considered the capital of the Delta, and the most industrious and manufacturing town in all Egypt. The chief fabrics are those of silk, and particularly a sort of linen handkerchiefs with silk borders, used in the baths, with which this city supplies the whole country. The manners, however, appear to be very licentious; disorderly females are particularly numerous, and are allowed a degree of liberty which is denied them in other Egyptian cities. Farther to the north, on the same canal, are the ruins of Bahbeys, the most splendid in the Delta. In the centre of an enclosure of brick, about 1200 feet by 800, are the remains of a grand edifice, 160 feet by 100. It consists of a confused mass of granite, among which are distinguished trunks of columns, and the remains of capitals with the head of Isis, all covered with sculptures in bas-relief most carefully executed. These fragments consist of the finest red granite brought from the quarries of Syene. Farther down on the Nile is the large town of Mansoura, celebrated in the history of the crusades for two great battles, in one of which St. Louis was defeated and taken prisoner. Lastly, four or five miles above the mouth of the river is the city of Damietta, which, though on the eastern bank, belongs properly to the interior Delta, as forming the chief market for its productions. Rice of excellent quality, and in great abundance, is grown in its vicinity, and, with coffee brought up the Red Sea, forms the staple article of export to Syria and the Levant. Tobacco and soap are imported from Syria; and luxuries of all kinds from Constantinople. The town is large, but ill built and without ornament. It is chiefly inhabited by fishermen and janissaries, and devoted to trade, of which a great part is contraband. The people are said to be the very worst in all Turkey, and to have a particular hostility to Christians, which seems to have descended from their ancestors in the time of the Crusades. It is such that a European cannot appear in the streets, without danger of being insulted. Damietta has no harbour; vessels anchor in a road by no means remarkably safe, at the mouth of the river, and the goods are brought up in boats.

4958. *The base of the Delta*, or the coast between Rosetta and Damietta, remains to be described. It consists, for eight or ten miles inland, of desert and marshy sand, and more than half its breadth is filled by the lake Bourlos, about twenty miles in length, and six in breadth. Like Mareotis and Edko, it is shallow, and separated from the sea by a narrow ridge, penetrated only in one point by a channel, which seems to be that of the ancient Sebennytic branch. This wild tract, the ancient Etearchis, is described in history as having repeatedly afforded refuge to the kings of Egypt, when driven from the throne by foreign invasion or by insurrection. It is still inhabited by a race of bold and rude fishermen, who hold themselves nearly independent of the national authorities.

4959. *The last divison of Lower Egypt*, and one of comparatively little modern importance, is the province of Charkieh, situated to the east of the Damietta branch, and consequently beyond any channel which can now be considered as the Nile. In ancient times, however, it was traversed by two great branches, the Tanitic and Pelusiac, flowing into the lake Menzaleh. Their channel may still be traced. M. Malus traversed the whole Tanitic branch, now known under the name of the canal of Moez, from the village about thirty miles north of Cairo, at which it strikes off from the canal of Damietta. In the lower part it changes to San, probably a corruption of the ancient Tania. It is navigable along its whole length for small barks, and, when the Nile is high, even for vessels of some size. It would be easy for an active government to restore it to all its former importance. Even now it affords large means of irrigation, and consequently supports a considerable culture and population. The upper banks are exceedingly fertile, and even the lower contain many fine villages, though they are kept in perpetual alarm by the frequent incursions of the Arabs. Not only is every village fortified, but from place to place along the Nile are erected towers, without entrance or windows; and into these strong-holds, on the approach of a band, the inhabitants with their most precious effects are hoisted up by ropes, and kept till the danger be past. Eighteen miles below the commencement of the canal, Malus found immense ruins, which, contrary to the opinion of Pococke, he supposes to be those of Bubastis. Enormous masses of granite, more or less mutilated, and covered with hieroglyphics, were heaped together in an astonishing manner.

4960. *The course of the most easterly or Pelusiac branch* may also be still traced, though much more imperfectly; the cultivation is there much inferior, and the exposure to the Arabs greater. The most important points on this line are Belbeis and Salahieh, maintained as military posts on the Syrian frontier. The southern district between the course of these canals and Cairo, called the province of Kelyoubeh, is tolerably watered, and abounds in cattle. From this circumstance, as well as its vicinity to the head of the Red Sea, we should presume it to be the Goshen of the Israelites. All the towns in this part of Egypt being built upon huge masses of unburnt brick, with the view of defending them against the inundation, we may thence account for the severe and oppressive labours to which that people were so cruelly doomed.

4961. *The lower part of the province of Charkyeh* is marshy and sandy, like all the rest of the Egyptian coast. It is traversed by the Menzaleh, a broad shallow lake, separated from the sea by a narrow ridge, similar to those of Mareotis and Bourlos, but much more extensive. It is sixty miles in length, and twenty-five in breadth, divided by a projecting peninsula. It abounds with fish; and the fishermen who inhabit its coasts, and the islands of Matharieh, near the above peninsula, are of the same savage, rugged, and independent character as those dwelling in the vicinity of the lake of Bourlos. It has two openings into the sea, one of which corresponds with the canal of San, the current of which is seen distinctly running across. On this peninsula is the town of Menzaleh, and six miles up the canal are seen the ruins of Tania, the Zoan of Scripture, once a magnificent residence of the Pharaohs. There are still several Corinthian obelisks and capitals of columns, fallen to the ground, and particularly some very fine antique earthen vessels, of which the glazing remains.

Subsect. 2. *Vostani, or Middle Egypt.*

4962. After passing the angle formed by the two divergent branches of the Nile which form the Delta, we ascend to what is called *Vostani*, or *Middle Egypt*. Here, about a league to the east of the river, appears the village of Matarieh, to the north of whose site are the ruins of the celebrated Heliopolis, the On of Scripture, and the great seat of Egyptian learning. Though almost in complete ruin, it has still some interesting antiquities; an obelisk sixty-seven feet high, several sphynxes, and large stones covered with hieroglyphics.

4963. *Cairo the Great* (*fig.* 769.), or, as it is popularly called, *Grand Cairo*, attracts the attention of the traveller sailing upwards, and he gazes with wonder on the numerous minarets which distinguish the capital of Egypt and of Africa. Throughout that continent and Arabia, Cairo is considered as the queen of cities, as the city without a rival; its splendour forms one of the great themes of Eastern romance. Old Cairo appears to be of very great antiquity, being built on the site of the fortress of Babylon, which derived that name from being assigned as a residence to some Babylonish captives, brought, probably, by Sesostris. The new city, however, which has alone risen to the rank of a capital, was founded in 973, by the first of the Fatimite Caliphs. Saladin surrounded it with strong walls and magnificent gates; and it soon eclipsed the splendour of the now neglected Alexandria. Europeans, however, in the aspect of Cairo, find little corresponding to the ideas raised in them by Eastern description. The streets are narrow and winding; the principal one, which traverses the whole area of the city, would be considered in Europe as a mere lane. As they are not paved, a most disagreeable dust is raised by the crowds of men, dogs, camels, and asses, which press through them. The houses are two or three stories high, which is not usual in the East; but almost all their light is derived from interior courts, and they present to the street only a mass of dead wall, which makes them appear like prisons. There are, however, several extensive open squares, round which are built the houses of the principal persons. Into these, when the Nile rises, the water is conveyed by a canal called the Kalisch, and converts them into lakes, which, being traversed by pleasure boats, present at this period a gay scene. On the retiring of the waters, these lakes

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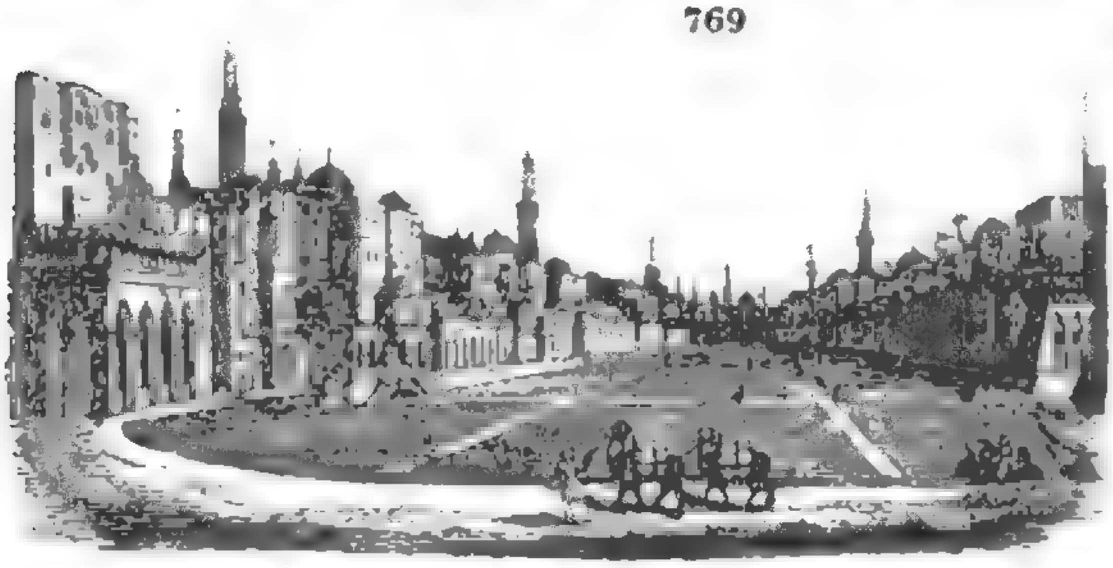

CAIRO.

become so many plains of mud, which is soon completely dried, and covered with excellent vegetation. The chief ornament of Cairo consists in its gates, several of which are built in a style of simple magnificence, and in its mosques, of which that of Sultan Hassan displays all the splendour of Saracenic architecture (*fig.* 770.). Many of the baths have their interior very richly ornamented. The tombs of the Mamelukes, also, built of white marble, and with painted or gilded domes, are very beautiful. The Pacha resides in the citadel, where he has magnificent apartments.

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MOSQUE OF SULTAN HASSAN.

4964. *Cairo, according to Pococke*, is seven miles and a half in circuit, and covers as much ground as Paris; but as a great part is occupied with gardens and empty spaces, it cannot, according to Volney, contain more than 250,000 inhabitants. Browne, however, reckons them at 300,000, Jomard at 260,000, Balbi at 330,000. The police is maintained with great strictness, each street being shut in at night with gates, and guarded by several janissaries. Notwithstanding the gloomy exterior presented by the houses even of the great, the interior of these mansions possesses great magnificence. Space and coolness are especially studied. They present wide halls, high domes, verandas, rich sofas and carpets, walls adorned with sentences of the Koran, and with foliage and flowers. The habits of life are recluse; the only great festivals are those of marriage and circumcision, when families bring all their wealth into full display.

4965. *Cairo is perhaps the greatest thoroughfare of any city in the world.* All the merchandise which passes between the Mediterranean on one side, Upper Egypt and Arabia on the other, must be conveyed through it. Its land communications are perhaps still more extensive, as in this respect it forms the grand link between the Asiatic and African continents. With the interior of Africa, in particular, a vast trade is carried on; and slaves are imported in very great numbers, to be exposed in the markets of Cairo. The sale takes place in the open street, where they are subjected to the most minute examination of the purchaser. According to Sonnini, the price did not exceed from eight to twelve pounds a piece. The amusements of Cairo are generally of a very humble nature; tumbling, rope-dancing, and juggling are publicly performed in the few open spaces which the city affords. For the amusement of the rich, there are improvisatory poets, both male and female, who are said to display occasional talent, though their medicant muse is too apt to employ itself chiefly in fulsome praises of its patrons.

4966. *Old Cairo*, originally of much smaller extent than the new city, is now uninhabited through a great part of its site. It is chiefly occupied by Copts, for whom it forms a sort of capital. They have twelve churches in it, some of them large and sumptuous; and their patriarch has removed his residence from Alexandria to this place. It contains also the ancient granaries, bearing the name of Joseph, which are still used for their original purpose. The place is distinguished also by an immense and skilfully contrived machine, by which the water is raised into an aqueduct for the supply of the castle of New Cairo.

4967. *The last appendage of this great city is Boulak*, its port on the Nile, distinguished by the bustle of trade, and boats without number ascending and descending. It is of considerable extent, but does not present any remarkable object, except very fine baths. There is an institute for 100 pupils, maintained at the expense of the Pacha.

4968. *The pyramids next claim our attention.* Scarcely has the traveller ascended above Cairo, when he comes in sight of those far-famed structures, to which the world presents nothing comparable, and which cannot be contemplated without the most awful emotion. These mighty monuments seem to look with disdain on every other work of human art, and to contend with nature herself. They form an uninterrupted range for about twenty leagues, on a declivity sloping down towards the river (*fig.* 771.); but the first two, the pyramids of Cheops and Cephrenes, from the union of magnitude and skill in their construction, have almost exclusively attracted the attention of the world. The first or great pyramid (*fig.* 772.) is 693 feet square, covering upwards of eleven acres, and rising to the amazing height of 599 feet. In an age when machinery was imperfect, and every thing was done by manual labour, it is said to have employed 100,000 men for twenty years. The destination of this and all similar colossal structures appears evidently to have been sepulchral. The original entrance,

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THE PYRAMIDS.

as well as that into each successive gallery and chamber, is studiously concealed, by being made exactly similar to the surrounding wall; and it is carefully barred by huge blocks of granite, which cannot be cut through without great labour, but which, to the experienced eye, afford a sure test of the sought-for entrance. The opening of the first pyramid has been long ago effected; it is ascribed to the Caliph Mohammed, in the ninth century. Several long galleries have been traced, leading to two chambers, the largest of which is 32 feet by 16; and contains a sarcophagus now empty. The second pyramid, or that of Cephrenes, is about 400 feet high. It had defied all attempts to enter it, till the enterprise was recently achieved by Belzoni. His attempts were long unsuccessful; but at length, by the position of the block of granite placed to bar the entrance, he was enabled to trace its real direction (*fig.* 773.). At the end of a long passage, he found a chamber 46 feet by 16, in which was a sarcophagus containing a small quantity of bones. These bones were supposed by him to be human; but on being brought to London, and examined by the Royal College of Surgeons, they were pronounced to be those of the bull, that base object of Egyptian worship. Indeed, it seems every way improbable that structures so stupendous should any where, and most of all in Egypt, have been undertaken without a religious impulse and motive.

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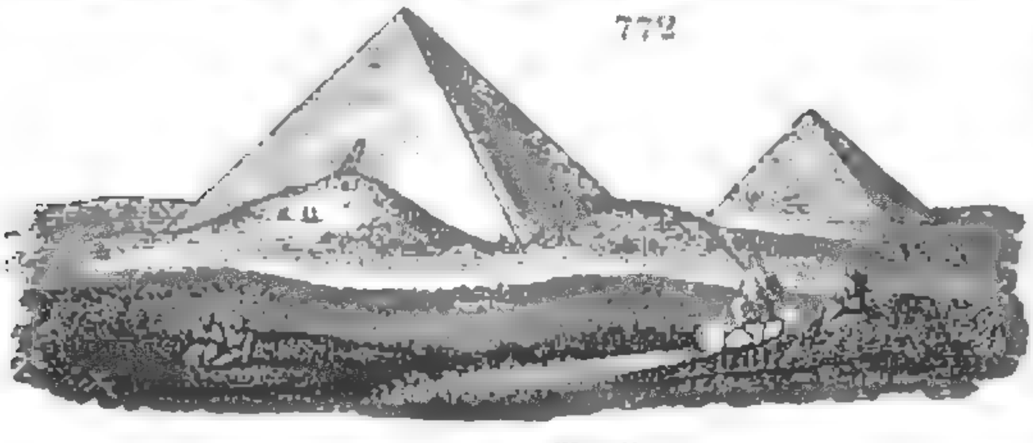

GREAT PYRAMID.

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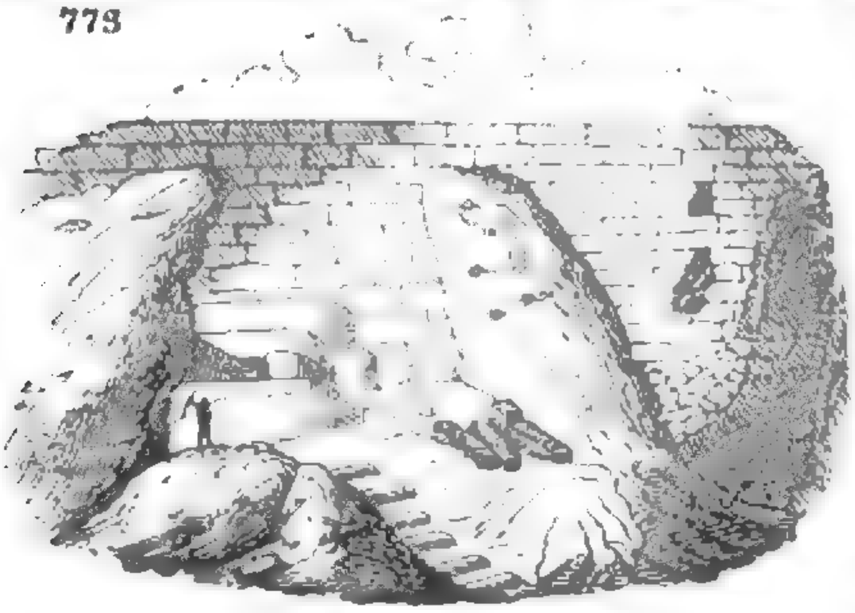

ENTRANCE TO THE SECOND PYRAMID.

4969. About three hundred paces from the second pyramid is the gigantic statue of the *Sphynx* (*fig.* 774.), that singular object, in the delineation of which Egyptian art so much delighted. It has been overthrown, and, till of late, only the head, the neck, and some part of the back, were visible above the sand. The length, from the fore part to the tail, was found to be 125 feet. Mr. Belzoni, having succeeded in clearing away the sand, discovered most singular appendages, consisting of two temples, one of which it holds between its legs, and the other in one of its paws.

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SPHYNX.

4970. *This part of Egypt*, reaching even above Benisuef, though it does not present the same wide-spread fertility as the Delta, is by no means destitute of the benefits of irrigation. The inundation extends for a considerable space along its western bank; but, from the peculiar slope of the ground, it cannot be diffused without some difficulty. Immediately on the Nile, the ground is considerably higher than the river, whose waters must be raised with wheels moved by oxen, and with other complicated and laborious machinery. Farther on, the level descends, till it falls even below that of the Nile; but the river must be considerably swelled before its waters can reach across the high separating ridge. In seasons of low inundation, therefore, it is almost entirely deprived of water; and, even in average years, does not obtain nearly the quantity which might be advantageously employed. This evil might be entirely remedied by an active government; but in the present neglected state of the canals, the country suffers severely from it. In one part, indeed, the tract along the foot of the mountains is watered by a natural derivation from the Nile, called the canal of Joseph, the principal branch of which passes into Fayoum, while another reaches even into Lower Egypt. — (*P. D. Martin, in Descript. Egypte, Etat Moderne*, ii. 197—202.)

4971. Except the pyramids, *this tract contains few remarkable objects*. Along the Nile is a succession of tolerably large, but ill-built villages. Benisuef, somewhat handsomer than the rest, is a brick town, containing a considerable manufactory of coarse carpets. Near Metrahenny appear extensive though faint traces of the ancient Memphis, the capital of Egypt at the era of the construction of the pyramids.

4972. *To the west of Benisuef* appears the province of Fayoum, truly remarkable by its physical character, even in Egypt. An opening in the elsewhere continuous Libyan chain, aided by a vast artificial cut, has let in the river upon this tract, and converted it from a desert into the most fertile portion of this most fertile land. After traversing the territory in numberless canals, this branch forms the lake of Fayoum, which antiquaries no longer hesitate in identifying with the ancient Moeris. Being only, indeed, about thirty miles in length, and four or five in its general breadth, its extent is much inferior to that ascribed to it by the ancients, who represented it as resembling a sea. Both Martin and Jomard, however, who carefully examined its environs, were convinced that the present lake may be considered as occupying little more than the bottom of its former bed. The surrounding tract bears every appearance of having been abandoned by the waters.

It is incapable of culture, covered with sand, lagoons, saline crusts, and some shrubs of a weak vegetation. On the northern side, Martin saw a number of detached hillocks, bearing every mark of having once been islands, and is convinced that the lake formerly extended to the foot of the mountains which bound the prospect in that direction. It has been deemed impossible, considering the vast extent of the hydrographic features of this province, that they should, as antiquity records, have been the work of art. To have turned the waters of the Nile into this lake would, it is urged, have required the removal of 3,200,000 cubic yards of earth or rock. Reflecting, however, on the stupendous magnitude of the works executed by the ancient sovereigns of Egypt, we are reminded that, among all their wonders, this has been celebrated as the most wonderful. To Jomard, both the passage through the mountain, and the channel of the Bahr Belama, by which the lake was fed, appeared to display evident marks of artificial excavation. The Mœris formed the grand sluice of Egypt, which drew off the waters when they were superabundant, and afforded a supply when they were deficient. Some of the dikes which were employed in alternately retaining and letting out the water, and which still remain, present indications of an extent of labour truly stupendous.

4973. *Fayoum* appears to enjoy a pre-eminence, *as to soil and products*, over every other tract of Egypt. According to Jomard, the eye is never weary of contemplating its smiling fields, watered by a thousand canals, which maintain a perpetual freshness, and whose aspect forms the most striking contrast with the bordering deserts of Libya. Besides yielding rice and grain in equal abundance with the other provinces, it abounds in dates and flax, and produces almost exclusively fine fruits. Here the olive and the vine come to perfection, and the plantations of roses afford materials for a perfume highly valued throughout the East. The objects, however, for which this country has been chiefly visited by travellers, are its antiquities; for, besides the lake of Mœris, tradition assigns to it the famous Labyrinth of Egypt, which held so high a place among ancient wonders. Great difficulties, however, have occurred in tracing its site. Attention has been mainly attracted by an edifice situated about a league from the western extremity of the lake, in a tract now uninhabited, but where the ruins of a number of large villages have been lately discovered. The temple is stated by Pococke at 165 feet long, and 80 broad; but these dimensions appear to be those of the whole enclosure; for the edifice itself is described by Jomard as only 90 feet long, by 50 broad. There are some large apartments, adorned in the Egyptian style, though without any particular magnificence; but the most remarkable feature is a long narrow passage, or rather hole, ending in a cell 5 feet by 4. Jomard penetrated into it, and, finding it extremely sonorous, and skilfully adapted for the conveyance of the voice along the passage, infers that it was destined for the emission of a pagan oracle. Upon the whole, his observations and those of Belzoni (*Researches*, p. 384, 385.) seem clearly to show that neither in its magnitude, the disposition of its apartments, nor in any other feature, does this structure bear the least resemblance to the famous temple of the Labyrinth, for which, as the most entire and conspicuous remaining in Fayoum, it has long been implicitly taken. Jomard is generally supposed to have been more successful in another quarter. About six miles south of Medinet el Fayoum is a lofty brick pyramid, near which is an extent of ruins about 900 feet in length, and 400 in breadth. This whole space is covered with heaps of hewn stones, and various materials confusedly piled upon each other; though, on penetrating through this rubbish, some vestiges of walls are discovered. The enclosing wall on the side of the pyramid, and some little towers with which it was flanked, are the parts best preserved. Upon the whole, he observes that there is little in these remains to justify the pompous descriptions of the ancients, and cannot but express his astonishment that an edifice which, in the time of Pliny, thirty-six centuries from its foundation, remained perfectly entire, should since his time have been so completely destroyed. He supposes that the mass of the building must have been buried in the sand, and that the visible ruins are only those of its terraced roofs. There are some minor discrepancies; but, upon the whole, the vicinity of the pyramid, the position, the extent, and, above all, the absence of any other ruins within the region, which can at all correspond with the magnitude which the ancient descriptions assign, seem to leave us no alternative but to accept this as all the trace that will ever be found of the famous labyrinth of Egypt.

4974. *Amid the peculiar interest of the antiquities of Fayoum*, we had almost forgotten its modern dwellings. Medinet, the capital, however, is a fine town, built near the ancient Arsinoë, and of materials taken from its ruins. All that remains of the latter city is a mere heap of stones and rubbish; but whatever was fine in its columns and fragments is found irregularly inserted into the modern town. Medinet is situated upon the canal of Joseph, immediately before its separation into nine branches. The place is flourishing, contains some fine mosques, and is surrounded by beautiful gardens. The population is reckoned at 5000; a considerable part of whom are Christian.

4975. *Returning to the Nile*, and ascending above Benisuef, we pass through a tract, still very fertile, more varied and beautiful than the Delta; and where towns and villages occur every where at short intervals. Minyet, or Minget, capital of an extensive district, is a very pretty town, whose mosques are adorned with magnificent columns of granite and porphyry, of Greek architecture. To the west of the city, there are also vestiges of antiquity, entirely, however, converted into rubbish. The markets of Minyet are crowded, its population considerable, and it contains a manufactory of those earthen vessels for cooling water, which are so much valued in Egypt. To the west of Minyet is a large lake, or rather swamp, called the Bathen. It extends southward as far as Achmounein, and is of large and vague breadth, but seldom more than a foot or two deep. It seems to be on very slender ground that Sicard and D'Anville identify this inundated surface with the lake of Mœris.

4976. Above Minyet, the Arabic chain on the east of the Nile is pierced by *numerous and most extensive ancient quarries*, which have converted it from a sloping face to one of perpendicular rock, and have caused it in one place to present the appearance of an immense fortified castle. The rocks are also excavated into a number of those tombs, to which the ancient Egyptians devoted their labour and their art. These are particularly remarked at a place called Zayonet el Mayetain, or the Village of the Dead, and farther up, near Benihassan. The interior, as in those on a greater scale at Thebes, is adorned with numerous hieroglyphics, and with paintings, which exhibit the most brilliant colours, and represent various particulars of the manners and domestic life of the ancient Egyptians.

4977. *We now approach antiquities of a more classic character*. As yet, Egypt has presented to us only monuments which astonish by their immensity, and by the incredible labour bestowed on them; but in those to which we allude, that vastness is combined with a high and peculiar architectural skill. About ten miles above Minyet, we pass between two of these grand masses of ruins. On the eastern bank are those of Antinoë (*fig.* 775.), bearing a very different character from any others which Egypt now presents. They are remains of a Greek city, founded by Adrian, with the design of uniting the elegance of classic architecture with the colossal

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RUINS OF ANTINOE.

grandeur of the Egyptian. In order to produce the same impression of grandeur, he made streets extending the whole length of the city, and forming one continued and immense colonnade. Here are no colossal statues, obelisks, palaces, temples and tombs of gigantic dimension; but amphitheatres, triumphal arches, thermæ, and hippodromes. The ruins of Antinoë extend about a mile in every direction, amid a wood of date trees, above which its columns are seen towering; they form a grand picture, to which the lofty and naked Arabian rocks form a noble background. The theatre with its portico, the hippodrome, the principal street, a triumphal column raised to Alexander Severus, a triumphal arch, and a great gate, may still be traced. The piles of fragments and rubbish are of very uncommon magnitude. Shekh Abade, close to Antinoë, is a pretty large village, inhabited by Arabs, and surrounded with considerable plantations of sugar cane.

4978. *The other side of the river* presents the site of *Hermopolis Magna*, where Greek, Roman, and Egyptian ruins are mingled on a most extensive scale. Their length is about 7000 feet, their breadth 5000, and their circuit nearly three miles. The greater part of this space is covered with rubbish, detached stones, and fragments of columns. The only part which remains entire is the portico of the great temple, a most magnificent monument, rivalling the greatest of which Egypt can boast. It consists of twelve columns, but there are indications that twenty was the original number. The whole length is 120 feet; the architrave and frieze consist of five stones which are 20 feet long; and the single stone which remains of the cornice is 34 feet long. The shafts are 80 feet 10 inches in diameter, and 60 feet high.

4979. *At one extremity of these ruins* is situated *Achmouneïn*, a large and populous village, containing 5000 souls. Its territory, of about ten miles in breadth, between the river and the mountain, is under peculiarly high cultivation, being watered by numerous channels from the Nile and the canal of Joseph. Six miles above is *Mellawi*, also a neat and considerable town, having some manufactures, and exporting a good deal of grain to Mecca. Considerably higher is *Moufalout*, still more important from its extent and beauty, and which combines considerable manufactures of cloth with a trade in grain.

Subsect. 3. *Said, Thebaid, or Upper Egypt.*

4980. After Moufalout, Middle Egypt, the Vuestani or Vostani of the moderns, the Heptanomis of the ancients, terminates, and *Upper Egypt*, the *Thebaid* of the ancients, the *Said* of the moderns, commences. Egypt, which in the Delta was a wide inundated plain, which in the Vostani became a broad well-watered valley, is here little more than a mountain glen. Still, however, though less fertile and populous, it presents objects which, in interest and grandeur, surpass all the most remarkable in the lower and more level tracts of this extraordinary country.

4981. *Siout* is the first large town of Upper Egypt, which has not here assumed the narrow and contracted aspect peculiar to other parts of the Thebaid. On the contrary, this part of the valley of the Nile is upwards of twelve miles broad, though the river itself has not a breadth of more than 750 feet. Siout has a large district attached to it, which is very fertile in wheat, barley, dhourra, flax, and contains very fine gardens. The population is reckoned at 200,000, and the taxes at 40,000*l.* The city is large and populous, and carries on a considerable trade in linen cloth, earthenware, natron, and opium. This also is the point from which the caravans of Nubia and Darfour usually depart, and to which they return. Behind the city are a number of country houses erected by the Mamelukes, partially fortified. There are no remains of ancient edifices, though trunks of columns adorn the houses of several of the principal inhabitants. The face of the mountain, however, which is about two miles to the west, is excavated into grottoes throughout its whole extent. The greater part of these are ancient Egyptian tombs, lavishly adorned with hieroglyphics and paintings. Others are the retreats of Christian hermits, who, in the first centuries, were induced by a mistaken devotion to bury themselves in the savage recesses of the Thebaid. Small niches, stucco facings, a few rude paintings representing crosses, and some Coptic inscriptions, are all the traces they have left of their abode in these cells. It seems ascertained that Siout stands on the ground formerly occupied by the city which, in the time of Ptolemy, was called Lycopolis.

4982. *The first great monuments of the Thebaid* which strike the eye of the traveller are those of *Anteopolis* (*fig.* 776.), situated at the village of Kau, or Gau, on the western bank of the Nile. Traces are here found of a temple 230 feet long, and 150 broad; but the only part at all entire is the first portico, about 50 feet high. The columns produce a peculiar effect, their capitals being composed of the leaves of the date palm tree, and being surrounded with groups of those trees, of which they present a faithful copy, and with which they are confounded. The village of Kau is poor, and the surrounding territory indifferently cultivated. Close to it is a mountain remarkable for the immense excavations made in it for the purpose of building; one of these quarries is stated by Jomard as 600 feet by 400.

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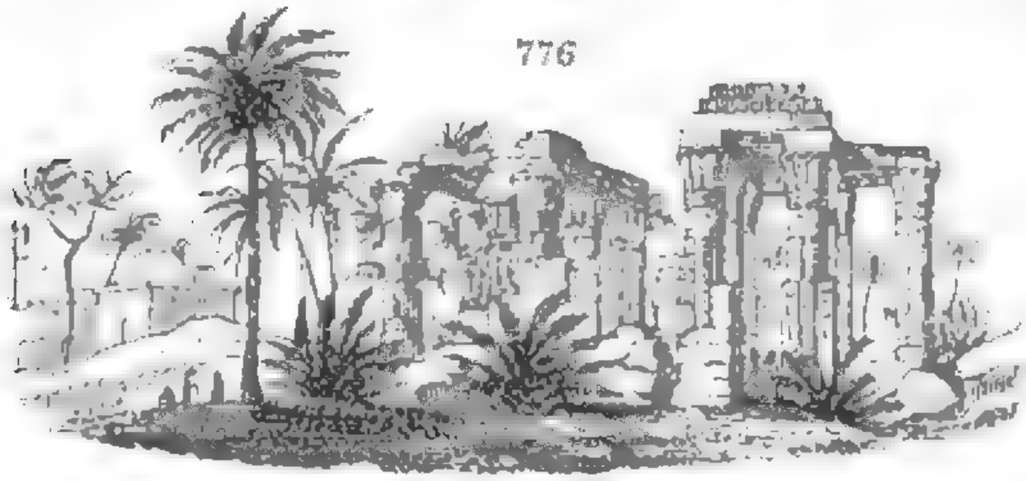

RUINS OF ANTÆOPOLIS.

4983. After passing the two small towns of Tornich and Tabta, we come to *Akhmym*, or Echmim, a neat town, with wide streets, though built only of unburnt brick, and containing several handsome mosques with lofty minarets. The population is estimated at 10,000; the full half of whom are Christians, and even the Sheiks have been suspected of Christianity by the government of Cairo. Commerce and agriculture, which always flourished here, continue prosperous; but its fine manufactures of linen are changed into those of cotton, and its elaborate works in stone into earthenware, which is transported, however, throughout all Egypt. Near it are the remains of two great temples, evidently part of the city called Chemmis by the Egyptians, and Panopolis by the Greeks.

4984. About eighteen miles south-east of Akhmym is *Girge*, or Girshe, the capital of Upper Egypt. Notwithstanding this proud distinction, it is not so large as Siout, being about the size of Moufalout, Minyet, and other secondary towns. Neither is it particularly handsome; but it is situated in a very fertile country, and all provisions are extremely cheap and abundant. During Denon's residence, 3000 Frenchmen were quartered there for three weeks, without causing the least appearance of scarcity. The name is derived from an ancient monastery dedicated to St. George, pronounced here Girge.

4985. Near this city, five miles west from the Nile, on the canal of Joseph, and on the borders of the desert, the French discovered the remains of *Abydos*. This city was accounted by the ancients the second in the Thebaid; it contained a palace of Memnon, and the tomb of Osiris: works by the same hands which constructed those of Thebes. It had the misfortune, however, of being situated at the end of a long valley crossing the mountains, and through which the sands of the boundless western deserts were blown in upon it. Plantations, canals, and all the expedients which were employed during the prosperous times of Egypt to preserve Abydos from the encroachments of these sands, could not avert its destiny. Not only is it in ruins, but these ruins are almost buried. They may be entered, however, by the roof, where spacious interior apartments are found entire, and adorned with hieroglyphics and paintings, of which the colours are as fresh and brilliant as in the first day they were painted. Jomard particularly admired the lower part of a kneeling statue, of human size, in black granite. This fragment appeared to him perhaps the most beautiful that had ever come from the Egyptian chisel. Only two miserable villages now exist on the site of these great ruins.

4986. In ascending above Girge, the traveller passes by *Farshout*, a poor-looking town, containing, however, a considerable manufactory of sugar; and *Hen*, a long village, on the site of the ancient Diospolis, but presenting no remains of it. He then arrives at *Kene*, a town of some consequence, and remarkable for its fabric of earthen vessels. Pococke met large floats coming down the river, containing jars placed on a framework of twined palm branches, and thus raised stage above stage. Four long poles, like oars, were employed to direct the boat. The curious observer, however, hastens across the river to *Dendera*, two miles to the west of which are the ruins of Tentyra, justly ranking with the most remarkable of which Egypt can boast.

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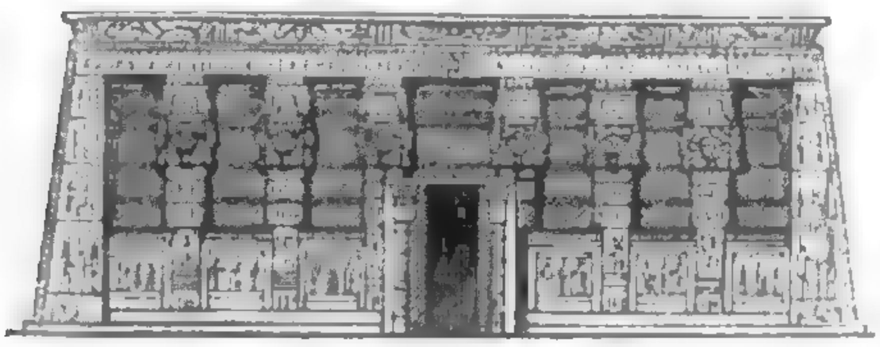

PORTICO AT DENDERA.

4987. *The ruins of Tentyra* cover a space of about a mile in length, and half a mile in breadth. The greater part of this ground is overspread with mere fragments and rubbish; but one part presents a temple (*fig.* 777.), which, though it cannot cope in grandeur with the monuments of Thebes, surpasses in art and skill every thing else in Egypt. The spectator feels, as it were, transported into a fairy scene of enchantment; he sees monuments which have no affinity with the products of Grecian architecture, or with those created by the taste of modern Europe, yet which present exquisite beauty, and a magnificence the most imposing. The length of the temple is 265 feet, and 140 broad. The portico, above all, inspires astonishment by the grandeur and singularity of its aspect. It consists of six columns, the capitals of which are formed of colossal heads of Isis, the deity in whose honour this temple appears to have been reared, and to whom almost every thing in it has reference. The height of the portico is sixty feet; but that of the general wall of the temple not more than seventeen. The whole is entirely covered over with those mystic, varied, and often fantastic sculptures (*fig.* 778.), which characterise Egyptian architecture; hieroglyphics, groups, figures of deities, and sacred animals; the whole of the manners and mythology of ancient Egypt embodied. The workmanship is of the most elaborate execution, and highly finished. The interior (*fig.* 779.) of the portico is equally beautiful and striking. It composes a rectangle 120 feet by 67, and is supported by 24 columns, ranged in six rows of four deep. The ornaments are equally profuse and varied; but the roof formerly presented a feature which strongly fixed the attention. Divided into twelve compartments, it exhibited, by a variety of mythological figures, many of which coincide with those employed by the Greeks, a representation of the twelve signs of the zodiac. This remarkable monument has recently, upon principles which we shall not now discuss, been detached from the roof, and conveyed to Paris.

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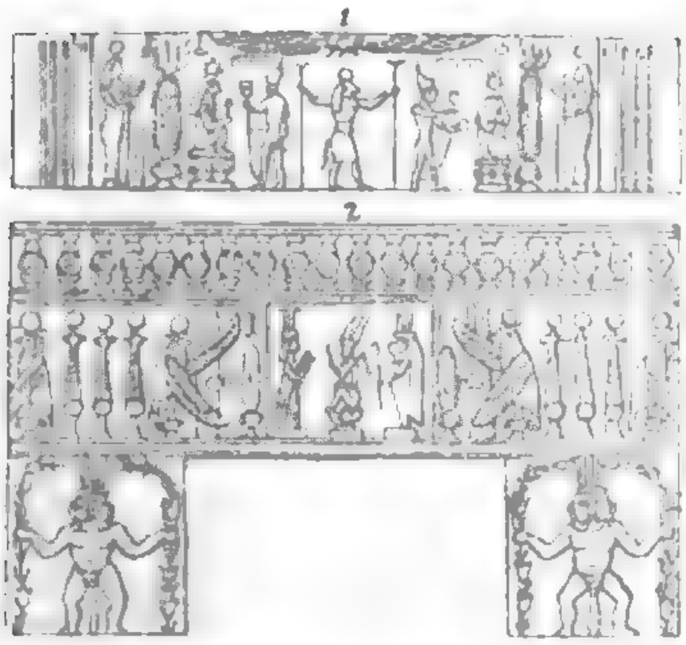

PART OF A SCULPTURED WALL AT DENDERA.

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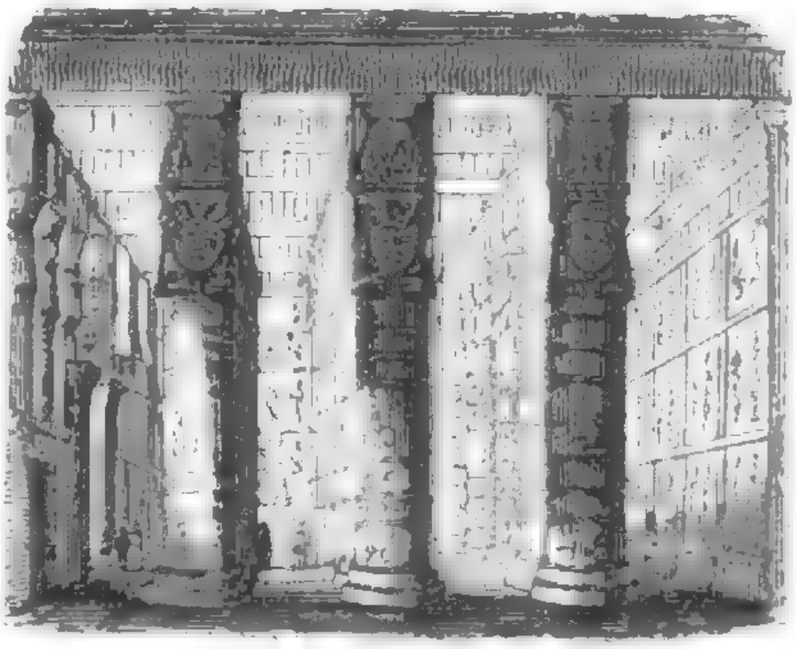

INTERIOR OF TEMPLE AT DENDERA.

4988. *From the contemplation of these monuments* has arisen a question, certainly of deep interest in the history of art. It was never doubted that they had been erected by the early and native kings of Egypt, until Visconti, in his notes to Larcher's edition of Herodotus, endeavoured to prove them to be of much more recent date. The structure of the zodiac appears to indicate, that the commencement of the Egyptian year answered then to the sign of Leo, which would take place between the years 12 and 132 of the Christian era. This opinion is strengthened by a Greek inscription on the front of the cornice, first observed by Denon, and since copied by Mr. Hamilton, in which the pronaos is dedicated to Aphrodite, and the reign of Tiberius assigned for the date of the dedication. These reasons appear irresistible to Dr. Young, in his very learned dissertation on the antiquities of Egypt, in the *Supplement to the Encyclopædia Britannica*. On the other hand, Jollois and Devilliers urge, with a good deal of plausibility, that the erection of edifices thus entirely in the style of a conquered people, was quite foreign to the custom of the Romans, and that no similar instance can be adduced; while it seems impossible that a structure of such extraordinary magnitude and splendour could have been erected at such a period, and yet no record of it have been preserved in history. The dedication of the *pronaos* to Aphrodite, who is essentially the same with Isis, might have been prompted in that ambitious people by the desire of taking possession as it were of so magnificent a monument, and marking its front with the name of one of their emperors. They conceive that the edifice was erected under the later kings of Egypt, at a period when Egyptian art had risen, through successive stages, to its highest pitch of perfection.

4989. About ten miles above Kene and Dendera is *Keft*, the ancient Koptos; and higher still, *Kous*, the ancient Apollinopolis Parva. These, under the Ptolemies, and even under the Saracen princes, were places of great wealth and importance; for opposite to each is an opening in the mountains, through which is the caravan route to the ancient Berenice and the modern Cosseir. Through the loss of the trade to India, and the transference of that of Arabia and Suez to Cairo, this communication is now become of very little importance. Even the few modern caravans which proceed in this direction take their departure from Kene. Both Keft and Kous, therefore, are now poor towns, containing many uninhabited houses, and ruins that belong to all the ages of Egyptian history. Kous, in particular, presents the portico of an ancient Egyptian temple, of which the entablature only appears above the rubbish, but with a beauty almost rivalling that of Dendera. These towns are inhabited chiefly by Christians, and are surrounded by gardens, which appear beautiful to those who have newly passed the desert.

4990. Above Kous, for some miles, is a sandy plain, after which the rocks approach close to the river. Beyond a projecting point, however, the view opens upon a scene to which the world presents nothing parallel; an extensive plain, covered almost throughout its whole extent with the most amazing ruins. This is *Thebes*; the city of the hundred gates, that mighty capital, the foundation of which is unknown to history, and belongs only to the dim ages of traditionary poetry, whose report would have been denounced as fabulous, had not such mighty monuments proved that it fell short of the reality. This work of the first age of the world almost eclipses, as to grandeur, all that art and power have since produced. At first, the observer sees only a confusion of portals, obelisks, and columns, all of gigantic size, towering above the palm trees. Gradually, he is able to distinguish, on the eastern or Arabian side, the palaces of Karnac and Luxor; on the western or Libyan side, Medinet Abu, the Memnonium, and the tombs cut in the mountain behind.

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RUINS OF KARNAC.

4991. *Karnac* (*fig.* 780.) surpasses in grandeur every other structure in Thebes and in the world. The French engineers on horseback were an hour and a half in performing its circuit, which, they therefore conceive, cannot be less than three miles. On the north-east entrance the Egyptians appear to have lavished all their magnificence. The approach is by a long avenue of sphynxes, the largest of any in Egypt, leading to a succession of portals with colossal statues in front. These structures are distinguished, not only by the grandeur of their dimensions, but by the variety of the materials. A calcareous stone, compact like marble, a variegated siliceous limestone, beautiful rose-coloured and black marbles of Syene, have been severally used. "Most points of view present only the image of a general overthrow, rendering it difficult to distinguish Karnac as a series of regular edifices. Across these vast ruins appear only fragments of architecture, trunks of broken columns, mutilated colossal statues, obelisks, some fallen, others majestically erect; immense halls, whose roofs are supported by a forest of columns, portals and propylæa, surpassing in magnitude all similar structures. From the west, this chaos assumes an orderly appearance; and the almost endless series of portals, gates, and halls appear ranged in regular succession, and harmonising with each other. When the plan is thoroughly understood, its regularity appears wonderful; and the highest admiration is excited by the arrangement and symmetry of all the parts of this vast edifice."

4992. *Not only the general extent*, but all the particular features, of this extraordinary structure are distinguished by a magnitude elsewhere unparalleled. There are two obelisks of 69, and one of 91, feet high: this, the loftiest of any in Egypt, is adorned with sculptures of perfect execution. The principal hall (*fig.* 781.) is 318 feet long, and 159 broad, having the roof still supported by 134 columns. These are about 70 feet high,

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and 11 feet in diameter; and a long avenue of others have all, except one, fallen down entire, and lie on the ground, still ranged in their primitive order. All the sculptures are adorned with colours, which, though they ought, it should seem, to have most experienced the ravages of time, shine still with the brightest lustre. Of the large sphynxes, fifty are still remaining, and there are traces which show that the whole avenue once contained 600. The palace itself is entered with great difficulty, and its interior, being dark and filled with rubbish, presents few objects to attract the attention; but on reaching the roof, the spectator enjoys a distinct and most magnificent view of the whole range of surrounding ruins. All who have visited this scene describe the impression made by it as almost superior to that caused by any other earthly object. According to Denon, the whole French army, on coming in sight, stood still, struck as it were with an electric shock. The scene, according to Jollois and Devilliers, appears to be rather the produce of an imagination surrounding itself with images of fantastic grandeur, than any thing belonging to real existence. Belzoni, in particular, declares that the most sublime ideas which can be formed from the most magnificent specimens of our present architecture, would give a very inadequate picture of these ruins. It appeared to him that he was entering a city of departed giants. He seemed alone in the midst of all that was most sacred in the world. The forest of enormous columns, adorned all round with beautiful figures and various ornaments; the high portals seen at a distance from the openings to this vast labyrinth of edifices; the various groups of ruins in the other temples; these, altogether, had such an effect upon his mind, as to separate him in imagination from the rest of mortals. For some time he seemed unconscious whether he was on terrestrial ground, or on some other planet.

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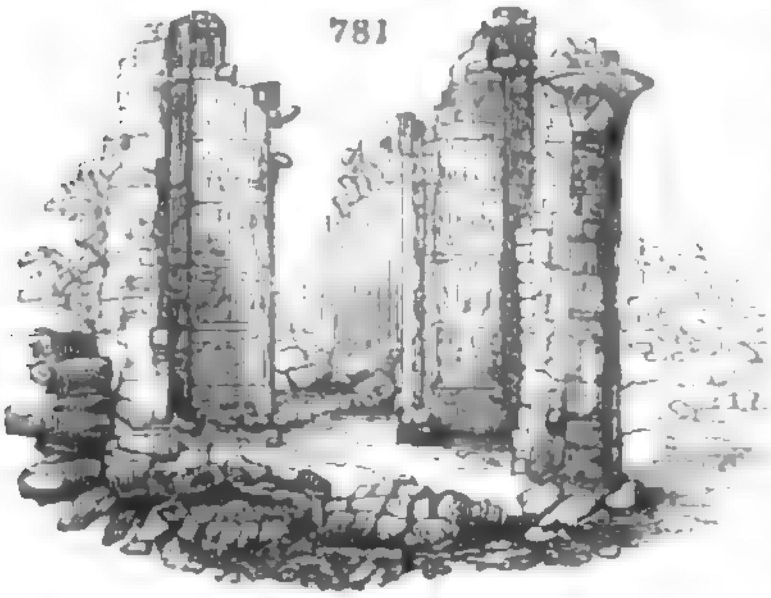

HALL AT KARNAC.

4993. If Karnac is unrivalled in the grandeur and extent of its remains, *the temple of Luxor*, as a single and beautiful object, seems superior to any thing else in Egypt. The view from the river is peculiarly beautiful, when, across the verdant islands with which it is studded, appears a wide plain covered with palm trees, over which these colossal masses throw their shadows; while, behind, the Arabian mountain chain forms the boundary of the landscape. The approach is through the village of Luxor, whose crowded and miserable huts form a strange contrast with these monuments of ancient splendour. At length the portico appears, by the sides of which are seen the two most beautiful obelisks in the world (*fig.* 782.), each rising to the height of eighty feet, yet composed of a single block of the finest granite, from the quarries of Syene. By what means such colossal masses were conveyed to so great a distance, and placed in their present position, surpasses the conception of modern art. Behind them are two colossal statues, now studiously defaced, and deep sunk in the sand, but which must have been forty feet high, and composed of a single block of the same granite. The propylon is 200 feet in height, rising fifty-seven feet above the present level of the soil. The interior is equally grand. It presents to the view upwards of 200 columns of different dimensions, many of them ten feet in diameter, and most in an entire state. But nothing is more remarkable in this edifice, than the profusion of sculptures with which the obelisks, the walls, and all the apartments are covered. These, indeed, are favourite ornaments on all the Egyptian edifices, and remarkably frequent in the palace of Karnac; but they occur here in unexampled profusion, and executed with as much care and delicacy as if they had been the work of the most skilful seal-engraver. They appear to represent the history and triumphs of an ancient Egyptian sovereign, probably the founder of the edifice. One compartment, in particular, exhibits a great battle, in which the

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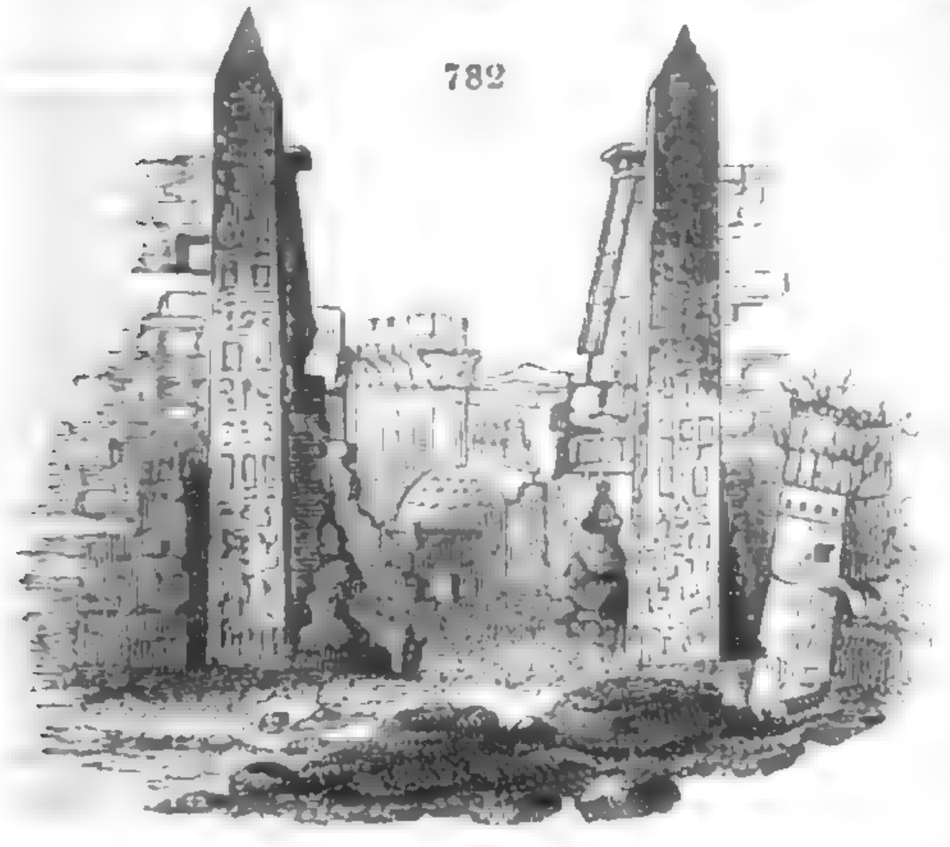

RUINS OF THE TEMPLE OF LUXOR.

Egyptians, armed with bows and arrows, gain a complete victory over their Asiatic enemies, armed with the spear and javelin. The forms of pursuit and retreat, the attitudes of the victors, the wounded, and the dying, are so varied and striking, that Mr. Hamilton imagines it probable, this and a similar representation at Karnac may have furnished Homer with materials for many of the varied descriptions with which his narrative is filled. In another compartment, the conqueror is represented as seated on his throne, while the captive monarch is fastened to a car, and the chiefs are treated with all that studied and ruthless cruelty which the ancient laws of war were supposed to authorise.

4994. *The western or Libyan side of the Nile* presents monuments of the grandeur of Thebes, which, though not of the same stupendous magnitude, are, perhaps, equally interesting. The *Memnonium*, or, as the French writers seem rather to show, the tomb of Osymandyas, and the temple of Medinet Abu present, though on a smaller scale, architecture and painted sculpture of the same character; equally excellent, and in many cases still better preserved. This is particularly observable in regard to the brilliancy of the gold, ultramarine, and other colours. The Memnonium is distinguished by three colossal statues, one of which is within the edifice, and the two others (*fig.* 783.) are in the plain adjoining. The former is entirely broken into fragments, which, being dispersed through the court, cover a space of sixty feet square, giving it the resemblance of a quarry. The form of the head, however, may still be traced, though the face is entirely mutilated; a foot and a hand have been found among the fragments. The ear is three feet long; the distance from shoulder to shoulder is twenty-two feet; and the entire height of the statue appears to have been about fifty feet. It was composed of a single block, which must have weighed 2,000,000 lbs. The French writers, in the *Description Historique*, adduce strong reasons for judging it to be the statue of Osymandyas. The two statues placed on the plain, and called by the country people Iama and Chama, are still standing, but mutilated to such a degree that it is impossible to judge of the merits of the sculpture. One of them, from the numerous inscriptions, appears evidently to have been the vocal statue of Memnon, celebrated by the ancients as emitting a musical sound at sunrise or when struck at particular times of the day. No modern visiter, however, has been able to elicit more than the usual sound made by percussion upon granite; and there seems no doubt that the musical tones were produced by some contrivance of the Egyptian priests. Amid these huge mutilated colossi, attention has been strongly attracted by another of smaller dimensions; but of which the head, detached from the body, has been found in a state of perfect preservation. All travellers have admired its elegant simplicity and pleasing expression, and have considered it the most perfect specimen of Egyptian sculpture which is to be found entire. The authors of the *Description* would have been tempted to believe it a production of the Greeks during the most brilliant period of the art, had it not borne evidence of that Egyptian style, which the Greeks never imitated, and which cannot be mistaken. This head, through the very great exertions of Belzoni, was embarked on the Nile, conveyed to London, and is deposited in the British Museum.

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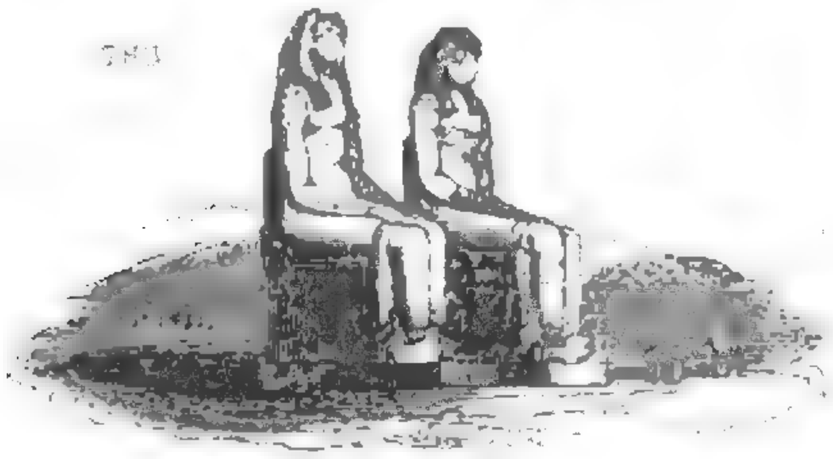

MEMNONIAN STATUES

4995. *The tombs of Thebes* remain to be noticed. The rocks behind conceal in their excavated bosom these monuments, less vast, indeed, than those now described; but of a still more striking and peculiar character. In all the Oriental countries peculiar honours are paid to the dead; but no nation appears to have equalled the Egyptians in monumental works. Wherever the remains of a city have been investigated, the mountains behind have been found excavated into sculptured tombs; and those of Thebes, as might be expected, surpass all the others in number, extent, and splendour. The Libyan chain, which presents for about six miles a perpendicular height of 300 or 400 feet of limestone rock, has appeared peculiarly suited for such elaborate sepulchres. These subterranean works of the Egyptians almost rival the monuments which they raised on the surface of the earth. Entrance galleries lead into large apartments, in which are placed the sarcophagi, and which are profusely decorated with that species of coloured sculpture with which they lavishly ornamented their walls. The deceased lies surrounded with representations of all the objects which formed his pride and occupation while living. A complete picture is thus exhibited of the domestic life of the ancient Egyptians; and many of the customs there indicated have been transmitted unaltered, and are still characteristic of the nation. Festivals, agricultural operations, commercial transactions, hunts, bull-fights, fishing and fowling scenes, vineyards, ornamented grounds, form the varied subjects of these representations. The chambers and passages adjoining contain numerous mummies, in that wonderful state of preservation which the Egyptians had the art of securing to the mortal remains of their ancestors. They are found wrapped up in successive folds of linen or cotton cloth, impregnated with bitumen, and so skilfully applied, as to preserve almost unaltered the form of the features and of the minutest parts of the body. Many of them contain, wrapped in their folds, *papyri* covered with hieroglyphical writing, an object of eager research to the European antiquary. Belzoni gives a very lively description of the difficulties attending this search. "A vast quantity of dust rises, so fine that it enters the throat and nostrils, and chokes the nose and mouth to such a degree that it requires great power of lungs to resist it and the strong effluvia of the mummies. You must creep through narrow passages, sometimes not more than a foot wide, after which you come to a more commodious place, perhaps high enough to sit. But what a place of rest! surrounded by bodies, by heaps of mummies in all directions. After the exertion of entering into such a place, through a passage of 50, 100, 300, or perhaps 600 yards, I sought a resting-place, found one, and contrived to sit; but when my weight bore on the body of an Egyptian, it crushed it like a band-box. I naturally had recourse to my hands to sustain my weight, but they found no better support; so that I sunk altogether among the broken mummies, with a crash of bones, rags, and wooden cases, which raised such a dust as kept me motionless for a quarter of an hour, waiting till it subsided again."

4996. *The ancient Egyptians* took the most jealous care to prevent any one from penetrating into these repositories of their dead. The entrances were closed with the greatest care by large stones, so united with the neighbouring rock as to prevent, if possible, any suspicion that they existed. It has required the most eager research of the moderns to penetrate into these subterraneous abodes. The cupidity of the Arabs, however, stimulated by the chimerical expectation of finding hidden treasures, has, in many instances, overcome every obstacle. The district immediately contiguous to Thebes is inhabited by a peculiar race, who maintain a fierce independence, and have scarcely, unless when compelled by the sword, owned the sovereignty of any government established in Egypt. They have taken up their abodes in many of the tombs, and eagerly employ themselves in searching their recesses for papyri and other antiquities, which they dispose of at high prices to European antiquarian travellers. This speculative traffic, however, has been on the whole injurious to them, by rendering their habits still more disorderly, and diverting their attention from regular industry and cultivation.

4997. These monuments of private individuals, however, are far surpassed by the *tombs of the kings*. At a small but highly finished temple, called El Ebek, a narrow gorge or ravine leads by a winding track into the heart of the Libyan mountains. At the end of two miles, a narrow chasm between rocks opens into "the valley of the tombs," a gloomy solitude, presenting the arid and desolate aspect of the most frightful desert. High mountains with rocky summits bound the horizon on all sides, and allow only part of the sky to appear. The heat reflected by them is so violent, that, in 1799, it killed two of Dessaix's escort; and there would be no possibility of enduring it, but for the shelter which the tombs afford. In this awful solitude, the ancient Egyptians sought to seclude from every human eye the magnificent monuments of the kings of Thebes. Avarice and curiosity, however, have triumphed over every precaution. All had been done to secure the entrance. The huge mass of stone which bars it, opens, when penetrated, into a narrow and intricate passage, closed by successive gate after gate. At length, entrance is found into a spacious chamber, in the middle of which is the sarcophagus, commonly empty, while the walls are adorned with painted sculpture, in the highest style of Egyptian magnificence. The subjects are of a different character from those found on the walls of the temples. They frequently consist of funeral processions, religious mysteries, sacred animals; a globe, the emblem of eternity; and Osiris judging the dead (*fig.* 784.). The eye, however, is often shocked by the representation of a number of victims newly beheaded, and streaming with blood, while others are led to share the same fate. This seems too strongly to suggest the savage mode of honouring the royal funeral by sacrificing over it a number of captives. The high preservation of these paintings is the more remarkable, as they are in general executed, not on the solid rock, which is here too hard to be susceptible of such ornaments, but on a soft plaster or stucco, which, however, has preserved them unaltered during several thousand years.

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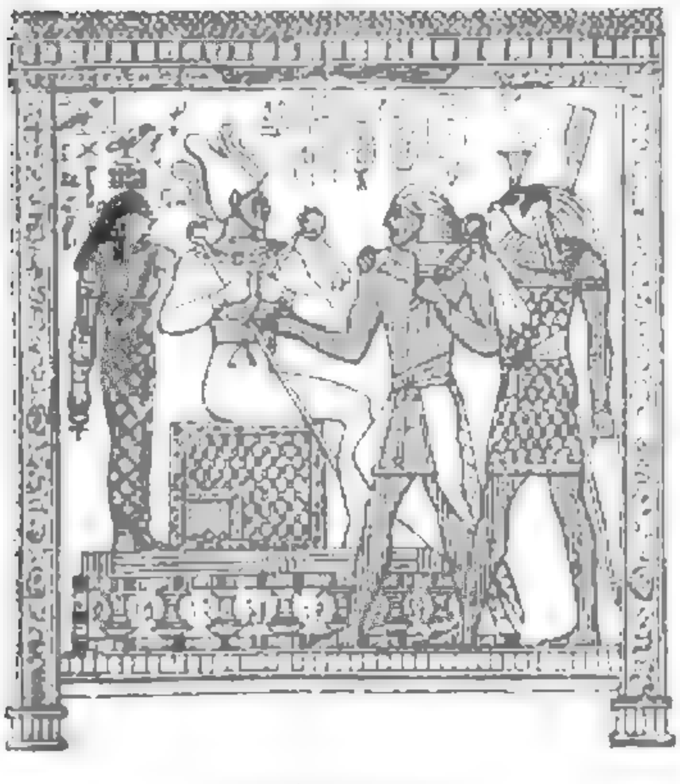


PRESENTATION TO OSIRIS.

4998. *At the time when Belzoni began his operations*, ten of these tombs had been opened, and were accessible. That enterprising traveller succeeded in opening several; but there was one, of which the entrance had been so carefully concealed, that it long defied his efforts. At length, he found a stone similar to that which had formed the opening into the second pyramid, and was able to penetrate. After making his way through accumulated obstacles, he arrived at a sepulchral chamber, similarly adorned with the others, but far surpassing all the rest in magnificence. In the centre was a sarcophagus nine feet five inches long, and three feet five inches wide, composed apparently of alabaster, though it has since been found to be arragonite. Both the inside and outside are covered with sculptures, most minutely and carefully executed, and representing several hundred figures, each about two inches in height. The subject appears to be the obsequies of the deceased, in which are introduced a number of foreign captives, among whom the Jews are distinguished by their physiognomy and complexion, the Ethiopians by their colour and ornaments, and the Persians by their dress. This entirely agrees with the inference which the learned observation of Dr. Young has drawn from the hieroglyphical inscriptions, that this is the tomb of Necho and Psammeticus, the former of whom is mentioned in Scripture as having made successful war against Judea and Assyria; and the latter is known by an expedition against the Ethiopians. This remarkable sarcophagus was, by the exertions of Belzoni, transported to England, and is now placed in the Museum at Cambridge.

4999. *A full idea of ancient Egyptian painting and sculpture* may be formed from the numerous specimens preserved in these tombs, as well as upon the walls of the Theban edifices. These arts are practised in a very peculiar style. The figures are first cut out in a certain degree of relief, and the colours then laid over them. All that belongs to drawing is performed by the chisel. It has merely, however, distinguished the figures by cutting away the stone round them, so that only the profile is exhibited, and the whole appears as a flat surface. The drawing of the figure, too, is far from being always correct. At the same time, a great deal of spirit and invention is displayed in the groups, and the expression of the heads is often very forcible. The painting process is still more simple. It consists merely in laying on the simple colours of red, blue, green, yellow, and black. No attempt is thus made to imitate that variety of tints with which nature adorns her works. The colours are remarkably bright, and have proved wonderfully durable; but these merits seem rather to belong to the chemist than to the artist. The only merit which the latter can claim is that of the harmonious distribution of them.

5000. *The village of Erment*, about six miles above the southern limit of Thebes, on the site of Hermonthis, contains still a temple of second-rate magnitude, dedicated to Typhon. It gives, in some respects, a better idea of ancient Egyptian architecture than any other, no part being either sunk in the ground or covered with rubbish. It has also remained uninjured by time, and might have been still entire, had not great part of it been studiously demolished by human hands.

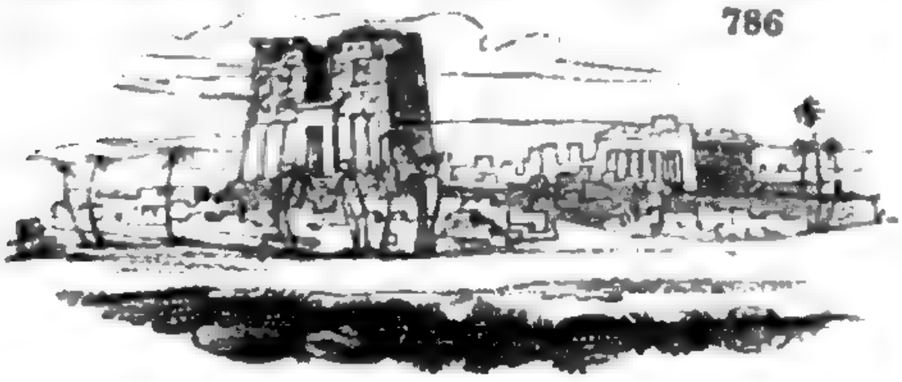
5001. About twenty miles above Erment is *Esné*, capital of the most southern district of Egypt, and the last great town which occurs in ascending the river. It is situated in a plain of considerable extent, formerly watered and rendered fertile by canals derived from the Nile; but, these being now neglected, cultivation is confined to the immediate vicinity of the river. Esné, prior to the administration of Mohammed Ali, was almost politically separated from Egypt, having become, amid the frequent civil wars with which that country has been distracted, the usual refuge of the vanquished party. The military chiefs, however, who preserved here a remnant of power, generally used it for the purposes of oppression and extortion, which were exercised particularly upon the agricultural classes. The town itself displays a luxury and industry not usual in Upper Egypt. It has manufactories of fine blue cotton, shawls, and pottery, and carries on a considerable trade with Sennaar. A great part of this industry is in the hands of about 300 Coptic families. The portico of the temple of Esné (*fig.* 785.), belonging to the ancient Latopolis, is remarkable for its beauty, which surprises even those who have seen the grandest of the monuments of Egypt. Its chief merit consists in an antique purity of style, peculiar to itself; and it was viewed by Denon as one of the most perfect ancient monuments. It is not peculiarly distinguished by its magnitude; the columns, twenty-four in number, are about 35 feet high, and 17 feet in circumference. The zodiac, with which its cupola is adorned, forms one of the most remarkable monuments of ancient science, and has given rise to much controversy.

785

PORTICO OF THE TEMPLE AT ESNE.

5002. *At Edfû*, thirty miles higher, towards the extremity of habitable Egypt, is found still another monument, which, according to Jomard, may be compared, for the happy conception of the plan, the majesty of the composition, the execution and richness of the ornaments, to whatever is most magnificent in architecture. Denon conceives that, if that at Tentyra is more learned in its details, this at Edfû (*fig.* 786.) has more grandeur as a whole. It is 484 feet in length, 212 in breadth; and there is no Egyptian edifice of the same dimensions in equal preservation. In the interior court (*fig.* 787.), the eye sees almost entire the height of the grand gate of entrance, the two huge pyramidal masses, and the peristyle of thirty-two columns, which form a most magnificent perspective.

786



TEMPLE AT EDFU.

5003. *Above Edfû*, the plain of Egypt narrows extremely; the rocks on both sides in many places overhang the river. In these rocks, to which has been given the name of Gebel Silsili, are seen the immense quarries, out of which the Egyptians constructed that astonishing range of monuments which we have now surveyed. M. Rosière observes, that travellers, consulting rather their imagination than their eyes, have seen in the temples of the Thebaid some precious material; marble, the granite of Syene, or the porphyry of Arabia. He states, that, in fact, all the edifices from Syene to Dendera are constructed of the sandstone found in these quarries. They are mingled with quartz, united by a calcareous gluten; the general colour is white or grey, though marked by variously tinted spots or veins. It is very easily operated upon by the chisel; he supposes it would have cost five times the same labour to have executed on marble the numerous sculptures which cover the walls of Egyptian edifices. Some of the subterraneous quarries form grottoes, which have been adorned in a manner nearly similar to the temples. The whole of this part of Egypt presents the most dreary aspect, consisting of naked rocks, whose fragments are mingled with the sand at their feet. The Nile, which elsewhere diffuses such luxuriant fertility, has no power over these spots doomed to eternal sterility. The narrow band of verdure, which sometimes bounds one of the banks, mingled with a few earthen huts and stunted palms, seems only to make more sensible the surrounding barrenness.

787

INTERIOR OF TEMPLE AT EDFU.

5004. *In a valley amidst this solitude, however, stood the ancient city of Ombos*, whose ruins are upwards of four miles in circumference, and contain two temples, much dilapidated, but bearing traces of great magnificence. Neglect, and the blowing in of the sands, have reduced the plain to a state of total desertion. The modern village on the site of Ombos contains no longer any inhabitants.

5005. *Assouan, the celebrated Syene of the ancients*, is situated on the eastern bank at the termination of this long and dreary tract. It was remarkable, not only as being the limitary town of Egypt and Ethiopia, but chiefly as one of the grand points upon which the geographers of the Alexandrian school measured the form of the earth, and the relative position of its parts. Syene was considered as immediately beneath the tropic, and a well was formed there, at the bottom of which, on the solstitial day, the body of the sun was reflected entire. The moderns have searched in vain for this well; and the position assigned is not strictly correct, Syene being in 24° 5′ 22″ S. latitude; but, considering the imperfection of ancient instruments, this does not imply a very great error. The ancient Syene contains a temple, by no means, however, correspondent to so great a name; and, with the other original monuments, it is in a great measure buried under the remains, first of a Roman, and then of an Arab town, erected on the same site. The modern town is closely adjoining, and, though populous, is very poor, being supported chiefly by a trade in dates. The inhabitants are observed to go almost naked, a custom which is partly excused on account of the extreme heat.

5006. *Syene* is surrounded on all sides by *dark and rugged mountains*, extending for many miles up the river. They are formed of that *rose-coloured granite* which, from the spot, is called *syenite*; but though, on fracture, it exhibits that and other brilliant colours, the surface is covered by the action of the air and elements with a dark brown tint. For about three miles round Syene are the famous quarries, whence the Egyptians drew their granite chiefly for the edifices of Lower Egypt. The marks of the instruments employed may still be traced; the soil is every where strewed with pieces of various forms and dimensions, and it is still possible to discover the purpose for which many were destined. The most remarkable is an obelisk, which is 54 feet high, without reckoning its point, buried in the sand. The rocks all round Syene are covered with sculptures and hieroglyphic inscriptions.

5007. *The Nile immediately opposite Assouan* encloses *Elephantine*, an island, the beauty of which strikes all travellers with an admiration, which they express by terming it the "Island of Flowers" and "the Garden of the Tropic." It presents, indeed, within the space of a mile in length and a quarter of a mile in breadth, a verdure and fertility equal to the finest spots of Egypt. This, in so savage a region, which elsewhere offers nothing but naked peaks and glittering sands, makes an extraordinary impression. The island contains also two temples of small comparative dimensions, but distinguished by their simplicity and elegance. These are considered by Jomard as only slender remains of the ancient power of Elephantine; but though that island appears once to have formed a separate kingdom, it could never, we think, have been powerful, situated, as it is, in a tract which for twenty miles in every direction is doomed by nature to perpetual barrenness.

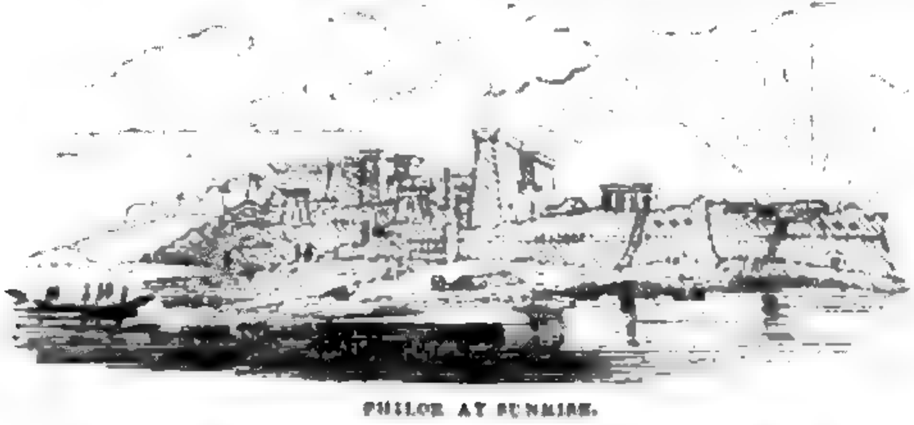
5008. *The cataracts of the Nile* (*fig.* 788.), so celebrated in antiquity, commence about three miles above Elephantine. The picture drawn of them, however, as forming a prodigious fall, whose sound deafened the neighbouring inhabitants, and obliged them to remove their dwellings to a distance from the roar, has not been verified by modern observation. It does not appear that there is at present any considerable fall: and though some change might be possible, one so entire cannot be imagined. A most picturesque and extraordinary scene is, however, produced by the Nile dashing through a wild confusion of granite rocks, with which its bed, for several miles, is thickly studded. The two opposite chains, presenting peaks of every form and aspect, meet and cross in the middle of its course. The river, which above flows in silent majesty, upwards of a mile in breadth, is here narrowed to half that space; and its stream, forcing its way through these steep and innumerable islets situated above, amidst, and below the cataract, boiling, foaming, and breaking among a thousand rocks, presents a scene of the grandest effect. The water in the different channels is tossed about in every direction, forming numberless little cascades. The noise, resembling that of a tempestuous ocean on a rocky shore, is in winter and spring very formidable, and heard at the distance of three miles.

788

CATARACTS OF THE NILE.

5009. *The island of Philoë* (*fig.* 789.), above the cataracts, and at the very gate of Ethiopia, constitutes still another striking feature. Within a space of a quarter of a mile in length, and half that breadth, it exhibits a confusion of grand and beautiful monuments, rivalling those left by the greatest cities of Egypt; and their elegant forms and white colour strikingly contrast with the embrowned tints and the wild and rugged peaks of the surrounding mountains. Denon distinguished eight different temples, built apparently at different periods, and quite separate, though some pains had been taken to combine together those which were contiguous. Philoë is far from presenting the smiling aspect of Elephantine; but a few dates and cultivated fields on the island itself and the opposite shores, placed as they are upon this burning soil, and amid this immensity of arid rocks, produce an agreeable impression, and soften somewhat the extreme severity of the site.

789



PHILOE AT SUNRISE.

5010. *Having thus traced the Nile in its entire course through Egypt*, we have gone over the main body of that country; but *some wild appendages remain*, which she claims as belonging to her. Among these is that peculiarly desolate tract, which extends from the Nile to the Red Sea, through the whole extent of Middle and Upper Egypt. No district of it appears to produce any thing which can afford food for man. The soil is sand, intermingled with rocks, through which, however, are interspersed trees and shrubs, affording pasture to the camels and sheep of the Ababde, a rude and independent race, who hold undisturbed possession of these wilds. At all times, however, a caravan route has been pursued across them to the Red Sea, for the purpose of carrying on that intercourse with Arabia and India, of which Berenice was anciently the great emporium, but whose much diminished amount is now chiefly carried on by Suez and Cairo. There is still a caravan from Kene to Cosseir, for the supply of Upper Egypt. The journey is performed with camels in forty-two hours, and without any inconvenience but what arises from the necessity of carrying provisions, and from the scarcity of water; several of the few springs which occur being rendered useless by the saline and mineral impregnations. Cosseir is an assemblage of Arab huts composed of wood and mats, situated in a frightfully poor and barren country, and without any good water but what is brought from Asia. The sea, however, abounds with fish, and it displays some commercial activity, though containing no accommodations for trade, and having only one harbour capable of holding a limited number of inferior merchant vessels.

5011. *Belzoni, by great exertions, found his way to the ancient Berenice.* He could trace the main streets, and even the materials of the houses, consisting of corals, madrepores, and petrifactions, the copious products of those seas. Opposite to it it a very fine natural harbour, which has not, however, depth enough for large vessels, and whose entrance is at present obstructed by a bar of sand, easily removable. There is a small Egyptian temple, built of sandstone. The extent of the ruins is 2000 feet by 1600, which might, it is supposed, have contained a population of 10,000. At present it is entirely deserted.

5012. About twenty miles inland from Berenice is the mountain of Zubara, famous for the *emerald mines* found in it by the ancients. When Belzoni passed, fifty men had been employed for six months by a speculator from Egypt, to open again this long lost source of wealth. They had found, however, only a few specimens, mostly of inferior quality. Towards the western quarter are said to be still two large monasteries, those of St. Anthony and St. Paul, whose gardens and plantations somewhat enliven the aspect of this desert.

5013. *At the head of the Red Sea is Suez*, by which Egypt carries on nearly all that remains of its once immense trade in that sea. This trade is now insufficient to give any degree of wealth and importance to Suez. It is a poor, ill-built town, which derives all its provisions from Cairo, and has to send several miles for water, and even that is bad. Almost its only intercourse is with Jidda, from which it receives coffee, and supplies it with grain for Mecca. A few vessels also come from Yemen. Those of any considerable burden are obliged to lie in the road, as only small boats can enter the harbour of Suez itself.

5014. *The canal which anciently united the Red Sea and the Mediterranean* was traced by the French engineers, who, after considerable search, conceived that they had ascertained its whole line. It extended across part of the isthmus of Suez, and by Belbeis, into the Pelusiac branch of the Nile. Although the work appears to have been continued successively by the native princes, the Greeks, and the Romans, there is no record that the canal was ever actually used, unless in the seventh and eighth centuries, under the Saracenic princes; and then probably only on a small scale. It is conceived quite possible to renew the work; though the necessary dependence on the rise of the Nile, and on the variable winds of the Arabian Gulf, renders it difficult to secure a regular navigation.

5015. *The region to the west of Egypt* consists of an equally dreary and still more unvaried plain, or rather ocean of sand. Interspersed in it, however, are oases, or cultivated islands, of considerable extent. The principal is the one called El Wah, or the great Oasis. It must be of tolerable magnitude, since Browne was eight hours in travelling from Aine Dize, the first spring, to Charje, the capital. Poncet describes it as a delightful spot; but it may have derived additional charms from contrast with the dreary wilderness around. The governors of Upper Egypt keep a garrison here, and consider it of importance, as affording to the caravans that proceed to the south, an opportunity of renewing their supply of provisions and water. Charje, the capital, contains about 2000 inhabitants, who subsist on rice and dates. The continual blowing of the sand is provided against by the singular precaution of a flooring formed above the streets, which renders them almost like a dark chamber. Near this place is a truly magnificent temple, 191 feet in length, and containing, in high perfection, all the ornaments peculiar to those of the Thebaid. On the outer gate is a very long Greek inscription. In the vicinity of other villages are considerable temples, where, though the character of the architecture be Egyptian, arched roofs and Greek inscriptions mark that additions, at least, have been made by a different people.

5016. About one hundred miles to the west of El Charje, Sir Archibald Edmonstone and M. Drouetti lately discovered *another Oasis*, consisting of twelve villages, of which the principal, called El Cazar, is beautifully situated at the foot of a line of rocky hills, and surrounded by fine gardens of palm, acacia, and fruit trees. Near it are vestiges of a very large town; and ruins of similar character with those of El Charje, though on a smaller scale, are scattered throughout the Oasis.

5017. *The little Oasis*, called likewise that of El Cazar, not being in the route of any caravan, remained almost unknown, till Belzoni lately made his way thither. It consists of a plain, fourteen miles long and eight broad, formerly cultivated throughout, but now only in parts. The people are a rude, independent race, who once had sheiks of their own: they hold little intercourse with any other tribe. Belzoni found here the remains of a large temple, with a number of tombs cut in the rock, in the Egyptian style. From these, and from a spring, varying somewhat in temperature, but not actually in the manner described by Herodotus, he conceives that on this oasis may have been situated the celebrated temple of Jupiter Ammon, at least that it may enter into competition with Siwah for that distinction.

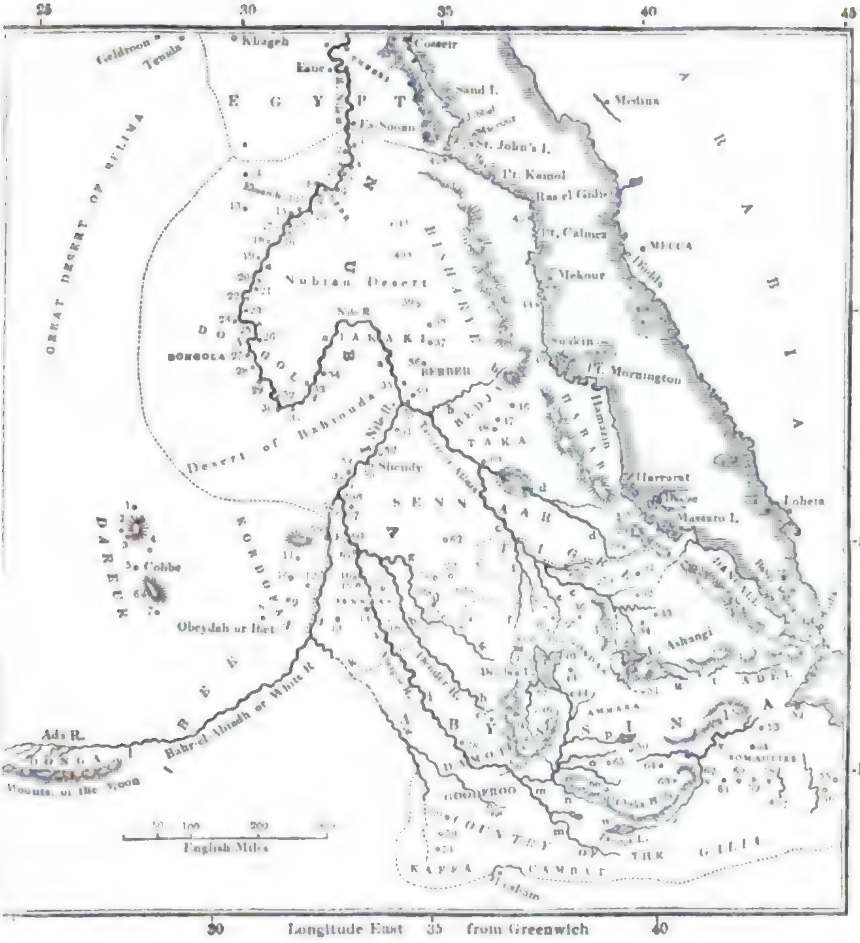
CHAP. III.

NUBIA.

SECT. I. *General Outline and Aspect.*

5018. *In the beginning of the chapter upon Egypt*, a general idea has already been given of Nubia. Like that country, it owes its exemption from the character of complete desert entirely to the Nile, which holds through it a course of nearly 1000 miles in direct distance, without including its long bend round Dongola. That great river, however, diffuses its waters to Nubia in much more scanty portions. Being every where hemmed in by high banks and rocks, it cannot, even without some artificial aid, be made to inundate

Fig. 790. MAP OF NUBIA AND ABYSSINIA.



References to the Map of Nubia and Abyssinia.

NORTH PART.
1. Darmout
2. Marowan
3. Dakki
4. Kobban
5. Baresla
6. Korosko
7. Derr
8. Ayfe
9. Ibrim
10. Ermyne
11. Ibsambul
12. Mour
13. Selime
14. Farss
15. Serra
16. Sukkot
17. Argeyn
18. Mershed
19. Samne
20. Kolbe
21. Ferke
22. Ebar
23. Korek
24. Soleb
25. Tinareh
26. Argo
27. Dongola
28. Kait
29. Handech
30. Dabdi
31. Abdouro
32. Old Dongola
33. Merawe
34. El Bellal
35. Hassa
36. Hawita
37. Amour, or Hamer
38. H. Halboub
39. Dimokea
40. Chigre
41. Terfowi
42. Port Habesh (Berenice)
43. Aidhab
44. Salaka
45. Suakin
46. Arewad Pond
47. Wady Oly
48. Wady Lado
49. Goos
50. Acos
51. Eliab
52. El Hassa
53. Shendy
54. Derrier
55. Suakim
56. Halfain
57. Halifoon
58. Gidid
59. Gimmoe
60. Kamilee
61. Herbagi
62. Mandera
63. Alliik.

SOUTH PART.
1. Medwa
2. Zeghawa
3. Halme
4. Sweini
5. Cobbe
6. Hadoo
7. Ril
8. Obeydah, or Ibet
9. Ilsherie
10. Abu Hadid
11. Harasse
12. Shegeeak
13. Walla
14. Sennaar
15. Usheta
16. Insurt
17. Nuba
18. Barras
19. Giesim
20. Byla
21. Teawa
22. Imgedalib
23. Rashid
24. Abothra
25. Saneala
26. Shire
27. Axum
28. Abba
29. Dixan
30. Arkeeko
31. Masuah
32. Genater
33. Adowa
34. Antalo
35. Nishuka
36. Tamano
37. Tcherkin
38. Deber
39. Gondar
40. Emfras
41. Teusel
42. Dingleber
43. Lebec
44. Alata
45. Lamgaar
46. Abo
47. Sinaset
48. Mine
49. Bure
50. Azzel
51. Ain Tacazze
52. Zeyla
53. Hamusa
54. Hubeta
55. Dedowale
56. Dando
57. Fauleh
58. Harnar
59. Kersha
60. Boorha
61. Dennta
62. Aufba
63. Aukobner
64. Gotetee
65. Mecan
66. Tegulet
67. H. Amba
68. Gooderoo
69. Killali
70. Angaree
71. Gonno.

Rivers and Lakes.
a Nile, R.
b Mareb, R. of Bruce
c Atbara, or Tacazze, R.
d Mareb, R.
e Angrab, R.
f Guangue, R.
g Bahad, R.
h Dender, R.
i Azergue, or Blue River
j Abiad, or White River
k Anket, R.
l Ada, R.
m Beloo, R.
n Roma, R.
o Tiana, R.
p Geshen, R.
q Nile, R. of Bruce
r Dembea Lake
s Ashangee, Lake
t Anasc, R.
u Moiee, R.
v Hawush, R.
w Iawaja Lake.

in general more than a mile in breadth upon one side. The country forms, therefore, a narrow belt of immense length, through the endless desert, stretching eastward to the Nile, and to the westward lost in the wide and unknown wastes of interior Africa.

5019. *As Nubia*, in consequence of this structure, is divided, both physically and politically, into a number of small states almost entirely detached from each other, our general view will be short, and the most interesting details will be reserved for the local survey.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5020. *Travellers* mention granite, syenite, porphyry, marble, sandstone and limestone among the mineral formations of Nubia; but no account has hitherto been published of its geognosy. Its mines of gold were formerly celebrated.

Subsect. 2. *Botany.*

5021. The *Botany* of Nubia has already been considered along with that of Egypt. (p. 1147.)

Subsect. 3. *Zoology.*

5022. *Our acquaintance with the Zoology of Nubia* is almost exclusively derived from the very recent discoveries of M. Rüppell: whose work, indeed, on the animals of Northern Africa, has scarcely yet, we believe, been brought to a conclusion.

5023. *The following quadrupeds*, besides those equally found in the northern regions of Africa, seem more particularly appropriated to Nubia: —

Lepus isabellinus *Rüp.* Fawn-coloured Mouse.
Mus dimidiatus *Rüp.* Nubian Mouse.
Canis variegatus *Rüp.* Variegated Fox-dog.
Canis Anthus *Rüp.* Nubian Wolf.
Canis famelicus *Rüp.* Kordofan Fox.
Canis pallidus *Rüp.* Pale Fox.
Felis maniculata *Rüp.* Nubian or True Cat.
Hyæna venatica *Burchell.* Painted Hyæna.
Oryx Tao *Sm.* Nubian Oryx Antelope.
Oryx Addax. Addax Antelope.
Antilope Saltiana *Rüp.* Salt's Antelope.
Antilope montana *Rüp.* Mountain Antelope.
Gazella Dama *Pall.* Swift Antelope.
Phascochœres æliana. Masked Boar.
Gazella Cora. Cora Gazelle.

5024. *Several of these deserve a slight notice.* Wild Dogs and Foxes appear to be numerous; as M. Rüppell has discovered no less than four new species. The Variegated Fox-dog is ochre-coloured, the fur thick, and variegated with blackish: it was discovered both in Nubia and Upper Egypt, where it lives in the deserts, but does not burrow.

5025. *The Nubian Dog*, or more properly Wolf, is light grey, marked with a few black spots on the back, while the tail is entirely black. It may be regarded as the wolf of Egypt as well as of Nubia, where it nevertheless appears to be rare. A third species, the Kordofan Fox, principally occurs in the deserts bearing that name, and in those of Nubia: it is nearly related to the Fennic, which it resembles in its burrowing habits, and is probably the fox-like animal represented on the monuments of ancient Egypt; for the true jackal (*Canis aureus* L.) does not appear to exist, either there, or in the immediately adjoining countries. Lastly, the Pale Fox (*C. pallidus*) is entirely of a light yellowish grey, with a bushy tail, tipped with black; it is only found in the provinces of Kordofan and Darfour.

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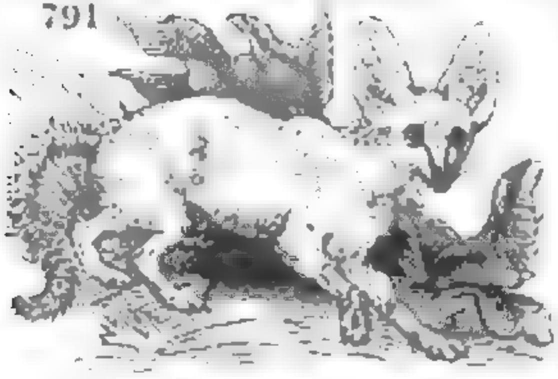

FENNIC.

5026. *That grotesque and rare animal, the Fennic* (*Canis Zerba*) (*fig.* 791.), first described by Bruce as inhabiting Abyssinia, was also discovered by M. Rüppell in the neighbourhood of Ambukol, and in the desert of Korti, where they live in holes, dug by themselves, and not on trees, as has been asserted by Bruce.

5027. *Respecting the Unicorn*, M. Rüppell's researches have furnished us with some very singular information; while his observations on the structure of the horns of the Giraffe prove at least that the existence of a quadruped like the supposed Unicorn, furnished only with a frontal horn, is at least neither impossible nor contrary to nature. Our traveller obtained some information on this much debated subject in Kordofan, where the Unicorn was said to be known, and to bear the name of Nillekma. Persons of various conditions agreed in the statement that the Nillekma was of a reddish colour, equal in size to a small horse, slender as the gazelle in its shape, and furnished with a long, slender, straight horn in the male, which was wanting in the female. Some added, that its hoofs were divided, while others declared they were entire. According to these statements, this animal inhabits the deserts to the south of Kordofan, is uncommonly fleet, and only occasionally visits the Kaldagi Slave Mountain, on the borders of this province. Three several Arabs asserted to M. Rüppell that they had themselves seen the animal in question: and one of his slaves from Kaldagi, on seeing the antelopes brought from the desert of Korti, gave, of his own free motion, a description of the Nillekma, exactly coinciding with the notices afterwards obtained by the traveller: it appears he had eaten of it in his own country, and described it as a very beautiful animal. Of the veracity of this slave M. Rüppell had frequent proofs, especially in the descriptions of animals, all of which were found to accord with the respective species which were subsequently procured. (*Zool. Journ.*, vol. xv. p. 390.)

5028. *The most beautiful Antelopes of Nubia* are those named the Mountain, the Addax or White, and the Dama or Swift Antelope. The first inhabits the neighbourhood of Fazogl on the White Nile. The elegant White Antelope (*A. Addax*) is very rare, being found only in certain parts of the desert to the south of Ambukol, where it lives in small herds: it is so exceedingly fleet, that even the best Arabian horses have much difficulty in keeping pace with it. The Dama, from the great length of its legs, would seem to possess the same celerity of motion.

5029. *The northern Giraffe,* or Camelopardalis of the ancients (*C. antiquorum* Sw.) (*fig.* 792.), has been seen by M. Rüppell in small herds in all the desert steppes south of Simrie, is plentiful at Darfour, and is even found to the east of the Bahr el Azrek. There can be no doubt that this is a distinct species from the Giraffe of Southern Africa (*C. australis* Sw.)

5030. *Several interesting birds* appear to be peculiar to this kingdom, or, at least, not hitherto known as inhabitants of Northern Africa.

5031. *Among those most deserving notice* should be mentioned the Occipital Vulture (*fig.* 793.), first discovered by Mr. Burchell in the southern regions of Africa. It is a large and imposing bird, having the upper plumage brown, the head and under parts white, and one half of the bill red: it inhabits the borders both of Nubia and Abyssinia, and is found either solitary or in pairs. The Red-throated Shrike (*Malaconotus erythrogaster* Sw.) is a new species, not very unlike the Barbary Shrike. M. Rüppell describes, under the erroneous generic name of Ixos, several curious birds belonging to the family of Great-legged Thrushes (*Cratcropodinæ* Sw.). The Otis Nuba, or Nubian Bustard (*fig.* 794.), is likewise a new acquisition; and seems peculiar to the deserts of tropical Africa. By the discovery of a new Parrot (*P. Meyeri* Rüpp.) in Kordofan, M. Rüppell has ascertained the most northern range of this family in the Old World. We could dwell much longer on the important discoveries of this enterprising traveller and able naturalist, did our limits permit. We must, therefore, merely add, that his researches have been extended to every department of the animal kingdom, and have made a very important addition to our knowledge of geographic zoology.

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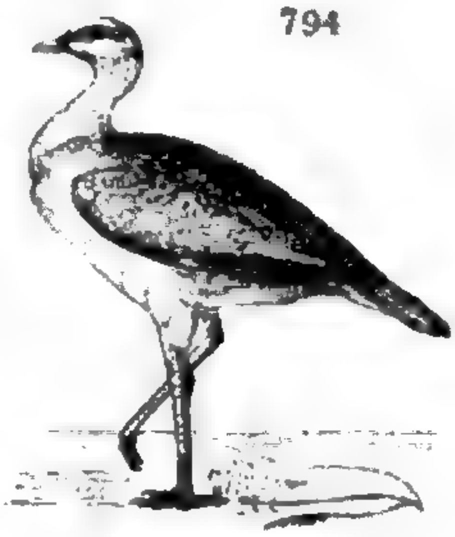
NORTHERN GIRAFFE.

5032. *The feathered game* is not deficient in these arid wastes. Besides the Nubian Bustard already noticed, another of the same genus, the Otis Arabs of Linnæus, is found in Kordofan: it is of considerable size, and distinguished by a pointed black crest. Partridges and quails are mentioned by former travellers: among the first is a new species discovered by Messrs. Denham and Clapperton, and justly named to commemorate the latter.

793

OCCIPITAL VULTURE.

794



NUBIAN BUSTARD.

Sect. III. *Historical Geography.*

5033. *Ethiopia* is one of the most venerable names of antiquity. In a vague and indeterminate sense, it comprehended the whole of interior Africa south of Egypt and Mauritania; but it was applied in a peculiar sense to *Ethiopia sub Ægypto,* — the region of the Upper Nile. This Ethiopia appears to have been a much more powerful and civilised kingdom in the early ages of history, than at any subsequent period. Egypt was repeatedly conquered from this quarter; and, according to some, she derived from Ethiopia the original of those arts and institutions which have rendered her name so celebrated. There certainly was an interchange between the two countries; but we should rather suppose Egypt, more fertile, and possessing much greater natural advantages, to have been the parent. Ethiopia, however, attests its ancient grandeur by monuments, excavated from lofty rocks which overhang the Nile, and which, though they do not display such exquisite skill, are nearly as magnificent as those of Egypt, and in some respects more striking.

5034. *Ethiopia did not,* like Egypt, sink under the ascendency of the great empires. The disastrous repulse of Cambyses forms a memorable event in ancient history. It does not appear that, beyond some occasional inroads, the Romans did more than maintain a frontier legion at Elephantine, which checked incursions, and exacted some imperfect homage and tribute from the chiefs immediately above. The Saracens and Turks never did more. Even for some centuries after the former enjoyed possession of Egypt, Nubia continued Christian; though it has since, by some unknown agency, become Mahometan. This rough independence, however, has been perhaps a misfortune to Nubia, since it has prevented her from receiving any of the improvements introduced by the great conquering nations. Split into a number of insignificant states, she has lost all her early civilisation, and her population was abandoned, either to lawless independence, or to the brutal tyranny of arbitrary chiefs. The late conquest by the army of Mohammed Ali was too violent, and attended with too much of outrage and rapine, to be attended with beneficial effects; and it appears to have been in a great measure ephemeral.

Sect. IV. *Political Geography.*

5035. *Nubia exhibits no semblance of a well-organised government.* Every town or large village, with its adjoining territory, has its *mek*, or *melek*, who exercises to the utmost whatever power he may possess, which, according to circumstances or character, is sometimes almost absolute, at other times is held in contempt. Each individual is armed with a crooked knife, which he is ever ready to employ in deeds of violence. From the various character and detached position of these states, their details will be best treated under the local survey.

Sect. V. *Productive Industry.*

5036. *The range of cultivation* in Nubia is extremely limited. That irrigation derived from the Nile, on which it entirely depends, is obtained almost solely by *sakies*, or wheels for raising the water to the level of the high banks. Of these, within the space of 150 miles, which intervenes between the first and second cataract, there are from 600 to 700. The dhourra, noticed as the produce of the more arid Egyptian soils, is almost the only grain of Nubia; though sometimes the people raise an after-crop of barley or lentils. Tobacco also, a luxury in universal demand, is cultivated with success. Sheep are fed on the tracts unfit for grain, but are by no means very numerous. Camels are numerous in the trading towns; but horses are only maintained by the chiefs, and for military purposes. The Nubians have scarcely any manufacture which can be termed national. The women make coarse woollen and cotton cloths, mats of date canes, and the necessary implements for cooking.

5037. *The commercial intercourse of Nubia* is less limited. Being the only practicable line through the desert, it forms the medium of communication for Arabia and Egypt with the vast regions of central Africa. Cotton goods, toys, arms, and a variety of trifling articles, are carried to be exchanged for gold and ivory, but chiefly for slaves. These are purchased from Darfour or Kordofan, where they are obtained by war, or by mere slave-hunting, from the still more savage countries in their vicinity. This is almost entirely a transit trade; for though a considerable number are kept by the great in Dongola, Merawe, Sennaar, &c. by much the larger proportion is sent across the deserts to Egypt, or by Suakim to Arabia. The chief seats of this traffic are Mahass, Dongola, and particularly Shendi, in which last Burckhardt supposes that 5000 slaves are annually exposed for sale. The slaves from eleven to fourteen or fifteen years of age are the most valued, and bring fifteen or sixteen dollars. Above that age, they are considered intractable, and rarely sell for more than eight or ten. The good treatment of the slaves is limited to that which mere self-interest imperiously dictates. The necessary supply of food, and whatever is absolutely essential to health, is regularly furnished. In the early part of the journey, while these unfortunate victims are yet near their native country, they are treated with kindness and indulgence, though narrowly watched; but when they are once beyond the Nile, more severe measures are resorted to, without hesitation. It is a common saying, with regard to a refractory slave, "Let him pass the Berber, and the whip shall teach him obedience." The more violent are secured by long poles fastened behind with cords; and at night they are put in irons. The final destiny, however, of these unhappy persons is by no means so severe as that of those employed to till the ground in the European settlements.

Sect. VI. *Civil and Social State.*

5038. *The inhabitants of this extensive line of territory* consist of two leading races. The first is the proper Nubian, called Berbers or Barabras; a class strictly native, and of the same race with those who inhabit the mountainous districts of Barbary. The banks beyond Dongola, and the still more southerly kingdom of Sennaar, are inhabited by negroes; though between them is interposed the tract of Berber, held by a mixture of Nubians and Arabs.

5039. *The Nubians are in a very rude state*, and are scarcely acquainted with any of the arts and improvements of civilised society. Many of them, even a little above Egypt, were found by Belzoni absolutely ignorant of the use of money. Like savages, they prized looking-glasses and shining toys more highly than articles of real value. Their food consists of dhourra, ground between two stones, and baked into cakes without leaven, over which they pour onion sauce, broth, or milk. They make from it *bouza*, a species of beer, in which they indulge to excess. Their houses are roughly built either of mud or loose stones: in the former case, they are roofed with leaves of the date tree. A cap of cloth or linen, and a woollen mantle or cotton shirt, form all the attire which is considered necessary; and, in many cases, even this is thought superfluous.

5040. *The Nubians are generally a handsome race*, well made, strong, and muscular. The countenances as well as the demeanour of the females are sweet and pleasing, and they are said to be strictly observant of their matrimonial engagements. In the small and secluded villages, the inhabitants of which are employed in agriculture, a primitive simplicity of manners appears to prevail, and a number who go to act as porters in the cities of Egypt are considered remarkably honest. In the large trading towns, which are chiefly inhabited by slave merchants, the utmost profligacy of manners prevails.

Sect. VII. *Local Geography.*

5041. *There are no data for exhibiting the divisions of Nubia* in any precise or definite form. Beginning, however, with the frontier of Egypt, and proceeding up the Nile, we shall obtain a rapid view of its varied objects.

5042. *In that close valley to which we now ascend*, the natural features, though striking, are uniform and monotonous. The Nile flows between rocks, which either overhang its stream, or leave room only for little patches of cultivation; and the modern inhabitants are poor and rude. The banks, however, as in Egypt, are diversified at short intervals with ancient monuments of a grand and striking character. Instead of being composed of masonry, they are in many and the most remarkable instances, cut out of the solid rock. After passing a small temple at Debod, and a number of singular ruined enclosures at El Umbarakat and Sardab, we arrive at Kalabshe, the first Nubian temple on a great scale. The propylon is 120 feet long, and

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50 feet high; but the portico is entirely wanting, and its destruction seems to have been effected by violence, as the remaining parts are in good preservation, particularly the colours. A golden lamp, evidently Grecian, was lately found among the ruins. At the distance of a quarter of a mile is a small temple, with the ruins of a considerable town, about a mile in length, supposed by Burckhardt to be the ancient Talmis.

5043. After passing Garba Dendour, we come to *Gyrshe*, or *Guerfeh Hassan*, which presents the first specimen of the excavated temples of Ethiopia. The greater part of it has been hewn out of a perpendicular rock. The entrance is adorned not only with large columns, but with three colossal statues, eighteen feet high, the workmanship of which appeared to Belzoni to display the mere infancy of the art. The figures were such as barely to indicate that men were meant to be represented, and their faces were a caricature of that of the negro. About nine miles above is Dakki, a much more elegant structure, situated in a plain, which appears once to have been cultivated, but which is now covered with sand. There are smaller edifices at Offelina and Leboua, but nothing of much importance occurs till we reach *Dehr*, or *Derri*, reckoned the capital of Lower Nubia, about 130 miles above Syene. It possesses little either of extent or elegance. The houses, which, with the exception of a few belonging to the chiefs, rarely exceed eight or ten feet in height, are built of mud and stones intermingled. There is an excavated temple, but not of much importance. A few miles above is Ibrim, strikingly situated on an almost perpendicular rock which overhangs the Nile, and considered a strong military post against the Arabs. The Mamelukes occupied Ibrim on their retreat from Egypt, but on being obliged to leave it, they entirely destroyed the place, which has remained ever since uninhabited. The date plantations round it are considerable.

5044. *The country above presents little of interest;* rude villages, date plantations on the eastern bank, total barrenness on the western. About fifty miles above Dehr appears the grandest monument of Nubia, *Ibsambul*, whose excavated chambers rival the proudest boasts of Thebes and Tentyra. This temple (*fig.* 795.) is cut out of a solid rock, rising perpendicularly about 600 feet from the Nile. The entrance, however, when first visited by Burckhardt, was choked up with such immense masses of sand, that all idea of penetrating seemed out of the question. Belzoni, by almost unexampled exertion and perseverance, succeeded in clearing away the obstacles, and found the interior (*fig.* 796.) truly magnificent. The pronaos, 57 feet long and 52 feet wide, is supported by two rows of square pillars, each pillar being adorned with a figure elegantly executed. Hieroglyphics, painted sculptures, colossal statues, and all the ornaments which characterise Egyptian temples, are profusely employed. Battles, storming of castles, triumphs, particularly over the Ethiopians, with captive groups of that race, are the subjects chiefly represented. The exterior of the temple is 117 feet wide, and 86 feet high; but the most remarkable feature consists of four colossi, which, with the exception of the Sphynx, are the largest sculptured figures in Egypt or Nubia. Burckhardt, who saw only the shoulder of one of them above the sand, conjectured, from its dimensions, that the whole would be 65 or 70 feet. Belzoni, after removing the sand, found it 51 feet, not including the cap, which was 14 feet. Of these colossi, one is still buried, and another thrown down.

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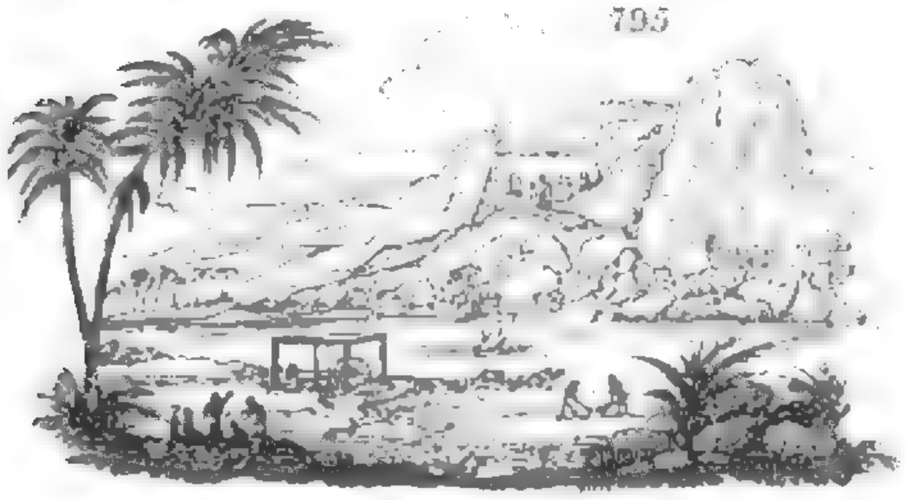

ROCK TEMPLE AT IBSAMBUL.

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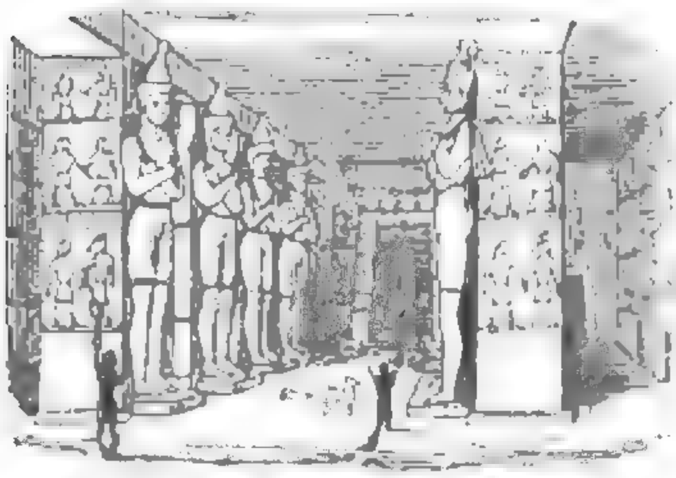

INTERIOR OF TEMPLE AT IBSAMBUL.

5045. With Ibsambul terminate the ancient monuments belonging to that part of Nubia which borders on Egypt. Above, at the distance of a day's sail and a half, is *Eshke*, the residence of a cacheff, and situated on a larger extent of wooded and cultivated land than intervenes between it and Syene. Another day's sail leads to *Wady Halfa*, the second cataract. Here, too, Europeans have been disappointed of finding a mighty waterfall. This cataract, like the first, is formed by several thousand rocky islands, through which the Nile dashes amid clouds of foam, and is whirled and tossed in perpetual eddies. The rocks consist, not of granite, but of a species of black marble; and the islets, being covered with patches of verdure, and several even inhabited, produce a picturesque effect, and relieve that aspect of extreme desolation, which characterises the scenery of the first cataract.

5046. *The territory of Mahass* may be described in a manner nearly similar; and the rude and violent character of its chief obliged Burckhardt here to terminate his career of Nubian discovery. Majestic ruins, however, continue to be scattered along the bank, among which, pre-eminent beauty is displayed by the temple of Soleb (*fig.* 797.). The remains consist only of a range of solitary columns,

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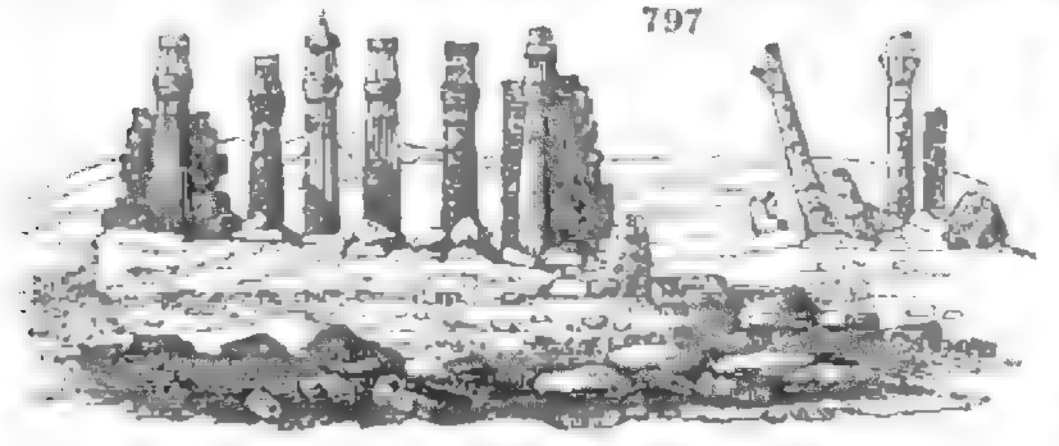

TEMPLE OF SOLEB.

but these are of such peculiar lightness and elegance, that they may come into competition with any of those which adorn the banks of the Nile.

5047. *Wady el Hadjar and Sukkot are rude and sterile territories*, in which the range of culture scarcely extends beyond the immediate banks of the Nile, and the poor villages, when not under the dominion of Egypt, are ruled over and oppressed by a succession of turbulent little chieftains. They contain, however, the temples of Semneh and Amarah, the remains of which possess considerable beauty.

5048. From Dar Mahass the traveller enters the territory of *Dongola*. The vicinity of the river continues to present the aspect of a narrow belt of cultivated land, rescued from the surrounding desolation; but this belt, hitherto on the eastern, is now on the western bank. Dongola, besides, presents tracts of more brilliant fertility and beauty than any part of Lower Nubia. High granite rocks enclose the green and cultivated valley of Jarjar, which flourishes in freshness and fertility in the bosom of the wildest waste. Immediately beyond is a pass called the Water's Mouth, which is represented as exhibiting a scene of grandeur and wildness, superior to those at the first and second cataract. It is formed by a succession of huge and detached masses of naked rock, and of large fragments scattered on the plain. Below is the large island of Argo, a spot of peculiar and striking fertility, forming, in the bosom of the desert, the most luxuriant natural garden. The air is full of fragrance, and the palm trees are rendered melodious by the song of numberless birds, among whose notes that of the dove is predominant. A narrow mound separates this fairy land from the regions of barrenness and death, and this display of nature's bounties singularly contrasts with the wide surrounding expanse of sandy desert. In one part of it are found two colossal statues, lying on the ground, 23 feet in length, and the sculpture of which displays considerable skill, especially when it is considered that the materials are peculiarly hard.

5049. About ten miles above Argo is *Maragga*, or *New Dongola*. This last name was given to it by the Mamelukes, who, during their temporary occupation of this country, made it their capital. They converted it, though built only of mud, into a very neat town, with several large courts or squares. The surrounding country, naturally the richest in the whole territory, was greatly improved by them. Old Dongola, which appears at no time to have answered to its ancient reputation, is now a miserable mass of ruin. The sand, which, when Poncet was there, had already made large encroachments, has now buried the centre of the town, and divided it into two separate parts.

5050. *The Nile*, in the tract which we now approach, no longer flows in that straight direction from north to south, which marks almost the whole of its known course. Soon after receiving the Tacazze, it makes *a great bend*, and for about 200 miles flows southward, contrary and parallel to its former course. It then bends again, and renews its usual northerly course, which it maintains through Dongola and Nubia. It thus forms three parallel channels, enclosing two peninsulas, which contain a greater extent of cultivated land, and support a larger population, than any part of Lower Nubia. The middle channel, or that which flows southward, parallel to the Dongola branch, is occupied by the *Sheygya*, a race of negroes, peculiarly roving, fearless, and warlike. They have numerous slaves, whom they employ in tilling the ground, and in performing all laborious offices, while they devote themselves entirely to arms. They make battle a scene of gaiety, rush laughing into the field, and address their enemy with the Eastern salutation, "Peace be with you." Disdaining the improved instruments of modern warfare, they have obstinately adhered to their ancient arms, the lance and the shield. Even with these, they fought a most obstinate battle at Korti with the troops of the Pacha of Egypt. It ended, however, in their entire discomfiture; after which they put to death their necromancers, who had deluded them with predictions of victory, and submitted to the invader. Rumour, however, since states, that they have risen in the rear of the Pacha's troops; and it does not, indeed, seem very probable that a race thus fierce and restless, inhabiting so distant and inaccessible a tract, should remain in quiet subjection to Egypt.

5051. *Merawe*, perhaps the ancient Meroë, capital of the Sheygya, is situated on the Nile. The modern town is large, being supposed to contain about 10,000 souls; but the houses are built of mud, and the streets are long and gloomy. In its vicinity, however, is situated a range of the grandest monuments which Ethiopia can boast. A lofty eminence, called Djebel el Berkel, or the Holy Mountain, presents, partly cut out of its rocks, partly built along its sides, seven or eight temples, the largest of which may rival the most magnificent monuments of Egypt. It is 450 feet long, by 159 wide, and the principal interior chamber is 147 feet by 111. Sculptures and hieroglyphics, of a religious import, cover the walls in equal profusion as in Egypt. The symbols of Jupiter Ammon, that primary object of Ethiopian worship, hold of course the foremost place. These works appear to great disadvantage, since they consist, not of the solid and durable materials which compose the Egyptian monuments, but of a friable sandstone, the surface of which has, in a great measure, wasted away. Considerable skill seems to be displayed in some of the workmanship; though other parts of it are inferior. Near these temples are seventeen pyramids, of no remarkable dimensions; but at El Bellal, on the opposite side of the river, at the distance of seven miles, there is a very magnificent range, though still decidedly inferior to the Egyptian structures. The largest (*fig.* 798.) stands on a base 152 feet square; and, though diminished in height by the fall of a great part, still rises to 103 feet. One very curious feature is presented by the existence, within its interior, of another pyramid, of a different age and style of architecture, but much more entire than that in which it is enclosed.

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PYRAMID AT EL BELLAL.

5052. *Beyond the head of the branch*, the Nile is joined by its great tributary the Tacazze, which has flowed through Abyssinia. A Berber population again appears; and the name of Berber is even given to a succession of four large villages situated along the river. The inhabitants are a very fine race, as to bodily qualities; they are somewhat taller, and much stronger, than the Egyptians. Though their colour is nearly as black as that of the negro, they have very different features; indeed, they are handsome, both in face and person. Their moral character, however, as drawn by Burckhardt, appears under the most unfavourable colours. Consisting of slave-traders, or having continual intercourse with that class of men, they contract all the irregular habits which their mode of life tends to generate. Among their bad qualities, treachery and avidity predominate; and in the pursuit of gain, they trample upon every ordinance, human and divine. The mek's authority is little regarded among the wealthier inhabitants, who carry on perpetual private quarrels, and terminate every dispute by the law of the strongest. They are also addicted to intoxication and every species of debauchery. Farther up the Nile is Shendi, or Chendi, a town still subject to the Arabs, which Mr. Bruce found in a state of decay, and not containing above 250 mud houses: but, when Burckhardt visited it, a protecting government had again rendered it the emporium of the trade with central Africa; particularly that in slaves, of whom about 5000 are supposed to be sold in the markets of Shendi. Near this place is a range of monuments, the existence of which was reported to Bruce, and which were lately visited and examined by M. Cailliaud. They consist of forty pyramids, and a temple, of which few traces remain, but which seems to have been about 280 feet in length. The largest pyramid is 87 feet high. They appeared to M. Cailliaud more ancient than the monuments of Egypt, and of the same character. Jomard, as well as M. Cailliaud himself, has supposed them to be the remains of the ancient Meroe; but it appears to us that the name of Merawe, and the ruins on a much greater scale at that place, give it a decided claim to preference in this respect.

5053. Soon after leaving Shendi, *the territory of Sennaar* begins; but the banks of the Nile are still sandy and barren, diversified only by occasional woods and cultivation. About fifty miles above is Gerri, a large village, and near it is a ferry across the Nile, joining the road which leads through the desert to Dongola. Soon after, another grand feature occurs; the junction of the Bahr el Abiad or White River, coming from the west and from central Africa, and of the Azreek, or Blue River, coming from Abyssinia; which two great streams uniting form the Nile. The controversy which *is* the Nile, seems now universally decided in favour of the *Bahr el Abiad*, which is described by Bruce himself as the largest of the two. Halfaia, a large, handsome, and pleasant town, is situated near the junction. The tropical rains here begin to be felt, and relieve the territory from that general barrenness, and dependence upon inundation, which characterise Egypt and Nubia.

5054. *In ascending the Blue River* we pass Herbagi and Gidid, two considerable villages; then, about a hundred miles above the junction, we come to Sennaar. This is the most important and populous kingdom throughout all that tract which bears the name of Nubia. Its fertility, however, is not maintained by inundation, but by the tropical rains, which are here considerable, though not so violent as in regions more immediately under the equator. Through their influence, the country in August and September assumes a verdant and delightful aspect, and a number of lakes are formed. On the cessation of the rains, the dhourra ripens, and the country acquires a yellow appearance. Soon afterwards, the lakes dry up, the country becomes parched, " all the beauty disappears, and bare scorched Nubia returns, with all its terrors of poisonous winds and moving sands, glowing and ventilated with sultry blasts." The horses of Sennaar are fine, and the horned cattle are represented by Mr. Bruce as the largest and finest in the world: but there is something, either in the air, or in the rank vegetation, which renders it impossible for animals to be bred, or even to live in it the whole year round; and they require to be removed frequently to the dry grounds, three or four miles from the river. The present native government of Sennaar was formed in 1504, by the conquest of the Shilluks, a race of negroes inhabiting the banks of the Bahr el Abiad. It has been in theory, entirely despotic; the inhabitants assuming, even as a boast, the title of slaves; but, even in Bruce's time, the military officers had usurped the whole actual power, and left to the king little more than the name. The troops amounted to 14,000, consisting chiefly of a race of negroes, called Nuba, occupying the country between Sennaar and Abyssinia. The infantry were bad; but the cavalry, amounting to 1800, were equal to any in the world. This country was lately occupied by the army of the Pacha of Egypt, who entered Sennaar with little or no opposition; but the general insurrection since raised in their rear has probably restored the native power to complete independence. The city of Sennaar has been supposed to contain 100,000 inhabitants; but, according to Cailliaud, they do not exceed 9000. The houses are built of clay with flat roofs, and, except those of the great officers, are small, and do not consist of more than one story. The palace is four stories high, built of burnt brick, but in a ruinous state. Although Sennaar produces abundantly dhourra, millet, rice, and even wheat, it yields few commodities fitted for trade. The only intercourse consists in the transit trade from interior Africa to Egypt and Arabia. The gold dust, brought in quills from Kordofan and Fazuclo, has the reputation of being the finest and best in Africa. The returns consist chiefly in blue cotton cloth from Surat, which, made into a species of long robe or shirt, forms the universal dress of the country. Spices, hardware, toys, particularly a species of Venetian black beads, are also in demand.

5055. *To the south of Sennaar* is Fazuclo, a hilly territory, forming a province of the former country, though still governed by its own prince. Beyond it extends a vast range of mountainous districts, called Dyre, and Tegala, or Taggula. It is nearly independent; but the wild inhabitants are hunted and carried off as slaves to Sennaar, where, however, they are well treated, and employed even as troops, to keep in subjection the Arab inhabitants. The gold mines are found chiefly in a district called Quamaml; but, when the Egyptian expedition had reached it, by great efforts and sacrifices, they found them very poor, the ore being extracted in small quantities, and with great labour, from sand and earth. To the west, along the Bahr el Abiad, dwell the Shilluk negroes, who, as already mentioned, conquered Sennaar in 1504, and now assume the title of Funje, or lords. El Aice, or Alais, their capital, seems merely to consist of a tract of country, formed into islands by branches of the Bahr el Abiad, and densely peopled. They employ themselves much in fishing, and have many boats, in which they sailed upon Sennaar, and effected their conquest. The country between the two rivers which form the Nile, and which for some space run nearly parallel to each other, is in general an extensive plain, covered with large woods, but diversified by one or two ranges of mountains.

5056. *The deserts to the east and west of Nubia* next claim our notice. The Nile, particularly between Berber and Dongola, has a winding course, the following of which would render the commercial route to Egypt very circuitous. The caravans, therefore, with that enterprising courage which characterises the inland trade of Africa, have struck a route across tracts where, for many hundred miles, no human habitation is to be seen, and only a few bands of predatory Arabs procure for their flocks a scanty herbage. The eastern route from Berber to Syene, forming a line of about 500 miles, has been travelled by Bruce and by Burckhardt, and by both without meeting a human being. It does not present, however, unvaried plains of sand, like those which constitute the western deserts of Africa. It contains mountains, some 1000 feet high, and interspersed with wadys, or valleys, affording a supply of water, and supporting some trees, shrubs, and grass. Many days' journey elapse without travellers having an opportunity of filling their bags with water. Its aspect is extremely rugged; but Burckhardt, after having passed through those of Suez and Sinai, did not think it quite so dreary.

5057. *The western desert appears much more desolate.* Travellers, indeed, after their departure from Siout, are refreshed at Charje, or the Great Oasis; but, having quitted its limits, find nothing but an unvaried waste of sand. Even the wells, which occur only at a wide distance, and of which the principal are at Sheb, Selimé, and Leghea, though they produce a verdure which relieves somewhat the nakedness of the desert, offer nothing which can be food for man or beast. Poncet strongly describes the painful impression made by a scene, " where we meet neither with beast, grass, nor even so much as a gnat; and see nothing but mountains of sand, carcasses and bones of camels." The caravan to Darfour has about 800 miles of this tract to pass through, ere it reaches Cubcubea. That to Sennaar, again, touches the Nile at Moscho, and proceeds through Dongola to Korti. It then strikes across the desert of Bahiouda, which, containing a few trees and herbs, does not present so frightful an aspect as the western solitudes.

5058. *Another line of commercial intercourse* reaches across from the district of Berber to the Red Sea. It is far from presenting the same desert aspect as those just described. On the contrary, the district of Taka, through which it passes, is famous over all these countries for its extreme fertility. Though the capacities of the soil are by no means duly improved by cultivation, yet its dhourra sells in the markets of Jidda 20 per cent. higher than that of Egypt; and its breeds of camels and oxen are said to be equally excellent. The Arabs of Taka are a warlike race, engaged in almost continual contests with the Bishareen, a fierce tribe, who wander over the neighbouring deserts. They are robust, hardy, hospitable among themselves, but accused of treachery and inhospitality to strangers.

5059. After three days' journey through this tract, the caravans arrive at *Suakin*, or *Souakin*, the only sea-port of Nubia. The island on which it is situated was seized in the sixteenth century by the Turks, who made it their maritime capital on the Red Sea. De Castro, at that time, found it one of the richest and most flourishing cities of the East, and had seen nothing equal to it except Lisbon. All this splendour has vanished with the loss of the Indian trade, and only a few wretched *dows* are seen unloading their cargoes by the side of some miserable houses. The Turks still retain Suakin, though with so small a force that they dare not set foot on the main land opposite. The harbour retains all its excellence, being capable of holding 200 large, besides a prodigious number of smaller vessels. The conveyance of pilgrims and slave-traders to Jidda is the only support of what remains to Souakin. Two minarets, however, attest its past splendour, and the general custom of whitewashing the houses gives it still a handsome appearance when seen at a distance.

Chap. IV.

ABYSSINIA.

5060. *After tracing upwards the course of the Nile*, we come to *Abyssinia*, the region from which that river derives much of its immense store of waters. The *Bahr el Abiad*, indeed, flows from the yet unknown interior of the continent; but a large portion of the stream which penetrates Nubia, and inundates Egypt, is poured down from the country to the eastward, where the mountains, rising to a stupendous height, yield copious supplies of water. That prime element of tropical cultivation renders Abyssinia the most fertile country in this part of Africa, and, with a very few exceptions, in the whole continent.

Sect. I. *General Outline and Aspect.*

5061. *Abyssinia*, in a manner insulated amid rocks, deserts, and boundless plains, though it has imbibed some elements of civilisation, has scarcely any intercourse with the civilised world. On the east, it is judged to be bounded by the Red Sea, with which, however, the proper domain of Abyssinia comes in contact only at one point. On the north it communicates with the deserts of Nubia, traversed by wandering Arabs. On the west it has Sennaar; and, on the south, the Mahometan kingdom of Adel, or Adaiel: but the greater part of these two last frontier lands consists of wild regions occupied by the Galla, who always ravaged, and have recently conquered, a large portion of the Abyssinian monarchy. It is difficult even to guess the dimensions of a region of which there are no fixed limits, measurements, or surveys; but somewhere between 700 and 800 miles from east to west, 500 and 600 from north to south, may form a tolerable approximation.

5062. *Abyssinia has been described as entirely a country of mountains.* Chain succeeds chain; and the level tracts which cover a great extent of the kingdom bear almost all the character of mere mountain valleys. The ridge of Lamalmon is the best known to Europeans, who have to cross it in entering Abyssinia from the Red Sea to Gondar. The mountains of Samen (*fig.* 799.) to the south, however, are still more lofty, and the same may be said of those of Gojam, which give rise to the Abyssinian Nile. Of Shoa, Efat, Damot, and the other southern provinces, our information is less precise; but it appears that they consist equally of an alternation of high mountains and deep valleys. All these mountains present forms peculiarly rugged and precipitous. The representations given by Mr. Salt fully exhibit the chaos of rocky masses into which these mountains are thrown; though he disputes the accuracy of Mr. Bruce, who represents them, in many cases, as pyramids pitched on their tops. In many of these mountains, the summit forms a plain of some extent, encircled by walls of rock, which being accessible only by ladders and cordage, may be called a natural castle. Such, in Amhara, was the mountain of Amba Geshen, in which the princes of the blood royal were confined, as a security against those machinations which are so dangerous in an unsettled government.

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MOUNTAINS OF SAMEN.

5063. *Abyssinia is not less a country of rivers* than of mountains. The eastern tract, above the province of Gojam, gives rise to the *Bahr el Azrek*, or Blue River, so much celebrated, in modern times, as presenting the long sought-for head and source of the Nile. It is, indeed, so considered in Abyssinia; and all the Portuguese travellers and missionaries, from whom alone our early information is derived, were impressed with the same idea. It is not, therefore, wonderful that Bruce went on his travels with this impression, and that, after having placed his glory in the discovery, he should have been slow in admitting the observation of D'Anville, that the Bahr el Abiad, admitted to be the greater stream, had in all respects the best title to be considered as the Nile of the ancients. Numerous waters rising in the same chain of mountains flow first eastward, and form the great lake of Dembea, one of the most conspicuous features of Abyssinian geography. From the eastern shore of this lake the Blue River then issues, and, making a vast semicircular sweep round the province of Damot, passes westward not far from its original source. It finally turns northward, receives from the south the copious accession of the Maleg, and, becoming the river of Sennaar, falls into the Bahr el Abiad, as we have seen, considerably beyond the Abyssinian frontier. The Tacazze, with its auxiliary streams, the Mareb and the Coror, drains all the high chains of Western Abyssinia, then makes its way through the Nubian desert, and pours its large tribute into the Nile. The mountains in the south give rise to two rivers, the Hanazo and the Hawash, which direct their course eastward, but meet extensive plains of sand, through which they are either naturally or artificially dispersed, and thus lost, before they arrive at the Red Sea.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5064. *We do not find* any precise information regarding the geology of this vast alpine land in the writings of travellers.

Subsect. 2. *Botany.*

5065. *Abyssinia,* doubtless, in its vegetation, as in its geographical position, borders on Egypt; and here want of space and want of information compel us to be very brief; for, though two eminent modern travellers have visited that country, Bruce and Salt, and though one of these, in particular, has given a chapter to the most remarkable plants, yet, for want of scientific names and descriptions, they cannot always be satisfactorily determined. Mr. Salt's collection, according to Mr. Brown, amounted to about 260 species, and in its character is somewhat extra-tropical, bearing but little affinity to the vegetation of the opposite and western coasts of Africa, in the same latitudes. In the Protea abyssinica, observed by Bruce, and Pelargonium abyssinicum and Geissorrhiza abyssinica, found by Salt, it more resembles that of Southern Africa. The first plant Mr. Bruce notices is the Papyrus, of which he has given a full history. In Abyssinia, its roots are chewed in the manner of liquorice, and a considerable quantity of sweet juice is thus obtained. One of the angles of the stem is observed to stand opposite the stream, like the cutwater of a boat, or the sharp angle of a buttress of a bridge, by which the pressure of the stream upon the stalk would be greatly diminished.

5066. The Balessan Balm, or Balsam, is the Amyris Opobalsamum (*Linn.*) Balsamodendron Opobalsamum (*De Cand.*), of which a full account has been given by Bruce. The Sassa Myrrh, or Opocalpasum, is the Juga (?) Sassa of Willdenow and De Candolle. This plant yields a very light gum, which Mr. Bruce believed to be the Opocalpasum of Galen. In water, this substance swells, turns white, and loses its tenacity. In quality it much resembles Gum Tragacanth, and may be eaten with impunity. The native merchants use it to set a gloss on the blue cloths of Surat, when they come in an injured state from Mocha. The tree that produces the Sassa is as high as our largest elms; the gum covers almost all the trunk and the principal branches, issuing in large globules, which often weigh 2 lbs. each, though the substance is of a light nature. The bark is thin and bluish-white, the wood white and very hard; the flowers of a crimson red; the filaments of a violet red, and purple at their extremities. The fruit has never been observed.

5067. Ergett y' Dimmo is Desmanthus divergens of Willdenow and De Candolle; Ergett el Krone, Mimosa polyacantha (*Willd.*), is probably not different from M. asperata. The Ensete is Musa Ensete (*Gmel.*), a species of Banana, which grows in the Abyssinian marshes, where there are large plantations of it; and it is almost the sole food of the inhabitants. They eat the green leafless stem, which is many feet high, and an excellent vegetable; scraping off the green skin, and cooking it like turnips, which it somewhat resembles in flavour; and is light, wholesome, and of easy digestion. The Kol-Qual is the Euphorbia antiquorum; and though Bruce says that he was prepared to see wonders, yet that this tree much surprised him. The ripe fruit, of a crimson colour, and borne on the top of the branches, gave the trees, that stood thick together, a veil of the most vivid red. The tree, which sends out most vigorous shoots, is succulent, and leafless below, and bears many golden-coloured flowers, succeeded by red fruit. From the green leaves an almost incredible quantity of milk issues; and, on severing two of the finest branches, no less than four gallons flowed out, of so caustic a nature that, though the sabre used for the purpose was immediately washed, the stain long remained. When the tree grows old, the branches wither, and, in place of milk, the inside appears to be full of powder, which is so pungent, that the small dust that flies, on a touch, from the branch, excites dreadful sneezing, while the milky juice excoriates the fingers. Still the woodpeckers pierce these rotten boughs, apparently with perfect impunity. The only use the Abyssinians make of this fluid is for tanning hides, at least for taking off the first hair. The Rack appears evidently, from the description and figure, to be a species of Avicennia; it grows near the sea-shore, and the Arabs build boats of the wood, which is hardened by the sea, and so bitter that no worm will touch it. Toothpicks, made of it, are sold in small bundles at Mecca, and are reputed to be favourable to the teeth, gums, and breath. The Gir-Gir, or Geshe el Aube, a grass, the favourite food of the goats about Ras el Feel, is the Andropogon afer (*Gmelin*). Kantuffa, a thorny tree, which, says Bruce, "like many men we meet daily in society, has wrought itself into a degree of reputation and respect, from its noxious qualities, and the power it has of doing ill, together with the constant exercise of these powers, is an universal nuisance in the country where it grows; seizing the raiment of the men, whether coarse or fine, and giving them the alternative of dropping their garments and appearing naked, or of extricating them, torn to rags; and laying hold of the long hair of the women. So dangerous is it for the natives of Abyssinia to leave this thorn standing, that every year, when the king marches, among the needful proclamations this is thought needful, 'Cut down the Kantuffa in the four quarters of the world, for I know not where I am going.' The wild animals well know the shelter that this shrub affords them; and they would be perfectly secure but for a hard-haired kind of terrier, of the smallest size, who, being defended from the thorns by his rough coat, goes into the bush, and brings the game, one by one, to his master." This plant is the Pterolobium lacerans of Brown's MS. in Salt's *Abyssinia*, and the Mimosa (?) Kantuffa of De Candolle. Gaguedi is the Protea abyssinica. Wanzey (*Cordia abyssinica* of Brown in Salt's work) is a common tree throughout Abyssinia; and so universally planted in the towns, that they have the appearance of a wood. "Gondar, in particular, at the season when the white flowers of this tree, which come out in a single night's time, appear, looks as if covered with white linen or new-fallen snow. To this tree, and the coffee tree, divine honours are paid by the Abyssinians. Under its shadow the king is chosen, and holds his first council; and his sceptre is a bludgeon made of its wood, carried in state before him. Farek (*Bauhinia acuminata* of Bruce, not Linn.), the Bauhinia Farek of Desvaux, was found on the banks of a brook, which, falling from the west side of the mountain of Geesh, down the south face of the precipice where the village is situated, runs into the lake Gooderoo. It is the water we employed for common uses, not daring to touch that of the Nile, unless in drinking and dressing our food. It grew in the side of a cliff, not 400 yards from the fountain of the Nile itself. Its name of Farek itself is derived from the division of the leaf. Kuara (the *Erythrina abyssinica* Lamarck and De Candolle) (*fig.* 800.), is a beautiful tree, and bears a red bean with a black spot in the middle, which has been, from the earliest ages, used as a weight of gold among the Shangalla, and where that metal is found, all over Africa; and repeated experiments have proved that the seeds vary so little in weight, that a better choice could not have been made between the collectors and buyers of gold. From its name of carat, the weight of gold is derived, and, passing from the gold country of Africa to India, it came to be used for weighing precious stones, especially diamonds; so that to this day both gold and diamonds are said to be so many carats fine. Walkuffe is evidently a plant of the Natural Order Buttueriaceæ, and described in the *Encyclopédie Botanique* under the name of Walkuffia Pentapetes. But it is probably not different from Cavanilles's genus Dombeya, of Bourbon and the Mauritius. It is spoken of as a tree of inimitable beauty. Woognioos, a powerful medicinal plant, grows abundantly in Ras el Feel, where dysenteries reign considerably; "Heaven having put the antidote in the same place with the poison." Both there and through all Sennaar, the inhabitants are well acquainted with the virtues of this plant, and it was successfully employed on Bruce himself, when all other means of cure had failed. Our traveller brought seeds with him to England, and the plant is now not uncommon in our stoves. Sir Joseph Banks named it, in honour of its distinguished discoverer, Brucea dysenterica. Cusso is a celebrated vermifuge in Abyssinia. It is the Hagenia abyssinica of Lamarck (*Banksia abyssinica* of Bruce). The Abyssinians of both sexes, and at all

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ERYTHRINA ABYSSINICA.

ages, are troubled with a terrible disease, which custom, however, enables them to bear with some indifference. Every individual, once a month, evacuates a large quantity of worms; and the method of promoting these evacuations is by infusing a handful of dry Cusso flowers in about two English pints of Bouza, the common drink of the country. While taking this remedy, the patient stays in the house, unseen by any one, from morning till night. The want of this drug is thought to shorten the lives of those Abyssinians who travel. It is always planted near churches, for the benefit of the town or village, and grows about 20 feet high. The Teff, or Poa abyssinica, is commonly sown all over Abyssinia, and from it is made the bread generally used throughout the country, alike by the king and peasant. The manner of making it is by taking a broad earthen jar, and, having made the pounded grain into a lump with water, they set it at some distance from the fire, where it begins to ferment; they then bake it into circular cakes about two feet in diameter. It is of a spongy soft quality, and a sourish, not disagreeable taste. At the Abyssinian banquets of raw meat, the flesh, being cut in small bits, is wrapped up in pieces of this bread, with salt and Cayenne pepper. The principal people eat the White Teff, which is made of finer grain; and the coarser sort serves the poorer classes. Every man wipes his fingers on the bread which he leaves for his successor, which Bruce truly calls "a most beastly custom." The Teff bread, after being well toasted, is put into a large jar, closely covered, after being broken into small pieces, and warm water poured on it: it is then set by the fire, and frequently stirred; after three or four days it acquires a sourish taste, and is what they call Bouza, or the common beer of the country.

5068. *An appendix to Bruce's Abyssinia* contains the following, more or less interesting, plants; but to which we dare not give other names than those under which they are published: — "Cassia Fistula," which Bruce says, though growing in Syria, Egypt, and Arabia, is a stranger in these places. Abyssinia is its native soil, and the goodness of the drug which it produces in all these countries is in proportion to their vicinity to its native country. The "Lehan, or Tabernæmontana," a tree of which nothing can exceed the beauty and fragrance. "Krihaha" appears to be a species of Bamboo, growing to a height of 55 feet, and to have been worshipped anciently among the Agow nation. "Anguale" is a tree found near the river Tacazze, and believed to be what bears the true Frankincense; and it produces, indeed, a gum very like it. The Gesh is a very common tree in Abyssinia, the leaves of which the people are accustomed to put in their hydromel or mead; they are also reduced to powder, and mixed with the mass from which the Abyssinians make bouza. "Merjoubey" indubitably is a species of Solanum, whose fruit, combined with other ingredients, is used as a cathartic. The "Nub" (*Polymnia frondosa*) a syngenesious plant, yet in the description said to be a species of Sesamum. It is from this herb they extract most of their vegetable oil. "Umfar, or Amfar," is determined by Mr. Brown to be a Buddlea (*B. acuminata*). "Kummel" is stated to be a species of Mimusops, of which the fruit is probably esculent, though nothing is said of its properties.

Subsect. 3. *Zoology.*

5069. *The Zoology of Abyssinia* is still but imperfectly known, although the general accounts given by Bruce, and by subsequent travellers, are, perhaps, sufficient for the general reader: the first of these writers, however, is frequently inaccurate. The Elephants, Rhinoceros, Lion, and some kind of Panther, are not uncommon; while the northern Giraffe, Camelopardalus antiquorum, *Sw.*, now known to inhabit Nubia, is in all probability found in the less frequented parts of Abyssinia.

5070. *Among the more local quadrupeds* we may enumerate the following: —

Megalotis Brucii. Bruce's Fennec.
Viverra Civetta. Civet.
Lynx Chaus. Booted Lynx.
Hyrax syriacus. Syrian Hyrax.
Antilope Soemmeringii *Rüp.* Black-fronted Antelope.
Sciurus rutilans *Rüp.* Abyssinian Squirrel.
Capra Jaela. Abyssinian Ibex.

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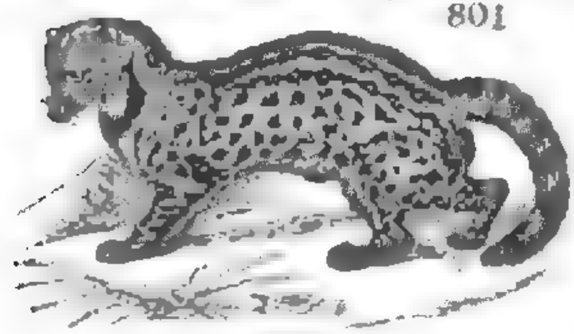

CIVET.

5071. *The Civet* (*fig.* 801.) *is the only quadruped we shall particularly notice*, as having long been celebrated for the odoriferous substance which it yields. This animal measures about two feet and a half in length; the tail is not more than one foot, and the height one foot and a quarter: the body is marked by narrow, black, transverse bands upon a grey ground, narrow, and parallel with each other on the shoulders, larger on the body and the thighs, and which sometimes form eyelike spots, like those on the panther: the tail has four or five black rings, and is broadly tipped by the same colour. The odoriferous substance is contained in a bag, opening by a narrow cleft near the vent: this scent was formerly in much more request than it is now. The Civet of India is the same as that of Africa: and Father Poncet has asserted that Emfras, a town of Abyssinia, is celebrated for the Civet trade, an immense number of these animals being there brought up in a state of domestication for this sole purpose. He further affirms, that with some of these merchants he has seen upwards of 300. The Civet is a particularly drowsy animal, and is roused from sleep with much difficulty. When irritated, the odour of musk becomes stronger, and from time to time it falls from the pouch in small pieces about the size of a nut.

5072. *The Abyssinian Ibex (Capra Jaela* Ham. Smith) is but imperfectly known, and merits the attention of future travellers. It is supposed to be the animal mentioned in the book of Job, under the name of Jaal. This interesting species, differing in many respects from the European Ibex, is said to be numerous in the mountains of Abyssinia and of Upper Egypt.

5073. *The Domestic Oxen* are of a large white breed, with long horns; but the greater number are variously coloured. The Abyssinian breed of hunched cattle is somewhat peculiar, they are marked with black and white in clouds; low on the legs, with the horns hanging loose, forming small horny hooks nearly of equal thickness to the point; turning freely either way, and hanging against the cheeks. This breed, by being transferred to Caffraria, and crossed with the straight-backed, has lost its hump: it is esteemed very valuable. (*H. Smith.*)

5074. *The Ornithology* is no doubt interesting; but the materials for forming an opinion on its general nature are much scattered, and not very precise. The Golden Eagle has been mentioned by Bruce; but the accounts of travellers, not themselves conversant with natural history, are now very justly viewed, on all occasions, with great suspicion. We shall, therefore, restrict our notices to the most remarkable authenticated species.

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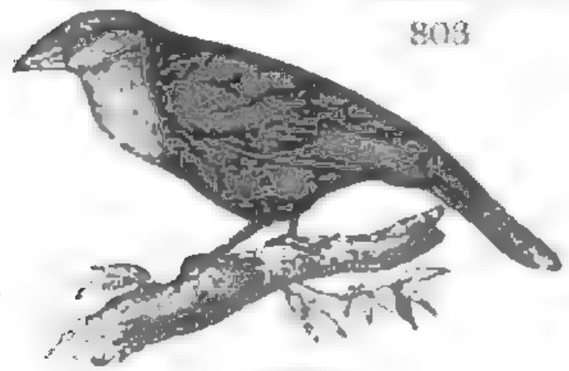
ABYSSINIAN HORNBILL.

5075. *The Abyssinian Hornbill* (*Buceros abyssinicus* Lath.) (*fig.* 802.) is of very large dimensions, little inferior to a turkey in size; and, like that bird, is said to have a wattle under the throat, changing at times to a full red: there is a large horny nob on the forehead; the quill feathers are pure white; but the rest of the plumage is dark. The nest is made in large trees, and of such unusual dimensions, as to be four times as large as that of an eagle; it is covered like the magpie's, the entrance being on the east side: it is the largest bird of the genus, sometimes measuring three feet and a half long. Mr. Salt mentions another species, the Yellow-billed Hornbill, not larger than a magpie. One of the lovely Turaccos, or Crown Birds, in all probability a distinct species from that of Guinea, is known in Abyssinia; the plumage is grass-green, of a soft silky texture, and the head is adorned with an elevated semicircular crest of delicately webbed feathers.

5076. *The Hyreus, or Abyssinian Plant-cutter* (*fig.* 803.), is a bird of great rarity, no museum in Europe being known to possess a specimen; it is not much bigger than a common grosbeak, or sparrow; but it has only three toes, and the margins of the bill are finely toothed in the manner of a saw; the plumage is black, with the head, throat, and breast red: according to Bruce, it is a solitary species, frequenting woods, and feeding upon the kernels of hard nuts; but this may reasonably be doubted, since the saw-like margins of the bill appear destined to cut off plants close to the ground, in a similar way as is done by the Chilian Plant-cutter.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PLANT-CUTTER.

5077. *Several Water Birds* inhabit the lakes and mountain streams. Of these, we shall only mention the African Jacama (*Sw. Zool. Illust.* 2.); a most graceful bird, of the size and habits of our water-hen, but with toes and claws of extraordinary length.

Sect. III. *Historical Geography.*

5078. *Abyssinia was little known to the ancients.* None of the conquerors of Egypt were able to penetrate, across Nubia and Meroe, into this ulterior region. The tradition which makes the Queen of Sheba an Abyssinian princess, and the monarchs of that country the descendants of Solomon, seems to rest on a very chimerical foundation. The Ptolemies, in extending their commerce, became intimately acquainted with all the ports of the Red Sea. Their observations thus reached the kingdom of the Axumitæ, whose port, Adulis, was celebrated for the great quantity of ivory which was shipped from it, and whose capital, Axum, exhibits splendid monuments, bearing somewhat of an Egyptian character. The same territory, though now forming a loose appendage to Abyssinia, continues to be the sole channel of its trade. The Abyssinian annals represent the country as converted to Judaism several centuries before the Christian era; and it certainly retains many observances bearing the stamp of that faith. In the fourth century, the nation was converted to Christianity, by the efforts of Frumentius, an Egyptian, who raised himself to high favour at court. Abyssinia remained impenetrable to the arms or the creed of the followers of Mahomet, and, affording shelter to the refugees from Egypt and Arabia, it became more decidedly Christian. To the Portuguese, when they began their grand career of maritime discovery, this country was an object of eager enquiry, as being the supposed seat of the chimerical prince whom they named Prester John. Its situation, too, at the bottom of the Red Sea, appeared, before it was thoroughly known, likely to be favourable to a trade with India. Early in the sixteenth century, Covilham reached it by way of Egypt, and was followed by successive embassies and missions. The Abyssinians adhered to the Eutychean sect, held the Monophysite doctrine, and owned the supremacy of the Patriarch of Alexandria; the Portuguese, therefore, although this system was rather less superstitious than their own, considered it little better than pagan, and made incredible efforts to convert the Abyssinians to the Catholic faith, and obtain their allegiance to the see of Rome: in fact, Paez, a missionary of great address, persuaded the king, Susneos, in 1620, to proclaim the Catholic religion to be that of the state. This step, however, occasioned violent civil wars, which ended in the total expulsion of the Portuguese. Since that era Abyssinia has maintained scarcely any intercourse with the powers of Europe. It had been almost forgotten among us, until the popular and animated narrative of Bruce made it again familiar; and, notwithstanding some vague and vaunting statements, the general accuracy of his information has been confirmed by subsequent enquiry. Mr. Salt has also favoured us with recent and accurate, though somewhat less extended, observations on the same subject.

5079. *Abyssinia has been always governed by native princes;* though disputed succession, and the rebellion of the military chiefs, frequently involved it in the calamity of civil war. These evils, rising to a peculiar height, exposed the country to the inroad of the Galla, a race of warlike and powerful savages from the south. By successive conquests, they have become themselves masters of all the central provinces, which their chiefs govern under the name of an Abyssinian prince. The position thus held by them separates Abyssinia into two parts, of which the northern division of Tigré was administered, in Mr. Salt's time, by Ras Welleta Selasse, who has since been succeeded by Subegadis, an able chief, who is aiming at the recovery of Gondar. The southern provinces of Shoa and Efat, again, are held by a prince descended of the royal family.

Sect. IV. *Political Geography.*

5080. *The constitution of the Abyssinian monarchy* has been, in theory, a complete despotism, no limit being assigned or prescribed to the absolute power of the sovereign. The country, in fact, appears to have been in a better state, when this system of government really prevailed. For some time past it has exhibited the calamitous picture of a broken-up despotism. The continual conflicts with the Galla and other barbarous neighbours have thrown extraordinary power into the hands of the governors of provinces and the military chiefs; and every thing has finally become almost wholly subject to the law of the sword. The nation, however, still holds the race of its kings in such reverence, as to make it unsafe for those armed usurpers openly to place the crown on their own head. They choose, therefore, some branch of the royal family, to whom they leave the form and shadow of sovereignty, and in whose name they administer public affairs. Even the Galla chiefs, who, as already observed, are become masters of half the kingdom, and of its capital, Gondar, have found it expedient to adopt this policy.

Sect. V. *Productive Industry.*

5081. *Abyssinia is a very fertile region.* Its valleys, supplied with copious moisture from the numerous mountain ranges, are completely exempted from the arid character of tropical plains. They maintain a rough plenty, with little aid from human art. The only disadvantage of the soil is, that the combined influence of heat and moisture produce often a rank fertility, which unfits it for the production of the finer kinds of grain. Wheat can be raised only on the higher grounds, and for the consumption of the rich. Barley is also cultivated, but chiefly for the feeding of horses. That which constitutes the food of the people, and can be raised almost on every soil, is *teff,* a weak herbaceous plant, with a stalk not much thicker than that of a carnation, and the seeds of which, though scarcely the size of a pin's head, by their great number make up a bulky crop. The lowest grounds produce some still coarser kinds of grain, which are mixed with *teff* and barley in making bread. The Abyssinian plough is extremely rude, often without iron. The operations of weeding and reaping are entirely performed by women. The low state of this important art may be inferred from the circumstance, that scarcely such a thing is known as corn brought to sale, and that each family raises what is necessary for its own use. The upland districts abound with horses and cattle, which, with cheese and butter, form objects of exchange. Bees are bred in great numbers, and the honey is of good quality. It is not only used for food, but, being mixed with maize, is formed into a fermented liquor, which is the favourite drink of Abyssinia. Cotton is raised in considerable quantities, though not sufficient for supplying the fabrics of the country.

5082. *The mineral wealth of Abyssinia is small.* No metallic substances are worked, or are known to exist; although, from the mountainous character of the country, there is little doubt that a search for them would be rewarded with success. A little fine gold is found in the sands of its eastern rivers; but the greater part, even of that article, is brought from regions farther in the interior. The most important fossil production is *salt*, drawn from a great plain in the western frontier, and even beyond its limits. The salt on the surface is hard and crystallised, like ice on which snow has fallen; but at the depth of two feet it is coarse and softer. It is cut with an adze into pieces, which, like the cotton cloth, are used as money. The employment of cutting it is dangerous, since both the workmen who dig the salt, and the caravans which convey it, are exposed to the attack of the *Galla*. A military force is therefore employed, under the command of an officer called *balgudda*, who receives payment for his services in salt.

5083. *The manufactures* of Abyssinia are of a rude character, and merely adapted for its home consumption. The staple is cotton stuffs, with which the people are universally clothed. Fine cloths are manufactured at Gondar, the capital, and coarse at Adowa; the latter, from their universal demand, serve in this rude state of commerce the purpose of money. The Abyssinians cannot dye their cloth dark blue, but are obliged, when they wish to introduce a mixture of that colour, to unravel the threads of the blue cloth of Surat. Coarse carpets are also manufactured at Gondar and in Samen, though for fine carpets the Abyssinians depend upon Persia. The demand for arms being regular and extensive, considerable industry is employed in manufacturing them. Adowa is distinguished for the fabric of knives, and Antalo for that of spears; and similar articles are imported from Sennaar and the district of Berbera.

5084. *The foreign commerce* of Abyssinia is far from extensive. Goods can be imported only at the single point of Masua, and thence conveyed through the empire by the laborious route of the caravans. Almost all the articles of refined luxury must be procured from abroad; but the demand for these is very limited. From Surat are imported both raw cotton and fine manufactured cloths; carpets from Persia; raw silks from China; velvets, French broadcloths, coloured skins from Egypt; glass beads and decanters from Venice. For these articles Abyssinia can give in return only ivory, gold, and slaves, the staples of interior Africa, between which and the eastern frontier of this empire there must exist a considerable communication, though yet undescribed by European travellers. This country, however, as a channel for the above trade, by no means equals Nubia. The slaves, indeed, are in some demand, being considered particularly handsome. On the whole, it appears, that, until Abyssinia shall attain a much higher degree of improvement, its commerce cannot be a material object to any European power.

Sect. VI. *Civil and Social State.*

5085. *The manners of the Abyssinians,* under a slight semblance of civilisation derived from Arabia and Egypt, present indications of the deepest barbarism. Indeed, their domestic life is marked by habits more gross and revolting than any that have been witnessed among the most savage tribes. Some, indeed, are such, that the bare report of them shook the credit of one of our most eminent travellers, who had not, however, been the first to report them, and whose testimony has since been fully confirmed.

5086. *The luxury of the brinde feast* is that which has particularly excited the astonishment of travellers. Slices of warm flesh cut from the ox standing at the door, are brought in, with the blood streaming and the fibres quivering, and are eagerly swallowed as the choicest delicacy. According to Mr. Bruce, the animal is yet alive while the slices are cut from him, and is heard bellowing with the pain; but Mr. Salt asserts that he has been just that instant killed: probably there may be some variation of practice. This strange food is as strangely administered. The chief is seated between two ladies, who wrap up the delicious morsels in teff cake, and thrust into his open mouth the utmost quantity which it is capable of receiving; "just," says an old traveller, "as if they were stuffing a goose for a feast." The ladies are then at liberty to satisfy their own appetite, and when these refined members of the company have supplied themselves, the servants succeed, and clear the table. The grossest indecencies are said by Mr. Bruce to be acted at these feasts; an assertion which Mr. Salt does not fully confirm, though he admits that the conversation is marked by the least possible reserve.

5087. *The shulada,* a similarly savage custom, is practised by the drivers of cattle. When they feel hungry on the road, they stop the animal, cut out a slice from him, close up the wound, and, having satisfied their hunger, drive him on.

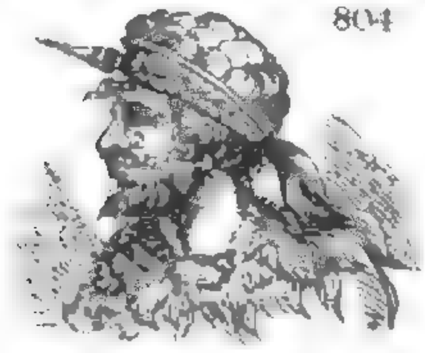
5088. *A general ferocity, and promptitude in shedding blood,* seems to characterise the Abyssinian nation, and is, doubtless, stimulated by the frequency of civil and of foreign wars. The principal officers scruple not to execute in person the sentence of death, which the king, or whoever he may be whom they obey, has passed against any individual; and they perform this horrid task with the most perfect coolness and indifference. While Mr. Bruce resided at Gondar, during a period of commotion, he could not stir out without seeing the victims of civil strife left unburied in the streets, to be devoured by the dogs and hyænas.

5089. *The manners of the Abyssinians* are not less distinguished by licentiousness than by cruelty. Intoxication is very prevalent, produced partly by hydromel, but chiefly by bouza, a drink well known also in Egypt and Nubia, and mostly produced here from the fragments of teff cakes brought from table. Marriage is scarcely considered by Mr. Bruce as existing at all; so great is the ease with which the contract may be formed and dissolved. The lover consults only the parents of the bride, and, having obtained their consent, seizes and carries her home on his shoulders. A *brinde* feast concludes the ceremony. Sometimes it is rendered a little more formal; the parties going, two or three weeks after their union, to church, and taking the sacrament together. A lady was met at Gondar, in company with six persons who had been successively her husbands. Ladies of rank assume great sway over their partners, and are at the same time very little observant of the duties which the marriage bond imposes. Polygamy is very common, though a great pre-eminence is allowed to one wife, and the rest are considered merely as concubines.

5090. *The Abyssinians profess the same form of Christianity with the Copts of Egypt,* and even own the supremacy of the Patriarch at Cairo. From him the Abuna, the actual and resident head, receives his investiture. By a regulation supposed to have been adopted with the view of securing a greater measure of learning than could be expected to be found in an Abyssinian, this pontiff must be a foreigner. As such, however, he is usually ignorant of the language; and his influence, and means of holding communication with the people, are much circumscribed. The Abyssinians combine with their Christian profession many Judaical observances, such as circumcision, abstinence from meats, and the observance of Saturday as well as Sunday as a Sabbath. At the same time, they share amply the superstitions which have infected the Catholic church. Their calendar of saints is equally numerous; scarcely a day occurs which is not consecrated to one or other of them, and sometimes to several. They maintain, that no nation, except themselves, holds the Virgin in due reverence; and in this respect even the Catholic missionaries found themselves outdone. Their churches are numerous, and adorned with paintings; but images and sculptured forms of any description are considered unlawful. They have monasteries, the tenants of which, however, are not at all immured with the same strictness as those in Europe. Upon the whole, the above account of their general conduct shows how little they are under the influence of Christian principles; which do not, it appears, even extend so far as to produce legal prohibition of divorce and polygamy.

5091. *Of the learning of the Abyssinians* little has been made known by travellers, and indeed it appears to be very limited. Yet they have a written language, the Gheez, which has a great affinity with the Arabic. The Amharic, however, more simple and less harsh, has for some centuries been the language spoken at court. Each province, besides, has its dialect, in which the native Arabic mixes, more or less, with idioms of African origin. There seems to be an expectation that the priests should be able to read; and a slight examination is made of their qualification in this particular: but no similar pretension exists among the laity. Their literature seems to be confined to legends of saints, chiefly translated from the Coptic, and to the chronicles, which are written by persons employed at court for the purpose, on the model of the Jewish chronicles; in these the transactions of each month are separately recorded.

5092. *All the houses in Abyssinia* are built in a conical form, and with thatched roofs. Some attempt at magnificence is made in their churches, also roofed with thatch, but surrounded by an arcade formed of pillars of cedar; and, being placed on the summit of little hills, they give the country a very picturesque appearance. The sovereign and grandees have also large and commodious residences. The Abyssinians are extremely fond of paintings, or rather daubings, made on the walls of the churches and of the houses of the great; but of these, the glittering colours seem almost the only recommendation.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ABYSSINIAN CHIEF.

5093. *The dress of the Abyssinians* consists chiefly of a large cotton mantle, with close drawers, and a girdle. Round their head they put a white wrapper, which leaves the crown exposed. Many chiefs, as a mark of dignity, wear an ornament in the shape of a horn (*fig.* 804.) projecting from the forehead, which, with their long beard, gives them a very wild and rough appearance. Bruce supposes a similar embellishment to have been worn by the Jews, and to have been alluded to when the exaltation of the horn is mentioned as an emblem of prosperity.

5094. Such are the natives of Abyssinia proper; but the society of that country could not be exhibited in all its deformity without noticing *those barbarous neighbours* who have harassed it with continual inroad, and have now possessed and covered so large a portion of the country. The origin of the *Galla* is involved in much obscurity. They have evidently come from the depth of that unknown region which composes the southern interior of the continent. They appear to have been long wandering in search of regions more fertile than their own, and were seen about two centuries ago by Lobo, near Melinda; but the fine plains of Habesh seem to have attracted the whole mass of their population. The Galla present an aspect of barbarism, in comparison with which that of the Abyssinian is humane and refined. Their favourite ornament is composed of the entrails of their oxen, which, without any superfluous care in cleansing them, are plaited in the hair and tied as girdles round the waist; decorations which are not only obnoxious to sight, but soon assail the olfactory nerves. The besmearing of their body with melted grease completes their embellishment. Their career is marked by indiscriminate massacre: they spare neither sex nor age, unless from the anticipation of gain by carrying off and selling prisoners. In Europe, they would be considered as a species of light cavalry; they perform immense marches, swim rivers, and endure incredible fatigue. Being almost destitute of iron, their arms consist of little more than wooden javelins, with the points hardened in the fire. They make a most furious onset, with shrill and savage cries, which strike terror into all but the steadiest adversaries; but, if this first shock be withstood, they are ill fitted to sustain a regular battle. They have been said to be without religion, and they certainly have neither priests nor temples; but they have been observed to hold certain trees as sacred, to worship the moon and some of the stars, and to believe in a future state. In their persons they are small, and neither in hair nor features resemble the negroes. In general, their complexion is only a deep brown; but this appears to be a consequence of their descent from nations inhabiting mountainous districts; those who have long dwelt on the plains are quite black. They are divided into several tribes, of whom the principal are the Boren Galla, who have occupied the Abyssinian provinces of Dembea, Gojam, and Damot, and even Gondar the capital; and the Adjow Galla, who are established in Amhara, Begemder, and Angot. These Galla who have long lived among the Abyssinians have in a great measure exchanged their original customs for the more mitigated barbarism which prevails among their new subjects. Some of the southern tribes have been converted to the Mahometan faith, which for them is an improvement.

5095. *Abyssinia is extensively infested by other tribes,* still more uncivilised and savage. The Shangalla, or Shankala, a race decidedly negro, of deep black colour, with woolly hair, occupy a most extensive range of territory along the western frontier. Bruce conceives them to be the same race who, under the name of Funje, inhabit the banks of the

Bahr el Abiad, and are now masters of Sennaar: but this branch, possessed of much higher advantages, is now in quite a different state, both social and political. The proper Shangalla inhabit the deep banks and ravines which border the Tacazze and the Mareb, in the lower part of their course. The numerous streams poured down from the heights, with the intense heat of these close valleys, produce a rank luxuriance of forest and underwood, which, not being pruned by the hand of industry, chokes the growth of every useful production. The hippopotamus, in these waters, rolls his unwieldy bulk, the elephant stalks along the shore; all wild animals here find subsistence, and, as it were, a home. Mixed with them, and only a degree higher in the scale of being, are the Shangalla. During summer, they live in pavilions formed under the shade of trees, the lower branches of which are bent down, fastened in the ground, and covered with skins. When the rainy season, however, converts the whole surface of the earth into mud, they retire to caves dug in the soft sandstone rocks, and subsist on the dried flesh of the animals caught in the favourable season. These are the tribes whom Ptolemy classes under the general appellation of Troglodytæ, or dwellers in caves, and whom he particularises under the titles of elephant-eaters, rhinoceros-eaters, locust-eaters; for there are some whose situation confines them to this last description of food. In the rainy season, the Shangalla are not left to the undisturbed possession of this wilderness. It is a favourite hunting-ground of the Abyssinian monarchs; and the objects of chase are not only the elephant and hippopotamus, but the Shangalla, who, wherever they are seen, are pursued, attacked, and carried off as slaves. This brave and fierce race, however, though without either horses or fire-arms, make often a desperate resistance; they have even undertaken successful inroads into the neighbouring districts of Tigré.

Sect. VII. *Local Geography.*

5096. *The entrance of Abyssinia* for Europeans is by the town of Massuah, situated on an island in the Red Sea, not more than three quarters of a mile in length. The houses are built chiefly of wooden poles and thatch, but a few are of a species of stone with shells embedded in it. The trade of Massuah was once very extensive, when the intercourse with India was carried on by this channel; but it fell into decay immediately after its subjection to the tyrannical sway of the Turks. Its decline has since been rapid; though, as the only channel by which all the limited trade of Abyssinia passes, Massuah must ever retain some importance. Its foreign intercourse is almost entirely with Mocha and Jidda on the opposite coast; and from these ports it brings India cotton wool and piece goods, European iron, copper, and manufactured goods, to the amount of about 400,000 dollars. The returns are in the usual African staples, brought during the month of February by a caravan from the interior. The Turks governed Massuah by a *naybe*, who has now acquired an authority nearly independent. He levies 10 per cent. *ad valorem* on all goods which pass through the place.

5097. *Opposite to Massuah is Dahlac*, or Dahalac, the largest island in the Red Sea, twenty-five miles long and twelve broad. It bears marks of former populousness and importance, and still carries on a little trade. At the bottom of the bay of Massuah is Arkeeko, a sea-port once celebrated, but which contains at present only a collection of miserable huts, inhabited by a thievish and degenerate race. Mr. Salt saw reason to think that, could he have searched, he might have found in this neighbourhood the ancient Adulis.

5098. *The kingdom of the Baharnegash*, as it is called by early travellers, is situated in the interior, south-west from Massuah, but it is rather an appendage to Abyssinia, than an integral portion of that country. The naybe of Massuah has now extended his authority over the greater part of this district. The road from Arkeeko leads first over the lofty mountain of Taranta, covered with fine cedar trees, and affording pasture to numerous flocks. On its opposite side is Dixan, a somewhat handsome town, of flat-roofed houses, built on a conical hill, commanding an extensive view over the high mountains of Tigré. It has a considerable trade, including, among other branches, the shameful traffic of selling children. Dobarwa is also an important town, and was the residence of the Baharnegash. The ruder parts of this province are traversed by races of Troglodytic shepherds, called the Hazorta and Shiho, who live in caves, or in small wooden cages covered with hides. They have the reputation of not much respecting the property of those whom they encounter in their wanderings, a charge which applies too generally to the African nomades.

5099. The Mareb forms the boundary between the province of the Baharnegash and that of *Tigré proper*. This last consists almost entirely of a wild confusion of rocky mountains, affording only occasional spots capable of cultivation. It is enriched, however, by some manufactures, and by its traffic as the channel of all intercourse with the Red Sea. The main theatre of its industry is *Adowa*, the capital, situated on the side of a hill, and containing about 8000 inhabitants. Cotton cloth, both coarse and fine, is manufactured to a great extent, and passes as money; about 1000 slaves are driven through it annually. Trade is chiefly in the hands of the Mahometan inhabitants, of whom the number is considerable. The inhabitants are rather above the usual standard of civilisation.

5100. Although Adowa is at present superior in importance, *Axum* is the most interesting town in Tigré, and even in Abyssinia, from its extensive monuments, which attest it to have been the ancient capital, and the most conspicuous town in all this part of Africa. In the great square alone there are forty obelisks, one of which is 80 feet high (*fig.* 805.), and considered by Mr. Salt as rivalling whatever is most magnificent in Egypt. From the character of the architecture, it seems to have been erected by the Ptolemies, or in their time; and a Greek inscription, discovered by Mr. Salt, shows this place to have been in the third century the capital of the Axumitæ. It still contains 600 houses, from

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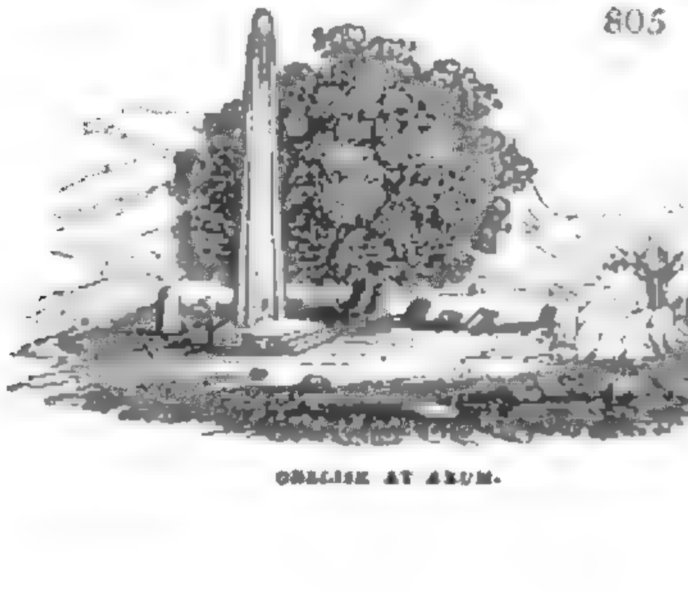

OBELISK AT AXUM.

which may be inferred 6000 inhabitants; and it carries on manufactures of parchment and of coarse cotton cloth. The inhabitants are rude and inhospitable. Chelicut is also a town of some importance, lately the occasional residence of the sovereign, distinguished for its church, the finest in Tigré, and perhaps in Abyssinia. This edifice is composed of three concentric walls.

5101. *Tigré, as a grand division of Abyssinia*, contains nine other provinces besides Tigré proper and the maritime district. These are, *Agame* to the east, a level and fertile territory, bordering on the great salt plain. *Enderta*, a mountainous province to the south of Agame. It contains Antalo; which, being made the residence of Welleta Selasse, on account of its vicinity to the frontier, became a sort of northern capital. It is situated on the side of a mountain, and contains about 1000 houses, chiefly poor cottages, with thatched conical roofs. *Wojjerat* and *Wofila* are wild, low, and wooded districts, reaching to the great lake Ashangel, which abound in wild beasts, and where the Galla are intermixed with the native Abyssinians. *Lasta*, *Avergale*, and *Samen*, are very rugged and mountainous districts, between the Tacazze and the Coror, the two former of which are chiefly inhabited by Agows. The mountains of Samen are the highest in Abyssinia, and frequently covered with snow. *Sire* and *Zemben*, beautiful provinces, lie immediately to the west of Tigré proper. Sire, in particular, is the most picturesque part of Abyssinia, abounding in valleys, flowery meadows, and shady groves. Tigré, composed of the above eleven districts, now forms a separate and powerful kingdom, since the central provinces have been over-run by the Galla. Though not the most uniformly fertile, it contains the most warlike of the native population. It monopolises all the trade, including the important branches of salt and of muskets.

5102. *The central division of Abyssinia*, called Amhara, is in several respects pre-eminent. It presents the most extensive level plains, and yields the greatest abundance of corn and cattle. While Abyssinia was entire, and till the whole division itself was over-run by the Galla, Amhara was the residence of the sovereign, and it still contains the principal and most ancient families. The inhabitants are reckoned very brave, and it has even been asserted, that, when well armed, they are equal to double their number of the other Abyssinians. In this province was the mountain of Amba Geshen, which formed the place of confinement for the younger branches of the royal family.

5103. To the east of Ambara *is Begemder*, a large and rude province, chiefly employed in pasturage. It possesses the finest breed of horses in the kingdom, and from it were drawn most of the cavalry employed in the Abyssinian armies. The people are under very little subordination, and cannot be called out but by a prince or chief capable of swaying their affections. Its mountains are said to contain iron mines, and it is bordered on the south by a chain of deep ravines, which long formed a barrier against the incursions of the Galla. The province of Lasta, adjoining to Begemder, presents nearly the same aspect.

5104. East of Begemder is *Dembea*, a province pre-eminent in several respects. It contains Gondar, the capital, and the great lake of Tzana or Dembea. Gondar is the only place in Abyssinia entitled, from its magnitude, to the appellation of city. In time of peace it contains 10,000 families; but the habitations are in no degree superior to those met with elsewhere, being merely mud cottages, with conical thatched roofs. There are an hundred churches; but the only very handsome edifice is the palace, built of stone, four stories high, commanding an extensive view. The presence chamber is 120 feet long. For this structure, however, beyond the powers of her native masons, Abyssinia is indebted to the Jesuits, since whose departure it has not been kept in repair, and the two upper stories have become uninhabitable. Emfras is a small but pleasantly situated town, with 300 houses. The province of Dembea is generally flat, and fertile, particularly in wheat. Its produce is assigned for the supply of the royal household.

5105. *The lake Tzana*, or Dembea, occupying the centre of this province, and forming one of the grand features in the physical aspect of Abyssinia, is fifty miles in length, and thirty-five in breadth. It is formed by the early stream of the Bahr el Azreek, or Abyssinian Nile, combined with numberless other streams poured down from the mountainous tracts in the west. It contains numerous islands, some of which have been used as state prisons.

5106. *The Bahr el Azreek*, after passing through the lake Tzana, and coming out on its eastern side, makes a grand semicircular sweep of several hundred miles, until it reaches a point not very distant from its origin. This part of its course encloses *Gojam* and *Damot*, fine and fertile regions, the latter of which has, by a modern traveller, been painted as a terrestrial paradise. They are pastoral districts, containing numerous herds of very fine cattle. The inhabitants differ somewhat in religion and manners from the other Abyssinians, and have often shown a refractory spirit to the government.

5107. *The last division of Abyssinia* consists of the southern provinces of *Shoa and Efat*, with some dependencies little known. These now form a kingdom, entirely separated from that of Tigré by the interposition of the Galla, and governed by a branch of the ancient royal family. Shoa is famous as having, about the year 900, afforded a refuge to the royal family, when the kingdom was seized, and a great part of them were massacred by an usurper. The survivors remained in it 400 years, and afterwards resumed possession of the kingdom. Shoa is described as a fine and rich province, containing the bravest and best-equipped troops in all Abyssinia. It has been supposed that there are more remains of learning in these southern provinces than in those visited by Europeans.

5108. *Abyssinia* is bordered by a number *of loose appendages*, subject or tributary to it when powerful and prosperous, but impatient of the yoke, which they throw off whenever opportunity offers. On the east is Angot, which the Portuguese, in the sixteenth century, found one of the finest parts of the empire, and adorned with a number of beautiful churches; but it has since been so entirely occupied by the Bertuma Galla, that it has ceased to be regarded as belonging to Abyssinia. Eastward, as far as the Red Sea, is Dankali, a sandy and saline tract, inhabited by a Mahometan people, called Taltal, who, without being subject to Abyssinia, have been in general submissive allies.

5109. On the western frontier, to the north of Gojam and Damot, is *Agow-midré*, or the country of *the Agows*. This remarkable people is somewhat widely diffused; another tribe of them occupies a great extent of the province of Lasta. Their subjection to Abyssinia consists merely in the payment of a tribute in butter, honey, cattle, and hides, partly to the king, and partly to the governor of Damot. Their traffic consists in selling these articles at Gondar; for which purpose they resort to that capital, often in parties of 1000 or 1500. Their mountains do not exceed 4000 or 5000 feet; an altitude which, in that climate, admits of verdure and cultivation to the very summit. Salt circulates with them as money. Their dress consists of leather softened by a peculiar process, and worn in the form of a shirt. Each of their habitations has behind it an immense cave dug in the rock, which does not seem to be now occupied in any shape. Whether its original destination was for a Troglodytic abode, or for a place of shelter in case of barbarous inroad, is matter of conjecture. The Agows were originally worshippers of the Nile; but, less than two centuries ago, they were converted to Christianity, and are now strict observers of, at least, its outward forms.

5110. *The district of Sacala*, in the southern part of this territory, contains the celebrated fountains of that river, which has been supposed to form the main branch of the Nile of Egypt. They are three in number, situated in a marshy plain, at the foot of a mountain nearly 5000 feet high. The natives have erected an altar of turf at each of the fountains; a high-priest officiates at them; divine honours are paid to them by the Agows, and an assembly of their national chiefs is held annually on the spot. Bruce's boast of having been the first to visit these "coy fountains," has been refuted, and is indeed doubly unfortunate; since neither is this river the main branch of the Nile, nor was he the first European who visited even its sources. They were traced three centuries ago by Peter Paez, and perhaps by Lobo. The charge, however, brought against him, with so much bitterness, of having practised an artful deception, is altogether unfounded. The Abyssinian river is considered as the Nile by the people of the country, by all the Portuguese missionaries, and by all modern geographers prior to D'Anville. The main facts which refute Bruce's opinion are to be found in his own book; for he there states that the Bahr el Abiad is greater than the Nile, and he inserts the narrative of Paez. His error was only one of judgment, into which a man may surely fall, without deserving to be termed a liar.

5111. *The Abyssinian Nile*, after making the circuit of Gojam and Damot, passes through a low marshy territory, called Maitsha. The soil, which is too moist for grain, produces an herb called *ensete*, which forms excellent food. Hereabouts are some tribes, the Gafats and the Guragues, of rude habits, and with languages peculiar to themselves. From the turn of the river northward, the interval between it and Abyssinia is filled by Kuara, a wild mountainous country, which receives a governor from Abyssinia when it dares not do otherwise. Its chief importance consists in the gold which passes through its territory from the East.

5112. *To the north are Walcayt and Waldubba*, wild wooded regions along the lower Tacazze, forming the domain of the Shangalla, already described. The southern regions of Narea, Caffa, and Gingiro do not seem in any shape to belong to Abyssinia.

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Chap. V.

BARBARY.

5113. *Barbary* is that long line of territory, from 100 to 200 miles in depth, which extends eastward from Egypt to the shores of the Atlantic. The name, though familiar with Europeans, and derived from the Berbers, a race of native inhabitants, does not appear to be recognised in the country itself; and the region is even occupied by different independent states; yet such is the similarity both as to nature and the condition and aspect of the inhabitants, that they may very advantageously be considered under one head.

Sect. I. *General Outline and Aspect.*

5114. *The level plain, which composes the greater part of Barbary*, resembles in surface and quality that immense ocean of sand which overspreads nearly the whole northern half of the African continent. Barbary, however, derives a distinctive and superior character from that mountain-chain, or series of chains, which, under the celebrated name of *Atlas*, ranges through nearly its whole extent from west to east. The loftiest pinnacles are in the west, rising above the plain of Morocco, and facing the Atlantic, where it appears even to rise above the limit of perpetual snow; but beyond the frontier of Morocco, and eastward through Algiers and Tunis, the mountains of this chain seldom exceed 3000 or 4000 feet. On the territory of Tripoli, they sink into lower eminences, and gradually subside to that flat sterile surface which characterises Northern Africa. The aspect of the Libyan desert, which separates Tripoli from Egypt, is compared by travellers to that of the bottom of the sea after its waves have receded. The breadth of the plain between the mountains

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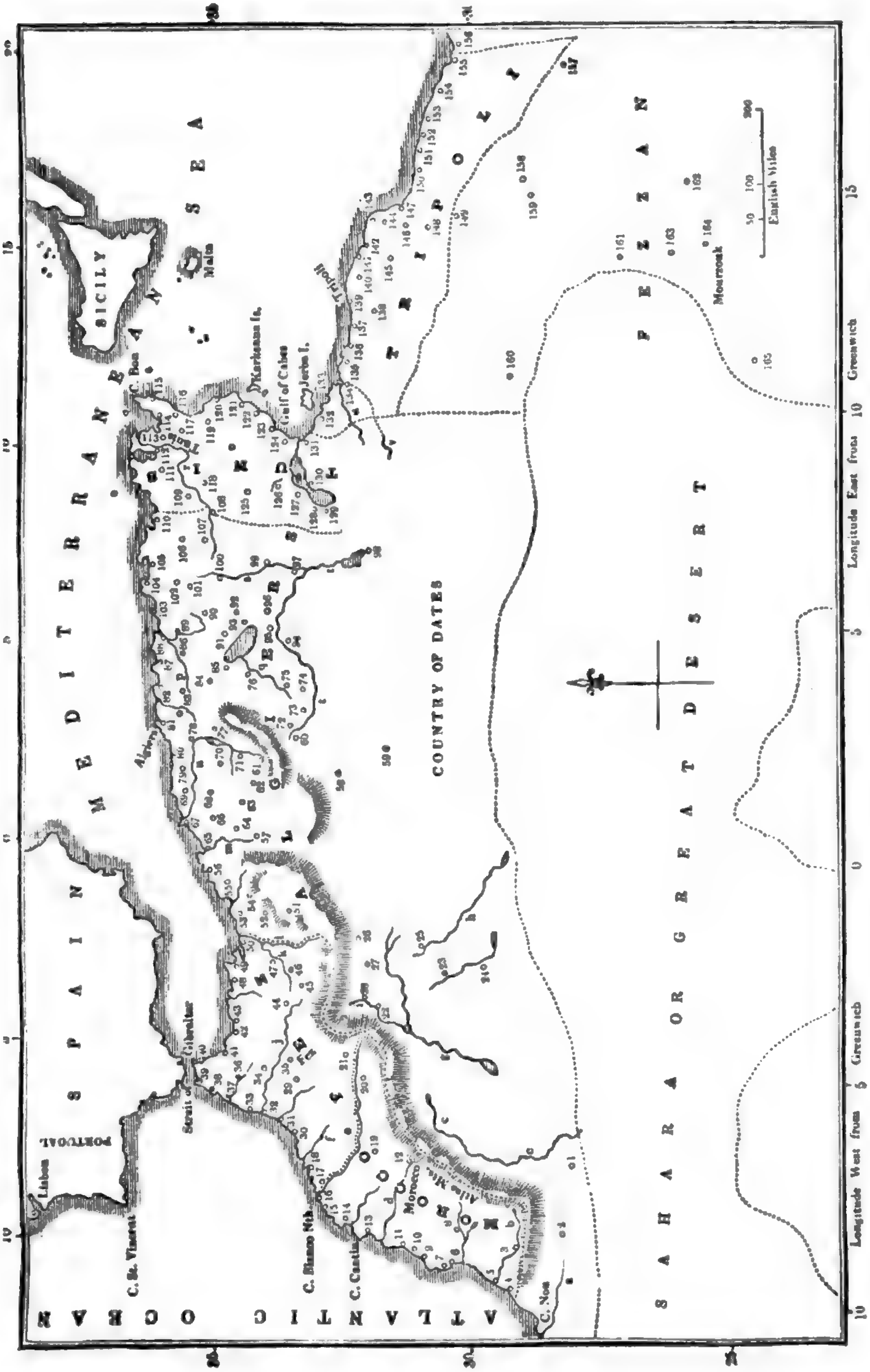
References to the Map of Barbary, or Northern Africa.

1. Tatta
2. Akka
3. Stukka
4. Agulon, or Agefah
5. Macas
6. Agadeer, or Santa Cruz
7. Tamara
8. Terodant
9. Ossum
10. Tesegdell
11. Mogadore, or Suerha
12. Morocco
13. Azaffi, or Saffi
14. Oualida
15. Tet
16. Bureja, or Mazagan
17. Sanit
18. Dar el Beeda
19. Treggeut
20. Tedla
21. Gher, or Guer
22. Tafilet
23. Sigilmessa
24. Sugahila
25. Mazalig
26. Beni Hessen
27. Fighig
28. Manufactory of Hayks
29. Mequinez
30. Rabat
31. Sallee
32. Meheduma
33. El Hoom
34. Ouled Aiss
35. Fez
36. Alcassar
37. El Haratch, or Larache
38. Arzilla
39. Tangier
40. Ceuta
41. Tetuan
42. Mostaza
43. Penon de Velez, Fort
44. Teza
45. Doubdou
46. Hadaha
47. Garais
48. Cala Nuflis
49. Melilla
50. Kilbadana
51. Alcasaba
52. Ouschda
53. Nedrome
54. Hemsan, or Tremesen
55. Sinan
56. Marsa Kebir
57. Nisrag
58. Tegorarin
59. Gardeia
60. Lowaate
61. Midroe
62. Gojeeda
63. Nader
64. Tagazoute
65. Anzeo
66. El Gallah
67. Mostagan
68. Loba
69. Merjejah
70. Tissumseely
71. Tukereah
72. Tejemoute
73. Dimidda
74. Amoura
75. Herba
76. Booferjoone
77. Burgh
78. S. Ben Tyba
79. Maliana
80. Zersabel
81. Algiers
82. Shahfah
83. Burgh Hamza
84. S. Eesa
85. S. Braham
86. Callah
87. S. Hamet
88. Boujeya
89. S. Esauf
90. Seteef
91. Mugrah
92. Tubnah
93. Emboukhal
94. Sidi Khaliet
95. Lewa
96. Piscara
97. El Fithe
98. Melgig
99. Zeribe
100. Tezzoute
101. Tattubi
102. Constantina
103. Zezeli
104. Kollo
105. Stora, or Solgata
106. Tifas
107. Greesa
108. Hydrah
109. Casir Jebbir
110. La Cala
111. Beja
112. Tuburbo
113. Tunis
114. Marida
115. Kalibia
116. Hammamet
117. Zowan
118. Keff
119. Kairwan
120. Mahadia, or Africa
121. Sbea
122. Sfax
123. Ungha
124. Nathor Tower
125. Ferina
126. Gaffsa
127. Tegewse
128. Tozer
129. Nesta
130. Fatnassa
131. Calees
132. Catana
133. Zarissa
134. Kela
135. Bucusala
136. Zoara
137. Sabart, or Old Tripoli
138. Beneabbas
139. Tripoli
140. Marabut
141. Lebida
142. W. el Khahan
143. Mesurata
144. Taverga
145. Benioleed
146. Ghirza
147. Isa
148. Wadey Bilkma
149. Bonjem
150. Mhad Hassan
151. Zaffran
152. Medina Sultan
153. Busaida
154. Hudia
155. Linuf
156. Muhdar
157. Zella, or Zela
158. Wadan
159. Sockna
160. Gadamis
161. Idri
162. Zoela
163. Germa
164. Mourzouk
165. Ghraat.

Rivers.

a Akassa
b Messa
c Draha
d Tensift
e Morbeya
f Enfife
g Felletly
h Ghir
i Tafilet
j Leven
k Mahala, or Meslonia
l Enza
m Haterah
n Shellif
o Isser
p Wed el Ouse
q Wed el Shaler
r Mejerdah
s Abiad
t Adjidee, or Zeeb
u Wed Fessa
v Wed el Jenne.

Fig. 806. MAP OF BARBARY, OR NORTHERN AFRICA.



and the Mediterranean, which constitutes Barbary, nowhere exceeds 100 miles, and in many places is not more than five or six; its average breadth may be estimated at about fifty or sixty miles. On the southern side of the mountains is another plain of vast and vague extent, stretching indefinitely to the south. This tract, which possesses naturally the same dry and desert character as the bordering regions, derives, from the streams poured down by the Atlas, a certain degree of fertility, which continues to the places where these are absorbed in the sands, or expanded into lakes. This region forms a loose appendage to Barbary, being inhabited by tribes in some sense tributary and dependent, though they are generally accustomed to rove with little control over their spacious plains.

5115. The plain of Barbary is watered by numerous *rivers* descending from the great mountain range; but, on account of the short interval which interposes between it and the sea, they cannot have any long course. None of them can be considered as general features of the region; their character is local, and will be described under the local head. The same may be said of the less known streams poured from the southern declivity of Atlas, though these roll a somewhat longer course, till they are absorbed in the sandy waste.

5116. *The limits of this vast region*, especially on the land side, where it passes by an insensible gradation into the trackless deserts, cannot be easily defined. It would be difficult even to fix the extreme points of Tripoli and Morocco. Port Bomba, on the eastern frontier of Tripoli, is in 32° 26′ E., while Mogadore, nearly the most western part of Morocco, is in 9° 20′ W., forming thus a line of forty-one degrees of longitude, or about 2000 miles from east to west. Of its northern boundary along the Mediterranean, the highest point is Cape Blanco in Tunis, in latitude 37°, whence it declines in Morocco to 35°, and in the Gulf of Sidra even to nearly 30°. The southern boundary is altogether of that vague and indefinite nature already described.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5117. *Atlas, or northern region of Africa.* — This interesting division of Africa is characterised by the Atlas range of mountains, some of the summits of which rise to a height of 13,000 feet above the sea. The central and higher chains are composed of granite, gneiss, mica slate, and clay slate; while resting upon and forming the lower ranges are extensive deposits of secondary limestones and sandstones. The limestone abounds with organic remains, as shells, corals, and even fishes, and is said to be referable to the various limestones of the secondary class, extending from the *lias*, or even the *magnesian limestone*, to *chalk* inclusive. Resting upon these limestones are deposits of tertiary rocks. Salt springs and gypsum are mentioned as occurring in different parts of the range. The secondary and tertiary formations are variously charged and upraised by trap rocks of modern date.

Subsect. 2. *Botany.*

5118. The *Botany* of this country has been described with that of Egypt, page 1147. *antè.*

Subsect. 3. *Zoology.*

5119. *The Zoology of the Barbary States* assimilates with that of northern Egypt, Arabia, and Asia Minor; and requires, therefore, but a slight notice. The quadrupeds, as may be expected, differ materially from those which are now known as inhabitants of Europe, as will be better seen from the following list: —

Cynocephalus Babouin. Little Baboon.
Felis Pardus. Panther.
Lynx Caracol. *Sw.* Caracol Lynx.
Lynx Chaus *Sw.* Booted or Marsh Lynx.
Sciurus getulus. Barbary Squirrel.
Camelus Dromedarius. Arabian Camel.
Mus barbarus. Barbary Mouse.
Gazella Dorcas *Sw.* Barbary Antelope.
Gazella Kevella *Sw.* Morocco Antelope.
Ovis tragelaphus. Bearded Sheep.
Damalis Bubalis *Sw.* The Bubalis.

5120. *Some of these we shall slightly notice.* The Dromedary (*fig.* 807.) (*Camelus Dromedarius* L.) is well known to be the most useful and the most general beast of burden throughout the whole of Northern Africa. It is smaller than the Asiatic or Bactrian camel, and has but one hump, while that has two; but the legs are more slender and elevated. There are several breeds, differing chiefly in size or colour; those of Turkey are the strongest, and best suited for burden; but the Arabian and Barbary breeds are the lightest and the swiftest. The females, when gravid, are usually taken from their work.

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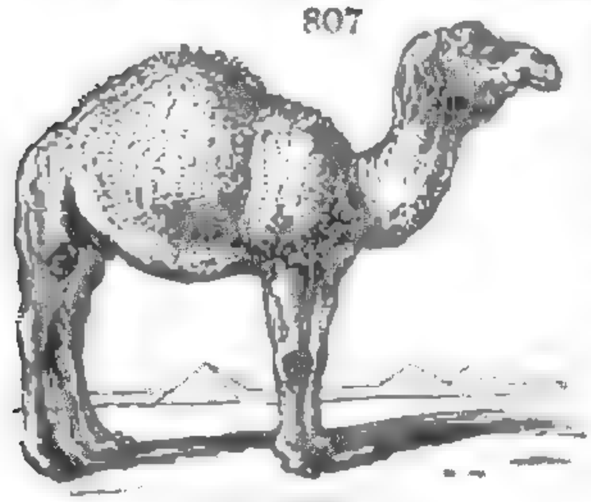

DROMEDARY.

5121. *Regarding the Bearded Sheep* (*Ovis tragelaphus*) said to inhabit Northern Africa in a wild state, no very recent accounts have reached us. Dr. Caius, about 1561, describes it as being of an immense size, nearly equal to that of a stag; yet it was gentle, petulant, and lascivious, fond of ascending high places and roofs of houses, running swiftly, and bounding prodigiously. This animal, continues Major Smith (*Grif. Cuv.* iv. 320.), appears to be the real Fishtail, or Lerwee, of Shaw.

5122. *The Bubal* (*Damalis Bubalis*) so nearly resembles the European buffalo, that travellers have confounded the two together. Its general appearance is not unlike that of a small cow; the proportions are heavy, the head long and clumsy, and the singular elevation of the shoulders is remarkably striking. It is wholly of a yellowish dun colour; the tuft of the tail being alone black. They seem to live in small troops throughout the deserts and forests of Northern Africa, from the Nile to Morocco, and were met with by Messrs. Denham and Clapperton in the woods of Bornou. The Arabs give them a name signifying cattle of the forest.

5123. *The Domestic animals* deserving notice, besides the Camel, are the superb Horses of Barbary, and the different breeds of cattle and sheep extending over Northern Africa.

5124. *The Barbary horse vies with the Arabian* in beauty of form, although not, perhaps, in the fleetness of its course. The chest is better made, and more rounded; the forehead, instead of being hollowed, is rather prominent, and the shape of the head is finer: the figure altogether is more imposing than that of the Arab, although their stature is nearly equal. The best Barbary horses are found, at the present day, in the kingdoms of Morocco and Fez; but the Moors do not take near so much care of their horses as the Arabians.

5125. *The Morocco breed of Sheep* have long wool, the hair on the neck rather shorter and more curled: like most of the African breeds, they are remarkable for their strong make and long legs: their horns are small, turned spirally outwards, and the scrotum forming two separate sacs; the general colour is white, tinged with liver-colour. There is another breed, called the Barbary, having the tail so broad at its base, as to be wider than the buttocks. the wool is coarse, and of a rufous colour on the neck, legs, tail, ears, and nose: the face is much arched, the ears pendulous, and the horns retain the original curve of the Argalis, on a smaller scale; the tail is longer than in the last. The third race of Northern Africa is found in Barbary, and even in Corsica. It is policerate, with pendulous ears, having the tail not much widened, and the colour white. This breed is remarkable for bearing two different kinds of fleece, the posterior parts being covered with wool, while soft loose hair extends from the head to the shoulders: a crossed breed of this race was some time ago brought to England. It was entirely covered with soft silky hair of a silvery whiteness; that on the neck being of great length.

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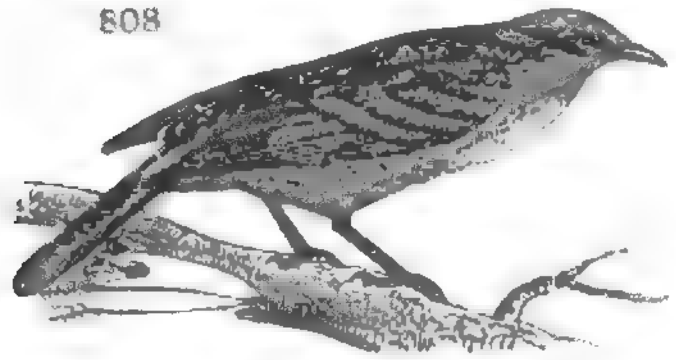

BARBARY SHRIKE.

5126. *Besides several Birds,* found also on the opposite shores of Europe, Barbary is known to possess many other species, inhabiting the arid tracts of the desert, such as Quails, Partridges, and Bustards. The most beautiful bird seems to be the Barbary Shrike (*fig.* 808.) (*Malaconotus barbarus* Swains.), about the size of a thrush; black above, and crimson beneath; the top of the head being yellow.

Sect. III. *Historical Geography.*

5127. *Barbary* occupied a more conspicuous place in the ancient than in the modern world. It formed part, and in many instances a prominent part, in the great system of civilised nations around the Mediterranean. Cyrenaica, its most westerly portion, corresponding now to Barca and part of Tripoli, was one of the most flourishing Grecian colonies. Africa Proper, including the rest of Tripoli and part of Tunis, contained Carthage, the pride of Africa, the mistress of Spain and Sicily, and the chief medium of commercial intercourse in the ancient world. Illustrious by her rivalry with Rome, and her mighty struggle for universal empire, she was not less distinguished by her glorious fall. The southern part of Tunis, joined to the Algerine province of Constantina, once formed the powerful kingdom of Numidia, which rendered itself famous both as the ally and enemy of Rome. Western Algiers and Fez composed Mauritania, a ruder region, yet distinguished for its swarms of brave irregular cavalry. The southern part of Morocco was Getulia, an imperfectly known tract, inhabited by a race almost proverbial for savage fierceness.

5128. *All these districts,* with the exception of the remote ones last mentioned, were incorporated into the *Roman empire,* and became, in some degree, the granary of Italy. They were exposed, however, earlier than might have been anticipated from their situation, to the inroad of the northern barbarians. Genseric the Vandal fixed here the seat of his kingdom, and established a naval power which made him master of the Mediterranean.

5129. *The invasion of the Saracens produced* a complete and permanent change in Northern Africa. They entered it, not only as conquerors, but in vast migratory bodies, which stamped the Arabian and Mahometan character upon the whole population. Barbary was at first governed, under the caliphs of Bagdad, by a viceroy, who established his residence at Cairoan, or Kairwan. As the central power lost its energy, the states of Barbary erected themselves into independent kingdoms, among which Cairoan was still the eastern capital; but it was almost eclipsed in power and splendour by Fez, a city which then ranked among the first in the world for learning and civilisation. By degrees, however, the Barbary states, like all others subjected to the recluse and bigoted system of Mahomet, lost their light and intelligence, and, having no intercourse but that of deadly hostility with the improved kingdoms of Christendom, they had no means of recovering those advantages. Thus they became, three centuries ago, and have ever since continued, blind, stupid, and barbarous.

5130. *The piratical war between the Turks and the Christians*, during the fifteenth century, occasioned a further change. The celebrated pirates Barbarossa and Hayraddin seized upon Algiers, Tunis, and Tripoli, and established them as dependencies of the Turkish empire. Retaining still the spirit of these conquerors, they continued, even after the fall of the Turkish naval power, to devote themselves to piracy; and their situation along the Mediterranean enabled them to act with terrible effect on the European states. Morocco, though she remained independent of Turkey, thought this too good an example to be neglected; and her piracies were at one time still more terrible than those of the other states, though they have not been so long continued.

5131. *In the course of the last half-century*, the three states have shaken off the Ottoman yoke. In Tunis and Tripoli, the Turkish population has been reduced to subordination under the Moorish and Negro troops; while in Algiers, the Turkish soldiery continued to hold a barbarous sway, deposing and electing the sovereign at pleasure. Their flagrant piracies, however, at length called forth the armed interposition of the European powers. England first inflicted a signal chastisement; and France has at length made a complete conquest of the city, and is endeavouring to colonise the territory, though with what success appears yet very doubtful.

Sect. IV. *Political Geography.*

5132. *Scarcely any trace of order, liberty, or good government exists* in any of the states composing this extensive region. The only limitation to a blind and barbarous despotism is found in the tumultuary sway of a brutal soldiery. In Morocco, pure despotism reigns; and that country has repeatedly been ruled by monsters who were a disgrace to humanity. The emperor, however, who reigned previous to the existing civil wars, of which we have only a very imperfect account, is described as mild and equitable, compared to his predecessors. The monarchs of Morocco claim the crown in the capacity of *sheriffes*, or descendants of Mahomet, and they attempt to increase the lustre of the regal dignity by assuming the character of doctors, prophets, and saints; which, however, they seem to regard as not inconsistent with the most unbounded indulgence of cruelty and sensuality. The emperor claiming the supremacy in religion, which in Mahometan countries includes law, prevents, probably, the formation of any corporate bodies, either hierarchical or juridical, sufficiently important to influence the public. There does not appear even to be any council of state, or deliberative assembly, like the Turkish divan. Every thing depends upon the momentary will and caprice of the prince. This absence, however, of all regular check, does not prevent the frequent occurrence of rebellion, which is almost without intermission fomented by the different members of a family contending for the throne; the sons against the father, and the brothers against each other.

5133. *The government of Algiers* was formed on the Turkish model, the Dey being originally an officer appointed by the Porte, and, like other despotic viceroys, exercising in the interior government all the powers of the sultan. Here, as at Constantinople, there appears to have been always a divan, which, being composed of the heads of that military body by whom the Turkish sway was alone maintained, possessed very extensive influence. When Algiers became independent of the Porte, nearly the whole power passed into the hands of the tumultuous Janissaries, who set up, deposed, and massacred the chief magistrate at pleasure. A long interval did not often elapse between the period when the Dey was raised to power, and that in which his life was terminated by the bowstring.

5134. *Tunis presents a more agreeable spectacle.* Its ruler, who, under the title of Bey, was originally a mere officer of the Porte, has now succeeded in emancipating himself, not only from this subjection, but even from dependence upon the Turkish soldiery. This revolution was chiefly effected by Hamooda, the Dey reigning in 1816, whose vigour of character had preserved him in power twenty-nine years; a very unusual period in the tumultuary annals of Barbary. Instead of allowing himself to be kept in thraldom by the Turks, he chose his officers in preference from among the European and Georgian slaves and renegadoes. He established a regular administration of justice, and extended equal protection to all classes of the inhabitants, not even excepting Christians and Jews, whom it had been considered the duty and privilege of the Moors to take every opportunity of insulting, of plundering, and even of killing. Although, therefore, the administration still exhibits many barbarous and oppressive features, yet, upon the whole, Tunis has improved, while Western Barbary has been sinking continually deeper in wretchedness and brutality.

5135. *Tripoli* has made still farther advances. Its progress has been ascribed to Hamet, whom the Tripolitans honour with the surname of Great. At the commencement of the last century he was a mere Pacha under the Turks, and his life was in perpetual peril from their licentious soldiery. He relieved himself from them in a manner truly barbarous. Having invited their chiefs, to the number of 300, to a feast, he caused them all to be seized and strangled. His adherents then commenced a general massacre throughout the city, and the Turkish sway was entirely annihilated. The Porte, which could with difficulty have vindicated its claims, suffered itself to be pacified by presents and tribute, and finally lost all dominion over the state. Hamet was very active in introducing every kind of improvement, inducing Europeans to settle in his territories, and promoting all the manufactures for which Tripoli was adapted. His successor, of a milder character, finding himself in peaceable possession of the sovereignty, exercised it with great equity and moderation; so that Tripoli assumed an orderly and civilised appearance, resembling that of the European states, especially when compared with the turbulent aspect of its African neighbours. Although it has been since exposed to some convulsions, the present government, from its conduct towards the English, appears to retain the same liberal and improving character by which it has so long been distinguished.

5136. *The foreign relations* of the Barbary states have not been extensive. The European powers long regarded them with cold and distant hostility, but without considering the conquest of them as a desirable object. These states were not in a condition to attempt schemes of distant aggrandisement. Their only pretensions to dominion are over the tracts behind the Atlas, and bordering on the great desert, called Tafilet, Sigilmessa, and the Bled el Jereed. Even the subjection of these countries is confined to the exaction of a tribute, which a flying detachment of troops, sent round once a year, forcibly collects. Since the reign of Hamet the Great, Tripoli has held Fezzan tributary. Spain possesses the fortresses of Ceuta, Melilla, and Peñon de Velez in Morocco, but without any territory attached to them; and this is now the only memorial of the long and deadly wars between the two countries. The efforts to put down their piratical inroads have brought them more into contact with the powers of Europe; and the issue of these, in the occupation of Algiers by France, promises to form a new era in the destiny of this part of the world. Those predatory ravages by which, down to a very recent period, they rendered themselves terrible to the powers situated upon and navigating the Mediterranean, seem to be now finally suppressed.

Sect. V. *Productive Industry.*

5137. *In every branch of productive industry* the states of Barbary exhibit marks of imperfection and decay.

5138. *Of the agriculture of Barbary our accounts are very imperfect*, this branch having been unaccountably omitted by Dr. Shaw; but enough has transpired to show it to be in a most imperfect state. In the greater part of Morocco, there exists no such thing as fixed property in land. It is cultivated by movable Arab camps, called *douars*, which establish themselves on a spot, continue till they have exhausted it, and then remove to another. In consequence, however, of the fertility of the soil, and of the want of a manufacturing population to consume its produce, there is in every state a large surplus of corn, which forms, when permitted, the staple article of export. Wheat and barley are the kinds generally cultivated; the soft and friable soil is particularly adapted to the latter. Rice is said to be raised on the banks of some of the rivers; but to its culture, upon the whole, this arid soil is peculiarly unfavourable; and the species of holcus, or dhourra, peculiar to the district are extensively cultivated. Coolness and moisture being the requisites wanted, the winter months compose the verdant and flourishing period of the year. The harvest is gathered in April and May; after which, from June to September, the country exhibits an aspect entirely parched and burnt up. The inhabitants possess the art of preserving the grain for several years, by burying it under ground in their dry soil.

5139. *All the fruits of southern Europe come to perfection in Barbary;* and the excellence of the olive is particularly noted. The vine flourishes; though the religious system of the natives deters them from converting the grape into wine, even for exportation. As we advance into the dry plains of the interior, all these fruits disappear; but their place is supplied by that of the date tree, which entirely covers the face of the country, and forms the principal support to the inhabitants of the southern districts.

5140. *Of domestic animals*, the cow, destitute of the rich pastures of Europe, is small in size, and deficient in milk. The sheep are also small; but those fed on the Atlas produce that exquisite mutton peculiar to mountain pastures. There are also some species, which, with little attention on the part of their proprietors, produce very fine wool. Goats are very numerous in the mountain districts; and their skins yield that soft and delicate leather for which Morocco is famous. The horses of Barbary were formerly much valued; and this ancient boast of Numidia has not altogether lost its qualities; but, the persons in power under so oppressive a government being accustomed to seize the best for their own use, the proprietors are discouraged from bestowing any peculiar pains in improving the breed. The once famed Barbary horses now yield to the Arabian, and even to the Egyptian. The ass, and the mule, are the ordinary beasts of burden. Beyond Atlas, the camel alone is suited to the sandy expanse of the wilderness. A small number is maintained of that species called the *heirie*, or desert camel, which seems to be the fleetest of all known animals. Mr. Jackson mentions one, which, in seven days, travelled across the Great Desert, a distance of about 1000 miles; and another which went from Mogadore to Morocco, and returned in one day, though the interval between these cities is not short of 100 miles. The honey, which is copiously collected through Barbary, seems to be chiefly the produce of wild bees.

5141. *Although manufacturing industry* must rank low in the Barbary states, yet there are some branches in which the inhabitants excel. The most noted is that of the leather already mentioned as known under the name of *morocco*, and celebrated for its softness, pliancy, and beauty. It is afforded by the goats which climb the declivities of the Atlas, particularly on the side of Tafilet: but its valued qualities are doubtless, in a great measure, due to the mode of tanning and preparing it. Fez is the chief theatre of this manufacture. It carries on also several woollen fabrics, particularly of a species of long robes called *haiks*, which are generally worn in the East; and of carpets, little inferior to those brought from Turkey. It makes also silk stuffs, chiefly sashes and handkerchiefs. Among the states on the Mediterranean, Tunis is by much the most distinguished for industry and manufactures. Its staple is a small species of conical woollen caps, called skull-caps, which are universally worn in Eastern countries. This fabric is said to have afforded at one time employment to 50,000 persons; but Leghorn and Marseilles have now succeeded in producing an imitation, and the caps manufactured there, though not equal in quality, can be sold so much cheaper, that they have superseded to a great degree those made at Tunis. There are likewise large manufactures of robes and shawls of woollen and gauze, carried on also in Algiers and Tripoli, though not on so large a scale.

5142. *The commerce* of this rude territory is also very limited. Its exports consist chiefly in the raw produce of the soil. In ancient times the African coast formed the granary of the Roman empire; and its corn continued to find a copious market in southern Europe, till its exportation was prohibited by the absurd policy of all the Barbary states, except Tunis. Even there, it is loaded with heavy imposts, twenty-two piastres and a half (1*l.* 10*s.*) being paid on the coffee (two English quarters) of wheat, and eleven piastres and three quarters on the same quantity of barley. The chief shipping port is Biserta. Tunis exports also olive oil, which does not become rancid so soon as the Italian oils; a large quantity of excellent soap, made from olive oil and barilla, with some sponge and orchilla weed collected on the shore. The commerce of Morocco is carried on almost exclusively from Mogadore. The exports consist of almonds, sweet and bitter, to the amount of about 1,000,000 pounds, cow-hides and calf-skins, 260,000 lbs.; goat-skins, 10,000 dozen. Wool was formerly a large article of export; but it is now absurdly prohibited. Ostrich feathers, olive oil, and some varieties of fruit, complete the list of native exports. Tripoli, Tunis, and, still more, Morocco, send to Europe the produce of Soudan, gold dust, ivory, and gums, particularly gum senegal. Of this last article Mogadore exports not less than 100,000 lbs. The total value of the exports from that city is stated by Mr. Jackson at 127,000*l.* sterling. The commerce of Eastern Barbary has been carried on chiefly from Leghorn and Marseilles, at which last place Louis XIV. established an African company. Britain at the same time had a company, which shared some portion of the trade; and private merchants opened a little direct intercourse, but sent their goods chiefly through the French and Italian ports. Since the continental war, however, and the possession of Malta by the British, a good deal of communication has been maintained from that island. The Barbary states receive, generally speaking, every species of European manufactured goods and colonial produce. The cloths most in demand in the markets are those which, being of a coarse description, can be offered cheap. Those of the kind called scarlet long ells are particularly adapted for the trade of interior Africa. German coarse linen, hardware, toys, tin and lead, alum, vitriol, and cochineal for their manufactures, may be named among the principal articles.

5143. *The most active commerce of the Barbary states is that by the caravans with interior Africa.* Tripoli sends hers by Fezzan to Bornou and Cassina, and thence across as far as Ashantee; Tunis by Gudamis and Tuat to Tombuctoo; Morocco across the broadest of the desert to the same city, and to the countries on the Senegal. A more particular account of the mode in which this trade is carried on will be given when we come to treat of the central countries of Africa. Into these countries the caravans carry salt, which is wanting along the whole line of the Senegal and Niger; together with European manufactures, particularly cloths of different kinds, hardware, and toys. The returns are gold dust, ivory, gum senegal, and, above all, slaves, for whom these unfortunate countries have been so long ransacked to supply the other quarters of the globe. It is impossible to form even a conjecture as to the amount of this inland trade; for Lempriere's estimate, according to which the imports would amount to 10,000,000*l.*, is evidently a monstrous exaggeration.

5144. *The mercantile shipping of the Barbary states* may be considered as next to nothing. *Fishery*, notwithstanding the extent of its coasts, is pursued only for immediate consumption. There is, indeed, a coral fishery, of some value, on the coast of Constantina, in Algiers, near Bona and La Cala. Mr. Blaquiere asserts that it might employ 500 boats and 9000 men; but we question if Europe would afford a market for so extensive a produce. With a view to this fishery, the British government, in 1806, contracted to pay to the Dey of Algiers 50,000 dollars (11,000*l.* sterling) for the possession of Bona, La Cala, and Il Col; but, having omitted to form a military establishment at any of these places, it has derived, as yet, no advantages from the purchase. This branch of industry is carried on chiefly by vessels from Sicily, Leghorn, and other ports of Italy.

Sect. VI. *Civil and Social State.*

5145. *Of the population of Barbary,* which has probably much diminished, only a very loose estimate can be made. Mr. Jackson, indeed, has given statements of the population of the empire of Morocco, founded on documents in the imperial register, according to which, it amounts to 14,886,600: but, if such records really exist, we can scarcely consider them as proceeding from any thing but an empty vaunt, unless they be taken as relating to a more prosperous period. They assign to the city of Morocco, for instance, a population of 270,000; while the most judicious travellers do not suppose that, in its present state of decay, it contains more than 80,000. We cannot, therefore, but prefer the estimate of Chenier, which allows to the whole empire only 6,000,000; and perhaps even this is beyond the truth. Respecting the population of Tunis and its territory, the statements made to Mr. Macgill, according to which it amounted to 5,000,000, appeared to him greatly exaggerated. The most careful estimates of the population of Algiers make it rather under than above 2,000,000. Tripoli is stated by Ali Bey at 2,000,000; but, notwithstanding the extent of territory, its prevailing barrenness would warrant the conclusion that one third of this is a very full estimate. Proceeding on these loose data, which are all we have, we may guess the population of Barbary as follows: — Morocco, 6,000,000; Algiers, 2,000,000; Tunis, 2,000,000; Tripoli, 600,000: in all, 10,600,000.

5146. *The inhabitants of Barbary* are separated into three very distinct classes; the Moors, the Arabs, and the Berbers or Berebbers.

5147. *The Moors* inhabit the cities of Barbary, and the country in their immediate vicinity. The term Moor, derived from the ancient *Mauri*, is applied throughout Africa in a very vague manner. In Central Africa it is made to comprehend all Mahometans who are not Turks. In Barbary, however, the wandering tribes are distinguished by the name of Arabs, and the term Moor is applied chiefly to the inhabitants of cities. Mahometan cities, in general, present a uniform scene. The inhabitants drag a recluse, gloomy, and monotonous existence. They are strangers to social assemblies, to public amusements, to the arts, and to every thing that animates life. Their time is chiefly spent, in a retired manner, in the interior of their houses. The females, according to the invariable Mahometan custom, are strictly excluded from general society, and must see none of the male sex, except their husbands; they are immured like slaves in the apartments of the haram. That aspect of apathy and gravity, however, which a Moor presents at first view, is, in a great measure, fallacious, and he is easily roused from it to the most outrageous acts of bloodshed and violence. In Barbary, the habits of a seafaring and piratical life have rendered these occasions more frequent, and have produced a character more habitually turbulent and disorderly, than is usual in Turkish states. Indeed, European travellers have usually described the Moors as a race devoid of all good qualities, and combining every sort of depravity; but the relations between the parties have usually been of a very hostile nature, embittered both by religious and political rancour.

5148. *The haram, that favourite and almost sole seat of Oriental luxury*, is, of course, inaccessible, and can only through some peculiar chance be seen by Europeans. Lempriere, however, in his character of a physician, was admitted into that of the Emperor of Morocco. It consisted of a wing of the palace, entirely separated from the rest, and communicating only by a private door, of which the emperor had the key. The edifice was divided into a number of courts, communicating by narrow passages, round which were ranged the apartments of the wives and concubines, who were from sixty to a hundred in number, besides their domestics and slaves. There was a principal sultana, who had a general superintendence over the establishment, but enjoyed not the same influence with the emperor as some of the younger favourites. There were several European captives, who appeared to the traveller the chief ornament of the haram, both as to personal and mental accomplishments. The Moorish ladies were enormously fat, and utterly stupid and ignorant. Their allowance from their imperial master amounted, in the case of the most favoured, only to half a crown a day; so that expense and luxury were to be maintained by presents or bribes received from the numerous suitors for favours from the emperor, who is understood to approve entirely this delicate mode of supply. A more favourable account is given of the Tripolitan haram by a lady who resided in that city for many years, in the family of Mr. Tully, the English ambassador. The inmates, who are generally Georgian and Circassian captives, not only possess superior personal beauty, but are endowed with various ornamental accomplishments acquired at Constantinople. Their time is also busily employed in superintending the numerous slaves, who grind, spin, and perform all the domestic operations. Their toilette is performed in a very elaborate manner, which employs several hours, and demands the service of a number of slaves. Each of the latter has a separate office; one to perfume the hair, another to arrange the eyebrows, a third to paint them, and so on. The blackening of the latter by a preparation of antimony, the forming of them into a particular shape, and the filling of the hair with powdered cloves, perfumes, and scented waters, are the most favourite modes of female adornment. In their domestic character, the ladies are said to display many amiable qualities; though here, as in Morocco, the jealousy of superior favour with their lord and master often excites violent enmities, and even impels to the crime of administering poison to a hated rival.

5149. While the Moors thus inhabit all the great towns and the fixed villages in their immediate vicinity, all the remoter districts are occupied by *a race who are called Arabs*, either because they are really the descendants of the Saracen conquerors, or, from situation and circumstances, have acquired similar habits. They dwell in a species of movable encampments called *douars*, composed of a number of broad and low tents, painted black, and resembling in form the hull of a ship. They are formed of cloth made of camel's hair and the fibres of the palm tree, and are arranged generally in three concentric circles, in the interior of which the cattle are secured during the night. Each douar is governed by a sheik, or chief, who is considered as standing in a paternal relation to the rest; kindred being the tie which chiefly unites them, and no one not related to the common family being allowed to reside in the douar. Their manner of living is quite patriarchal, and their rites of hospitality so primitive, that they remind us of those practised by Abraham to the three angels, as recorded in Scripture. The greatest sheik, when a stranger enters his tent, sets down water, and assists him to wash his feet. He goes to the flock, brings in a calf or a kid, kills it with his own hands, and delivers it to his wife to dress. Like all the races which bear the Arab name, they are equally distinguished for hospitality and robbery; often exercising the latter against those who have just been the objects of the former. When they have exhausted one spot, they prepare to remove to another; for which purpose, however, they must obtain the sanction of the government, which is held as the proprietor of all these wide tracts of unoccupied land; a permission for which a large sum of money must be always paid. The douar then breaks up, and its members depart, with their wives, children, cattle, tents, furniture, agricultural implements, and every thing which they possess. The men walk, driving the cattle; the women are mounted on camels, three on each; the children, lambs, and kids are hung in panniers by the sides of these animals (*fig.* 809.). The internal administration of these camps, or douars, is almost entirely independent of the emperor or prince; the several communities are animated by deadly feuds against each other, which often lead to conflict; and, in every case of weak government or disputed succession, many of the Arabs betake themselves without hesitation to plunder.

5150. *While these wandering tribes cover the plains*, the mountain districts of Atlas are occupied by the *Brebes*, or *Berbers*, who seem to be the original and most ancient inhabitants of Barbary, driven to take refuge in these inaccessible retreats. In the little valleys embosomed within the huge declivities of the Atlas, they build their villages, which are beautifully enclosed with gardens and plantations. Some of those, however, occupying the higher and ruder parts of the chain, dwell in caves cut out of the rock. They are hard-featured, athletic, and patient of fatigue. Occupied in pasturage and cultivation, they also employ themselves much in hunting, and derive an extensive profit from the skins of wild beasts. Their favourite exercise is the use of the musket, both in firing at a mark, and twirling it variously in the air; in which they have acquired remarkable dexterity: those who can afford it take a pride even in ornamenting their fire-arms with gold and ivory. Possessing such habits, they are by no means quiet subjects of the Moorish empire and the other states to which their territory belongs. Their only homage consists in a tribute, at once scanty and uncertain. In their revolts, which are not unfrequent, their valour, and the rugged nature of the territory, render it almost impossible to subdue them. On the contrary, they have sometimes descended into the plain, and carried their inroads to the very gates of Morocco. They have none of the migratory habits of the Arabs; but, on the contrary, are unwilling to remove from their original spot. Unlike the Arabs, too, they elect their own sheiks, and have a republican form of government, very unusual in this part of Africa. They speak a language called the Amazigh, or Berber, entirely different from that of the Moors and Arabs, who often require an interpreter when conversing with them. This language is supposed to be very ancient, and is of the same family with that of the Tibbo, the Tuaricks, and other indigenous tribes who roam over the plains to the south-east.

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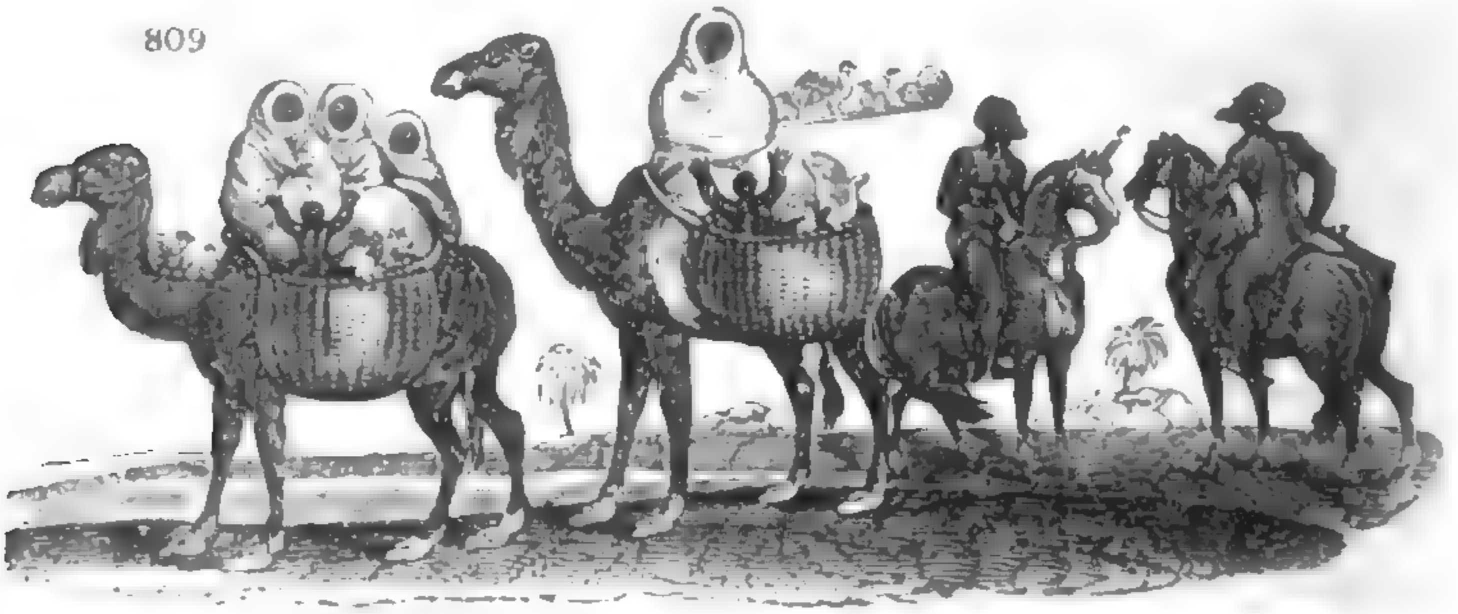

REMOVAL OF AN ARAB VILLAGE.

5151. *The Shilluks* are a branch of the Berbers, somewhat smaller in stature, and less rude in character, inhabiting the mountainous districts in the south of Morocco. The Errifi, on the contrary, who border on Algiers, are still braver and fiercer; the very glance of their eye is said to strike terror into the inhabitants of the plains.

5152. *The religion of all the Barbary states* is that of zealous Mahometans; and the ferocious bigotry which every where characterises the professors of Islam is carried, if possible, to a higher pitch in this country than elsewhere. The cruelty exercised against their European captives is exasperated, or at least all pity and remorse are deadened, by religious antipathy. Although they have *talbas*, or spiritual instructors, very little of any real knowledge or improvement seems derived from these personages. There is no connection between the ministers of religion and the government; neither is there any corporate body, like the *ulema* in Turkey, to preserve and maintain the doctrine and discipline of the church. The veneration of the people is almost exclusively bestowed on a class of persons who, by individual exertion, raise themselves to the character of *saints*. This character is not attained by any peculiar purity of life, or even rigour of superstitious observance. Grotesque and fantastic pretensions to supernatural power, and to an intercourse with invisible beings, are the means by which they impose on the credulous multitude. Throughout all this region the idea prevails according to which idiots and madmen are reputed holy; and privation of reason is even feigned for the sake of attracting veneration. The higher class of saints are decidedly the second persons in the kingdom, if they do not even rival the monarch. Indeed, the emperors of Morocco have been long accustomed, by high pretensions to sanctity, to heighten the respect of their subjects. That most savage of tyrants, Muley Ismael, spent a great part of his time in superstitious gestures and observances, calculated to impress the idea of his direct communication with the Deity and with Mahomet, and of superhuman

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powers thence derived. Barbary, moreover, is over-run by superstitions of all kinds, such as usually prevail among the vulgar in unenlightened countries; among which, the belief in the potency of an evil eye is particularly prevalent. Individuals among the Arabs still make a boast of the power of charming serpents. They exhibit themselves to the admiring multitude, half-naked, in strange attitudes and contortions, and twined round by those creatures, whom they certainly have the art of rendering innoxious (*fig.* 810.). The most amiable of their feelings consists in the reverence paid to deceased relations, which exists to a much greater extent than is customary among Europeans. Every Friday evening forms what is called "the feast of the dead," when the people repair to the tombs of their ancestors, who are supposed to be present on that evening, and to share the almost gay festival which is there celebrated.

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SERPENT CHARMER.

5153. *Learning and science in Barbary* may be considered as nearly extinct. Like the other Saracen states, those of Barbary, and of Morocco in particular, were formerly distinguished for the cultivation of mathematics and astronomy. Fez was a celebrated school, to which students from the most distant quarters resorted. At present, by far the greater part of the population can neither write, read, nor perform the most common operations of arithmetic, and there are scarcely any persons who have acquired the mere rudiments of knowledge. Shaw mentions as having been shown to him quadrants and astrolabes constructed in the most admirable manner; but such instruments were exhibited as mere curiosities, without the least idea being entertained of their use. Medicine, in which the Arabs boast of the great names of Avicenna and Averrhoes, cannot be very highly cultivated in a country where the usual fee of a physician is sixpence; and a shilling is only bestowed in the most serious and important cases. Accordingly, unless for mere external wounds and hurts, the interposition of a native practitioner seems rather productive of injury than benefit. European physicians are always eagerly sought, and are considered as possessed of almost supernatural power.

5154. *The amusements* of the natives of Barbary are very little varied. Mixed company, public exhibitions, and theatrical entertainments, which give so gay an aspect to European society, are altogether foreign to their habits. Among those who are not obliged to labour for bread, the day is spent chiefly in a sort of listless indolence; lounging at coffee-houses and barbers' shops, the favourite scenes of talk and scandal. Chess is pursued with great eagerness. Opium, so passionately indulged in by the Turks, is not in use here; but, instead of it, they have a sort of preparation from hemp, which produces nearly the same effect. Wine, too, is taken much more freely, even to excess, and in a convivial manner, especially at Algiers and Tunis, than in other Mahometan countries. But horsemanship, above every thing else, forms the pride and amusement of the Moors; and their feats in this art are often very wonderful (*fig.* 811.). They are particularly fond of galloping, and then suddenly stopping; and some will even lift objects from the ground while riding at full speed. Although, however, the rich Moors are almost constantly on the backs of their horses, they train them to none of those travelling paces which are found so useful in Europe; they have no idea of any thing intermediate between a walk and a gallop.

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AMUSEMENTS OF THE MOORS.

5155. *In the dress of the Moors and Arabs*, the most conspicuous feature is the *haik*, or *hyke*, a large square piece of woollen cloth, commonly six yards both in length and breadth, which is folded loosely round the body. It seems to be the same with the *garment* of the Jews, and indeed the very same with the Highland plaid. The loose manner in which the haik is attached to the body renders it necessary, whenever any work is to be seriously set about, to tighten the girdle, which is formed of woollen, often richly ornamented, and in which also the weapons are stuck. Hence arises the figurative expression so often applied in Scripture to the industrious, to have their loins girt. Under the haik is the tunic, or coat, which sits close to the body, and beneath it the shirt, which the Moors wear of linen or cotton, but the Arabs of woollen. A species of cloak, called *burnoose*, is thrown over the haik, when necessary, as a defence against rain or cold; and it has a cape which may be raised to cover the head. On the head is also worn a species of conical scarlet cap, covering the crown; below which is wrapped the turban, expressing, by the number and variety of its folds, the rank of the wearer (*fig.* 812.).

5156. ***With regard to food***, one dish prevails at the table of all, from the prince to the peasant, which is *cuscosoo*, a sort of almost fluid paste made of crumbled bread, and enriched, according to the means of the preparer, with small pieces of meat, vegetables, and condiments. This dish, placed in a large wooden or earthen bowl, is set in the middle of the company, who immediately thrust in their fingers, lift it to their mouths, stirring it, if necessary, with their hands, and selecting the most savoury morsels. The rich, on great occasions, present a variety of dishes; but they are all cooked in the same manner, consisting of what we call in England spoon meat. To make some amends for this mode of eating, the custom of washing the hands both before and after eating is still rigorously observed.

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DRESS OF THE MOORS.

Sect. VII. *Local Geography.*

5157. *Morocco*, the most westerly, is also the most extensive and important, of the Barbary states. It has two coasts; one along the Mediterranean facing the north, the other and larger along the Atlantic, looking to the west. The loftiest part of the chain of Atlas runs parallel to these coasts, changing its direction along with them, and leaving an intermediate plain, finely watered and not surpassed in natural fertility by any part of the globe. But though the modern Moors have advanced greatly beyond the rude and roaming habits of the ancient Mauri, they are far from improving the country to nearly the extent of which it is susceptible. Mr. Washington conceives it might be made one vast corn-field, and that the ground over-run with weeds and brushwood might afford food to millions. Beyond the range of Atlas, however, Morocco includes a more arid region named Tafilet, unfit for grain, but yielding the finest dates in the world, and rearing a breed of goats whose skins afford the material for the fine morocco leather.

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EMPEROR OF MOROCCO.

5158. *The political and social state of Morocco* is rude and degrading. The emperor possesses a power more despotic than any other even of the Mahometan potentates. He is not held in check by a mufti, an ulema, or even a council or divan. He is supposed to possess a divine character, and to be superior to all law. One emperor, being reminded of a promise, said, "Takest thou me for an infidel, that I must be the slave of my word?" Yet this monarch must pay respect to long-established usages and institutions; must not invade the domestic privacy of any of his subjects; and must even give public audience four times a week to administer justice to all who may appeal to him from the cadi, or local governor. On these occasions he appears on horseback, in an open interior court of the palace, with an umbrella over his head (*fig.* 813.). This absolute power, meantime, is little regarded by the mountaineer tribes, and even by some of those that wander over the plains. Having, too, no one interested in its support, it is continually liable to be shaken by treason, revolt, and disputed succession. Hence these princes have derived a peculiarly jealous and ferocious character: and Morocco has been ruled by some of the most bloody tyrants recorded in history. Among these was pre-eminent Muley Ismael, who introduced the system of employing negro mercenaries as body-guards. They were raised at one time to upwards of 20,000 (Mr. Washington is probably mistaken in saying 100,000), but are now reduced to 5000. They constitute, however, the only regular troops in the empire; the rest are merely a loose militia, summoned by imperial mandate, and, though expert horsemen and good marksmen, destitute of any sort of discipline. The revenue is collected in kind, in the proportion of a tenth of grain and a twentieth of cattle, which, aided by fines and the poll tax upon Jews, is estimated by Mr. Washington at about 1,000,000*l.* sterling.

5159. *Industry and commerce* have in Morocco a very limited range. The only important manufacture is that of the leather which bears its name. One tannery in the capital enploys, according to Mr. Washington, 1500 persons; and, though the processes are slovenly, a fine colour is produced, which Europeans are unable to imitate. Other articles for exportation are almonds, of very fine quality, from Suse, dates from Tafilet, ivory and gold dust from Soudan; honey, wax, ostrich feathers, &c. In return, it receives the usual articles of European manufacture and colonial produce. This trade is carried on chiefly by the port of Mogadore. The outrageous piracy formerly exercised from Sallee and other ports of Morocco has for a considerable time ceased.

5160. *Morocco, the capital,* is situated on a very extensive and naturally fruitful plain (*fig.* 814.), above which rises abruptly, covered with perpetual snow, one of the loftiest ranges of Atlas. The mosques are numerous, and several of them present striking specimens of Arabian architecture, particularly that called El Koutouben, the tower of which is 220 feet high. Of the eleven gates, one is richly sculptured in the Moorish style. The palace forms an oblong of 1500 by 600 yards, divided into enclosures, where, surrounded by gardens, are the pavilions of the sovereign, his principal officers and ladies. The floors are tessellated with variously coloured tiles; but a mat, a small carpet, and cushions, compose the entire furniture. Beautiful gardens surround the city, and spacious aqueducts, conveying water from the Atlas, twenty miles distant, bear testimony to a superior state of the arts in former times.

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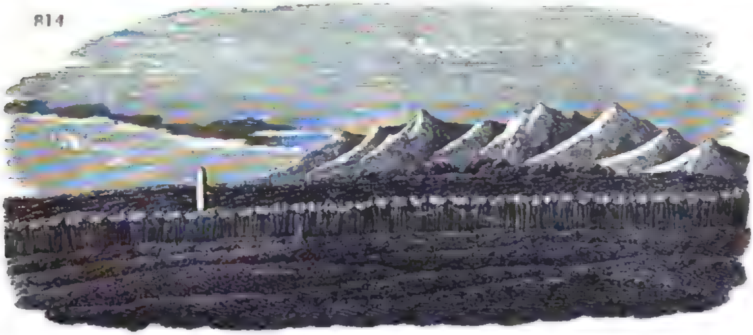

VIEW OF MOROCCO AND THE ATLAS.

5161. *Fez,* situated in the more northerly province of the same name, is a place of high celebrity, and ranked long as the splendid and enlightened metropolis of Western Africa. It was founded, in the end of the eighth century, by a prince of the name of Edris, and rose to such magnitude, that Leo, in the twelfth century, describes it, though doubtless with some exaggeration, as containing 700 mosques, of which fifty were magnificent and adorned with marble pillars. Its schools and its baths were also very celebrated. At present it is described by the latest travellers as presenting a singular mixture of splendour and ruin; and, amid the usual defects of Mahometan cities, the splendour being almost confined to the interior of the houses, it is still an agreeable place. The situation is singular, but pleasant; in a hollow valley surrounded by hills covered with groves and orchards, and with a river winding through it. Fez is still not without some of the sciences which formerly rendered it illustrious; but they are nearly confined to the Koran and its commentators, a slight tincture of grammar and logic, and some very imperfect astronomical observations. The population, respecting which authors greatly vary, is probably rather under than above 100,000. Mequinez, to the west of Fez, has risen to importance by having been made the residence of the sovereign. The seraglio, or palace, consists of a most extensive quadrangular enclosure, though the mansions which it contains are only one story high. The citizens are said to be more polished and hospitable, and the females handsomer, than in the other cities of Morocco. The population seems extremely uncertain.

5162. *The sea-ports of Morocco,* though they have lost the greatness formerly derived from commerce and piracy, are still not inconsiderable. Mogadore, the most southerly, and the nearest to the capital, is now the chief emporium of the intercourse with Europe. It was founded only in 1760, by the emperor Sidi Mohammed, who spared no pains in raising it to importance. Being composed of houses of white stone, it makes a fine appearance from the sea; but the interior presents the usual gloom of Moorish cities, and is chiefly enlivened by the residences of the European merchants and consuls. The country round is almost a desert of sand; water is scarce, and provisions must be brought from the distance

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of several miles. The population is reckoned at about 10,000. Saffi, or Azaffi, a very ancient town, with a fine harbour, though also in a barren country, was the chief seat of European commerce till the monopolising preference of the emperor transferred it to Mogadore. Saffi is still supposed to retain a population of 12,000. Mazagan, a small well-built place, of 2000 inhabitants, was in the possession of the Portuguese till 1770. Azamore, formerly a great town, and with walls a mile and a half in circuit, is now deserted, and crumbling into ruin: it has 3000 people. Dar al Beed is a very small place. Farther north, on the opposite sides of a small river, are the important towns of Sallee and Rabat. Sallee, once the terror of the seas, whence issued such bands of pirates and rovers, the seat of action, riot, and bustle, is now still and lifeless. It continues, however, to be surrounded by a wall thirty feet high, and in its mosques, arches, and fountains displays traces of beautiful sculpture, and of great antiquity. What remains of its commerce has been mostly transferred across the river to Rabat, or New Sallee. This place, when viewed from without, presents a picturesque grouping of minarets, palm trees, ruined walls, and old mosques, near which are conspicuous its venerable and battlemented Kassubah, or citadel, and the lofty tower of Sma Hassan. The interior retains still some activity, and the markets are well supplied. Population 18,000, of whom 3000 are Jews. Mehedia, now a poor fishing village, has monuments which display its former importance. El Arache, or Larache, was once a flourishing European and Christian town; but the churches are now converted into mosques, and the deserted houses of the consuls line the Marina. It has been made the imperial arsenal, and is very strong towards the sea. Tangier, on the straits, was in 1662 ceded by Portugal to England, which abandoned it in 1684. It derives its chief present importance from the permission granted by the emperor to supply Gibraltar with provisions, and from the residence of European consuls. Tetuan, the only port within the Mediterranean, is allowed to carry on some intercourse with the English, whose vessels often take in victuals there on their way up the Mediterranean.

5163. *Algiers*, the ancient Numidia, and the grand modern seat of piratical warfare, comprises an extensive and beautiful range of coast, lying between 2° E. to about 9° W. longitude, and thus extending 700 English miles in length. The breadth of the inland territory, till it passes, by almost insensible gradations, into the domain of the mountain tribes, or of the wandering Arabs, is much more vague, varying probably from 50 to 150 miles. The southern border is traversed by the Atlas in three successive ranges, separated by fine and fertile valleys. The range which faces the maritime plain is called Jurjura; and its peaks, though they do not reach the stupendous altitude of those which tower above Morocco, are of such height, that the snow on their summits melts only in May. The eastern tracts, traversed by numberless streams of pure water descending from the Atlas, form perhaps the most finely irrigated country in the world. Desfontaines mentions a spot near Tremecen, where, in a circuit of two leagues, about 2000 springs occur. Yet the surface is too varied to allow this moisture to spread into swamps; it is only diffused so as to maintain a general verdure and fertility. None of these numerous streams, however, attain the character of rivers, except those which rise in the second range of Atlas, roll through the intermediate valley, and then force their way into the plain of Barbary. Such are the Seibouse, the Rummell, the Zeitoun, and the Shelliff, which last has an early course of nearly 100 miles through the mountain valley.

5164. The territory of Algiers is thus greatly distinguished by *natural fertility*. With the exception of some arid and rocky plains, it consists of valleys covered with rich pastures, fitted for the best kinds of European grain, blooming with the orange and the myrtle, and producing olives, figs, and grapes of peculiar excellence and size. Noble forests of pistachio, of cypress, and of oak, cover the sides of the mountains. Yet the indolence of the people, the oppression of the government, the want of roads and interior communications, cause three fourths of the country to be left uncultivated. Their oil, wine, and butter are all of inferior quality. They are not so wholly destitute of manufacturing industry. Skins are prepared and coloured in almost as perfect a manner as in Morocco. Their bonnets, shawls, and handkerchiefs are in request throughout the Levant. Baskets of palm-leaves, and mats of junk, are fashioned with singular elegance. Essence of roses is prepared with a skill little to be expected in such rude hands; but there is an extensive demand for the article in the voluptuous palaces of the East. The trade, before the French invasion, was almost entirely in the hands of the Jews, and consisted in the export of these manufactures, and of some grain, oil, wax, fruits, and wool. The Algerines took, in return, light cloths, glass, and toys, but showed a great preference for fire-arms and powder; while the European merchants have been reproached, not only for supplying them with these articles, but even for purchasing the proceeds of their piratical expeditions. The fishery of coral, carried on by European vessels, produces an annual value of about 100,000*l.*

5165. *That turbulent and piratical system*, of which Algiers was the centre, is now become a subject only of history. The country was long domineered over by a body of Turkish troops, not supposed to exceed 15,000, and who were recruited from the meanest classes in the ports of the Levant. This body, at short intervals, strangled the Dey, electing in his stead the boldest and bravest of their number. The corsairs formed a kind of separate republic, carrying on their barbarous trade under the sanction of the prince, who received a large share of the slaves and booty. These marauders, in 1816, suffered a severe chastisement from the English fleet under Lord Exmouth. Again, after they had for some time set France at defiance, that country, in 1830, fitted out a formidable expedition, by which Algiers was entirely subjugated. The French, however, have said very little as to any benefits derived from this acquisition. According to the statement made by M. Duboc, in his account of Oran in 1832 (*Annales des Voyages*), the Arabs, who inhabit nearly the whole of the territory, are in a state of constant hostility, either open or secret, against the French; they are masters of all the open country, and can assemble in a few days 30,000 men, skilled in partisan warfare; so that they keep the invaders nearly blockaded in the principal seaports. In these circumstances, colonisation, which was viewed as one of the objects of the expedition, has not been even attempted.

5166. *The population* of this territory is judged of only by estimates, which are very wide of each other, varying between 1,000,000 and 3,000,000. We have conjectured 2,500,000. Yet a recent estimate in the *Annales des Voyages*, which seems to be made with some care, states, of Arab cultivators, 1,200,000; Independent Arabs, 400,000; Berbers, 20,000; Jews, 30,000; Turks, renegadoes, and their descendants, 40,000: in all, only 1,870,000. These are distributed into three great provinces: Titterie, in the centre; Tremecen, or Tlemsen, in the west; and Constantina, in the east.

5167. *Algiers, the capital*, is situated in the province of Titterie, though without being considered as forming part of it. The streets are built on the declivity of an eminence facing the Mediterranean, and rising by successive stages above each other, with loftier hills above: they make thus a magnificent appearance; hence, too, it is said, almost every house commands a view of the sea. On entering the city, however, all this beauty disappears; and it is found a labyrinth of steep, narrow, and dirty lanes. There are, however, several splendid edifices, particularly the palace of the dey, and the principal mosques. The barracks are also fine structures, adorned with fountains and marble columns; and the naval arsenal is spacious and commodious. The *bagnios*, as the quarters formerly destined for the slaves were called, are huge, but gloomy and dirty edifices. The estimates of the population vary from 50,000 to 200,000; M. Balbi supposes 70,000. The French expedition captured 2,000,000*l.* sterling in money, besides an ample supply of ships, artillery, and ammunition. The fortifications towards the sea are very strong, but on the land side by no means formidable; so that, when the French had effected a landing with a superior force, they soon became masters of Algiers.

5168. *In the western quarter* of the Algerine territory, the most distinguished place is Tremecen, or Tlemsen, once the capital of a powerful kingdom, still containing about 20,000 inhabitants, situated in a beautiful and finely watered district. Mascara, about a mile in circuit, on the face of a mountain which commands the view of a fertile and well-cultivated plain, is an agreeable but ill-built city. Oran, on the sea coast, long a subject of contention between the Moors and the Spaniards, remained in possession of the latter people till 1792. The fortifications have been injured by earthquakes; but the spacious magazines built of stone remain entire. It has a roadstead with good anchorage, but so exposed, that vessels are obliged to land their cargoes at the point of Mers el Keber, about a mile from the city. Oran is much declined; and, though the French have repaired some of the edifices, and converted an old mosque into an hospital, their occupation has hastened its decay, by inducing the whole of the Arab population to leave the place. The inhabitants are now about 4000. Arzew, on a gulf which affords a good harbour, is chiefly noted as containing the shattered ruins of the ancient Arsenaria. Dr. Shaw saw here a Corinthian capital supporting a smith's anvil, and through the rents of a ragged carpet he discovered a mosaic pavement. In its vicinity are large salt pits. Tenis, also on the coast, once the metropolis of a little kingdom, consists now only of a few mud hovels. El Callah, in the interior, seated on an eminence amid branches of the Atlas, is remarkable, as well as its neighbourhood, for an extensive manufacture of carpets and bornouses. Medea and Bleeda, the chief places in the province of Titterie, are both flourishing, and surrounded by a fine country.

5169. *In the eastern part of Algiers, Constantina*, celebrated under the name of Cirta, the ancient and strong capital of Numidia, ranks still second to Algiers, and is supposed to contain at least 40,000 inhabitants. It is boldly situated on a rock precipitous on one side, where it overhangs the broad stream of the Rummell. The surrounding country is fine; but the modern city presents nothing remarkable. The site, however, is distinguished by splendid monuments of antiquity; and the ground in one place is entirely covered with the remains of broken walls, columns, and cisterns. The bridge, still in good preservation, several gates, a triumphal arch, called by the natives the Giant's Castle, with various altars and other fragments adorned with Corinthian columns, and with rich friezes and sculpture, rank among the most elegant remains of classic antiquity. Boujeiah, celebrated as a strong and piratical sea-port, retains still marks of the breaches made upon the walls in 1671, when it was stormed by Sir Edward Sprague. The fortifications are now barely sufficient to hold the wandering Arabs in check; but it derives some importance from its iron manufactures, and the export of wax and oil. Bona, having its site covered with considerable remains of the ancient Hippo, was in modern times the chief settlement of the French African Company, which they lost during the revolutionary war. It derives consequence from the coral fishery carried on in its vicinity; and the same cause gives value to La Calle, and the neighbouring island of Tabarca, which were also long in possession of the French.

5170. *Tunis* has a territory very differently situated from that of Algiers. From the frontier of that country, the coast continues to extend eastward, with a slight inclination to the north, till it reaches Cape Bon, the most northerly point of Africa. It then makes a sudden bend southward, and, with some windings, follows that direction as far as Cape Jerbi for a space of about 250 miles. This coast, with the country reaching for upwards of 100 miles inland, composes the territory of Tunis. It is not so extensive as that of Algiers; but it is not so closely hemmed in by the branches of the Atlas, nor are they so steep or so lofty; and there intervenes between them and the sea a spacious plain, watered by the noble river Bagrada, or Mejerda, and profusely covered with all the riches of culture and vegetation. The people, also, though composed essentially of the same elements as those of Algiers, have imbibed a considerably greater share of polish and civilisation. The situation of the territory, projecting into the Mediterranean, and at an easy distance from the finest shores of southern Europe, fitted it to be the seat of the most celebrated commercial republic of antiquity. Carthage, by her commerce, rose to such grandeur as to dispute with Rome the empire of the world; and, even after being completely vanquished, and her walls levelled with the ground, she continued one of the chief Roman cities, and the capital of the African provinces. The Saracens, however, in the successive kingdoms which they founded, fixed their capital, first at Kairwan, and then at Tunis; and Carthage was entirely deserted. In the sixteenth century, Tunis was occupied by the corsair Barbarossa; and, notwithstanding a successful expedition by Charles V., was, in 1574, completely subjected to the Ottoman power.

Since its decline, it was at first domineered over, like Algiers, by the Turkish soldiery; but the Beys, within the last half century, have succeeded in crushing the influence of this body, and have made themselves hereditary and almost absolute sovereigns. They have governed mildly, doing much to mitigate the former violent and bigoted system, and to introduce European improvements.

5171. *The city of Tunis*, only ten miles south-west from the site of Carthage, and on the same spacious bay, possesses all the advantages which raised that city to such a height of prosperity. It is, in fact, the largest place in Barbary, the population being estimated at from 100,000 to 130,000. It cannot, on the whole, be said to be well built, the streets being narrow, irregular, and dirty; yet the principal mosque is very spacious; and the new palace, constructed at great cost, in the Moorish style, is one of the finest edifices in Barbary, though with the incongruity of the ground floor being entirely composed of shops. This city has entirely renounced its piratical habits, and addicted itself to several branches of useful industry. There are extensive manufactures of velvets, silk stuffs, and the red caps generally worn in the Levant. The exportation of grain, absurdly prohibited in the other ports on this coast, is allowed under a *tickery*, or licence from the dey, though at the exorbitant duty of 15*s.* a quarter on wheat. The Tunisian olive oil, being well packed, and not liable to become rancid, is in high estimation; and the wool of the south-eastern districts is said to be little inferior to the best Spanish. The soap, made from olive oil and barilla, is of excellent quality, and has no unpleasant smell. There is also a considerable traffic with interior Africa for its staples of gold, ivory, and ostrich feathers. Tunis takes a variety of European manufactures, East India stuffs, and colonial produce. That species of woollen cloth called scarlet long ells is the British commodity most in demand.

5172. *The remains of Carthage* are a little to the east of Tunis; but no destruction can be more entire than that which has overwhelmed that celebrated city. The inquisitive traveller may even look over that renowned site, without perceiving that a city ever existed on it. Even the few broken walls which remain bear evident marks of Moorish construction. It is not till he penetrates into its subterranean recesses that he finds clear marks of ancient greatness. He then discovers the spacious cisterns in which water was retained for the use of the inhabitants; and he can trace the line of that stupendous aqueduct by which it was derived from mountains fifty miles distant. It is probable that farther traces might, by diligent search, be still detected.

5173. *Of the other cities of Tunis*, the chief is Kairwan, or Cairoan, founded by the Saracens, and long the capital of their possessions in Northern Africa. The great mosque, supported by 500 granite columns, is said to be at once the most magnificent and the most revered of any in Africa. Tozer, on the lake of Lowdeah, is only a large village, but enriched by trade with the country of dates and interior Africa. On the west coast, Porto Farini, near which are the ruins of Utica and Biserta, have both some trade in grain; though the fine harbour of the latter is now so choked up as to allow only small vessels to enter. Of the towns on the coast, reaching southward from Tunis, Almahdia is distinguished by the remains of a commerce which rendered it once the principal haven on this coast; Monasteer and Cabes by a flourishing modern trade, which gives to the one a population of 12,000, and to the other of 20,000. Sfax carries on traffic on a smaller scale; and the island of Jerbi is noted for manufacturing industry. Near El Gemme are the remains of a magnificent amphitheatre.

5174. *Tripoli* presents a different aspect, and one by no means so grateful and smiling as the western regions of Barbary. That great mountain range, which has diffused through them verdure and fertility, terminates, and the great plain of sand which generally covers Northern Africa presses close upon the cultivated territory. The district in which the city stands forms only an oasis, and one not very extensive; and he who takes his departure from it in any direction finds himself soon in the heart of the desert. Tripoli thus cannot equal the other capitals of Barbary, and its population is not supposed to exceed 25,000. Even this is supported rather by commerce and industry, than by the limited productions of the soil. It is, however, the chief theatre of the intercourse with Bornou and Houssa, the most fertile countries in the interior of Africa; over which it exercises even a species of dominion. Fezzan, the great emporium of the caravan trade, is tributary to the pacha; and he possesses a powerful influence over the courts of Kouka and Sackatoo. This prince has shown a more enlightened spirit, a greater desire to cultivate intercourse with the European powers, and to introduce the improvements of civilised life, than any other in Barbary. A singular absence of that jealousy which usually actuates Mahometan courts has been displayed in the welcome given to the British expeditions of discovery, and the zeal displayed in promoting their objects. Tripoli cannot be called a fine city; yet its palace, and the generality of its mosques, have some beauty; and there is a triumphal arch and several other interesting remains of antiquity.

5175. *To the eastward of Tripoli*, and in its close vicinity, begins a dreary portion of *the Great Desert* of Africa. A few days, however, bring the traveller to the district of Lebeda, where thick groves of olive and date are seen rising above the villages, and a great space is covered with luxuriant crops of grain. This territory is considered much superior to that round Tripoli, and was more highly prized by the ancients, who founded on it the flourishing colony of Leptis Magna. Remains of its magnificent edifices and shattered columns are still seen half buried under the sand which the wind and sea have accumulated over them; but the country people are daily carrying off the fragments, and using them as mill-stones. A similar country continues to Mesurata, to the west of which is also a plain singularly fertile, compared even by Herodotus to that of Babylon. Mesurata carries on a manufactory of carpets, and a considerable trade with Central Africa. At the termination of this plain commences the awful and desolate expanse of the Syrtis. Captain Beechey thus describes the opposite spectacle presented by the two points of view: — "To the west, endless groves of palm trees and olives, among which are scattered numerous villages and gardens, rich tracts of corn land, flocks of sheep and goats, and every where a moving and busy population: to the eastward, a tenantless and desolate waste, without a single object rising from its surface, lies stretched in one long and unbroken line, as far as the eye can reach."

5176. *The Gulf of Sert, or the Syrtis*, about 400 miles in length, presents some striking features. For about forty miles it is bordered by a marsh covered with a thin saline crust, which often gives way beneath the horses' feet, and discovers hollow spaces, many of which are of great depth, with water at the bottom. This dangerous swamp, combined with the general sandy character of the region, seems to have suggested to the ancients the idea of quicksands, which they very decidedly attached to this shore; though it is positively stated that nothing is found in any part of it strictly answering to the term. At the end of this marsh, the Syrtic region, though extremely wild and dreary, affords from time to time little valleys, or detached spots, traversed by the Arabs with their flocks, herds, and movable tents. The dangers of this gulf, painted by the ancients in such direful colours, consist in a flat and shallow coast, full of concealed rocks and banks, against which a heavy surf is continually breaking. The same perils still exist, increased by the heavy swell brought in by the north wind blowing across the greatest breadth of the Mediterranean; but this gulf, so terrible to the ancients, who were unable to navigate at any distance from land, and doomed by a fatal necessity to cross it on their way from Egypt to Carthage, is little dreaded by the moderns, who in this course systematically stand out to sea.

5177. *The ancient Cyrenaica*, and modern Barca, commences at the termination of the Gulf of Syrtis, and exhibits a very improved aspect. It is traversed by a steep and high ridge abounding in springs which, according to Arab report, amount to 360, and sprinkle the surrounding desert with valleys of the most brilliant verdure and fertility. On this coast the Greeks founded Cyrene, one of their most flourishing colonies. At present it is abandoned by all civilised and industrious nations, and, with the exception of a few poor villages, is occupied exclusively by the wandering Arabs with their flocks and herds. Bengazi, the Hesperis of the earliest writers, the Berenice of the Ptolemies, is now only a miserable village. Every trace of the ancient city appears to have been buried under the sands of the surrounding desert. Yet the modern Arab still finds in it ample building materials: he begins to dig, and speedily arrives at fragments of splendid columns and rich entablatures. To suit his purpose, however, these must be pounded into minute portions; and the elegant volute, the rich triglyph, the flowering acanthus, are soon reduced into shapeless fragments, which, however, being ill cemented with mud, form by no means very secure habitations. The range of valleys east of Bengazi is singularly picturesque, their sides being in many places steep and rocky; yet every cleft filled with a brilliant vegetation. "The white pine and the olive," says M. Pacho, "adorn the sides of the mountains, whose summits are crowned with forests of thuja and arborescent juniper. The rocks, overhung with dark groves, present sepulchral grottoes, the only vestige of towns, which have disappeared, with their ancient inhabitants. These pious excavations, the funereal tree which covers them, with the hoarse and savage songs of the Arabs, which are echoed from valley to valley, arrest the pensive traveller, and fill him with solemn and tender recollections." In this tract are found the two ancient, now entirely deserted, cities of Teuchira and Ptolemeta. The edifices of the former are entirely reduced to rubbish; yet its walls, a mile and a half in circuit, have by their Cyclopean strength resisted the powers of destruction, and form a very perfect specimen of ancient fortification. Ptolemeta has one magnificent gateway and the remains of an amphitheatre, two theatres, and of the columns and tessellated pavement of a palace. The area is covered partly with grain, partly with lofty shrubs; while the cry of the jackal and hyena, and the noise of owls and bats, alone afford any symptom of life.

5178. *The ruins of Cyrene itself*, which may be said to be a recent discovery, form the most striking object in this remarkable region. They are finely situated on a high table plain, descending abruptly towards the sea, by successive stages, along each of which is a smooth rocky path, still marked by the wheels of the ancient chariots. The view from the brow of the eminence, upwards of 2000 feet high, over the rocks, plains, and the distant Mediterranean, is singularly beautiful. There are the remains of a spacious amphitheatre, numerous statues, and several fine springs, particularly one called the Fountain of Apollo, much resorted to by the wandering Arabs; but the city is totally destitute of permanent inhabitants. The most remarkable feature in Cyrene consists of its necropolis, or city of tombs (*fig.* 815.). Eight or nine rows of sepulchral grottoes are arranged in terraces along the mountain. Around them are grouped tombs and sarcophagi, rich in ornaments and inscriptions, and extending for a mile and a half along the roads leading to Cyrene, so as to present the appearance of gay and splendid streets. Derne and Apollonia contain ruins of similar character, but not on so great a scale.

815

TOMBS OF CYRENE.

5179. *The ancient Marmarica* extends from this point eastward; a bleak region, destitute of those smiling groves of laurel and myrtle which crown the mountains of Cyrenaica. It is crowded with beasts and birds of prey; and human existence is indicated only by the bleating of distant flocks and the dark tent of the Arab. Yet there is cultivation in favoured spots; and the traces of cisterns and canals of irrigation mark the former existence of a civilised and even somewhat numerous population. M. Pacho estimates the Arabs of Marmarica at 38,000, those of Cyrenaica at 40,000; and the addition of those who wander over the Syrtis may perhaps raise the whole of this wandering population to 100,000.

Chap. VI.

WESTERN AFRICA.

5180. *Western Africa* seems the only general name under which it is possible to comprise that wide range of coast, excluding the Great Desert, which extends along the Atlantic from the Senegal, to the river of Benguela. The greater part is known to Europe under the appellation of Guinea, which, however, is confined to the shores of the vast gulf so called, commencing at Cape Mesurado. It even applies most strictly to the northern shores of that gulf, terminating with the rivers of Benin; for the term Lower Guinea, applied to Loango, Congo, and the neighbouring territories, is in much less frequent use. The territories on and between the Senegal and Gambia are, by the French, called Senegambia; but these names are all European, and unknown to the natives. The whole region is split into a multitude of states, mostly small, and without any political connection. There is a general resemblance of climate, nature, aspect, and character, which justifies us in classing them under one head.

Sect. I. *General Outline and Aspect.*

5181. *This immense range* of maritime country is included between the thirteenth degree of south and the seventeenth degree of north latitude, forming thirty degrees in a direct line; but, allowance being made for the windings of the coast, and the deep bays by which it is indented, the entire length cannot be less than 4000 miles, running in a direction generally from north-west to south-east. The breadth varies much more; indeed, it is founded upon an arbitrary division, which Europeans have made, between Western and Central Africa; vague regions, which are separated by no precise line of demarcation. In general, the boundary fixed by nature seems marked by the heads of the rivers that fall into the Atlantic. This dimension has been ascertained in the case of the Senegal and Gambia, and forms a depth of 700 or 800 miles, on the other side of which lies the upper course of the Niger. In the lower course of that great river, as now ascertained, no such line can be drawn; and the extensive countries situated on its banks belong in their character and relations so decidedly to Central Africa, that the region so called, must, in this quarter, be brought much nearer to the coast. Immense deserts bound this maritime district, both at its northern and southern extremity.

5182. *The coast of Western Africa* presents, in general, a flat surface, though Cape Verd, and some others, project bold headlands into the ocean. All the great ranges of mountains are in the interior, and their line and position are still imperfectly ascertained. The most important is that very extended chain, in the interior of Senegambia, usually called the Mountains of Kong, which appears in some measure to stretch across the continent, till it connects with the Mountains of the Moon, on the opposite side of Africa. This chain, running from east to west, becomes parallel to those coasts, which form the northern boundary of the Gulf of Guinea. Congo is, in many parts, rugged and hilly; and there are, undoubtedly, great chains of mountains in the interior.

5183. *The western rivers of Africa* are conspicuous features, though not of that immense magnitude which has been sometimes imagined. The Senegal is no longer identified with the Niger, nor supposed to draw its waters from the interior depths of the continent; but it is about 900 miles in length from its source, in the western extremity of the Mountains of Kong, not very far distant from that of the Niger. Its early course is swelled by numerous streams from the same mountains, among which the Ba-fing, the Ba-lee, and the Faleme, are the most important. After passing Gallam and the falls of Felu, it descends into a dead level, and rolls along the borders of the desert, till, near Fort Louis, it finds a passage, obstructed by heavy bars of sand, into the Atlantic. The Gambia rises from a point of the same chain not very distant, and rolls a more powerful and rapid stream, forming at its mouth a considerable estuary; but its course is not more than two thirds of that of the Senegal. The Rio Grande, and the Mesurado, which come down from the southern side of the same mountains, have not attained the character of streams of the first order when they reach the sea. The waters of the ivory and gold coasts of Guinea are little better than mountain torrents, pouring down from the high grounds; but from the western limit of Whidah to Calabar, a space of above 200 miles, the Gulf of Benin receives a continued succession of large estuaries, which convert the whole territory into alluvial and partially inundated islands. These channels, the sources of which were long the subject of conjecture, are now, by the discoveries of Lander, ascertained to compose the delta of the Niger; though the course of that mighty river must be considered as belonging to the central regions of Africa. Farther south, the Congo pours its ample volume of waters into the Atlantic, which it freshens to a considerable distance; but though the expedition under Captain Tuckey penetrated 300 or 400 miles upwards, the higher part of its course is still enveloped in mystery. The Coanza likewise appears to come from a considerable distance in the interior, and may rank high among rivers of the second class.

5184. The waters of Western Africa do not accumulate into *lakes* of any importance.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5185. *Western Africa.* — *The African coast*, from Sierra Leone to the mouth of the Orange River, is very imperfectly known in a geological view. The hills around Sierra Leone are said to be of *granite;* the geology of the grain coast and ivory coast of Guinea is unknown, and nothing satisfactory can be offered in regard to the slave coast. In Benin there are mountains (those of Camaroon, on the sea coast), said to be 13,000 feet high. The extensive district through which the Zaïre flows was examined during part of its course, and the rocks met with were *granite, syenite, primitive greenstone, gneiss, mica slate, clay slate*, and *primitive limestone* or *marble*. The kingdom of Angola is remarkable for the great extent of its salt mines; it also affords copper and iron. The mines of Loango and Benguela, so often mentioned by travellers, afford principally iron ores.

Subsect. 2. *Botany.*

5186. *Western Africa*, containing, as it does, a vast extent of country, both in the northern and southern hemispheres, including the tropics, must, of course, possess an extremely varied vegetation, of which, unfortunately, a very great portion is unknown. Islands present a more interesting field for the geographical distribution of plants, than the continent. In the first place, therefore, we shall offer a few remarks upon that of Madeira, which we are the better enabled to do from the observations of Dr. Kuhl, given in the *Botanische Zeitung*, and the interest of which is increased from the relative situation of this speck in the ocean being such as to form the connecting link between the vegetation of Europe and that of the western continent of Africa, to which country it naturally belongs. " Here," says this traveller, " every stranger must be struck with the entire absence of Oaks, Firs, Birch, Willows, &c. All our European fruits are cultivated; but such as are not planted in a soil that is properly manured, are far inferior to ours in point of flavour; at least those we had the opportunity of eating. The Grapes, indeed, must be excepted, which possess much richness, and are mostly red. The wine is a true claret, and the good old Madeira has the exact colour of Rhenish wine. The red, which is not a claret, is rare. All the native trees have coriaceous leaves, and one only bears an esculent fruit, which is an arborescent Vaccinium (*V. padifolium* Smith), the rest have been introduced by the Portuguese. One single species of Fir, it is said, was found on the island when it was discovered; but that was soon extirpated by the use made of it in building, for which purpose the Chestnut is now employed and cultivated. Of the thick stems of the arborescent Heaths (*Ericæ*), which crown the top of the Pico Ruivo, and whose wood is of a beautiful red colour, they make props for their vines, which are not, as with us, trained upright; but horizontally, just above the ground, forming a green covering. As the climate of the respective regions varies according to the relative heights of the mountains, so we meet with very different plants at different elevations, and the several belts, or regions, may thus be characterised: —

5187. " 1. *Region of the Cacti*, which, according to our calculations, reaches to an elevation of 630 feet above the level of the sea. — Von Buch gives the same extent to this region at Teneriffe. In Madeira, however, the succulent *Euphorbiaceæ* and other African plants, which abound in Teneriffe, are wanting. The Indian or Prickly Fig (*Cactus Opuntia*), grows alone upon the bare rocks, and Vines, Canes, Figs, Arums, Musæ, and other southern fruits, are cultivated in the fields. This district is rich in wild plants: we found one *Cryptogamous* species, Adiantum Capillus Veneris (*fig.* 816.); seven *Monocotyledones*, viz. three Panica, a Cynodon, Andropogon, Setaria, and Milium; sixty *Dicotyledones*, among which (besides the genera which abound with us, such as *Rumex, Convolvulus*, &c.) were Crotalaria, Physalis, Asclepias, Helminthia, Atractylis, Ageratum, Sida, Myrtus, Cassia, &c. The Pomegranates, Figs, and Bananas, which are planted about the houses, together with the bright green of the Arums, gave a singular charm to this district. Of the sixty-eight species now enumerated, seventeen extended as far as the region of the Vine, and only two of them were met with again, at a height of 5300 feet.

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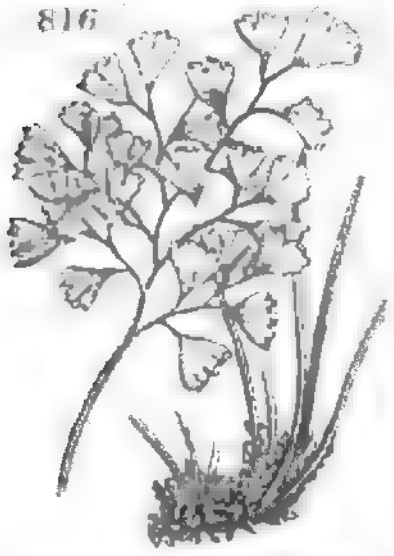


ADIANTUM CAPILLUS VENERIS.

" 2. *Region of the Vine.* — The culture of this plant may be said to commence at the sea shore; but the Cactus does not accompany it above 630 feet. The Vine ascends to an elevation of 2030 feet; but higher than that the fruit will not ripen. In this region, the Arum, Cane, Mulberry, &c., Potatoes, Corn, and Onions, are cultivated; but not the Bananas and Cacti. The hedges consist of Myrtle and Chestnut. Agriculture is more successfully carried on here than elsewhere; on which account, few wild plants are met with, but such as we had already found in the lower region, and of those, three that grew at a still higher elevation.

" 3. *Region of the Chestnut.* — This commences at 2030 feet, and is eminently distinguished by the tall stout stems of the Chestnut, which tree ascends to about 2950 feet. Those that are found still higher, are smaller, distorted, and bear no fruit. We staid longest in this region, and our success in collecting plants was proportionably great. We found twenty-three *Cryptogamiæ*, viz. twelve Ferns (one *Darea* and *Woodwardia*) five Lichens, Anthoceros, Marchantia, Boletus, two Jungermanniæ: — twelve *Monocotyledones* of our common genera; only one Carex, and a beautiful Cyperus: — sixty-six *Dictyledones*, viz. five Rumices, Clethra, Lobelia, Andryale, Chamæmelum, an arborescent Euphorbia, two shrubby species of Teucrium, Cineraria, Disandra. We found nine of these species in the next region.

"4. *Region of the Spartium.* — This terminated at a height of 3920 feet, and is singularly poor in its vegetation. We found but one plant we had not seen before, or did not meet afterwards in the following region. The whole region is covered with Spartium alone.

"5. *Region of the Heath* (*Erica*). — This extends to the summit of Pico Ruivo, the highest point in the whole island, and, according to our reckoning, 5300 feet above the level of the sea. It is very rich in interesting plants. Towards the centre of it are trees with coriaceous leaves, an arborescent Vaccinium, and two trees, called Till and Vintratico, which for want of flowers, we could not determine. Between the fourth and fifth region is a tract almost covered with Pteris aquilina, and some other Ferns, especially another Pteris. On many ridges, these abound to the exclusion of all other plants, and remarkably so at a height of 3920 to 4080 feet; while below them the Spartium, and above them the Ericas, maintain possession of the soil. But again, not far from the top of the Pico, is a tract where the Ericas are supplanted by the Spartium; only, however, for a short space, for the summit is covered by the thick stems of the Heaths. Besides fifteen species, common to the lower regions, we found, of *Acotyledones*, twelve; Peziza and Lichens: — seven *Monocotyledones*, among them two Sciuri, two species of Cynosurus, an Aira and Agrostis: — thirty-seven *Dicotyledones*, among them a Sideritis, a beautiful shrubby Echium, with a blue spike, Crocodylium, Pyrethrum, Phyllis, two Semperviva, Sedum, Cotyledon, &c. There is no Pine Region. It would take too much space to name all the genera we collected: but a comparison of the relative proportion they bear to one another, shows the island to be deficient in the northern families of Amentaceæ, Saxifrages, and Caryophylleæ, especially the second. It is poor, likewise, in the predominant families of the tropics, the Euphorbiaceæ, Malvaceæ, and Corymbiferæ, which latter are only in the proportion of 1 to 19; but at the Cape 1 to 5, and, in other equatorial countries, 1 to 6. But the Cichoraceæ, which belong to the temperate zone, are here numerous. In our walks on the shore, we found whole banks of Fuci."

5188. *In the same way* does the celebrated Humboldt divide the famous Peak of Teneriffe, in the Canary Islands, into five zones, to which he gives the name of the Region of Vines, the Region of Laurels, the Region of Firs, the Region of the Retama (*Spartium nubigenum*), and the Region of the Gramineæ. These zones, which lie one above another, like terraces, occupy an elevation of 10,500 feet on the steep sides of the Peak; while, fifteen degrees more northerly, on the Pyrenees, the snow covers all, above the height of 7800 to 8400 feet. If vegetation does not, at Teneriffe, reach the very summit of the volcano, it is not because eternal snows and a cold atmosphere prevent it; but because lava and pumice-stone do not admit of plants growing upon the very brink of the crater.

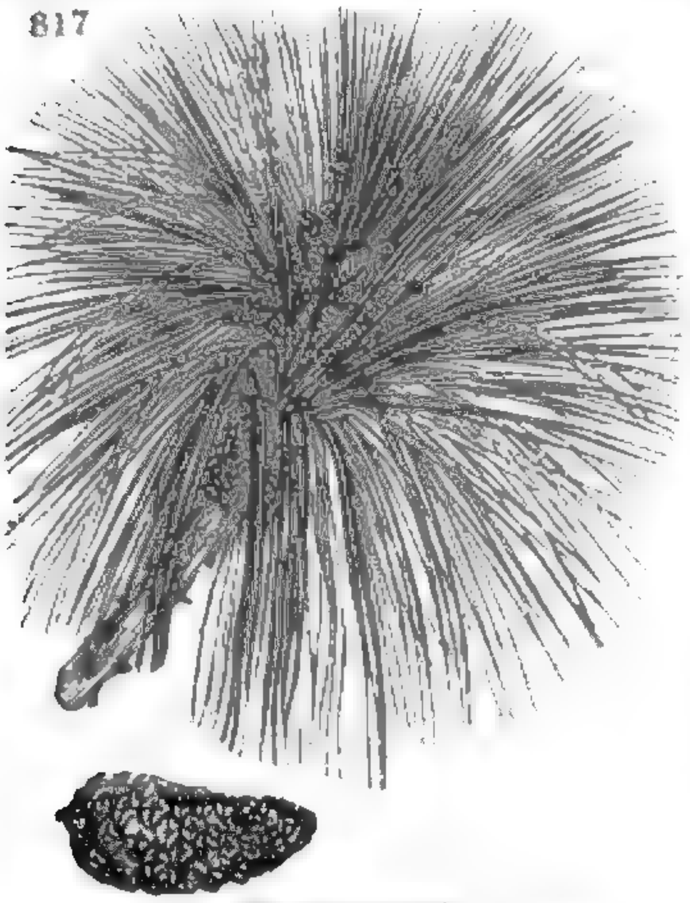
5189. *The first Zone,* that of the Vine, extends from the sea-side to a height of from 1200 to 1800 feet: it is the most inhabited, and the only one where the soil is carefully cultivated. In these low regions, at the sea-port of Orotava, and wherever the winds have a free access, the thermometer never rises so high in summer, nor falls so low in winter, as at Paris and Petersburgh; as was ascertained by observations made by M. Savaggi, in 1795 to 1799. The climate seems to hold a mean between that of Naples and the Torrid Zone. In spite of the analogy existing between the climate of Madeira and Teneriffe, the plants of the former island are in general much less delicate, when cultivated in Europe, than those of Teneriffe. Thus Cheiranthus longifolius, from Orotava, is killed by the cold at Montpelier, and C. mutabilis, of Madeira, stands there in the open air all winter. The summer heats are shorter at Madeira than at Teneriffe.

5190. *The Region of Vines presents,* among its vegetable productions, eight kinds of arborescent Euphorbias, some Mesembryanthemums, which abound from the Peloponnesus to the Cape of Good Hope, the Cacalia Kleinia, the Dragon tree, and other plants, whose naked and tortuous stems, succulent foliage, and glaucous hue, indicate the vegetation of Africa. In this zone are the Date, the Banana, the Sugar Cane, the Indian Fig, the Arum Colocasia, whose roots afford the lower classes a wholesome farinaceous food, the Olive, the European fruit trees, the Vine, and the Cerealia. The corn is cut from the end of March to the beginning of May, and the Bread-fruit tree promises to succeed well, as also the Cinnamon tree from the Moluccas, the Arabian Coffee, and the American Cocoa Nut. At many parts of the coast, the landscape presents all the character of a tropical scene, and the Region of Palms may be easily seen to extend far beyond the Torrid Zone. The Palmetto and the Date grow very well on the fertile plains of Murviedro on the coast of Genoa, and in Provence, near Antibes; some trees of the latter, planted within the limits of the city of Rome, resist even the cold of 2·5° below the freezing point. But if Western Europe shares but little in the productions that grace the zone of the Palms; the island of Teneriffe, placed under the parallel of Egypt, of Southern Persia, and of Florida, glows with almost all the vegetable glories which enhance the majesty of Equatorial Regions. Among its indigenous plants, however, the trees with pinnated foliage, and the arborescent Gramineæ do not appear; nor has any species of the numerous family of Sensitive Plants migrated so far as the Canary Islands.

5191. *The second Zone*, that of the Laurels, includes the wooded portion of Teneriffe: it also is the region of the springs, which bubble up in its ever-verdant turf. Splendid forests crown the hills which adjoin the volcano, among them are four species of Laurel, an Oak, very similar to Quercus Turneri of Thibet, the Visnea, Mocanera, the Myrica Faya of the Azores, an indigenous Olive (*Olea excelsa*), the largest tree in this zone, two species of Sideroxylon with beautiful foliage, Arbutus callicarpa, and other evergreen trees of the myrtle tribe. Climbers, and an Ivy quite different from that of Europe (*Hedera canariensis*) twine round the stems of the Laurels, at the foot of which grow numberless Ferns, of which but three species grow so low as in the Vine Region. Every where the soil, which is covered with mosses and fine grass, shines with the blossoms of the golden Campanula (*C. aurea*), of Chrysanthemum pinnatifidum, Mentha canariensis, and several shrubby kinds of Hypericum. Plantations of wild and grafted Chestnuts form a broad band round the region of the springs of water, which is the most verdant and agreeable of all.

5192. *The third Zone*, or Region of Firs, begins at an elevation of 5400 feet, and there the last groupes of Arbutus, of Myrica Faya, and the fine Heath, which the natives call Texo, disappear. This zone, about 2400 feet in extent, is wholly occupied by a vast forest of Firs, mingled with the Juniperus Cedro of Broussonet. The Firs (*Pinus canariensis* Von Buch) (*fig.* 817.) have very long and stiff leaves, which often grow in pairs, but more frequently three in each sheath. As we had no opportunity if examining the fruit, we are ignorant if this species, which has all the habit of the Scotch Fir, is truly distinct from the eighteen species of Pinus which are already known in the Old World. A celebrated traveller, who has much advanced the cause of science, M. De Candolle, considers the Fir of Teneriffe as alike distinct from Pinus atlantica and P. halepensis. On the slope of the Peak, at 7200 feet, we saw the last Firs: on the Cordilleras of New Spain, under the Torrid Zone, the Mexican Fir grew at an elevation of 12,000 feet. But whatever may be the analogy existing between different species of the same genus, each requires, for its perfect developement, a certain degree of temperature and of rarification of the atmosphere.

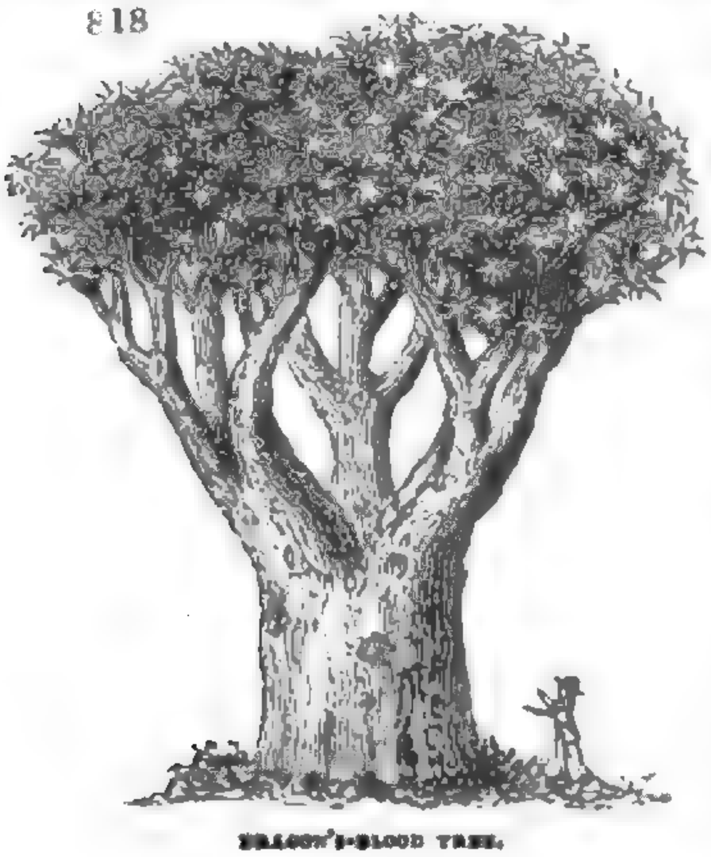
817



PINUS CANARIENSIS.

5193. *The fourth and fifth Zones*, the Regions of the Retama and the Gramineæ, occupy an elevation corresponding with the highest and most inaccessible points of the Pyrenean mountains. This is the desert portion of the island, where masses of pumice-stone, obsidian, and shivered lava forbid the progress of vegetation. We have already alluded to the flowery tufts of alpine Broom (*Spartium nubigenum*), which form so many oases in this vast wilderness of ashes. Two herbaceous plants, Scrophularia glabrata and Viola cheiranthifolia, rise somewhat higher. Beyond the scanty grass which is parched up by an African sun, Cladonia paschalis covers the arid soil; and the shepherds often set it on fire, till the blaze extends to considerable distances. Towards the summit of the peak, Urceolarias and other individuals of the Lichen family are always tending to effect the decomposition of the scorified matter. Thus, by an uninterrupted action of organic force, the empire of Flora is continually gaining ground on these islands, whose whole structure has been, as it were, deranged by volcanic fire.

818



DRAGON'S-BLOOD TREE.

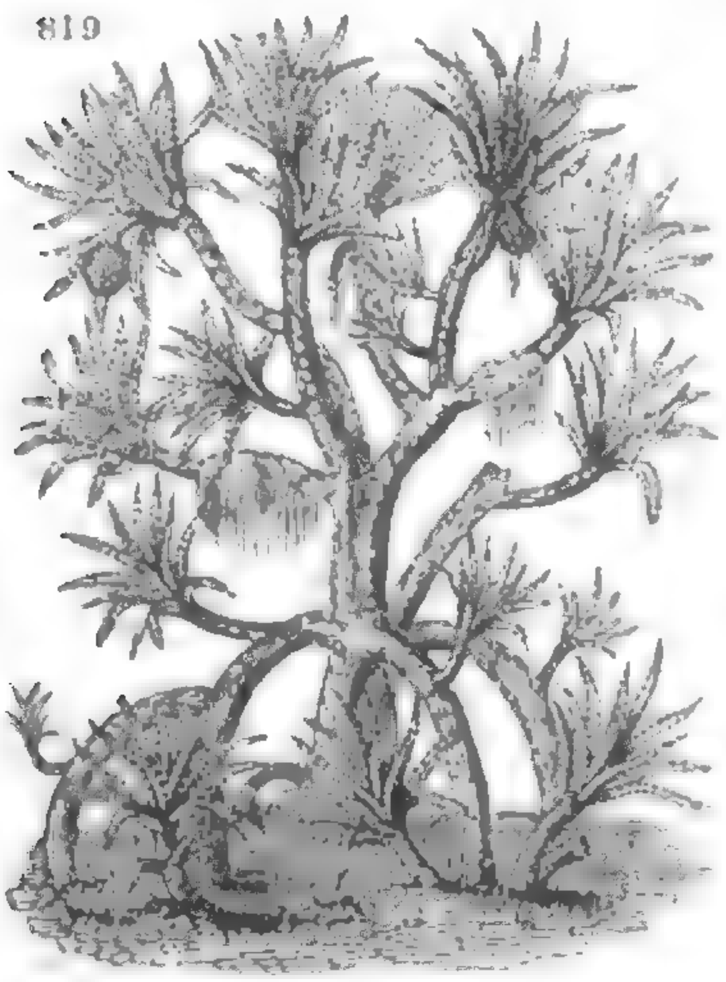
5194. *It is in the Canary Islands* that the Dragon's-blood tree (*fig.* 818.) appears to arrive at its highest degree of perfection, and to attain a most astonishing size. "This gigantic tree," as is observed by M. de Humboldt, that first of travellers, in his *Tableaux de la Nature*, when speaking of a very celebrated specimen of the Dragon's-blood tree, "is now included within the precincts of M. Franchi's garden, in the small town of Orotava, one of the most delicious spots in the world. In 1799, when we climbed the Peak of Teneriffe, we found that this enormous vegetable was forty-five feet in circumference, a little above the root. Sir George Staunton affirms that, at ten feet high, its diameter is twelve feet. Tradition relates that this particular Dracæna was venerated by the Guanchos, as the Elm of Ephesus was by the Greeks; and that in A. D. 1400 it was as large and as hollow as it is now. The gigantic Dragon's-blood tree, which I saw in the Canaries, was sixteen feet in diameter, and, enjoying a perpetual youth, was loaded with flowers and fruit. When the MM. Bethencourt, French adventurers, conquered the Fortunate Islands, in the sixteenth century, the Dracæna of Orotava, as sacred in the eyes of the natives as the Olive tree that grew in the citadel of Athens, was of colossal dimensions, as it is now. In the Torrid Zone, a forest of Cæsalpinia and Hymenæa is perhaps the monument of 1000 years. As the growth of the Dragon-tree is extremely slow, we may be sure that the Orotava tree is extremely old. Doubtless this tree and the Baobab are the oldest inhabitants of our planet. It is singular that the Dragon's-blood tree has been cultivated in the Canaries, Madeira, and the isles of Porto Santo, from the remotest antiquity, though originally derived from India. This fact contradicts the assertion of those who represent the Guanchos as a race of men of the Atlantic, who were completely insulated, and had no intercourse with the people of Asia and Africa."

5195. *The trunk of the* Dracæna Draco cleaves open in many parts, and distils, at the time of the summer solstice, a fluid, which condenses into red tears, soft at first, afterwards hard and friable: this is the true Dragon's blood of the shops, and must not be confounded, though dry, friable, blood-red, and inflammable, with other resinous substances known under the same name, and derived, the one from a species of Calamus (*Rotang*), and the other from a Pterocarpus. To the Dragon's blood are attributed astringent, desiccatory, and incrassating virtues. It is administered internally for dysentery, hæmorrhage, violent bowel complaints, and inward ulcers: and externally, to dry up running sores, to heal wounds, and to strengthen the gums. The painters make use of it, in the red varnish with which they colour the Chinese boxes and chests.

5196. *Our observations* upon the vegetation of the coast itself, of Western Africa, must be very brief, and chiefly confined to the Tropics; while for a more full account we must refer to a learned paper, by Dr. Robert Brown, given in the Appendix to *Tuckey's Voyage to the Congo*, and content ourselves with little more than a few extracts from that paper, on a comparison of the vegetation along the line of the Congo, with that of other parts of the West Coast to Equinoctial Africa.

5197. *It appears that from* the river Senegal, in about 16° N. lat., to the Congo, which is in upwards of 6° S. lat., there is a remarkable uniformity of vegetation, not only as to principal orders and genera, but even, to a considerable extent, in the species of which it consists. More than one third part of the plants from the Congo have been observed previously on various parts of the coast. Many of the Trees, the Palms, and several other remarkable plants, which characterise the landscape, as Adansonia, Bombax pentandrum, Elais guineensis, Raphia vinifera, and Pandanus Candelabrum (*fig.* 819.) appear to be very general along the whole extent of coast. Sterculia acuminata, the seed of which is the Cola, mentioned in the earliest accounts of Congo, exists, and is equally valued, in Guinea and Sierra Leone, and, what is remarkable, it bears the same name throughout the West Coast. The Ordeal Tree, called by Professor Smith, Cassa, and by Captain Tuckey, erroneously, a Cassia, if not absolutely the same plant as the Red Water Tree of Sierra Leone and the Gold Coast, belongs at least to the same genus. A species of the Cream Fruit, remarkable in affording a wholesome and pleasant saccharine fluid, used by the natives of Sierra Leone to quench their thirst, though belonging to that generally deleterious family the Apocyneæ, was also met with. The Sarcocephalus of Afzelius, which is probably what he has noticed under the name of the Country-fig of Sierra Leone, was found on the banks of the Congo.

819



PANDANUS CANDELABRUM.

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Anona senegalensis, whose fruit, though smaller than that of the cultivated species, is said to have a flavour superior to them all, and appears to be a general plant along the whole extent of coast; and Chrysobalanus Icaco, or a nearly allied species, is equally common from Senegal to Congo.

5198. *We may here introduce a few remarks* on the Esculent Plants of the Congo; the cultivated, as well as the indigenous species, being very similar throughout the West Coast. On the banks of the river, the principal articles of vegetable food were the Indian Corn, or Maize (*Zea Mays*), Cassava, both sweet and bitter (*Jatropha Manihot*), two kinds of Pulse extensively cultivated; the Cytisus Cajan and a Phaseolus (?), with Ground Nuts (*Arachis hypogæa*). The most valuable fruits are Plantains (*Musa sapientum*), the Papaw (*Carica Papaya*), Pumpkins (*Cucurbita Pepo*), Limes and Oranges, Pine Apples, the common Tamarind, and Safu, a fruit the size of a small plum, which was not seen ripe. One of the most important plants, not only of the Congo, but of the whole extent of coast, is Elais guineensis (*fig.* 820.), or the Oil-Palm, which also affords the best Palm Wine. Wine is likewise obtained from two other Palms, Raphia vinifera (?) and a Corypha (?). Among the other alimentary plants, of less importance, or imperfectly known, are the Shrubby Holcus, the common Yam, only seen near Cooloo; and another Dioscorea, found wild only, and very inferior to the Yam, requiring, it is said, four days' boiling to free it from its pernicious qualities. On Mr. Lockhart's authority, two kinds of Sugar Canes, and Cabbages, were seen sparingly; Capsicum and Tobacco are generally cultivated, and in the herbarium is a specimen of Malagnetti Pepper. A second kind of Ground Nut or Pea (*Glycine subterranea ?*) which is extensively grown at Madagascar, also appeared. A species of Ximenia (*X. americana ?*) was likewise found; the fruit yellow, the size of a plum, and acid, but not unpleasant, in the higher parts of the river, where it is generally planted. An Antidesma, perhaps like that mentioned by Afzelius, as having a fruit of the same size and taste as a currant, is also in the herbarium.

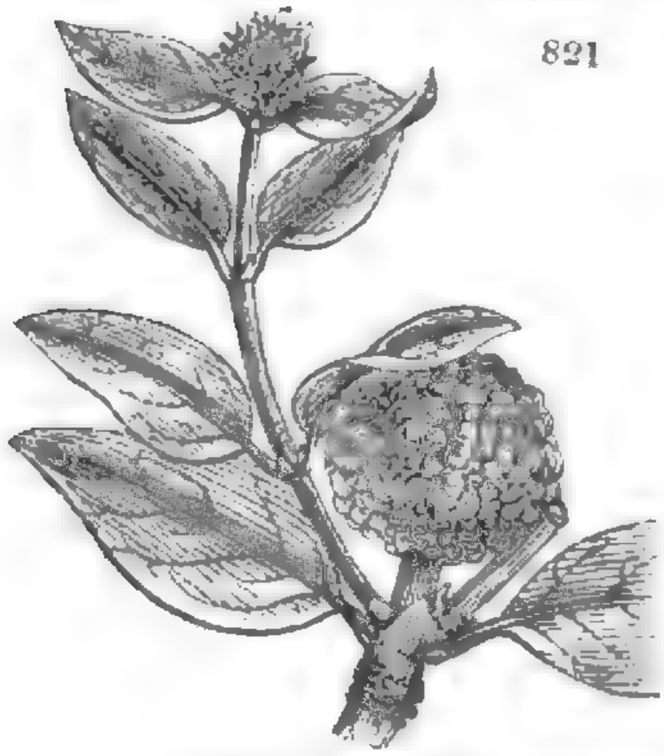
820

ELAIS GUINEENSIS.

5199. *It is particularly deserving of notice* that most of the above plants, enumerated as cultivated on the Congo, and especially the important species, have probably been introduced, and do not even belong to the continent of Africa. Thus Maize, Manioc or Cassava, and Pine Apples, have been brought from America, as also, perhaps, Papaw, Capsicum, and Tobacco; while the Banana or Plantain, the Lime, the Orange, the Tamarind, and the Sugar Cane, may be considered as of Asiatic origin.

5200. *In connection with these observations of Mr. Brown's*, we may here introduce a list of the Edible Fruits of Sierra Leone, drawn up by Joseph Sabine, Esq., from the Journal and Notes of Mr. George Don, who was charged by the Horticultural Society of London to collect the useful vegetables of that most interesting country.

821



SARCOCEPHALUS ESCULENTUS.

5201. The Peach of the Negroes (*Sarcocephalus esculentus*) (*fig.* 821.) is a large, fleshy, and solid fruit, hard and eatable throughout, and full of small seeds, not much unlike a strawberry in flavour and consistence. The tree grows plentifully throughout the colony of Sierra Leone, 10 to 15 feet high; the leaves are large and elliptical, the flowers pink, produced in globular heads, and seated on a receptacle which afterwards becomes the fruit. The Anona senegalensis, or African Custard Apple, of which the fruit is not much larger than a pigeon's egg, and with the same or a superior flavour to the rest of the species. The Monkey-bread (*Adansonia digitata*) is much used by the negroes: its fruit, which is of considerable size, and of an oblong shape, is full of seeds, and tastes like gingerbread, with a pleasant acid flavour. The Locust Tree of Sierra Leone (*Inga biglobosa*) is a beautiful tree when in blossom, covered with compact biglobular heads of fine vermilion-coloured flowers; which are succeeded by compact bunches of pods, containing a yellow farinaceous substance, of which the natives are very fond. It is mentioned by Park as affording an agreeable and nutritive food. The Country Cherry is rare, growing on the mountains, and bearing a small oval reddish fruit, somewhat like a Plum in flavour, and produced in clusters on the topmost branches. Anisophyllea laurina, the Monkey Apple, is a fruit of the size of a pigeon's egg, red on one side and yellow on the other, with a flavour between the nectarine and plum. Country Grapes are the produce of Vitis cæsia, they are black, austere, and acid, chiefly eaten by the negroes. Country Currants resemble elderberries, and are found plentifully on the mountains. The shrub (*Ficus Brassii*) which bears the Large Fig grows about the colony: the fruit would be very pleasant, if the ants did not generally get in and spoil it; and the same may be said of a smaller fig, that bears abundantly, and is the size of a hazel nut. Afzelius speaks of Wild Guavas (*Psidium pyriferum*) as natives of this country, and Mr. Don saw and tasted the fruit, but he could not exactly identify the plant with the West Indian Guava. The Hog Plum is the fruit of Spondias Myrobalanus; it is well tasted, and sharper than the plum of our gardens, but the stone forms half the bulk of the fruit. The Grey Plum tree (*Parinarium excelsum*) is more valuable for its compact and durable wood than for the fruit, which, though large and abundant, is dry and farinaceous, with a very large stone: an allied species, P. macrophyllum, is called by the colonists Gingerbread Plum. Of four other fruits, called Plums, the Small Pigeon Plum (*Chrysobalanus ellipticus*), the Yellow Pigeon Plum (*C. luteus*), the Black Plum (*Vitex umbrosa*), and the Sugar Plum, it may be said that the first three, though good, are inferior to the latter, which is sold in large quantities in Sierra Leone, and is one of the very best fruits in the colony. The tree is very handsome, sixty feet high, and bears many fruits of the size of a bullace: at ten feet from the ground, the stem throws out roots like a mangrove or Pandanus, but its botanical affinities are not known. From the fruit of the Sweet Pishamin (*Carpodinus dulcis*), a quantity of sweet milky juice exudes, the pulp is also pleasant and sweet: the Sour Pishamin (*C. acidus*) though sharp, acid, and rather bitter, is much relished by the natives. The Mammee Apple (*Mammea africana*) is a lofty tree, with useful wood and a very large fruit. The Butter and Tallow Tree (*Pentadesma butyracea*) abounds in a yellow greasy juice, to which it owes its name, and which is given out plentifully when the fruit is cut; this is mixed by the natives with their food, on account of its turpentine flavour, which renders it disagreeable to the European settlers. Two kinds of Star Apple (*Chrysophyllum macrophyllum* and *C. obovatum*) are very inferior to the West Indian Star Apple (*C. Cainito*). Tonsella pyriformis bears a rich and sweet fruit, like a bergamot pear. There is a tree called Pomegranate, said to be excellent: but having no affinity to Punica. The seeds of Sterculia acuminata are called Cola by the negroes, who hold them in great esteem, as possessing the same virtues as Peruvian bark. They are like horsechestnuts, and produced in pods, which grow two to five together. A somewhat similar seed, named Tola, is used in the same way. Velvet Tamarinds, the fruit of Codarium acutifolium, are produced in beautifully black velvety pods, and possess an agreeably acid taste, while Brown Tamarinds differ little, except in the colour and larger size of the pod. Pine-apples (*fig.* 822.) both grow wild and are cultivated by the natives: they abound in the woods, so as to obstruct the passage through them in every direction, shooting most vigorously, and yielding fruit abundantly. The profusion in which these plants are seen, even in unfrequented spots, sanctions the common opinion of the colonists, that they are indigenous to the soil; contrary to the doctrine of scientific botanists, who maintain that Pine Apples have been carried from America into Africa and Asia; yet it is remarkable how such an exotic can have assumed all the characters of a native, and even sported into varieties, strikingly different from the appearance of the plant in the country of which it is supposed to be the original inhabitant. Two kinds only, the Black and White, are grown at Sierra Leone: though not so large as those cultivated in England, the flavour is superior. The wild varieties are innumerable; and a very pleasant kind of wine is made in the colony from the juice. Besides the fruits already mentioned as found wild near Sierra Leone, the following are cultivated: Plantains (*Musa Sapientum*), Bananas (*M. paradisiaca*); the Cocoa Nuts are still rare, and Papaws (*Carica Papaya*) are only seen near the settlers' houses. Oranges are abundant, and have now grown wild, Lemons are rare, but Limes plentiful. Cashew Nuts have been cultivated in large quantities of late: Rose Apples (*Eugenia Jambos*), and Tamarinds from the West Indies, Love Apples (*Solanum Lycopersicon*), Melons, Water Melons, Cucumbers, Gourds, &c. of many kinds and qualities: among the Melons, some which having the smell of Musk are called Musk Melons. Two sorts of Capsicum are grown, and do not appear to be natives of the country.

822

PINE-APPLE.

5202. The Baobab, or Monkey Bread, above mentioned (*Adansonia digitata*), may be deemed one of the most valuable productions of Western Africa. It is likewise said to be found in Egypt and Abyssinia, and is cultivated in many of the warmer parts of the world. There seems to be no question that it is the largest known tree; its trunk being sometimes no less than thirty feet in diameter. Many interesting particulars of this tree are given in Adanson's account of his visit to Senegal, especially respecting its size and great age, whence it has been called *arbre de mille ans*. The height of its trunk by no means corresponds with the thickness which it attains, according to Adanson's calculations, which go to prove that its successive growth from one year old, when its diameter is one inch, and its height five inches, to 30 years old, when the diameter has attained to two feet, while the height is but 22 feet; and so on, till, at 1000 years old, the Baobab is 14 feet broad, and 58 feet high, and at 5000 years, the growth laterally has so outstripped its perpendicular progress, that the trunk will be 30 feet in diameter, and only 73 feet in height. We must confess that the disproportion is truly enormous. The roots, again, are of a most extraordinary length; so that, in a tree with a stem 77 feet round, the main branch or tap root measures 110 feet in length. A figure of the whole tree may be seen in a beautiful vignette (p. 141.) of *Lord Macartney's Embassy to China*, drawn from a fine specimen in one of the Cape de Verd Islands. The foliage there, indeed, is not so abundant as to conceal the vast proportion of the trunk; but it often happens that the profusion of leaves and of drooping boughs almost hide the stem, and the whole forms a hemispherical mass of verdure, 140 to 150 feet in diameter, and 60 to 70 feet high. The wood is pale-coloured, light, and soft, so that in Abyssinia, the wild bees perforate it, and lodge their honey in the hollow, which honey is considered the best in the country. The negroes on the western coast, again, apply these trunks to a very extraordinary purpose. The tree is liable to be attacked by a fungus, which, vegetating in the woody part, without changing the colour or appearance, destroys life, and renders the part so attacked as soft as the pith of trees in general. Such trunks are then hollowed into chambers, and within them are suspended the dead bodies of those to whom are refused the honour of burial. There they become mummies, perfectly dry and well preserved, without further preparation or embalming, and are known by the name of Guiriots. The Baobab, like all plants of the same Order (*Malvaceæ*) is emollient and mucilaginous. The pulverised leaves constitute *lalo*, a favourite article with the natives, which they mix with their daily food, to diminish excessive perspiration, and which is even used by Europeans in fevers, diarrhœas, &c. The fruit is perhaps the most useful part of this tree; its pulp is acid and agreeable, and the juice expressed from it, mixed with sugar, constitutes a drink that is deemed a specific in putrid and pestilential fevers. Owing to these circumstances, the fruit forms an article of commerce. Bowdich mentions that it possesses such an agreeable flavour, and is so abundant, that it constitutes a principal article of food with the natives, who season many of their dishes with it, especially their corn gruel. The Mandingoes convey it to the eastern and southern districts of Africa, and through the medium of the Arabs, it reaches Morocco, and even Egypt. If the fruit be injured, it is burned, the ashes being mixed with rancid palm oil, and serving for soap. The flowers are large, white, and handsome, and on their first expansion, bear some resemblance, in their snowy petals and violet mass of stamens, to the White Poppy (*Papaver somniferum*). Both the flowers and fruit are pendent. The Baobab tree loses its leaves before the periodical rains come on.

5203. The Arachis hypogæa (*fig.* 823.) deserves notice on account of the singular economy of its fruits. It belongs to the very few plants which mature their seeds under ground; the flower-stalk, after the blossom has withered, bending downwards, and burying the germen in the soil, where it soon increases in bulk, and perfectly ripens. The fruit is a pod, containing one or two seeds, the size of small nuts, with a flavour of almonds; the natives of several countries eat them, either boiled or fried, and make very pleasant confections of them, the taste resembling chocolate. A valuable oil is also extracted from the seeds of the Arachis, alike useful in food and for supplying lamps, as it never turns rancid. Many attempts have been made to naturalise this plant in Europe; but the climate is too cold for it every where north of the southern coast of France.

823

ARACHIS HYPOGÆA.

SUBSECT. 3. *Zoology.*

5204. *Our remarks on the Zoology* of this portion of Africa must be chiefly confined to Senegal, the neighbouring coasts of Guinea, and the colony of Sierra Leone: these, in short, are the only districts hitherto visited by naturalists, whose researches, moreover, have been but slight, and confined to the districts immediately surrounding the European factories.

Yet, whatever may be the nature of the interior zoology, that of the coast is strikingly distinguished from Northern Africa. A rich vegetable soil, and a luxuriance of foliage, is here not uncommon; heavy rains are perpetually nourishing the earth, and animal life is multiplied under a variety of new and striking forms, totally unknown in the arid and sandy deserts of Northern Africa. We may thus safely consider the Great Desert as a natural demarcation between the zoology of the two regions; but under what degree of latitude we may fix the commencement of the southern zoological range, it is impossible to guess. The whole extent of this side of the continent, from Sierra Leone to the great Orange River, has never even been visited by a naturalist, and its productions are absolutely unknown.

5205. *In the following lists* are enumerated the chief quadrupeds of Western Africa, arranged under those countries where they have been particularly observed: —

Senegal.

Cercopithecus ruber. Red Monkey.
Cercopithecus sabæus. Green Monkey.
Megaderma frons. Foliaceous Bat.
Taphozous senegalensis. Senegal Bat.
Oryx bezoartica Sw. Senegal Oryx.
Gazella Dama Sw. Swift Antelope.
Tragelaphus scripta. Harnessed Antelope.

Guinea.

Cercopithecus nictitans. White-nosed Monkey.
Cercopithecus petaurista. Vaulting Monkey.
Cercopithecus diana. Palatine Monkey.
Cercocebus fuliginosus. Smoky Monkey.
Cercocebus æthiops. Ethiopian Monkey.
Cynocephalus papio. Guinea Baboon.
Papio Mormon. Mandrill.
Papio sylvicola. Wood Baboon.
Canis cancrivorus. Crab-eating Wolf.

Sierra Leone and Congo.

Simia troglodytes. Chimpanzee.
Colobus polycomos. Full-bottom Monkey.
Gazella mytelopes Sw. Broad-footed Antelope.
Antilope redunca. Nagor Antelope.
Cephalophus sylvicultrix Sw. Bush Antelope.
Cephalophus quadriscopa. Sw. Four-tufted Antelope.
Cephalophus mergens. Ducker Antelope.
Cephalophus Grimmia. Guinea Antelope.
Cephalophus Maxwellii. Sw. Maxwell's Antelope.
Cephalophus Philantomba. Sw. Sierra Leone Antelope.
Tragelaphus phalerata. Sw. Ribbed Antelope.

5206. *The most interesting quadrupeds of Senegal* appear to be the Red Monkey, the Green Monkey, and the two Antelopes named Dama and Scripta. Of the former, M. Adanson has left us some interesting details.

5207. *The Red Monkey is a pretty animal*, but capricious, mischievous, and little susceptible of attachment. Our author gives an interesting account of their curiosity. During his aquatic excursion, they descended from the tops of the trees to the extremity of the branches, earnestly noticing, and apparently much amused by, the boats passing up the river. After a time they took courage, and began to pelt the travellers with pieces of wood, thus provoking a most unequal contest. Upon being fired upon, they uttered the most frightful cries, and, although many were killed, the survivors returned to the contest with redoubled courage, and with a most determinate spirit: some flung stones at their adversaries, while others even collected their own excrements for the same purpose.

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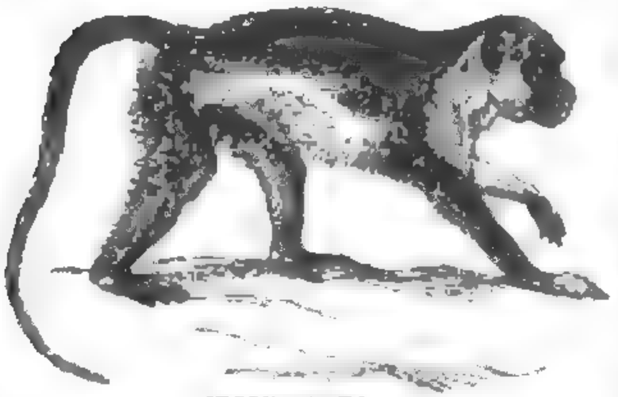

GREEN MONKEY.

5208 *The Green Monkey* (*fig.* 824.) is so named from the upper parts being of a greenish-yellow colour: the lower are greyish; and the tail is terminated by a long pencil of yellow hairs; the face, ears, and hands being black. Adanson found this species in immense numbers. They remain on the trees in large troops, and preserve the most profound silence, even when they are wounded. He did not at first notice them, from the similarity of their colour to that of the foliage, until they suddenly began flinging at him pieces of the dead branches; and although he killed twenty-three of them in less than an hour, they did not appear in the least frightened by the discharge of his guns. In confinement, it is stated by M. Cuvier to be remarkably beautiful and gentle; fond of being caressed by those it knows, and seldom exhibiting any malicious propensity: when fully contented, it expresses satisfaction by a peculiar gentle grunt, which may be compared to the syllable *grou*.

5209. *The Dama Antelope* was first described by Buffon, from a skin brought home by Adanson from Senegal; this so closely resembles the species so named by M. Rüppell, and found by him in the deserts of Nubia, that they are probably one and the same.

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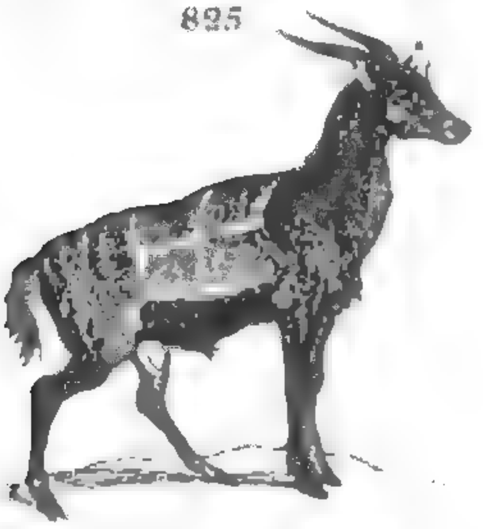
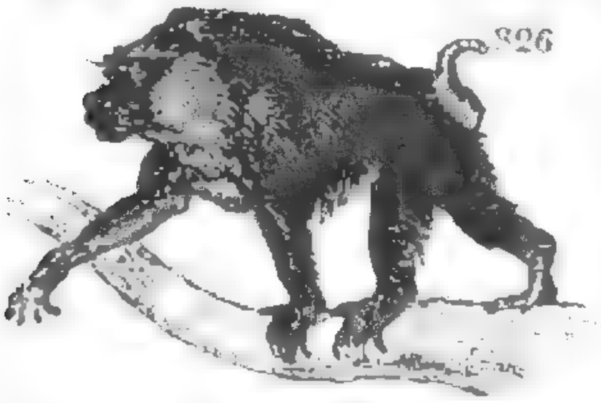


HARNESSED ANTELOPE.

5210. *The Harnessed Antelope* (*fig.* 825.) is a most beautiful animal, first noticed by Adanson by the native name of *Gerib*. It is about the size of a fallow deer: the ground colour of a bright bay, but marked with stripes in various directions, and with such regularity as to give the idea that a harness, of some white material, was thrown over its body. It has been thought to extend from Senegal to Caffraria; but Mr. Burchell's observations do not confirm this idea. Another species, closely resembling this, is named by Major Smith the Ribbed Antelope (*A. phalerata*): it inhabits the barren plains above the great falls of the Zezere, or Congo; where it was first observed by Professor Smith.

5211. *The quadrupeds of Guinea and Congo* must be far more numerous in species than what would appear from our list, but the climate is too deadly to the European constitution to permit the researches of science; while the notices given by ordinary travellers only lead to error. These regions present, indeed, a singular feature in geographic zoology, since we find within it the least developed races of mankind, and those animals most approaching to his conformation. The damp and impenetrable forests give shelter to innumerable Monkeys; and large Baboons, of the most grotesque but repulsive forms, are common in this part of Africa.

5212. *The Papion, or Common Baboon* (*fig.* 826.), abundant on the coast of Guinea, is of a yellowish green, verging more or less to brown: the visage black, and the tail long. It varies in size according to age: when adult, it is a most ferocious and disgusting animal. From the same country comes the Mandrill Baboon (*Simia Maimon* Lin.), of an olive colour: its chin has a small yellow beard, and the cheeks are naked, blue, and furrowed. In the adult males, the nose grows red, and the end is sometimes of a bright scarlet, while the buttocks are of a beautiful violet. M. Cuvier well remarks that it is impossible to conceive an animal more extraordinary and more hideous. It very nearly attains the height of man, and is looked upon by the negroes with great fear.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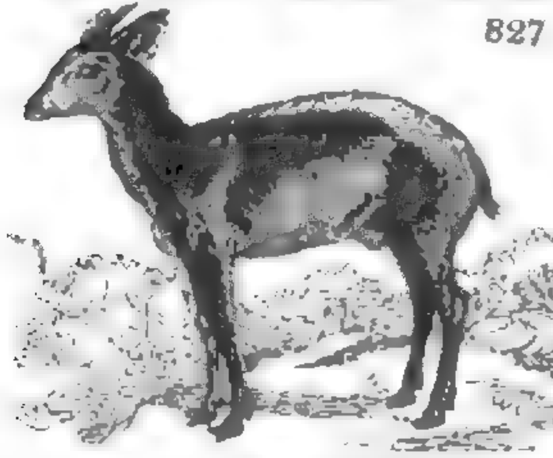
COMMON BABOON.

5213. *But the Chimpanzee*, of all the Apes yet discovered, is that which makes the nearest approximation to the human form. The most extravagant accounts of this animal are given in the narratives of the old voyagers; and although its distinction from the Orang-Otan of India is now established, its history, in other respects, is still shrouded in great obscurity. It was designated by Linnæus as a variety of the human species, under the name of *Homo troglodytes*. The Chimpanzee appears to have an affinity, if not identity, with the large African apes so often mentioned by travellers, or to the Barris, or great Wild Man of the African woods: but the few specimens that have yet reached Europe have been young. In the adult state its size is said to exceed that of the Orang-Otan, and to exhibit the same docility, submissiveness, and gentleness. It appears confined to intertropical Africa, and is heard of more especially in Congo. The Perruque or Full-bottom Monkey (*Colobus polycomos* Geof.) appears more restricted to the forests of Sierra Leone and Guinea; it is thus named from the neck being furnished with a variegated mane of long hair, fancifully compared to a full-bottom wig, but truly representing the Lion in its own family.

5214. *Several of the Antelopes are very elegant*, but we must content ourselves with shortly noticing two.

5215. *The Bush Antelope* (*A. sylvicultrix*) (*fig.* 827.) is called, by the colonists of Sierra Leone, the Bush Goat: it is of a considerable size, and measures five feet in length: it is found on the bushy acclivities of the open mountains, quitting the covers about sunrise to feed, when it is shot by sportsmen; the venison being excellent: it is not so fleet as other antelopes.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BUSH ANTELOPE.

5216. *The Ducker Antelope* (*A. mergens*) is remarkable for its great timidity, being alarmed at the least unusual noise, and concealing itself on hearing thunder. It lives solitary or in pairs: its peculiar name originates from its singular habit of rising upon the hind legs to look round, making a blowing noise with its nostrils, and then stooping and flying under cover of the vegetation, to stand and rise up again. Another species, the Dodger Antelope of Major Smith, also from Western Africa, appears to resemble this very much.

5217. *The Lamantin, or Sea Cow* (*Manatus senegalensis*), an amphibious quadruped of great dimensions, occasionally frequents the mouth of the Senegal. It is essentially herbivorous, and of a mild and inoffensive character. Adanson describes it as full eight feet long, having some resemblance to a seal: four nails are at the edge of the fins, and the tail is horizontally flat; the eyes very small, and the ears not visible. The negroes call it *Cercou*.

5218. *To enumerate the variety of Birds* inhabiting this richly-wooded portion of Africa would be hopeless, while a list of all the species would little interest the general reader: we must, therefore, merely notice the more curious or the more beautiful species.

5219. *The Rapacious Birds* are few. It appears singular that only one species of Vulture is yet known to inhabit Western Africa; where their services, in removing putrid animal matter, might be supposed so necessary. This is the Angola Vulture of Latham, which is probably the same with the Vultur percnopterus of Egypt and Southern Europe; although Latham's name has recently been erroneously applied, in an English translation of Cuvier's *Animal Kingdom*, to a totally different bird.

5220. *The Crowned Eagle* of Guinea (*F. coronatus*) (*fig.* 828.) is not more than two feet in length, or one third the size of the larger European eagles: it is only occasionally seen on the Gold Coast, and is remarkable for a crest over each eye, while the legs are clothed with feathers to the toes. *The Senegal Fishing Eagle* feeds almost entirely upon fish, in the manner of our Osprey. Five other falcons, peculiar to this country, have only recently been noticed; a proof how little we are acquainted with the ornithological riches of Western Africa. The Grey-necked Shrike (*Malaconotus olivaceus* Sw.), the Barbary Shrike (*Malaconotus barbarus* Sw.), and two or three other species of the same group, equally conspicuous for the richness of their plumage, occur in Senegal, and, probably, also in the neighbouring states.

5221. *The beautifully coloured Sunbirds* (*Cinnyridæ* Sw.) are met with in great numbers, sipping the nectar from the odoriferous blossoms. The Senegal, the Long-tailed, and the Chalybeate, are three species of exquisite beauty; and not larger in size than many of the American humming-birds. Here likewise are seen numerous flocks of golden-coloured Orioles of different species. Migratory Rollers, decked with the brightest tints of azure, purple, and green, occur in large

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CROWNED EAGLE.

flocks ; with crested Hoopoes, and beautiful Bee-eaters. Many other tribes, interesting both to the common observer and to the scientific naturalist, might be mentioned. The water birds are but imperfectly known.

5222. *The Gallinaceous Birds*, so numerous in India, and even in America, under the same parallels of latitude, are here very few. Some of the partridges, loosely mentioned by travellers, are probably of that particular race called Sand Grouse, found only in the hot latitudes of the Old World (H. *Picrocles* T.), while the rest cannot be referred to their true species. The only gallinaceous birds of any size, peculiar to tropical Africa, are the Guinea Fowl. Of these, the most common species (*Numida meleagris*) has long been domesticated in Europe. In a wild state, these birds associate in numerous flocks of 200 or 300 each : they chiefly frequent marshes and morasses, where they seek for worms, insects, and seeds. During the night they perch on high places, and are well known as restless and clamorous birds.

5223. *Four of the most remarkable land birds* still remain to be noticed ; namely, the Plantain-eater, the Touracco, the Beef-eater, and the Long-shafted Goatsucker of Sierra Leone.

5224. *The Plantain-Eater* (*Musophaga violacea*) (*fig.* 829.) according to M. Isert, its first discoverer, is found on the plains bordering the rivers of Acra in Guinea, feeding principally on the fruit of the plantain. M. Isert remarks, it is so very rare, that, with every pains, he could only procure one specimen. Two magnificent examples, however, of this most elegant bird are now before us. They are as large as ordinary-sized pigeons, but with the tail much longer : the whole plumage is of a deep black, highly glossed with bluish purple ; but the quill-feathers, when opened, are then seen to be of the deepest and richest lilac, reflecting violet ; the feathers of the head are of the same colour, and so short and soft as to resemble velvet ; the bill is orange, mixed with red ; its substance very thick, and elevated in front like a helmet. Another species, the variegated Plantain-eater, is also found in Senegal, but its plumage is plain.

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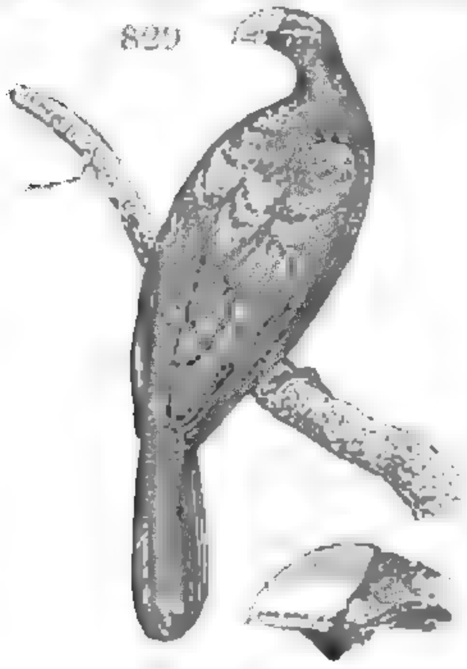

PLANTAIN-EATER.

5225. *The Touracco, or Web-crest*, of Senegal, is of the same natural family ; rather smaller in size, but living equally and exclusively upon fruits : the wings are also of a crimson lilac, but the rest of the body is green. On the head is a compressed and erect crest of thin and delicate feathers. It lives in the deepest forests, and perches only on the loftiest trees.

5226. *The Beef-eater* (*Buphaga africana* L.) receives its name from its habit of alighting on the backs of cattle, and picking from their hides the troublesome insects by which they are infested, climbing round their bodies, much in the same way as the creepers or woodpeckers do on trees : this is rendered apparent by the formation of their claws and tail, both of which are of the scansorial structure ; the bill also is very thick. The bird is not so large as a thrush, and is plainly coloured : another species is said to inhabit Abyssinia.

5227. *The Long-shafted Goatsucker* (*C. macrodipterus*) (*fig.* 830.) is peculiar to Sierra Leone. It is varied with brown, yellowish, and black, much like the European species, yet it is smaller ; its most remarkable character is a very long single feather, issuing from the wing covers, measuring near twenty inches, the shaft of which is only expanded into a broad web at the end. We are totally ignorant of the peculiar use which nature has, no doubt, designed for this extraordinary appendage.

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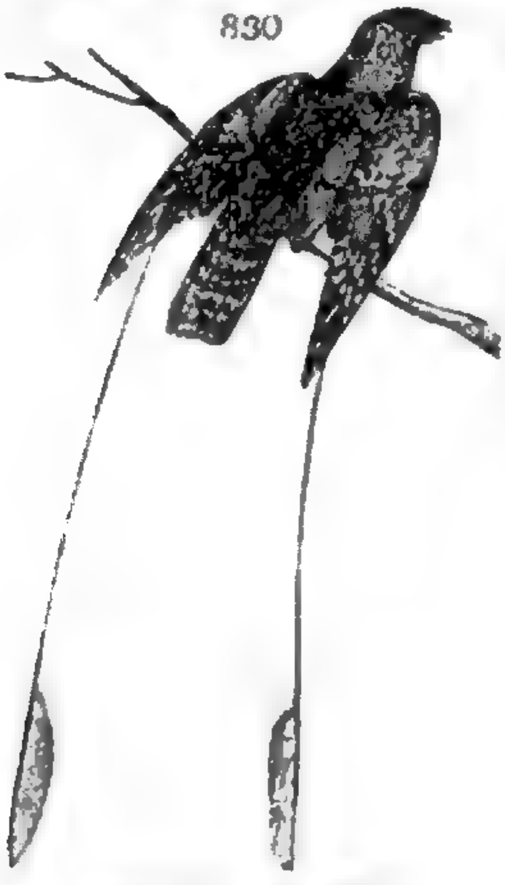

LONG-SHAFTED GOATSUCKER.

5228. *The rivers and coasts abound with many fish*, beautiful in their colours or nutritious for food ; while the swarms of alligators, serpents, and other reptiles need not be enumerated. Many of these, however, are not only harmless, but highly beneficial. Mr. Smeathman, who lived many years on the African coast, observes that the snakes get into the thatch of the houses in pursuit of the rats and cockroaches ; the former being very harmless, and the two latter destructive. The patient negroes, it seems, no less than the rational traveller, is not without consolation amidst this heterogeneous crowd of inmates. They see with pleasure the spiders always upon the watch for wasps and cockroaches ; the last of which are intolerable. The lizards, again, attack all sorts of insects ; the large Tarantula, as it is called, not excepted. The lizards not unfrequently fall a prey to the fowls, as the rats do to the snakes. The land-crabs are frequently enclosed (as in the West Indies) in a small yard, and fed with vegetables, upon which they fatten exceedingly ; and, when stewed, become delicious eating. Thus, as our traveller observes, either lizards, rats, snakes, or land-crabs occasionally serve as delicious repasts to the improvident inhabitants, who thus " thrive under evil."

5229. *The Insects are innumerable*, but we must refer the scientific reader to the third volume of *Drury's Illustrations*, which is almost entirely devoted to the Western African insects discovered by Smeathman. We shall, however, repeat the more general observations of this truly scientific observer, more particularly as they are highly interesting, and appear to be very little known. The whole of tropical Africa, says Mr. Smeathman, is one immense forest, except where the sandy plains are too unsettled to afford a proper footing for vegetation. Whenever a plantation is to be made, the trees are cut down and burned, to fertilise the ground : the people never sow two years together on the same spot ; but suffer the trees to grow again, for two or three years, by way of fallow, before they attempt to get another crop. It is these spots, called recent plantations, which afford an amazing variety of insects; in the second and third year, they become impassable to human feet.

5230. *There are a variety of edible Insects*, which, Mr. Smeathman affirms, supply a wholesome, if not a delicious food. The larvæ or caterpillars of all the beetles that feed upon decayed wood are rich and delicate eating, so that every forest affords the traveller plenty of wholesome nourishment, did he know where to search for it. Of this kind are the *Termites*, or white ants, subsequently described; and even the locusts in general are not only wholesome, but palatable to many. The children in Africa, at the proper season, are busily employed in digging out of the ground the females of a particular sort of cricket, which are then full of eggs, and so enclosed in a bag, as to resemble part of the roe of a large fish: these, when roasted, are deemed very delicate food.

5231. *The number of Locusts and Cicadas* is every where striking; but in the sandy plains thinly covered with grass their numbers are immensely greater; their chirping is intolerable; and they are seen of various kinds, sizes, and colours, skipping or flitting about in all directions, at every step of the traveller.

5232. *The myriads of Ants*, which swarm in tropical Africa, can scarcely be conceived by those who have never visited hot climates. They are of numerous species, but all seem intent on removing from the face of the earth every animal or vegetable substance no longer necessary or useful. Like the destroying angel, they walk steadily forward in the line ordained them, and spare neither magnitude nor beauty, neither the living nor the dead. One species, which seems at times to have no fixed habitation, ranges about in vast armies: being armed with very strong jaws, they attack whatever animal impedes their progress, and there is no escape but by immediate flight, or instant retreat to the water. The inhabitants of the negro villages, as Mr. Smeathman has himself witnessed, are frequently obliged to abandon their dwellings, taking with them their children, &c., and wait until the ants have passed. So numerous are these hosts, that a deer, hog, &c. being killed, and left on the ground, in one night will have the flesh entirely cleaned from the bones, and made a complete skeleton. There are near twenty other species in Western Africa, of different sizes and colours, each possessing peculiar habits. Some attack the collections of the botanist, and, in spite of weights laid upon his books of drying plants, get in, cut the leaves and flowers to pieces, and carry them away! Others attack all sorts of victuals. Mr. Smeathman has had four large sugar dishes emptied in one night, when the least opening was left; some assail the sideboard, and cover every glass that has had wine or punch left in it; nay, innumerable multitudes frequently even ascend the table, and drown themselves in the very bowls and vessels before you. (*Pref. to Drury's Insects*, vol. iii.)

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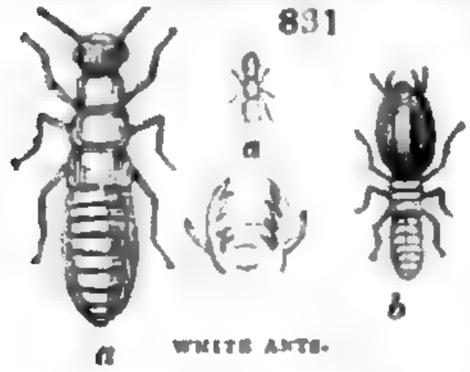

WHITE ANTS.

5233. *The Termites, or White Ants* (*fig.* 831.), constitute the most extraordinary feature in the natural history of Western Africa. We are entirely indebted to Mr. Smeathman for a knowledge of their wonderful economy; an economy, indeed, which nearly exceeds the wisdom and policy of the bee, the ant, or the beaver. They build pyramidal or conical structures (*fig.* 832.), divided into appropriate apartments, magazines for provisions, arched chambers, and galleries of communication. These are so firmly cemented that they easily bear the weight of three or four men; and, on the plains of Senegal, appear like the villages of the natives. The destruction they effect is wonderfully rapid: they destroy food, furniture, books, clothes, and timber of whatever magnitude, leaving merely a thin surface; and in a few hours a large beam will be eaten to a mere shell not thicker than writing-paper. On emerging from the egg, the insect is in its larva state, furnished with a great hard head and strong toothed jaws, but is destitute of eyes. These are the labourers who, although not more than a quarter of an inch long (*a*), build these edifices, procure provisions for the community, and take charge of the eggs. On changing to the pupa state, they become larger and more powerful (*b*): the head is nearly as big as the body, while the jaws project beyond the head, they are very sharp, but without teeth. They now become *soldiers*, and assume higher duties; never working themselves, but superintending the labourers; they act also as guards to defend the common habitation from intrusion or violence. When a breach is made in the dwelling, they rush forward and defend the entrance with great ferocity; frequently beating their jaws against the walls as a signal to the other guards, or as encouragement to the labourers; they then retire, and are succeeded by the labourers, each with a burden of tempered mortar in his mouth, and who diligently set about and repair the injury. One soldier appears to attend every 600 or 800 labourers when building a wall; he takes no active part himself, but frequently makes the noise above mentioned, which is constantly answered by a loud hiss from all the attendants, who, at this signal, evidently redouble their diligence. The next change brings the pupæ, or soldiers, to their perfect state as male and female winged insects. They then emerge into the air either during the night, or on a damp and cloudy day: in a few hours, however, the solar heat causes the wings to wither and become dry; the insects then fall to the ground, and are eagerly sought after by hosts of birds, lizards, and even by the negroes themselves, who roast and eat them. The few which survive this general destruction are collected by the labourers and soldiers, who enclose them, by pairs, in apartments made of clay, the entrance to which is so narrow that they cannot migrate; but where they are diligently fed and attended by the labourers, whose bodies are small enough to admit an easy entrance. After impregnation, the abdomen of the female extends to an enormous size, exceeding the rest of her body nearly 2000 times; in which state it is filled with an immense number of eggs, protruded to the amount of about 8000 in 24 hours. These are instantly taken away by the labourers, and conveyed to separate chambers; where, after they are hatched, the young are attended and provided for till they are able to shift for themselves, and take their share in the labours of the community. (*Smeathman, Phil. Trans.*, vol. lxxi.) Such is the history of one of the most extraordinary insects in creation: an insect, insignificant in its size, almost deformed in its shape, and contemptible in appearance; one, also, to whom Providence has denied the power of sight. Yet this little creature

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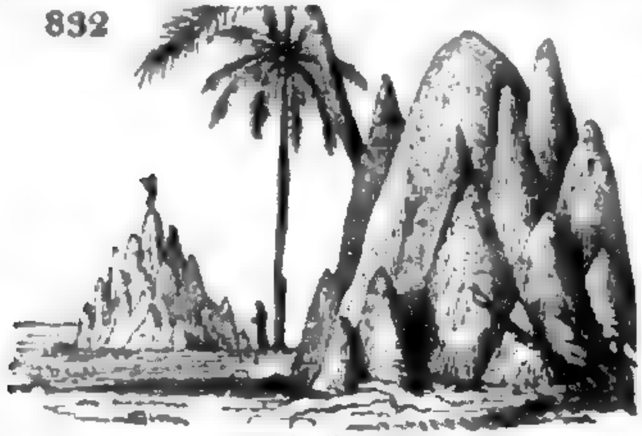

WHITE-ANT NESTS.

evinces more wisdom, prudence, skill, courage, and foresight, than those savage races of mankind who tread him in the dust. Truly may we exclaim, O God! wonderful are thy works; thy ways are past finding out!

5234. *Other species of Termites* build their nests on trees of an oval form, while that of another (*T. arda*) is cylindrical, two or three feet high, terminated by a round vaulted dome, and surrounded by a prominent terrace.

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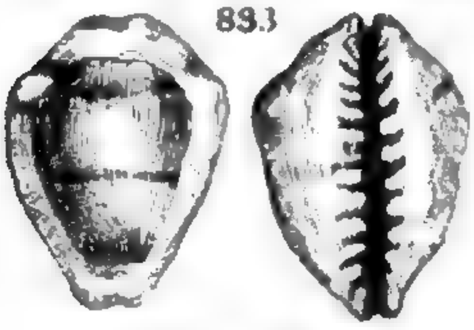

MONEY COWRY.

5235. *On the Mollusca and Shell-fish*, Adanson is the only author worth consulting. The Voluta cymbium and scæpha, two large volute shells, the animals of which are carnivorous, appear to be in profusion towards Senegal. Cones, olives, and various other predacious races, are no less common; and it is well known that Cypræa moneta, or money cowry (*fig.* 833.), passes current among the negro tribes as coin, of a very low value.

Sect. III. *Historical and Political Geography.*

5236. *Western Africa cannot be considered as a region within the domain of history.* Whether it was known to the Carthaginians or the Romans, and whether their navigators ever passed the shores of the desert, is a question which the few though curious documents extant, will scarcely ever perhaps enable us with certainty to solve. The Arabian geographers appear to have had only a vague and conjectural idea of this region. The coast was entirely unknown to Europe during the middle ages; and until the Portuguese, under Prince Henry, began their career of discovery, in 1432, it was thought a mighty achievement to pass Cape Bojador; but, that obstacle being overcome, the shores of the desert, however uninviting, were rapidly traced, and in 1441 a settlement was formed on the island of Arguin. Successive navigators discovered the Senegal, the Gambia, the Gold Coast, Benin; and, in 1484, Diego Cam sailed up the river of Congo. Of all this vast extent of coast, possession was taken, according to the usual European pretension, in the name of the king of Portugal. Settlements were formed at all the leading points, embassies sent into the interior, and great exertions made to convert the natives to the Catholic religion. Portugal, however, in the decline of her power, lost all these territories, and retains only some possessions on the most southerly part of the coast. In 1643, the Dutch drove her from El Mina, and about the same time from all her possessions on the Gold Coast, of which that people now claimed the sole dominion. From this pretension they were forced to recede by the rising naval power of the English, who, in 1661, took from them Cape Coast Castle, and, having formed an African company, built a number of forts upon the coast, with a view to the trade in slaves and gold. The English, about the same time, formed settlements at the mouth of the Gambia, while the French established the principal seat of their African power at St. Louis, on the Senegal. Both these last settlements were founded on the belief then prevalent in Europe, that these rivers were the embouchures of the Niger, by which a communication might be opened with the inmost regions of Africa. Spirited attempts were made by the two nations, and particularly the French, to carry this navigation into effect; but various obstacles arrested their progress. Park's journey finally proved the limited extent of the two rivers, and ascertained the Niger to be a distinct stream, flowing easterly. The expedition of Lander, which has shown the Niger to fall by a succession of estuaries into the Gulf of Benin, promises to give a new importance to Western Africa, as the quarter whence barks may penetrate into the most interior regions of the continent. Allowing for some vicissitudes, originating in their wars with each other, the two nations have continued to occupy these several points. Among the numerous native states, also, a continual fermentation prevailed; and little barbarous thrones were alternately raised and subverted; but these can rank only as local changes, not affecting the general character of the region.

Sect. IV. *Productive Industry.*

5237. *In the arts which minister to subsistence and wealth*, all the nations along this coast have made some progress. They are decidedly advanced beyond the hunting and even the pastoral state, and derive their chief support from a certain species of agriculture. The whole coast being situated between the tropics, and generally well watered, is, in most cases, capable of yielding an abundance of all the richest treasures of the vegetable kingdom. The products are maize, millet, some rice, to which are added yams and potatoes, sugar, coffee, cotton. All the objects of culture which enrich the West India islands might be raised here with advantage. There are some spices, particularly that called Guinea pepper, but none of them possess the high and delicate flavour which distinguishes those produced in the Eastern seas and islands.

5238. *These natural advantages are improved by agriculture* only in a very limited degree. In general, the great mass of the negro territory consists of an immense and impenetrable forest. Unless in a very few spots, there is no such thing as property in land, but an ample portion lies waste for any one to clear and cultivate who chooses, and can obtain the permission of the king or head of the village. In general, only a certain extent round each village or town is cleared of wood and brought under tillage. Farming does not constitute any distinct profession, nor are domestic animals employed to aid the labour of man. For a few days only at seedtime or harvest, the people of a whole village assemble as to a festival, the king at their head, and issue forth to the sound of musical instruments. Each man carries a hoe, or little spade, with which he scratches rather than digs the ground, when just moistened by the rains; and in this happy climate it is fit to receive the seed after such superficial culture. The ground belonging to the king or the public is first worked; and then successively the fields of different individuals. The palm tree, a spontaneous production, yields a juice or wine, which has an intoxicating quality, and forms one of the greatest luxuries of the natives, and its oil is now the chief staple of African commerce.

5239. *Manufacturing industry* seems to rank still lower. Cotton is, indeed, formed into those loose robes which are generally worn; but it is mostly of a coarse fabric, and made by the females of each family for domestic consumption. Fine cotton cloth is indeed made in Africa, but only at a considerable distance in the interior. The smith exercises his trade with considerable dexterity, and is an important personage as furnishing arms to a warlike people; yet he has not acquired the skill requisite to fabricate a gun. The gold, however, which is brought from the interior is worked into ornaments which excite the admiration even of Europeans. Mats are woven with considerable neatness and skill, being the staple articles of furniture, used for sitting and sleeping upon, and also as partitions to the houses. Moore even saw them pass as money.

5240. *Fishing* is carried on by the negroes with great activity, and supplies, indeed, almost the whole of their animal food. The most delicate species are the Dorado, called by the English, Dolphins, and by the Dutch, gold-fish. The Albicore is a fish of extraordinary magnitude, often five feet long, and as thick as a man's body; but the flesh is not agreeable. They have also cod, pilchard, sole, mackerel, and other species that frequent our seas. They go out to fish in canoes sometimes forty feet long, cut out from the trunks of their enormous trees, and holding from twelve to eighteen men. From 600 to 800 canoes will issue of a morning from one of their large towns, row to the distance of two or three leagues, and continue fishing till noon. They practise also most of the known modes of catching fish; with stake nets, with lights during the night, by which the fish are attracted, and then either pierced with spears, or taken up in baskets. In their habits, the people on the sea-coast are almost amphibious. They have no modes, however, of salting the fish, which serve only for immediate consumption, and cannot be made an article of export.

5241. *Commerce* is not actively pursued by the natives of the African coast. Their canoes are obviously unfit for maritime traffic on any extensive scale, nor do they send often or far into the interior such immense caravans as traverse the whole of Central Africa. In general, the natives are content to deal with European vessels, and with merchants from the interior. The Barbary caravans seldom arrive on the Gold Coast or other parts of Guinea Proper; but they are occasionally seen in the rivers of Benin. From the mouths of the Gambia and Senegal, coffles, or kafilas, are occasionally sent up to some distance inland for gold and slaves.

5242. *The slave trade*, unfortunately, has ever been the grand staple of the intercourse with Europe, if trade it can be called, which is founded on the violation of the rights of humanity, and consists in a uniform series of acts of violence. Sometimes the chiefs may make their captives taken in war subservient to this nefarious traffic; but, in general, its victims are the product of expeditions undertaken for that express purpose, without even the slightest pretence of right. The king, who wishes to replenish his treasury by the sale of slaves, fixes upon some village either in his own or a neighbouring territory, surrounds it in the night, sets fire to it; and the wretched inhabitants, in attempting to escape, are seized, and hurried on board a European vessel. Slavery is made also a punishment for offences; but this is productive of various disorders; for not only is the judge strongly biassed against the criminal, of whose condemnation he is to reap the benefit, but it has even become a trade to entrap men into crimes, in order to acquire the advantage of selling them. During the full career of the slave trade, the number annually carried off from the coast of Africa was estimated at 80,000. Britain, however, after a long course of philanthropic exertion, was induced, not only to renounce this traffic, but to employ her influence with the nations of Europe to procure its general abolition. At present, through the concurrence of the governments of France, Holland, and America, it cannot legally be carried on to the north of the line, and Britain exercises the power of searching for, and bringing back to Africa, all slaves conveyed from the coasts so situated. A considerable contraband still exists; and the Spaniards and Portuguese carry off the victims in great numbers from the southern coasts. The unhappy wars, also, which have desolated some of the finest of these districts, have diminished the tendency of the abolition laws to promote civilisation and improvement.

5243. Although the slave traffic has unhappily been long the staple of West African trade, there are *articles of commerce* which it has always produced, and the exportation of which might be considerably extended: of these, the most important is gold, brought down the Senegal and Gambia from Bambouk, Manding, and the other mountain districts at the head of those rivers. But the most ample store is found in that part of Guinea which, from this product, is called the Gold Coast. The greater part is brought from some distance in the interior, and from the opposite side of the same mountains. No account is taken of the importation of this article; but in the beginning of the last century it was estimated by Wadstrom at from 200,000*l.* to 300,000*l.* in value. That of ivory, or elephants' teeth, also from the interior, is from 10,000*l.* to 15,000*l.* The gums are important articles, particularly gum Senegal, drawn from vast forests of acacia, which grow in the half desert tracts to the north of the river Senegal. Teak wood is an important commodity, to which is added several kinds of ornamental and dye woods, particularly that called red or cam wood. But of late years, palm oil, from its use in manufactures, and the abundance with which it is supplied, has acquired an importance greatly surpassing that of any other article. Sugar, cotton, and other grand tropical staples have never been raised for more than native use; and it would seem that a complete change must take place in the habits of the people, before they will cultivate them to any extent which can produce an exportable surplus.

5244. *Among the articles received by the negroes* in return, cotton goods are the most extensive. Till of late, those of India were greatly preferred; but British manufactures of this class are now so much improved, or, at least, made so cheap, that they have almost driven out their Eastern rivals. The export of woollen goods is also very considerable. Brass, iron, and steel, are in considerable demand. Guns, gunpowder, brandy, and rum, were largely given in exchange for slaves; and for the two former there still exists a great and effective demand. Cowries, from the Malabar coast, are largely introduced to form the medium of circulation through all the negro countries.

5245. *The imports and exports* between the western coast of Africa and Britain appear, by M'Culloch's *Dictionary of Commerce*, to have amounted, in 1829, the former to 258,573*l.*, the latter to 350,361*l.* Under the head of imports, the leading articles were, palm oil, 179,900*l.*; bees' wax, 21,800*l.*; ivory, 13,100*l.*; dye and hard woods, 11,100*l.*; teak wood, 10,200*l.*; hides and skins, 7,400*l.*; gums, 5,900*l.*; coffee, 500*l.* The exports from Britain were chiefly cottons, 141,500*l.*; woollens only 3,200*l.*; guns and pistols, 57,400*l.*; swords and cutlasses, 7,100*l.*; gunpowder, 65,300*l.*; iron, wrought and unwrought, 22,700*l.*; hardware and cutlery, 4,500*l.*; brass and copper, 3,200*l.*; salt, 6000*l.*; glass and earthenware, 1,900*l.*; linens, 1,900*l.*

SECT. V. *Civil and Social State.*

5246. *Of the population of a territory, of which the interior is so little known,* and has such vague limits, it is very difficult to form even an approximated estimate. In the Supplement to the *Encyclopædia Britannica*, reasons are given, founded partly upon actual enumeration, for supposing that the density may be about twenty-six to the square mile. If, then, we estimate the length of coast at 4000 miles, and assume an average breadth of 300, this will give 1,200,000 square miles, and a population of 31,000,000. Yet, after all, considering that there are desolate tracts of very great extent, this number may be beyond the truth, and, perhaps, at a rude guess, we may fix the population of this great tract of tropical Africa at about 20,000,000.

5247. *In this region human nature cannot be said to appear under a dignified form.* Even the external aspect of the negro is, in our eyes especially, mean, coarse, and ugly. The deep black of his complexion has been supposed by some to be connected with the barbarism of his habits, though it appears to us sufficiently accounted for by the long-continued action of the intense solar heat. But the thick lips, flat nose, woolly hair, and the line of the face sloping backwards, are at variance with every idea of beauty, and suggest very little of the exercise of intellectual energy.

5248. *The character of the negroes,* of course, varies extremely, according to the variety of situation and government, among such a multitude of little communities. In general, they have made little progress in that which constitutes improved and civilised life. They are strangers to literature, the ornamental arts, and refined luxuries. Yet, whenever adequate objects are presented, they display energies sufficient to refute the cruel theories which would represent them as a degraded race, incapable of reaching any high degree of mental culture. In governments of a popular character, they display an eloquence, address, and activity surpassed by few of the most civilised nations. Even in their absolute monarchies we discover a regular subordination, polished manners, and skill in the art of war, which, among a people destitute of arts and letters, cannot but appear surprising. There is no room whatever to doubt that, placed in favourable circumstances, the negro would attain to as high a degree of civilisation, as the men of any other race. Ferocity in war is a universal feature of savage character; and in some of the sable nations it is carried to an extraordinary pitch. In his domestic character, the negro presents much that is amiable and pleasing; he is cheerful, gay, hospitable, and kind-hearted. The negroes appear to great advantage compared with the Moors, who, from the north, have over-run so great a part of Africa, and to whose gloomy and austere bigotry the black natives are entirely strangers.

5249. *Of religion,* as embracing the belief in a supremely wise and good ruler of the universe, and in a future state of moral retribution, the negroes have very obscure conceptions; while almost every superstition which can degrade the human mind reigns in full sway. To express generally what is sacred, what is forbidden, what is endowed with supernatural powers, either beneficent or malignant, they employ the term *fetiche.* Every thing which strikes the fancy of a negro is made his fetiche. The grand or national fetiches are rocks, hills, or trees of remarkable size and beauty. But there are fantastic objects of veneration, which each individual adopts, and carries about with him. Such are, a piece of ornamented wood; the teeth of a dog, tiger, or elephant, a goat's head, a fish bone, or the end of a ram's horn. Some merely carry branches of trees, or a bunch of cords made of bark. They set up these fetiches in the houses, the fields, or the centre of the villages; erect altars to them, and place before them dishes of rice, maize, and fruits. The framing of these fantastic objects of African worship, and the selling them at an enormous price, forms the chief occupation of the African priesthood. All the good fortune of the negroes is supposed to arise from the favour of the fetiche, and every evil to proceed from offence taken by it. Every man fixes upon some act of self-denial, something from which he is to abstain, in honour of his fetiche; and the engagement thus contracted, he will, in many cases, die sooner than violate. This superstition is often employed as an instrument in judicial proceedings, which are so conducted as to involve an appeal to superior powers, who it is expected will directly interpose to discover the truth and punish falsehood. If a negro eats a crust of bread, tastes a drop of liquor, or throws sand upon his head, wishing at the same time that the fetiche may kill him on the spot if he tells a falsehood, more reliance may be placed on his words, than on those confirmed by the oaths of rational men taken before our courts. It frequently happens, that when tests are propounded, the most hardened criminal at once confesses himself guilty, rather than encounter the terrible alternative of denying his guilt. In the case of any solemn engagement, the person taking it is presented with his "swearing liquor," which he drinks under the dread of the most awful penalties if he violates the accompanying promise. The people cherish the general belief of a future state, little connected, however, with any idea of moral retribution. The question is, whether they have faithfully observed the promises made to the fetiche, and forborne every thing by which he could be offended. According to their ideas, the future world will be a counterpart of this; will present the same objects to the senses, the same enjoyments, and the same distinction of ranks in society. Upon this belief are founded proceedings not only absurd, but of the most violent and atrocious description. A profusion of wealth is buried in the grave of the deceased, who is supposed to carry it into the other world; and human victims are sacrificed, often in whole hecatombs, under the delusion that they will attend as his guards and ministers in the future mansion. This savage superstition prevails to a peculiar extent in those great interior monarchies, which in other respects are more civilised than the rest of Western Africa.

5250. It is impossible to name a region tolerably peopled, where any progress at all has been made in the arts, which is so completely *illiterate, as Negro Africa.* It is not enough to say that it has neither books, authors, nor learned men. In no part of this extended region is there an alphabet, or a hieroglyphic, or even a picture or symbol of any description.

All those refined processes, by which the ideas of one mind are made to pass into those of another, are entirely unknown. The facility of subsistence, and the absence of circumstances tending to rouse the intellectual energies, are doubtless the causes of this singular deficiency; for, as already observed, there can be no ground to presume any original want in the capacity of the negro. Their powers of oratory, and their skill in politics and war, indicate talents which, under proper impulse, would lead to excellence in literary composition. In the more improved nations, there has been found to exist an oral literature, traditionary songs and poems, the recitation of which is listened to with delight.

5251. *The universal amusements of the negro*, above those of mere sensation, are dancing and music. The former is invariably performed in the open air. As soon as the sun declines, and its intense heat abates, there is dancing from one end of Africa to the other. Four thousand years ago, Hanno and his companions were surprised, immediately after sunset, to see lights glittering along the shore, and to hear on every side the sound of musical instruments. The passion, however, with which this amusement is pursued, has not led to any refinement in the art. Their performance consists chiefly of violent and grotesque movements; leaping, stamping on the ground, bowing their heads, and snapping their fingers. In their music, also, noise appears the chief if not the sole object. Their drums and their trumpets, or rather horns, produce a horrid dissonance, against which, according to some travellers, a whole bale of cotton would be required to stop the ears. Others represent it as more tolerable; and add, that the negroes have also a kind of castanet, a flute, musical tongs, and a sort of cittern; and the performers, gaily and even fantastically attired attract to themselves the admiration of the multitude (*fig.* 834).

834

DANCING AND MUSIC OF THE NEGROES.

5252. *Polygamy*, throughout all tropical Africa, has no limit but that of the ability to maintain a considerable number of wives. By the great it is practised to the utmost extent that their circumstances can admit. To have numerous wives and children is considered a matter of state, and is always made their first boast. It forms even a source of wealth; for, except the principal wife, who is mistress of the household, and the sacred wife, who is consecrated to the fetiche, all are made to work hard, both in tilling the fields, and in manufacturing mats and cloths. Even the principal wife often urges her husband to take fresh mates, as a means of increasing the importance of the establishment over which she presides; it is also customary to make her a handsome present on the occasion. In the towns on the coast the more wealthy take usually from three to twenty wives, while the kings raise the number to eighty or a hundred; but in Ashantee, Dahomey, and other despotic interior kingdoms, the privilege knows no bounds, and the number is often carried to several thousands. It is swelled, not only by captives taken in war, but by the selection which the king has a right to make of the fairest and most accomplished females within the circuit of his own dominions. A great part of the nation are thus reduced to celibacy, and very dissolute habits prevail. In many of the towns on the Gold Coast, a body of courtesans are maintained by the state, and are considered as public servants. Not a few even of the wealthy are willing to derive a profit from the irregular conduct of their secondary wives. Notwithstanding the overgrown families of some of the great, such habits cannot fail to keep down the amount of population, and, by causing a neglect of education, to lower the intellectual standard of the people.

5253. *In architecture*, and even in masonry, the negro nations rank very low. There is not, perhaps, in all native Africa, a house built of stone; wood, earth, leaves, and grass, are the only materials. One traveller compares their villages to groups of dog-kennels rather than of houses. The trunks of four large trees are driven into the ground, and connected by poles; this framework is then covered with earth or clay. The roof is formed by a number of branches meeting at the top, and covered with leaves or grass. The doors not being above two or three feet high, the intrant creeps rather than walks in, and he cannot stand upright unless in the part of the roof which is left hollow like a pent-house. The floor being raised about three feet from the ground to avoid the damp, and the apartment being open in front for the admission of air, the dwelling resembles a good deal a mountebank's stage in Europe. The houses of the rich are scarcely better, though more in number; for each wife has a house, and the whole establishment is surrounded by a wall of earth or twigs. Princes assign similar houses to their principal officers, and the group is enclosed with a general high wall, so as to make a sort of little town. It may be observed, however, that the houses of the great kings in the interior, though of the same materials, are of a somewhat superior description. The regal dwellings display brilliant colours on the outside walls, while the apartments are sometimes so spacious as to resemble a good English barn. In the cities where the people have a share in the government, there is a hall of assembly, which is open at the sides, having merely a roof supported by poles.

5254. *The furniture of the house* bespeaks as much poverty as the house itself. A few seats, cups, and pots, all of wood or earth; coverlets of rushes, and perhaps a mat to sleep upon, form the entire amount of their accommodations. The rich distinguish themselves by fine mats, and occasionally by a brass kettle.

5255. *In point of clothing* and ornament, the negroes are not quite content with the same simplicity. The lower classes, indeed, think it enough if they can cover the lower part of their bodies with a *paan*, or loose wrapper of the coarse cloth of the country. Until the age of twelve or thirteen, indeed, no attire of any description is considered requisite. The rich, however, must appear in costly robes of silk, velvet, India chintz, or other imported materials. The females of rank wear long veils and mantles, which they throw over the shoulder; red is their favourite colour; and they ornament their dress with gold and silver lace, and also with ribands. But the great rage is for bracelets and rings, which last are accumulated on the ears, arms, and the small part of the leg. The rich wear them of gold, or at least of brass or ivory; but the poorer classes are fain to content themselves with copper, tin, or, in default of better materials, even with iron. They have been seen with no less than forty small iron rings on their arms. The arrangement of the hair, or rather wool, is a matter of profound study to both sexes. They rub it with palm oil, curl and dress it in various forms, and largely entwine it with gold, and with a species of coral valued at its weight in gold. Some of the negro belles paint their face with red and white spots, till it looks like a piece of flowered damask. A certain degree of tattooing, or marking their skins with figures of flowers or other natural objects, is also practised.

5256. *In regard to diet*, if the negroes observe a degree of simplicity, it is chiefly the result of necessity. Butcher's meat, poultry, and rice, are only within the reach of the opulent. The poor must content themselves with fish and millet, which, when boiled together into a thick mess, and palm oil poured over them, form the staple dish. They are alleged to eat coarsely and voraciously, thrusting their hands together into the common dish; but this is a custom universal throughout Africa. When good fare is placed before them, they are careful to indemnify themselves for former privations. On such occasions, they have been known to manifest a sort of canine appetite, eating as much as six Europeans. The drink of the country is palm wine, with which chiefly they enliven the social circle; but intercourse with Europeans has taught them the more pernicious use of brandy.

Sect. VI. *Local Geography.*

5257. *With the country called by the French Senegambia*, or the region watered by the two rivers Senegal and Gambia, we commence our survey of Western Africa. It would be difficult and almost idle to attempt to fix the limits of this vast territory; but they may be stated at about 250 miles along the coast, and reaching 500 into the interior. It is divided among a vast variety of little kingdoms, whose boundaries and condition are continually varying. This part of Africa is most remarkable for the great negro races who inhabit it, and who are in general more peaceable, more industrious, and more amiable than any of the others upon the western coast. They are chiefly three, the Foulahs, the Mandingoes, and the Jalofs.

5258. *The Foulahs* have been supposed to come from Fooladoo on the Upper Senegal, but others suppose them of the same race with the Fellatahs in Central Africa; in which case they must be traced to a foreign origin. They have now spread over all the banks of that river, besides the great kingdom of Foota Jalloo to the south, and many districts on the banks of the Gambia. They have not the extreme negro characteristics; neither the deep jet hue, the flat nose, nor the thick lips; on the contrary, their features are high, with an olive tint, and an agreeable expression. They have embraced the Mahometan faith, but without that bigotry which almost universally accompanies it. Their manners are peculiarly courteous and gentle; they practise the most liberal hospitality, and relieve the wants not only of their own aged and infirm, but even of those belonging to other tribes. Their employments are pastoral, and their habits, in some degree, nomadic. Occupying countries where there is no fixed property in land, they drive their flocks, according to the season, to the tops of the mountains or the banks of the rivers. At night they collect their herds within the circle of the tents, and light large fires to deter the approach of wild beasts. Such is their good conduct and industry, that it is considered infamous to injure them, and a blessing is said to rest on any territory that contains one of their villages. Their internal government is republican, under chiefs of their own; and this form they insist upon retaining, even when they settle under a sovereign of another tribe.

5259. *The Mandingoes* are a race more numerous and more decidedly negro, both in form and disposition. Though capable of great occasional exertion, they have by no means the steady industry of the Foulahs. Their employments are chiefly a slight agriculture, fishing with nets and baskets, and, above all, traffic, in which their enterprise exceeds that of the other negro races. They conduct large kafilas to a considerable distance in the interior, and their language is well understood in all the commercial districts. They are cheerful, inquisitive, credulous, and so gay, that they will dance for twenty-four hours without intermission to the sound of the drum or balafou. Polygamy is practised to a peculiar extent, and the numerous households to which it gives rise live in tolerable outward harmony, which must not, however, be considered very secure, since it requires to be cemented by the extraordinary expedient of Mumbo Jumbo. This bugbear of the African ladies is called into service whenever the simpler expedients of scolding or beating fail to quell domestic dissension. Mumbo Jumbo, being then summoned, arrays himself in a fantastic coat hung for his use on a neighbouring tree, crowns his head with a tuft of straw, and soon after dusk marches into the market-place. Thither the unhappy fair one being summoned dares not disobey, and the love of stir and mischief causes her to be soon followed by the bulk of her fellow-citizens. In their presence she is stripped naked, and undergoes a severe whipping, inflicted by the rod of Mumbo Jumbo, amid the applause of all the spectators. They have some more refined tastes than are usual among Africans; particularly in poetry, the extemporary composition and recitation of which forms one of their favourite amusements. The original country of the Mandingoes is the elevated territory of Manding; but they are now widely diffused over all this region, and particularly along the banks of the Gambia.

5260. *The third great race are the Jalofs.* They occupy nearly the whole of that inland territory which intervenes between the Gambia and the Senegal, and the extent of which is estimated by Golberry at 4800 leagues. A number of them are subject to a powerful inland prince, called Burb-y-Jalof, who boasts of himself as anciently the sole ruler in this part of Africa. The Jalofs, though of a deep black complexion, and with the decided negro features, are considered a handsome race. They boast of their antiquity, and in many respects excel their neighbours. Their language is softer and more agreeable; they manufacture finer cotton cloth, and give it a superior dye; they rival the Moors in horsemanship, and are fearless and expert hunters. They have a singular mode of numeration, reckoning by fives instead of tens, in reference apparently to the fingers, which, for want of the faculty of writing, are the sole instruments employed in calculation. Their ingenuity, however, is unfortunately too often employed in dexterous thieving, effected by a skilful movement of the toes, which may be said to rival, in this respect, the fingers of the most expert European pickpockets.

5261. *We shall close this catalogue with the Feloops*, a wild and rude race, who inhabit the shores to the south of the Gambia. Their country is fertile, abounding in rice, poultry, and honey, from which last they prepare an intoxicating liquor. Provision is drawn from them for the settlements on the Gambia; but the English, having never taken the trouble to learn their language, cannot hold any direct communication with them; and the traffic is managed through the Mandingo merchants, who are suspected to take advantage of their own exclusive knowledge to cheat both parties.

5262. Among European nations, *the river Senegal has for more than a century been entirely French;* and extraordinary efforts have been made by successive African companies to raise it to importance. Fort St. Louis, the capital, is situated on an island in the river, a mere sand-bank, without any water which can be drunk without being filtered, and dependent entirely for provisions on the southern coast, which, however, yields them in abundance. St. Louis never became a large settlement. Golberry, in 1786, reckons not above sixty Europeans settled there for the purposes of trade. The military and civil servants of government amounted to 600, the natives to 2400. The French lost St. Louis during the revolutionary war, but had it restored to them on the friendly peace which succeeded in 1814. The disastrous fate, however, of the expedition sent out in the *Medusa* frigate has been unfavourable to any attempt to restore and extend the prosperity of the colony. It is said, however, to have experienced an increase within the last few years, and to contain now about 6000 inhabitants. The original hopes of its greatness were founded on the supposed identity of the Senegal with the Niger, and on the prospect of a communication by it with the inmost regions of Africa. All the efforts founded upon this erroneous theory proved of course abortive; and the commercial advantages of the colony (the procuring of slaves not included) have been confined to the gum trade, and the gold trade of Bambouk.

5263. *The gum* which, from this river and settlement, is called *Gum Senegal*, is the produce of some scattered oases, or verdant spots, that occur in the vast desert of sand to the north and west of the Senegal. The species of acacia from which it exudes has every appearance of a stunted and desert tree: its aspect is crooked and rough, its branches are thorny, its leaves of a dry or dirty green. The mere blowing of the harmattan causes the bark to crack in numberless places, and the gum to flow in large transparent drops, which remain attached to the surface. The harvest of gum is in December, when the Moorish tribes, of whom the *Trarshaz* are the most powerful, break up from their usual camps, their kings and princes at their head, and proceed in a confused and tumultuous crowd to the forests, of which each claims one or more. After six weeks spent in collecting the gum, they put it in large leathern sacks, with which they load their camels, and proceed in the same tumultuous array to the spot fixed on for the gum market, between Fort Louis and Podor. This plain, which is one of the most desolate spots in nature, is suddenly covered with an innumerable multitude of people enveloped in clouds of dust. The kings appear mounted on beautiful horses, their wives seated in baskets on the backs of camels, the crowd on foot; the air resounds with the cries of men, women, children, and animals. A cannon is fired as the signal for commencing the treaty. A dreadful scene of wrangling and higgling immediately ensues. The French accuse the Africans of most dishonest arts in order to enhance the value of their commodity. They themselves, it appears, are not far behind, since they have not scrupled to adopt the policy of insensibly augmenting the size of the *cantar* by which the gum is measured, a change which escapes the notice of their rude antagonists. The French take off annually about 250,000 lbs. of gum, which sells in Europe at from 15*d.* to 20*d.* per lb. The returns are taken almost exclusively in East India cotton cloths dyed blue, which are called pieces of Guinea, and for which it has been in vain attempted to substitute the manufacture of Europe.

5264. *The kingdom of Bambouk*, situated near the head of the river, and so enclosed between its main stream and the great branches of the Kokoro and the Faleme, as to form almost a complete island, is the next object of commercial importance to the French on the Senegal. It is almost entirely a country of mountains, whence flow numerous streams, almost all of which roll over golden sands. But the main depositaries, where the metal is traced as it were to its source, are two mountains, Natakon and Semayla. The former composes almost an entire mass of gold, united with earth, iron, or emery. The first four feet of depth consists of fat earth, from which the grains of gold are extracted by agitation with water in a calabash. Afterwards the precious metal begins to appear in small grains or spangles, and at twenty feet in small lumps of from two to ten grains. The pieces become always larger as the work descends; but the natives having no means of propping up the sides, these often fall in, and bury the workmen. Semayla, a mountain 200 feet high, presents a different structure. The gold is here embedded in hard sandstone, which must be reduced to powder before the extrication can be effected. Part of it also is found in red marble, a substance which to the natives is perfectly unmanageable. Bambouk is said to have been early conquered by a Mahometan force, and afterwards by the Portuguese; both have been driven out; and the French never made any serious attempt to establish themselves in it. They calculated, indeed, that 1200 men would be sufficient for its conquest; but were wisely deterred by the difficulty of retaining possession of so difficult a country, in so unhealthy a climate.

5265. *The point at which the French attempted to carry on the commerce* of the Upper Senegal is at Fort St. Joseph, in the kingdom of Gallam, or Kajaaga. A voyage thither was reckoned to produce cent. per cent.; but the unhealthiness of the climate, the difficulties of the navigation, and the constant hazard of being plundered by a succession of barbarous chiefs, who occupy the banks, rendered it a very precarious speculation. At present the fort is abandoned, and in ruins; but the Serawoollies, who inhabit this fine country, are among the most industrious of the African tribes, and have engrossed the trade of Bambouk, Manding, and most of the upper countries on the Senegal and Niger.

5266. *In descending the Senegal*, we find several populous and powerful states, among which is that of Foota Torra, extending considerably both to the south and north of the river, but of which the interior has not been explored by Europeans. The king is a zealous Mahometan, and, under pretext of making converts, has endeavoured to subdue the almost pagan Damel, or Burb, of the Jalofs. The latter, however, by the strength of his country and a prudent system of warfare, has been able to baffle his attempt. On the middle Senegal, the most important personage is the Siratic, who holds his court at Ghiorel, considerably to the north of the river. Nearer the sea is the kingdom of Hoval, governed by a petty prince, called the Great Brak, which, in the language of the country, signifies King of Kings.

5267. *The coast between the Gambia and Senegal* is chiefly occupied by the kingdom of Kayor. It is stated, by Golberry, to extend 750 miles in length, and to contain 180,000 inhabitants, who are Jalofs. At the little island of Goree, on this coast, the French have established the capital of all their African settlements. Its advantages consist solely in its almost inaccessible situation on a rock, three sides of which are perpendicular, and the fourth very steep. The rock is fortified, but not, it is said, in the most skilful manner. The town contains 3000 inhabitants, and presents a very bustling scene, being the entrepot of all the trade with the opposite coast, and also a place of refreshment for French ships on their way to India. It lies on the northern side of the peninsula, which terminates in Cape Verde, the most westerly point of the African continent. Though the soil be sandy, it bears a number of those immense trees called Baobab, which give to the Cape that verdant aspect whence it derives its name. On the northern side, two hills, 600 feet high, mark this striking geographical position, and serve as a guide to mariners.

5268. *The Gambia* is almost entirely an English river; the attempts to form settlements upon it having, for nearly two centuries, been confined to that nation. They have erected James Fort in the middle of the river, by which they are enabled to command its entrance. They have also a small factory at Pisania, about forty miles up; but, like the French on the Senegal, they have never been able to realise any of those splendid expectations, with a view to which the settlements were founded. All attempts to penetrate, by ascending the river, to the regions watered by the Niger, proved abortive. Yet it was not till the expedition of Park that the failure was fully traced to its true cause, the structure of the continent, and the want of communication between the two rivers. Hence these settlements have never risen to any great importance.

5269. *The Gambia* is bordered on its north bank by *several flourishing little kingdoms*. That immediately on the sea is Barra, said to contain 200,000 inhabitants. The capital is Barra Inding; but the chief place of trade is Jillifrey, where the king has a custom-house, to levy the duties on vessels passing up and down. Boor Salum is a still more extensive kingdom, situated on a small river that falls into the Gambia, and containing, it is said, 300,000 inhabitants. Above it, occur successively the two smaller kingdoms of Yani and Woolli. The territory of all these states is flat and fertile, abounding in rice, grain, and other provisions, but not producing any articles for the market of Europe. The inhabitants are chiefly of the Mandingo race, and carry on a considerable trade into the interior. At Barraconda, about four hundred miles up the river, are falls, or rather rapids, above which sand-banks and flats soon render the navigation difficult, while the crowd of crocodiles and hippopotami, and the multitude of wild beasts that roam on its banks, render the navigation alarming, and even somewhat dangerous.

5270. To the south of the Gambia nothing of great importance occurs, till we come to *the alluvial estuaries of the Rio Grande*, a river supposed, as its name imports, to be of some magnitude; but Captain Owen found it a mere inlet, receiving some inconsiderable streams. At its mouth occur a number of islands, which, with a group opposite to them, in the open sea, form what is called the Archipelago of the Bissagos. The inhabitants of the same name, called also Bijugas, are a tall, robust, warlike people, who have driven out the peaceable race of the Biafaras, the original tenants, and have compelled them to confine themselves to the continent and the banks of the Rio Grande. Bissao, the largest of these islands, is inhabited by the Papels, also warlike and enterprising. In 1792, an association was formed in England, with a view to planting a settlement in the Island of Bulama; but, though no opposition was made in the first instance, the difficulty of establishing a new colony under circumstances so unfavourable, and especially amidst the hostility of these rude neighbours, soon obliged the English to desist.

5271. Along the heads of the Rio Grande lies the important kingdom of *Foota Jallo*, said to extend about 350 miles in length, and 200 in breadth. It appears to be the most improved of all the states in this part of Africa. The inhabitants are Foulahs, and of the Mahometan faith, but not bigots; and their marabouts are held in high reputation for learning. They manufacture cloths of considerable fineness; they work in iron, dug from extensive mines in the country; also in silver, wood, and leather; and they conduct large caravans into the interior, as far even as Timbuctoo and Cassina. Here, where they are the ruling people, they by no means display that pacific character which distinguishes the tribes on the Gambia and Senegal. They can bring into the field 16,000 men, and the king is engaged in almost continual war, for the base purpose of procuring slaves for the European market. On being reproached upon this subject by Messrs. Watt and Winterbottom, he declared that he had no other means of obtaining European goods, otherwise he would gladly give up this violent and criminal mode. Timbo, or Teembo, the capital, is said to contain 7000 souls, and Laby, 5000.

5272. *To the south of Foota Jallo* is Soolimana, also warlike and considerable. It borders on the Niger in the highest part of its course, though the sources of that river are placed in the hostile territory of the Kissi. The king is at present Mahometan, but the bulk of the nation pagan. They are a gay, thoughtless, stirring race. The two sexes seem to have reversed their occupations; the women till the ground, build the houses, act as barbers and surgeons; while the men tend the dairy, sew, and even wash the clothes. The king expressed to Captain Laing the same willingness to give up the slave-hunting system, and complained of the same difficulty which had been expressed at Teemboo. On the eastern side of the Niger is the country of Sangara, still more extensive and more warlike; the people of which would, it is supposed, have by this time conquered Foota Jallo, had they been united among themselves. At present, whenever the Soolimas are inclined to go to war, they can easily command ten thousand auxiliaries from beyond the Niger.

5273. *In returning to the coast*, we pass through the Koorango country, inhabited by the Mandingoes, who, as usual, are gay, thoughtless, hospitable, and enterprising. Farther down are the Timmanees, a more depraved race, who were the chief agents in the slave trade. They are described as hospitable, treacherous, and avaricious. Captain Laing met a woman who accused her two children of witchcraft, and on that ground offered to sell them to him at a low price. Their agriculture is peculiarly rude, and the cloths of their manufacture very coarse. They abuse the English as having deprived them of almost their only source of wealth, which consisted in the sale of slaves. This people are oppressed by a singular association called Purrah, who, united by a bond and always supporting each other, have become almost masters of the country, and often exercise their power in a very tyrannical manner.

5274. The country of the Timmanees borders on that part of the coast where Britain, with the most philanthropic views, has founded *the colony of Sierra Leone.* Its principal seat, at Freetown, is on the south side of the bay, which receives the river formerly called by the same name, but now more usually the Rokelle, and which arises in the Soolimana country. The first colonists consisted of a number of free negroes, who, having been dismissed from the army and navy at the end of the American war, gladly accepted the proposal made by a number of benevolent individuals, of a settlement in their native region. They did not, however, possess all the habits necessary for struggling with this difficult undertaking. The rains came on; a pestilential fever carried off numbers; and the attack of an African chief obliged the remainder to take shelter on Bance Island. The zeal for the improvement of Africa, however, continued unabated in this country; and in 1787, the Sierra Leone Company was formed, with a charter for thirty-one years. They sent out five vessels with stores and articles of trade, and obtained a large reinforcement from the free negroes who, in the American revolution, had adhered to the royal standard, and had been obliged to take shelter in Nova Scotia. The establishment was then conducted with fresh spirit; but it had many difficulties to encounter. It was disturbed by internal dissension; it was involved in contests with the bordering native states; and, in 1794, was plundered by a French squadron. Under all these disasters it continued active; though the Sierra Leone Company were obliged to resign their concerns into the hands of government, which placed them under the African Institution. A great reinforcement to its population was derived from the negroes taken in slave ships, and brought back to Africa, in consequence of the laws made against the slave trade; though it has been somewhat difficult to initiate them into the habits of civilised life. With this view, the Church Missionary Society have undertaken to furnish schools and religious instructors; and upwards of two thousand children are now educated on the national system. The population of Freetown and its suburbs has extended to nearly five thousand; eight or ten little towns or villages have been established in its vicinity, forming an entire population of twelve thousand; and another, called Bathurst, has been founded on the Gambia, in a healthy situation, and communicating with the populous countries on that river. Notwithstanding all this, it appears too true, that Sierra Leone has not yet made any impression upon Africa, and that there is no radius of civilisation proceeding from it. It labours under two great disadvantages; the extreme unhealthiness of the climate, which both keeps down its population, and renders it difficult to procure well qualified persons to go out, and also, its unfavourable position, in contact only with a few turbulent tribes, not with any of the great and leading states of the continent. These disadvantages, joined to the death of four successive governors, among whom was Col. Denham, the celebrated traveller, led government to hesitate as to the expediency of supporting this colony, after 3,000,000*l.* had been expended in its formation. To withdraw it, however, would be attended with many evils, so that an attempt has been made to maintain it on a more limited scale. The European troops have been removed, and their place supplied by negroes, and the annual expenditure has been reduced to about 40,000*l.*, of which 17,000*l.* is for liberated Africans. The number of these, in 1829, was 21,205, of whom about 5000 were in Freetown, the capital; the rest dispersed in Regentstown, Gloucester, Wellington, and other large villages in the vicinity.

5275. *The space from Sierra Leone* to the commencement of the Grain Coast of Guinea, an extent of about two hundred miles, is chiefly marked by the entrance into the sea of the considerable rivers of Sherbro and Mesurado. The former is navigable twenty leagues up, and has a tolerably large island at its mouth. On the banks is found a species of pearl oyster. The Mesurado is a still larger stream, and very rapid. According to the natives, it requires three months' navigation to reach its source, which would appear to be in the mountains of Kong, not very far from that of the Niger. The banks are described as finely wooded, fertile, and, in many places, very well cultivated. The states here are entirely negro in religion and manners, none of the Mahometan institutions having penetrated so far. Travellers enumerate the kingdoms of Bulm, Quoja, Moron, and Folga, which they sometimes even dignify with the title of empires. The sovereigns are in general absolute, and their obsequies are celebrated with human sacrifices, though not to the same frightful extent as in some of the countries to the west.

5276. The Americans, in 1820, formed a settlement on this coast, which was called *Liberia;* while its capital, on an island at the mouth of the Mesurado, was named Monrovia. The object was to obtain an asylum for liberated negroes, who, notwithstanding their emancipation, are, by the barbarous prejudices of the country, excluded from caste, and regarded as beings of an inferior order. In spite of disastrous events, which obstructed its progress, it had attained, in 1830, a population of 1500. The population of Monrovia amounted to about 700; the rest were distributed in eight different stations along 150 miles of coast from Cape Mount to Tradetown. The territory is healthy and fertile, the colony has been well conducted, and has opened a friendly intercourse with the natives, from which happy effects are confidently anticipated.

5277. From the Mesurado to Cape Palmas extends what is commonly called the *Grain or Malaghetta coast of Guinea.* The species of pepper to which it owes its name is produced from a small parasitical plant, with

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beautiful green leaves, and the fruit of which, resembling a fig, presents, when opened, aromatic grains, forming the valuable part. At its first introduction into Europe, where such articles were little known, it received the flattering appellation of "Grains of Paradise." After the diffusion, however, of the fine species of India, it fell into total disrepute; and this coast, producing no other articles of export, has been the least frequented of any part of Guinea. The two rivers of Sestro and Sangwin, near the centre of the coast, are rather considerable; and their banks are said to be fertile and populous. The state of society seems to be nearly the same as in the countries last described; the sovereigns absolute, human sacrifices prevalent to a certain extent, and also self-immolation, the wife being, in many cases, expected to sacrifice herself at the grave of her husband. Great sway is in the hands of a peculiar priesthood, called the *belli*. The youthful candidate for a place in this body must qualify himself by a long initiation, during which he is withdrawn from all his friends, and lodged in the depth of a sacred forest, where, it is said, he is kept in a state of entire nudity. Among the tests of his proficiency is the performance of songs and dances of a very extravagant and often indecent nature; but peculiar knowledge is also supposed to be communicated on various high points; and those who have gone through the course with success, and are called the "marked of the belli," look upon all the rest of the community as *quolga*, or idiots. They not only administer all the concerns of religion, but conduct the judicial proceedings; most of which are made dependent on some form of ordeal. Although the Portuguese have lost all their settlements in this part of Africa, considerable numbers of their posterity reside there, mixed with the natives, by whom they are treated with some degree of respect.

5278. Beyond Cape Palmas, the coast, turning to the north-east, and reaching as far as Cape Apollonia, is called *the Ivory Coast*. The name is evidently derived from the quantities of that valuable product, obtained from the numerous elephants on the sea shore, and in the interior. The teeth are of good quality, and uncommonly large, weighing sometimes not less than 200 lbs. Towards the east, at Issini and Apollonia, a considerable quantity of gold is brought down from the countries behind the Gold Coast. There is also a good deal of ivory at the ports of Cape Lahoo, and Great and Little Bassain. There are no European settlements upon the coast, except an English fort at Apollonia, which perhaps belongs rather to the Gold Coast. Navigation along this as well as the Grain Coast requires much caution, as the shore is flat and destitute of any conspicuous landmarks, while a heavy surf, borne in from the whole breadth of the Atlantic, breaks continually against it. Early navigators describe the natives as the most violent and intractable race on the whole African coast. Their teeth filed to a point, their long nails, their harsh and guttural language, almost resembling the cry of wild beasts, inspire disgust; they have even been accused of cannibalism; and their suspicion of Europeans is usually said to be so great, that nothing can induce them to go on board a vessel. It is but justice to observe, however, that Captain Adams, the most recent visiter, gives a much more favourable account. He even says, that almost all the business is transacted on board European ships, though, when he did go on shore, he was hospitably received.

5279. From Apollonia to the Rio Volta extends what is called *the Gold Coast* of Africa. It was long the most frequented by European traders, particularly English and Dutch, both for that highly prized commodity which its name indicates, and for slaves, while they were a permitted article of trade. The coast presents the appearance of an immense thick forest, only detached spots of which are cleared and cultivated. The soil near the sea, being light and sandy, is scarcely fit for any important tropical product, except cotton; but six or seven miles inland, it improves greatly, and might be made to produce sugar and others of the richest West India products, provided habits of industry could be introduced among the inhabitants. Maize is the grain principally cultivated. The gold, which forms the staple commodity, is chiefly brought down from mountainous districts far in the interior. In many places, however, even upon the coast, a small quantity may be extracted from the earth by mere agitation with water in a calabash. Little or no ivory is exported. The ruling people on the coast are the Fantees, a clever, stirring, turbulent race. They exert more ingenuity in the construction of their dwellings and canoes than the nations to the west. The form of government is republican, and each village has a large public hall, roofed, but open at the sides, where an assembly is held, and public affairs are debated. The *pynims*, or elders, however, possess considerable authority, and the administration of justice is chiefly in their hands. An excessively litigious disposition prevails, particularly against those who are supposed to have accumulated great wealth, and who, unless they can disarm public envy by moderation or popularity, are often, between suitors and lawyers, stripped of every thing. The dreadful custom of immolating human victims over the tombs of the great men very generally obtains, and is accompanied with several days of tumultuous feasting and intoxication. As usual, in this state of society, all the laborious offices devolve upon the female sex, except fishing, which is considered an employment sufficiently dignified for the lords of the creation. Yet the Fantee ladies find time to spend an hour or two at the toilette, in which they employ various cosmetics, not omitting paint, which is generally white. The Fantees have of late suffered severely by the invasion of the Ashantees, which had been provoked perhaps by their own violent conduct, and which their want of courage renders them quite unable to resist. Britain, which, perhaps imprudently, interfered in their support, has suffered severely in the attempt; and the terror of her arms alone maintains the Fantees at present in a state of doubtful independence.

5280. *The capital of the British settlements* is at *Cape Coast Castle*, built upon a rock, and defended by strong walls of stone and brick, and by ninety pieces of cannon. The approach on the sea-side would be difficult for an enemy; but the fort has the disadvantage of being too near a large, dirty native town of eight thousand souls. The country round has been a good deal cleared, and laid out in pleasure grounds by the British, to whose health, however, the climate in this and the other settlements is extremely unpropitious. To the west of Cape Coast, the English have Dix Cove and Succondee, in the Ahanta country, a very fertile tract, and to which purer gold is brought than to any other part of the coast. The inhabitants are also peaceable and tractable, and the chances of improvement, as Mr. Meredith conceives, are on the whole favourable. It is to the east that the British have their principal settlements. That at Anamaboe was formerly the great mart of the slave trade. The fort is compact and regular, and in 1809 it withstood, with a garrison of twelve men, the attack of 15,000 Ashantees. Winnebah, in the Agoona country, though in an agreeable situation, has been abandoned; but Fort James, at Accra, would, in peaceable times, afford great conveniences for trade, as no other on the coast has such extensive intercourse with the interior. It and Cape Coast, indeed, are now the only places where any garrison is maintained.

5281. *The capital of the Dutch Settlements* is El Mina, or the Castle; first founded by the Portuguese, and taken from them in 1637. It is about fifteen miles west of Cape Coast, in an open country, close to a large dirty town of 15,000 inhabitants. The fort is well built, on a high situation, and vessels of a hundred tons can come close to the walls; but its strength has been doubted. The Dutch maintain here a garrison of 150 men, and keep their establishment, on the whole, upon a more reputable scale than the British. Their forts along the coast are almost numberless; particularly in the Ahanta country, where there are no less than seven. The Danes have a respectable fort at Accra, called Christianborg Castle, and also one at Ningo, near the eastern extremity of the coast.

5282. *The country behind the Gold Coast*, when first known to Europeans, was divided among a number of considerable kingdoms; Dinkira, Akim, Warsaw, and Aquamboe; but all these have now sunk beneath the overwhelming sway of *Ashantee*. This warlike power has also reduced the interior countries of Gaman, Inta, Dagwumba, and others, of which some are more extensive and populous than itself. Ashantee Proper is estimated to contain 14,000 square miles, and about a million of people; but this last number would be more than quadrupled, if we were to include all its subjects and vassals. The attire of the sovereign and his principal chiefs displays a peculiar and barbarous splendour; their persons being loaded with golden rings and ornaments, waving plumes and superstitious amulets (*fig.* 835.). The people are, on the whole, of a superior class to those on the coast; their houses are larger, more commodious and ornamented; they manufacture finer cloths. Their manners are more polished and dignified, and their general conduct more orderly. The king is absolute, with the exception of a military council of four principal officers, whom he is obliged to consult on questions of peace and war, and who usually give their voice in favour of the latter. There are, however, some features in this monarchy which surpass in barbarism those of almost any other. The fury with which war is conducted is, indeed, too general among barbarians, but Ashantee is horribly distinguished by the vast amount of human sacrifice. There are two annual *customs*, as they are called, in which the king and chief men seek to propitiate the manes of their ancestors by a crowd of victims. Foreign slaves and criminals are selected in preference; but, as each seeks to multiply the number, unprotected persons cannot walk the streets, without the hazard of being seized and immolated. At the death of any of the royal family, victims must bleed in thousands; and the same is the case when the king seeks from the powers above favourable omens respecting any great projected undertaking. The abuse of polygamy also is carried to the highest pitch. The legal allowance of wives for the king is upwards of three thousand, selected from the fairest damsels in his dominions. These unfortunate creatures are in general no better than slaves, and, on any capricious disgust, are treated with the greatest cruelty, and often put to death. Yet this barbarous king is not without a desire to civilise his subjects, and to adopt European arts and improvements. He has occupied himself in erecting a palace of stone, in the European style, under the direction of an artist from El Mina, instead of the structures of earth and straw to which the architecture of Africa has hitherto been confined. He seeks also to promote by every means the commerce of his subjects, and to open a communication with the sea, to which, however, the late unhappy difference with Britain has been a considerable bar. Gold is now the most valuable article of export, not produced within the country, but brought in large quantities from the mountainous regions in the north. He still clings to the slave trade, a mode of procuring European luxuries too congenial with his habits; and so natural did he consider it, that he could with difficulty be dissuaded from sending fifty boys and the same number of girls as presents to the King of England.

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5283. On the eastern side of the Rio Volta commences what Europeans have called *the Slave Coast*, because slaves were there procured of the most docile and tractable character. It consisted originally of the two kingdoms of Whidah and Ardrah, forming the most populous and the best cultivated part of the African coast. The vast and impenetrable forests which cover so much of that continent had here been cut down, leaving only what was requisite for ornament and convenience. The whole country was like a garden, covered with fruits and grain of every description. Amid this abundance, the Whidans, having become luxurious and effeminate, were unable to make head against the warlike power of Dahomey, in the interior, which invaded and conquered them at the beginning of the last century. The first ravages were dreadful, and rendered their country almost a desert, nor has its peaceful submission ever allowed it to regain its former prosperity.

5284. *Dahomey*, which is thus predominant both over the coast and over the interior, to a depth of about two hundred miles, is governed upon the same system as Ashantee, and with all its deformities, which it carries to a still more violent excess. The bloody *customs* take place on a still greater scale; and the bodies of the victims, instead of being interred, are hung up on the walls and allowed to putrefy. Human skulls make the favourite ornament of the palaces and temples, and the king has his sleeping apartment paved with them. His wives are kept up to an equal number with those of the king of Ashantee. All the female sex is considered as at the king's disposal, and an annual assemblage takes place; when, having made a large selection for himself, he distributes the refuse among his grandees, who are bound to receive them with the humblest gratitude. In short, this ferocious race allow themselves to be domineered over in a manner of which there is no example among the most timid and polished nations. The greatest lords, in approaching the king, throw themselves flat on the ground, laying their heads in the dust; and the belief is instilled into them, that their life belongs entirely to their sovereign, and that they ought never to hesitate a moment to sacrifice it in his service. The king of Dahomey has been lately worsted in his wars with Eyeo, by which he is now held in a species of vassalage. His country consists of an extensive and fertile plain, rising from the sea by a gradual ascent. The soil is a reddish clay mixed with sand, and nowhere contains a stone of the size of a walnut. Though capable of every species of tropical culture, little is actually produced from it that is fitted for a foreign market; so that, since the abolition of the slave trade, small advantage has accrued from continuing the intercourse with it, and the English fort at Whidah has been abandoned.

5285. *Whidah*, now commonly called Griwhee, may be considered the port of Dahomey, from which a route of about a hundred miles reaches through Favies and Toro to Abomey, the capital. Griwhee is situated in a fertile country, still highly cultivated, and is plentifully supplied with all the necessaries and conveniences of African life. Captain Adams, whose estimates on this point are unusually low, represents it as containing about 7000 inhabitants. The despotic and capricious manner, however, in which foreign residents are treated by the tyrant of Dahomey, has gradually induced the different European powers to withdraw their factories. *Ardrah* is still larger and more flourishing; containing, according to the same authority, 10,000 inhabitants. It is situated about twenty-five miles inland, on a long and beautiful lake or lagoon, running parallel to the sea, with which it becomes connected at its eastern extremity by the River of Lagos. The Ardranese are industrious in the manufacture of cotton interwoven with silk: they make also soap, baskets, and earthenware, and are skilful in working iron. Their market is the best regulated of any on the coast, and exhibits the manufactures of India and Europe, tobacco from Brazil, cloth from Eyeo and Houssa, and every other article that is here in demand. Though so close to Dahomey, the people appear to enjoy a republican form of government. A considerable number of Mahometan residents have made their way hither, and have introduced the management of horses, and the use of milk, to both of which the negroes in general are strangers. Badagry, though it has suffered by recent contests with Lagos, appeared still, by Lander's report, to be a large and populous place, situated in a fine plain, and divided into four districts, each governed by a chief, who assumes the title of king. Lagos is built upon a small island, or rather the bank at the point where this channel communicates with the sea on one side, and on the other with the Cradoo lake, a parallel piece of water. The town is scarcely a foot above the lake, and is over-run by water rats from it. It has 5000 inhabitants, with a good deal of stir and trade. Its petty despot assumes all the airs of the greatest African monarchs, never allowing his courtiers to approach him unless crawling on the ground. Some barbarous customs prevail, such as impaling alive a young female, to propitiate the goddess who presides over rain, and hanging the heads of malefactors to some large trees at the end of the town. The currency here consists of cowries, which are imported in large quantities, and transmitted into Houssa and other interior countries, where they form the universal circulating medium.

5286. At the termination of the Cradoo lake commences a large tract of coast, of a peculiar character, which, from the principal state, receives the name of *Benin*. It extends upwards of two hundred miles, and presents a succession of broad estuaries, now discovered to be all branches of the Niger, of which this country forms the delta. They communicate with each other by creeks, and, frequently overflowing their banks, render the shore for twenty or thirty miles inland, a vast alluvial wooded morass. The natives, having thus very extended water communications, are the most active traders any where in Africa; but, except slaves, the commodities in which they deal are entirely changed. Gold has disappeared; ivory is again found in considerable plenty; but palm oil is the great staple of the eastern districts. A great quantity of salt is made at the mouths of the rivers, both for consumption at home and in the interior. This tract, however, from its low, marshy, and woody character, is excessively pernicious to the health of Europeans.

5287. *The first leading feature is the river Formosa*, two miles wide at its mouth: on a creek tributary to it lies the capital of Benin. This city appeared to Captain Adams the largest he had seen on the coast of Africa; he therefore probably under-rates its population at 15,000; and, being built quite irregularly, and consisting of detached houses, it occupies an immense space of ground. The surrounding territory is well cultivated, though not so thoroughly cleared of wood as that round Ardrah and Whidah. The king is not only absolute, but fetiche, or a god, in the eyes of his subjects; and all offences against him are punished in the most cruel and summary manner, not only as treason, but impiety. Gatto, about fifty miles below, is the port of Benin; accessible to vessels of sixty tons. The trade on this river has greatly declined.

5288. *Warré, or Owarri*, is another state and city, situated on another creek, communicating with the Formosa, on its opposite side. It consists of a somewhat elevated and beautiful island, appearing as if dropped from the clouds amidst the vast woods and swamps by which it is surrounded. Here, too, the king is absolute, and carries polygamy to a very great extent. A late traveller, happening to get a peep into the seraglio, saw about fifty queens, busied in various employments from the toilette to the washing-tub. New Town, on the Formosa, is the port of Warré.

5289. After turning Cape Formosa, and passing several estuaries, we come to that of the *Brass River*, called, by the Portuguese, the river of Nun. Though not the largest estuary of the Niger, yet being most directly in the line of the main stream, and that by which Lander entered the Atlantic, it at present enjoys the reputation of being the principal channel. It is divided into two branches; but the navigation is greatly impeded, and the trade limited, by a dangerous bar at its mouth. Brass Town is built not on either branch, but on one of the numerous creeks connected with both, and in a country overgrown with impenetrable thickets of mangrove. It is a poor place, divided by a lagoon into two parts, each of which contains about 1000 inhabitants. Bonny River forms the next important estuary, having on its opposite sides the towns of Bonny and New Calabar. Being only a few miles up, they are in the midst of the morasses which overspread all this country. The people support themselves by the manufacture of salt and the trade in slaves and palm oil. Bonny, in particular, is become the great mart for these last commodities, and is supposed to export annually about 20,000 slaves. The dealers go in large canoes two or three days' sail to Eboe, the great interior market, which will be described under the head of Central Africa. The king is absolute, and more barbarous than the rest of his brethren on this coast. He boasts of having twice destroyed New Calabar, and ornaments his fetiche house with the skulls of enemies taken in battle.

5290. *After Bonny is the estuary of Old Calabar river*, the broadest of all, and navigable for large vessels sixty miles up to Ephraim Town, governed by a chief, who assumes the title of duke. It appears to contain about 6000 inhabitants, carrying on a considerable trade; and the duke has a large house filled with European manufactures and ornaments of every kind, received by him in presents. This river is followed by that of Rio del Rey; and then by the Rio Cameroons. These rivers are very unhealthy; but they yield a good deal of ivory and palm oil. The continuity of that vast wooded flat, which has extended along the coast for more than 200 miles is now broken by some very lofty mountains, the principal of which is supposed to reach the height of 13,000 feet.

5291. *Several islands which lie in the Gulf of Benin* may terminate the description of this coast. They are, Fernando Po, a fine high large island, lately occupied only by a lawless race, composed of slaves or malefactors escaped from the neighbouring coast. The British government, however, upon the disappointment experienced in regard to Sierra Leone, formed, in 1827, a settlement at this island, the mountainous and picturesque aspect of which afforded hopes of a healthy station; but these have been completely disappointed. Of thirty European settlers taken out, nineteen died; and Col. Nicholls, the governor, was three times attacked with fever. Hopes have been held out, that by a change in the situation of the town, this evil might be greatly mitigated, and Fernando Po would then acquire a double importance, from its vicinity to the mouth of the Niger. Prince's Island is high and wooded; St. Thomas is large and fertile; the pretty little isle of Annabona is inhabited by a simple native race. These run in a chain to the south-west from the Rio Calabar; and the last three are in nominal subjection to the crown of Portugal.

5292. The next division of Western Africa consists of *Congo and Loango*, to the coast of which navigators generally give the name of Angola. The principal feature is the Zaire, or Congo, a powerful and rapid river, which rushes by a single channel into the Atlantic. Its course was traced upwards by Captain Tuckey, in his unfortunate expedition, about 400 miles, yet nothing was ascertained as to its origin and early course; though the hypothesis of its forming the termination of the Niger is now completely refuted. The natives of Congo are rather of small size; they are cheerful and good-humoured, but unreflecting, and possessed of little energy either of mind or body. The negro indolence is carried in them to its utmost excess. The little cultivation that exists, entirely carried on by the females, is nearly limited to the manioc root, which they are not very skilful in preparing. Their houses are put together of mats made from the fibres of the palm tree; and their clothes and bedding consist merely of matted grass. The population along the river is very small; the largest villages, Cooloo, Embomma, and Inga, containing only from 300 to 600 inhabitants. The interior capital of Congowar, however, mentioned as the residence of the Blindy N. Congo, to whom all the chiefs pay a species of vassalage, is probably what the Portuguese called St. Salvador; and where, according to Mr. Bowdich, they still maintain a mission; but no recent details have been obtained respecting it. There is a regular distinction of ranks, the Chenoo, or chief, hereditary in the female line; the Mafoots, or collectors of the revenue; the Foomoos, or cultivators; and the domestic slaves, not numerous. The chiefs have many wives, whom they make the victims of the most scandalous traffic; frequently tendering their favours to Europeans at a very trifling rate.

5293. *The slave trade*, for which alone this part of Africa is now frequented, is chiefly carried on at Malemba and Cabenda, on the north side of the river. Malemba has been called the Montpelier of Africa. It stands on a hill about 100 feet high, commanding a beautiful prospect of the windings of the Loango Louisa through an extensive plain. Its dry and elevated situation preserves it from those deadly influences which elsewhere operate so fatally on the health of mariners. Cabenda, near the mouth of the river of that name, also a beautiful city, is situated at the foot of a conical wooded mountain, and has been called the Paradise of the Coast. It is a great mart for slaves, who are brought from the opposite territory of Sogno; but the natives, contrary to their general character in this region, are rude and difficult to treat with.

5294. *The country to the south of Congo* is called Benguela, and its commerce is still almost entirely in the hands of the Portuguese. They frequent the bay and river of Ambriz, in which there is a tolerable roadstead; but their great settlement is at St. Paul de Loanda, a large town in an elevated situation. It exports annually, 18,000 or 20,000 slaves, chiefly to Brazil. S. Felipe de Benguela, in a marshy and unhealthy site, is now considerably declined; and its population does not exceed 3000, mostly free negroes and slaves. There is also a smaller port, called Nova Redondo. The Portuguese claim a certain jurisdiction over the native states for several hundred miles in the interior, obtaining presents and purchasing slaves. Farther inland is the country of Jaga Cassanga. The Jagas are celebrated by the writers of travels, two centuries ago, as a formidable devastating tribe, addicted to the most ferocious habits; and rumour does not represent any change as having taken place in their character. Behind them, and in about the centre of the continent, is said to be the nation of the Molouas, represented as more numerous, more intelligent, and to have attained a higher degree of industry and civilisation than any other in Africa under this latitude. The country abounds in valuable copper. The king, however, is absolute, and the atrocious custom of human sacrifice prevails.

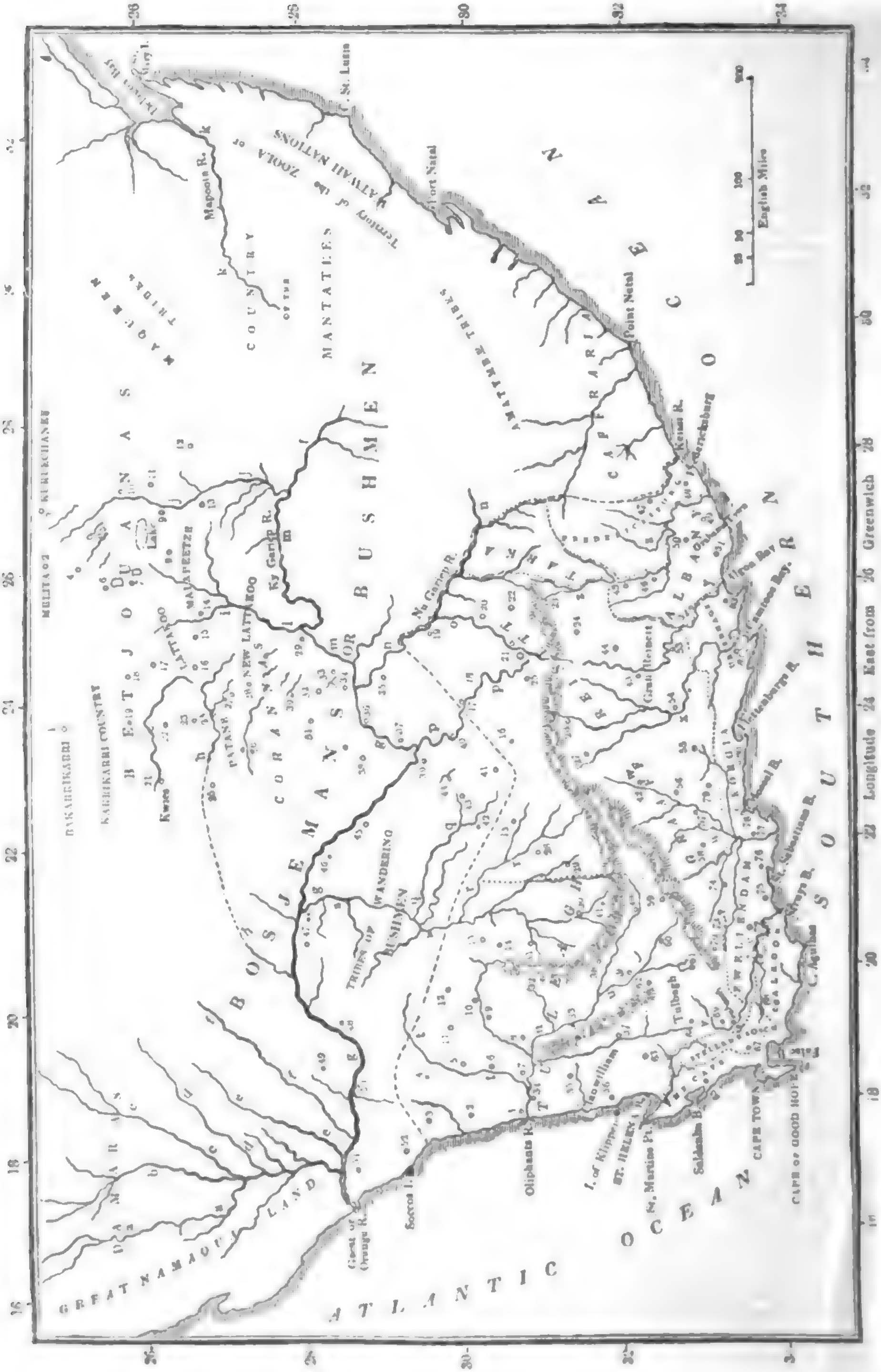
Chap. VII.

SOUTHERN AFRICA.

5295. *Southern Africa*, by its mere name, sufficiently indicates the part of the continent to which the somewhat vague appellation is applied. Generally speaking, it is given to the territory discovered and partly colonised by Europeans, from that important settlement which they formed at the Cape of Good Hope.

Sect. I. *General Outline and Aspect.*

5296. *The surface of this region* is striking and peculiar, presenting three successive mountain ranges, running parallel to the coast and to each other. The first, called Lange Kloof, is between 20 and 60 miles from the ocean, the breadth of the intermediate plain being greatest in the west. The second chain, called the Zwaarte Berg, or Black Mountain, rises at an interval nearly similar behind the first, is considerably higher and more rugged, and consists often of double or even triple ranges. Behind, at the distance of 80 or 100 miles, rises the Nieuweldts Gebirgte, the loftiest range in Southern Africa. The summits, to a great extent, are covered with snow; from which circumstance the eastern and most elevated part is called the Sneuwberg, or Snowy Mountains, whose highest pinnacles are not supposed to fall short of 10,000 feet. The plain nearest the sea is fertile, well watered, richly clothed with grass and trees, and enjoys a mild and agreeable climate. The plains between the successive ranges are elevated, and contain a large proportion of the species of arid desert called Karroo. The southern plain, in particular, is almost entirely composed of the great Karroo, 300 miles in length and nearly 100 in breadth, covered with a hard and impenetrable soil, almost unfit for any vegetation. Along the foot of the Sneuwberg, however, there is a considerable tract finely watered, and affording very rich pasturage. Beyond the mountains, the territory is for some space bleak and sterile; but it gradually improves till it opens into the extensive pastoral plain occupied by the Boshuanas. So far


ATLANTIC OCEAN
SOUTHERN OCEAN
GREAT NAMAQUA LAND
DAMARAS
BOSJEMANS OR BUSHMEN
WANDERING TRIBES OF BUSHMEN
CORANNAS
BEETJOUANAS
KARRIKARRI COUNTRY
MORUTZI TRIBES
MANTATEES
COUNTRY
Territory of the ZOOLA or HATTIAH NATIONS
AMAYTEMBE TRIBES
CAFFRARIA
NEW LATTAKOO
LATTAKOO
PATANI
MELITA
KURRECHANE
Kwira
Ky Gariep R.
Nu Gariep R.
Mapoota R.
C. St. Lucia
Port Natal
Point Natal
Keiskamma R.
Graaff Reinett
ALBANY
Algoa Bay
Camtoos Bay
Kromme R.
Plettenberg B.
Gauritz R.
St. Sebastian B.
C. Agulhas
ZWELLENDAM
Tulbagh
Clanwilliam
Olifants R.
St. HELENA B.
St. Martins Pt.
Saldanha B.
CAPE TOWN
CAPE OF GOOD HOPE
Soccos I.
Mouth of Orange R.
I. of Klipper
English Miles
Longitude 24 East from 26 Greenwich
16
18
20
22
24
26
28
30
32
34

as this has been explored to the southward, it becomes always more fertile, though to the west there has been observed a desert of very great extent. The eastern coast also consists chiefly of a fine pastoral plain, occupied by the various Caffre tribes, and broken by some chains of mountains, the direction of which has been very imperfectly explored.

5297. *Rivers* do not form a prominent feature in a country of which the general character is arid. The principal are those which flow down from both sides of the great boundary chain of the Nieuweldt Mountains, particularly in the eastern quarter, where it becomes both more lofty and more distant from the coast. On the side of the colony, it gives rise to the Camtoos, the Zoondag, and the Great Fish River, which last, though the most considerable, has not a course of much more than two hundred miles. The smaller and more westerly streams of the Breede, and the Gansely, with its tributary the Oliphant, are chiefly fed from the inferior chains along whose base they flow. On the northern side, the waters which descend from the Snowy Mountains unite and form the Orange River, which, having flowed, first north-west and then due west, through long ranges of rude and desert territories, falls into the Atlantic in about 28° 30′ N. lat., after a course, which, with its windings, must considerably exceed a thousand miles. In the Caffre territories, several estuaries open into the Indian Ocean, the early course of which is little more than conjectured; but travellers through the Boshuana territory crossed streams which, from their direction, appeared likely to reach that receptacle.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5298. This district is bounded on the north and east by the Orange and Fish rivers; on the west and south by the ocean. The country extends from S. lat. 26° to S. lat. 33° 55′ 40″, that of the Cape of Good Hope.

5299. *Peninsula of the Cape of Good Hope.* — The rocks of which this tract is composed are *granite, gneiss, clay slate, greywacke, quartz rock, sandstone,* and *augite greenstone,* or *dolerite.* Of these the most abundant are granite and sandstone; the next in frequency are clay slate and greywacke; and the least frequent are gneiss and dolerite. In some parts, as Steinberg, the sandstone is traversed by veins of red iron ore. The Neptunian formations, viz. the gneiss, clay slate, greywacke, quartz rock, and sandstone, are variously altered and upraised by the granite, and traversed by veins of the augite greenstone. The hill named *Lion's Rump* is composed of clay slate, greywacke, and sandstone; granite forms a considerable part of the *Lion's Head;* the *Table Mountain,* in its lower and middle part, is composed of red sandstone, clay slate, and greywacke, which rest on granite: the upper part of the mountain exhibits magnificent displays of horizontally stratified sandstone. *The Devil's Peak* has the same general structure and composition as the Table Mountain.

5300. *The ranges of mountains* which run northward from the Cape peninsula to Orange or Gariep River are composed of granite and slate, with vast deposits of sandstone and quartz rock, with numerous table-shaped summits; thus showing a similarity of composition in these mountains to those of the Cape peninsula. The three great ranges of mountains that run from east to west are of the same general nature, and characterised by the vast abundance of sandstone reposing in horizontal strata upon the granite and slate, forming the middle and very often the highest parts of the chain.

5301. *Geology of the Table-land.* — From the third range onwards to lat. 30° S., the prevailing rock in the plains and hills is sandstone. At Dwaal River, the frontier of the

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References to the Map of Southern Africa.

1. Bakarrikarri
2. Melita
3. Kureechane
4. Cheye
5. Seitkahely
6. Mashow
7. Merthowhey
8. Taykeeso
9. Yattaba
10. Khing
11. Moquanua
12. Bouklutre
13. Boqueen
14. Malapeetzee
15. Marabay
16. Old Lattakoo
17. Desert Station
18. Giraffe Station
19. Terminalia Station
20. Hot Station
21. Kwies
22. Sand Station
23. Kuru
24. Patanee
25. Tureehey
26. Chopo
27. Kruman
28. New Lattakoo
29. Bushman's Kraal
30. Knegt's Fountain
31. Sensavan
32. Griqua
33. Camptell Town
34. Spruigsland
35. Konnah
36. Brakke
37. Bern's Kraal
38. Hardcastle
39. Kaabi's Kraal
40. Quakka Station
41. Bush Dove Place
42. Dwaal
43. Brakke-river
44. Buffet-bout
45. Hans Haiman
46. Orlam's Kraal
47. Pella
48. Zebra Fn.
49. Warm Baths
50. Kams
51. H l-gat
52. Vander Hyvers.

CAPE COLONY.
1. Bakovan
2. Valleitjes
3. Lang Klip
4. Leeuwenkuil
5. Leedwendams
6. Dassen
7. Wolfgift
8. Moedverloren
9. Oorlog's Kloof
10. Matje's Fn.
11. Brakke
12. Akkerengam
13. Eland's Fn.
14. Hartebeeste
15. Gaertner's Fn.
16. Pinnaars
17. Nieuw-jaars Fn.
18. Eland's Fn.
19. Hephzibah
20. Toornberg
21. Boulhouders Draal
22. Nuawe
23. Bull Fn.
24. Hyena Station
25. Geranium Rocks
26. Brakke Fn.
27. Waal Fn.
28. Karrie
29. Bonteberg
30. Koornland's Kloof
31. Matje's Fn.
32. Rhenoster Bosch
33. Van Wyk's Fn.
34. Wolfaarts
35. Jackall's Vall.
36. Riet Fn.
37. Clanwilliam
38. Olyven-bosch
39. Jan Klaaf's Fn.
40. Vischers Fn.
41. Klip Fn.
42. Beaufort
43. Graaf Reynet
44. Kruidt Fn.
45. Roodewal
46. Stockenstrom's Fn.
47. Fort William
48. Fredericksburg
49. Bathurst
50. Graham's Town
51. Theopolis
52. Enon
53. Drie-kops
54. De Beer's Valley
55. Goede-hoop
56. Remhoogte
57. Blauwekrans
58. Slagter's Fn.
59. Kabelton
60. Hang Klips
61. Karra Pt.
62. Jackal's Kl.
63. Klip Fn.
64. Tulbagh
65. Gelbek
66. Cape Town
67. Stellenbosch
68. Caledon
69. De Liefde
70. Meyntjes-hook
71. Breederiven
72. Zwellendam
73. Reed Fn.
74. Zoute Vlakte
75. Zuurbrak
76. Yzerhout
77. Gauritzriver
78. Georgia
79. Streutel Fn.
80. De Poort
81. Klippendrift
82. Suka
83. Uitenhage.

Rivers.
a Guaquipa
b Kooklp
c Gamna
d Lion
e Kameeldoorn
f Glep
g Orange
h Kruman
i Hart
j Mobatee
k Mapoota
l Donkin
m Ky Gariep, or Yellow
n Nu Gariep, or Black
o Zeekoe
p Brak
q Hartebeeste
r Groot Kiet
s Zak
t Kromme
u Klein Doorn
v Breede
w Gamka
x Groote
y Sunday
z Great Fish.

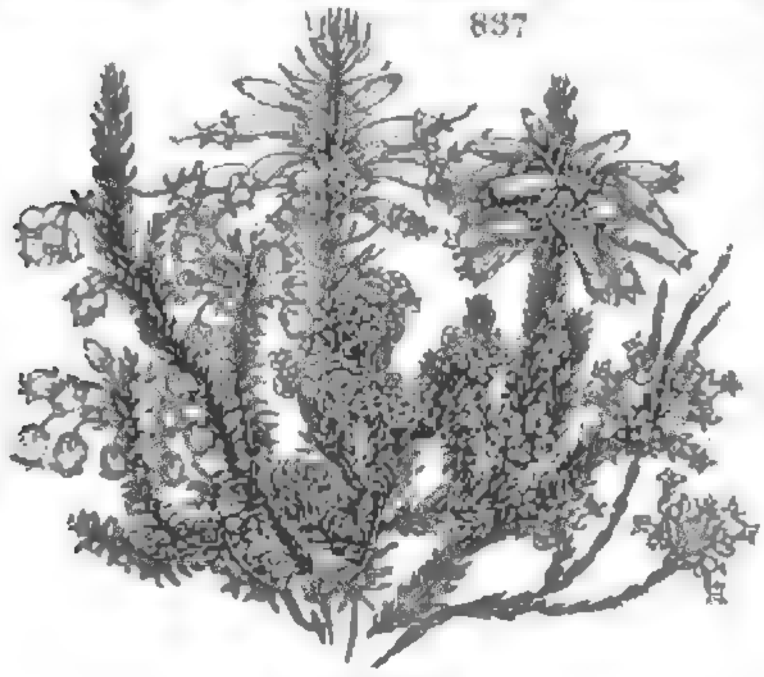
colony, there are rocks of augite greenstone and basalt, probably traversing the sandstone. The Kareebergen, or Dry Mountains, beyond the limits of the colony, are principally composed of sandstone, in horizontal strata, and every where exhibit beautiful table-shaped summits. This sandstone rock continues onward to lat. 30° S., to near Mud Gap, where true quartz rock and vesicular trap appears. In lat. 29° 15′ 32″ S., mountains, called the *Asbestus Mountains*, composed of clay slate, disposed in horizontal strata, occur; thin veins of asbestus traverse the slate. In the same mountain green opal and pitchstone occur. To the north of these mountains, at Klaarwater, are vast beds of *limestone*, disposed horizontally, enclosing organic remains. In conclusion, it may be remarked, that, as far as is known at present, the whole of the table-land of Africa to the north of the Orange River is composed of *limestone* in horizontal strata, *clay slate*, *sandstone* and *quartz rock*, *granite*, *greenstone*, *serpentine*, and *potstone*.

SUBSECT. 2. *Botany*.

5302. *If our botanical observations on certain countries* are often limited for want of information, it is far otherwise with regard to the region in question, which, almost ever since it has been known to Europeans, has been a never-failing source of botanical novelty to the green-houses and conservatories of our country: and in proportion to the multiplicity of subjects is the difficulty of selecting, consistently with brevity, what is most useful and interesting. "All that I had pictured to myself," exclaims Mr. Burchell, one of the most enlightened of modern travellers, "respecting the riches of the Cape in botany, was far surpassed by what I saw in one day's walk. At every step a different plant appeared; and it is not an exaggerated description of the country, if it should be compared to a botanic garden, neglected and left to grow in a state of nature; so great was the variety every where to be met with. As I walked along," he continues, "in the midst of the variety and profusion, I could not for some time divest myself of feelings of regret, that at every step my foot crushed some beautiful plant; for it is not easy, during one's first rambles in this country, to lay aside a kind of respect with which it is customary in Europe to treat the Proteas, the Ericas, the Pelargoniums, the Chironias, the Royenas, &c. To give some idea of the botanical riches of the country, I need only state, that in the short distance of one English mile, though the most favourable season had passed, and many of the bulbous and herbaceous plants had disappeared under the influence of the drought, I collected, in four hours and a half, 105 distinct species; and I believe that more than double that number may, by searching at different times, be found on the same ground."

5303. *Nothing, perhaps*, is calculated so much to strike the attention of a stranger, as the great extent of certain groups, and the vast number of different kinds included in them. Among them may especially be enumerated the Heaths (*fig.* 837.), for which the Cape has long been celebrated, and the beauty and delicacy of which are familiar to all of us from the great number cultivated (no less than 500 * species and varieties) in the green-houses of our gardens. Yet in the colony, notwithstanding their elegance and beauty, so little do they strike the attention of the people, that they have not even a name; but when spoken of, are indiscriminately called bosjes (bushes). It does not appear, however, that the range of the Heaths is very extensive; for, on coming to the Karroo Pass, Mr. Burchell observes, "four of the strongest and most characteristic features of Cape botany, the Ericæ, the Diosmæ, the Proteaceous and Restiaceous tribes, entirely disappear; nor did I meet again with any of them till two years afterwards, when I reentered the same botanical parallel at Zwartwater Poort, lying in the same parallel of latitude as Karroo Pass, but at 6° long. more to the eastward. The Heath was Erica Plukenetii. This lovely tribe had attended me the whole way from Cape Town, till now that I was arrived at the very door of the desert, beyond which the scorching heat rendered it impossible for them to exist; and it seemed as if this handsome species had accompanied me till the last moment, to take a long farewell in the name of the whole family." It is probable, therefore, that in Europe, the single species, the common Heath, or Ling (*Erica vulgaris* Lin.), extending as it does from Lapland to Italy in the plains, and on the mountains even to Morocco, occupies a greater extent of surface

837



CAPE HEATHS

"empurpled with the Heather's dye"

than the 300 species which are enumerated as natives of the Cape of Good Hope. "Amidst all these beauties," says Captain Carmichael, "the Cape Heaths stand confessedly unrivalled. Nature has not restricted these elegant shrubs to one particular soil or situation. You meet with them in the marshes, and on the banks of rivers; in the richest soil, and on the bare mural cliffs; on the acclivities of the hills and the tops of the highest mountains. The form of their flowers is as varied as their colours; some are cup-shaped, some globular, some exhibit the figure of a cone, others that of a cylinder contracted at the mouth, or swelled out like a trumpet; some are smooth and glossy; others covered with down, or with a mucilage. The predominant colour is red; but you meet with white, green, yellow, and purple; of every colour, in short, but blue; a fact which deserves notice, when we consider the almost unlimited extent of the genus."

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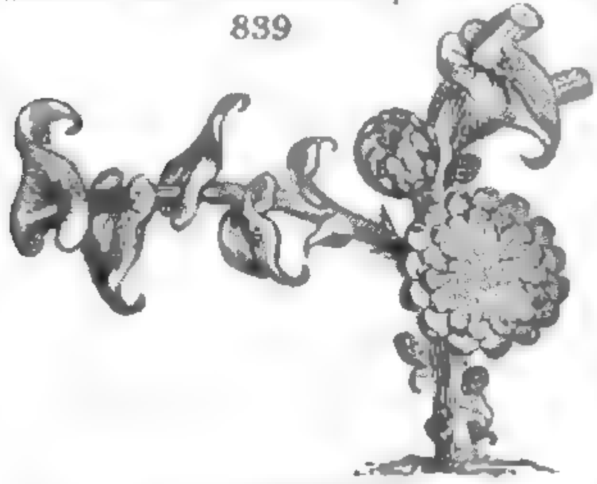
* Loudon's *Hortus Britannicus*.

838

PROTEACEÆ.

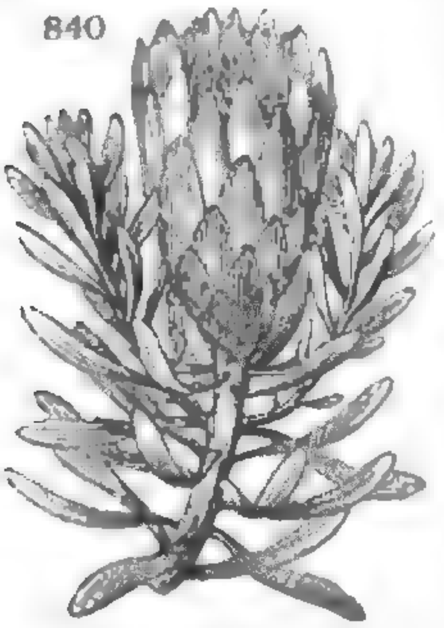
5304. *The Proteaceæ* (*fig.* 838.) constitute an equally striking feature at the Cape; a tribe of plants almost wholly confined to the southern hemisphere. Nearly 200 species are known to be natives of Southern Africa; and of these, many are conspicuous for the extreme beauty and magnitude of their flowers, which excite the admiration of the most careless observer. Those who have visited Cape Town cannot fail to be acquainted with the Silver tree, no less remarkable for the delicate silky covering of its foliage than for its large and showy blossoms; yet this is the common fuel of the place. Near Cape Town is a village called Witteboom, a name which with great propriety it has received, on account of the numerous plantations of large Witteboom, or Silver Tree, which grow about it. The native station of this handsome tree is the sloping ground at the foot of the eastern side of Table Mountain; and at present very large groves occupy the northern side, next the town. That this place, Mr. Burchell observes, should be the only part in all the colony where it grows wild, can be no object of wonder to any person who has the least knowledge of the character of Cape botany; since the natural places of growth of a multitude of other plants are circumscribed by limits equally contracted. "Next to the Heaths," says a late intelligent naturalist, "for variety and beauty stand the Proteas. In the stem, the leaves, the flower, and the fruit of these plants, there appears such diversity, as if nature had created them with a view to setting botanical arrangement at defiance; and the name imposed on the genus would seem to indicate that she has been in some degree successful. The Silver tree (*Protea argentea*) grows to the height of a middling-sized tree; while the Protea repens (*fig.* 839.), at the other extreme, creeps along the sand, and bears on its slender stem, a flower, which, from its size and colour, might at first sight be mistaken for an orange. The intermediate space is occupied by upwards of sixty species, which display an extraordinary diversity in form and habit. Some have small blossoms that attract the attention of no one except the botanist; others, at the elevation of a few inches, bear a flower that exceeds in size the crown of a hat, and strikes with wonder the most indifferent passenger. In the inflorescence of some species, particularly the Protea mellifera (*fig.* 840.), a vast quantity of honey is secreted, which attracts swarms of bees, beetles, and other insects, whose variegated colours and active movements heighten the interest of the scene; nor is this interest at all diminished, when the Cape Humming-bird (*Certhia chalybea*) joins the animated group, and, perching on the border of the chalice, darts its tubular tongue into the bottom of the flower, or snaps at the insects as they buzz around.

839



PROTEA REPENS.

840



PROTEA MELLIFERA.

5305. *The colony* owes some gratitude to the person who introduced the Pine to an acquaintance with the Silver tree. The contrast is not stronger between a black man and a white than between these trees: yet, like them, they possess several striking points of resemblance. The seeds in both, for instance, are contained in cones; when once cut down, neither of them revives in shoots from the trunk; the annual branches in both spring out in a circle round the stem; and in both, the branches, as well as the minute twigs, are covered with leaves. But the leaves of the Pine are mere lines, without breadth, smooth, rigid, and of a dark green colour; whereas those of the Silver tree are lance-shaped, soft, and clothed with a white shag, more delicate than silk, which, blending its hue with the white parenchyma of the leaf, gives it the appearance of sky-blue satin. The effect of a strong wind on the mingled foliage of these trees is peculiarly pleasing.

5306. *The Silver tree* is diœcious. The fertile flowers are separated by the scale of the cone. After the germ has been fecundated, the scales begin to grow, and at length overtop the petals, gathering them in a bunch, entirely concealed from view. When the fruit is become ripe, the sun begins to act on the scales; they curl out at the top and contract at the base, gradually squeezing out the nut, until it arrives at the aperture, when, spreading out the white hairy border of the corolla, it assumes a feathery appearance, like the seed-down of a syngenesious plant. In this state it remains, ready to be wafted by the first gale that blows: but to ensure the ultimate object of nature, the transportation of the seed, the long capillary style and its round stigma remain attached to it, and, the latter being too large to slip through the narrow throat of the corolla, the seed is thus suspended by the style, and descends to the ground somewhat in the manner of an aeronaut in his parachute.

5307. More numerous than the Proteaceæ, though of humbler growth, and bearing smaller but not less brilliant flowers, are the Fig Marigolds (*Mesembryanthemum*), a genus almost peculiar to Southern Africa. The principal species of this plant, of which upwards of 300 have been enumerated, seem admirably adapted for fixing the loose shifting sand, with which a great part of the country is covered, spreading over the ground from a central point; a single specimen shades a great extent of surface, and affords a singular relief to the eye, fatigued by the powerful refraction of light. In its thick fleshy foliage, it possesses a magazine of juices, which enables it to bear, without shrinking, a long privation of moisture, at the same time that it gives shelter to the nascent shoots of other plants which spring up in its bosom. The mucilaginous capsules of the Hottentot Fig (*M. edule*) are the chief material of an agreeable preserve. Nature has made a beautiful provision for the increase of some of the annual kinds of Fig Marigold, in the property of the capsule, which, contrary to most fruits of the kind, is firmly closed in a period of drought and only opens and discharges the seed in wet weather, when the parched and sandy deserts which this plant inhabits are moistened with the prolific rain. Even after having been long gathered, the capsule retains the same property, being shut in a dry atmosphere and readily expanding wide in water, and very rapidly in warm water. *Mesembryanthemum coriarium* of Burchell is employed by the Hottentots for tanning leather.

5308. *The Stapeliæ, or Carrion flowers* (*fig.* 841.), are a numerous and highly curious genus, with square, succulent, leafless stems and flowers resembling Star-fish. They derive their latter appellation from their abominable odour, which so much resembles that of putrid meat, that insects are deceived by it, and even in our hot-houses (where 110 species are now cultivated), they deposit upon them their eggs, which are hatched by the heat of the sun, when the larvæ perish for want of animal food. This is not the only service which these unsavoury plants render. Spielmann brought home a species, well known to the Hottentots by the name of Gnuap (*Stapelia pilifera*): it has an insipid, yet cool and watery taste, and is used by them for the purpose of quenching thirst; for which purpose it would seem Providence has designed it, by placing it only in hot and arid tracts of country. "In passing through the Karroo, I expected to have seen abundance of Stapelias, but scarcely half a dozen appeared. No part of the colony seems to be so rich in them as the dry sandy regions of the western coast, where they cover a tract of many degrees of latitude in extent, disappearing to the eastward, though their associates, Aloes, Mesembryanthemum, and Aizoon, were now and then much farther north."

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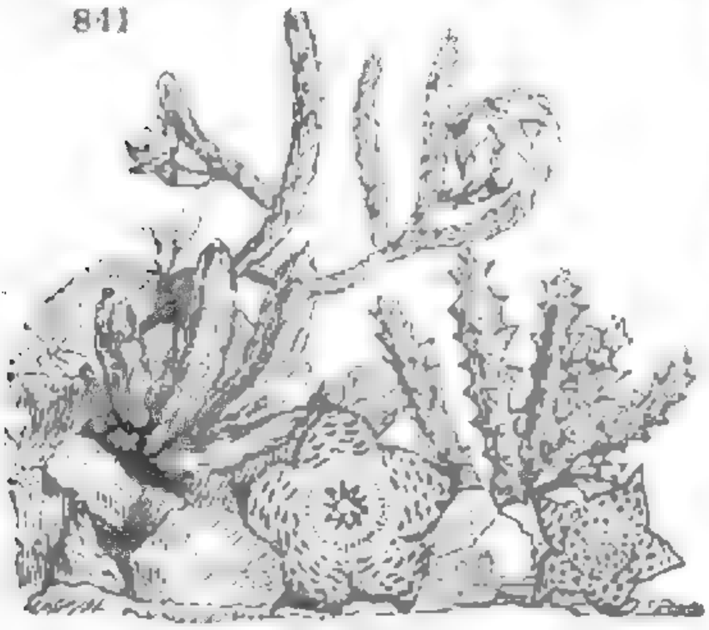

STAPELIAS.

5309. *Aloes* certainly are far more numerous than Stapelias, and more remarkable for their varied mode of growth, and the curious form of their succulent leaves, than for the elegance of their flowers, though many of them, especially the larger kinds, are not destitute of beauty. Mr. Burchell observed in his excursions, when halting for the night in a rocky situation, near a small river, the fine scarlet blossoms of a new kind of Aloe (*A. claviflora* Burch.) decorating the barren rocks, and giving a certain gay and cultivated look to a spot, which, without it, would have appeared a rude neglected waste.

5310. *As it is not possible* to preserve the Aloe tribe (*fig.* 842.) for the herbarium, and as they have not been studied in their native deserts, all that we know of them, or nearly so, is from the species cultivated in our green-houses, and these amount to 170 different kinds. Among them, the Aloe dichotoma, is not the least remarkable; the Cokenboom, or the Quiver tree of the Hottentots, so called, because natives of the western coast make their quivers of its wood. Aloe spicata is said to be extensively cultivated at the Cape of Good Hope, to obtain from it Hepatic Aloes, like that of the Barbadoes Aloe (*A. soccotrina*). The place of the Cactuses (a genus wholly unknown to the Old World) seems to be occupied by a peculiar and very extensive group of Euphorbias, which have the fantastic and varied forms of that singular tribe, and occupy the very same arid and rocky situations. Many of them rise to a vast height, with their highly succulent and often prickly and angled stems and branches not unlike candelabra. The acrid milky juice is in them highly elaborated; and while, on the one hand, men and cattle suffer from the great abundance of these plants, on the other hand, they afford a most powerful poison (especially E. mammillaris), by which the wounds inflicted by arrows and assagays are rendered most deadly. Vaillant mentions the great sufferings he underwent, by treading with his bare feet upon the thorny Euphorbia meloformis (*fig.* 843.). E. tuberosus, and many other species, are reported to occasion the strangury at a certain time of the year to cattle browsing upon them; and this statement seemed to be confirmed by Mr. Burchell's oxen being taken ill of that disorder in spots where those plants abounded. The Tamus elephantopus (*fig.* 844.) (*Testudinaria* Salisb. and Burch.) is a very remarkable plant, now well known in the green-houses of the curious. The mountains of Graaf-Reynet, says the latter author, are the native soil of this extraordinary production, which is called Hottentot's Brood (*Hottentot's Bread*). Its bulb stands entirely above ground, and grows to an enormous size, frequently three feet in height and diameter. It is closely studded with angular ligneous protuberances, which give it some resemblance to the shell of a tortoise. The inside is a fleshy substance, like a turnip in consistence and colour. From the top rise several annual twining stems. The Hottentots eat the inner substance, which is considered not unwholesome, baked on the embers. It will easily be believed that this food may not be very unlike the East Indian Yam, since the plant belongs to a very closely allied genus. Other remarkable genera, or tribes, inhabiting the Cape, are the Irideæ, whose gaudy flowers, for a short season, give beauty and life, as it were, to the sandy deserts, after which their light and scaly or tunicated bulbs are dispersed far and wide by the winds; the interesting terrestrial Orchideæ (*fig.* 845.), whose large and brilliant blossoms are scarcely exceeded by those of the parasitic species of Tropical America; the Restiaceæ, a family which the Cape shares in common with New Holland, some individuals of which, especially Restia tectorum, afford excellent thatching for houses; numerous grasses; shrubby Boragineæ, with vivid blossoms, particularly belonging to the genus Echium; numerous species of Celastrus,

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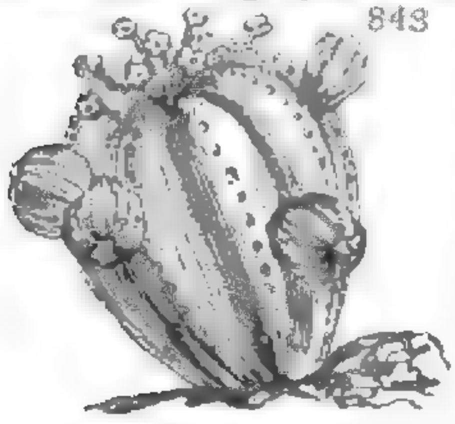
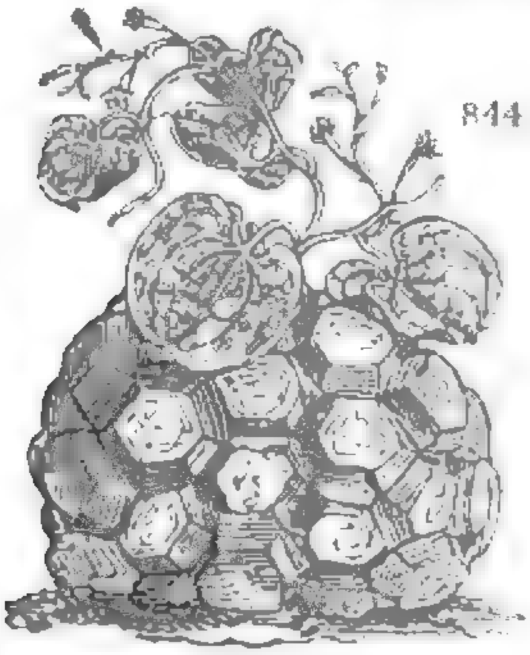
GROUP OF ALOES.

843



EUPHORBIA MELOFORMIS.

844



TAMUS ELEPHANTOPUS.

845

ORCHIDEÆ.

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STRELITZIA.

of Lobeliaceæ, of Phylica, Brunia, Thesium, and Chironia; the splendid Strelitzia (*fig.* 846.), so named by Mr. Aiton, in compliment to the queen of George III., "and which stands," says Sir J. E. Smith, "on the sure basis of botanical knowledge and zeal, to which I can bear an ample and very disinterested testimony;" — numerous plants of the Natural Order Rutaceæ, to which belongs the Diosma, the powerfully scented Buku[*] of the Hottentots (who take delight in mixing it with grease and smearing their bodies with it), and now of our Pharmacopœias; Apocyneæ (including Stapelias), several Umbelliferæ, some of them very remarkable, among which is the Tondelblad, or tinder-plant (*Hermas depauperata*), whose down supplies the natives with tinder, and which may be removed from the leaves in an entire mass (so closely are the fibres interwoven), and stretched out so as to be modelled into little caps, stockings, &c., to which the impression of the veining of the leaves gives a beautiful appearance: in this form the tomentum is often brought to this country: numerous kinds of Rhus, Cluytia, Pharnaceum, Statice, Crassula, and other genera of the same family, Ornithogalum, Anthericum, Lachenalia, Asparagus, Juncus, among which we may mention the Juncus serratus: — "Many rivers," Mr. Burchell observes, "are choked up with the plant called Palmiet (*Juncus serratus*) by the colonists, and from which one river, in particular, derives its name. Some idea of the appearance of this plant may be gained by imagining a vast number of Ananas, or Pine-apple plants, without fruit, so thickly crowded together as to cover the sides, and even the middle, of the stream, standing seldom higher than three or four feet above the surface, but generally under water, whenever the river swells above its ordinary height. The stems which support them are of the thickness of a man's arm: black, and of a very tough and spongy substance; generally simple, though not rarely divided into one or two branches. They rise up from the bottom, not often in an upright posture, but inclined by the force of the current. They have very much the growth of Dragon-trees (*Dracæna*), or of some palms, from which latter resemblance they have obtained their name:" — Cliffortia, a curious genus in Rosaceæ; numerous Salviæ, several species of Scrophularinæ and Selagineæ; a remarkable genus of Cruciferæ, Heliophila, many of whose species have blue flowers, an unusual colour in that natural order; a vast quantity of Geraniaceæ, particularly of the genus Pelargonium, which are almost peculiar to the Cape; Hermannia, and some Malvaceæ. Polygalæ abound; as do Leguminosæ, among which are several confined to that country, and highly ornamental, as Lebeckia, Rafnia, Liparia, Hypocalyptus, Sarcophyllum, Aspalathus, Hallia, &c. Indigoferæ prevail very much, and the Acacias, which present some remarkable species. A. vera and A. capensis are often loaded with large lumps of very good and clear gum, and they have so great a resemblance to the true Acacia of the ancients, or the tree which yields the gum-arabic, as to have been considered the same species. Wherever these trees are wounded, the gum exudes; and it is probable that a large crop might thus be annually obtained without destroying them. If a computation could be made of the quantity that might be obtained from those trees, only, which skirt the river Gariep and its branches, amounting to a line of wood (reckoning both sides) of more than 2000 miles, it might be worth while to teach and encourage the natives to collect it, which they would readily do, if they knew that tobacco could always be had in exchange. Indeed, the supply thus obtained would be more than equal to the whole consumption of Britain. The Acacia capensis (*fig.* 847.) (*Doornboom*), or Thorn tree, Wittedoorn (*Whitethorn*), and Karrodoorn (*Karrothorn*) has straight white thorns, two to four inches long, and is certainly the most abundant and widely disseminated tree of the extra-tropical parts of Southern Africa. Acacia Giraffæ abounds in the Bichuana country, and was first noticed by Mr. Burchell, who saw it there for the first time, and describes it as a remarkable species, having thick brown thorns and an

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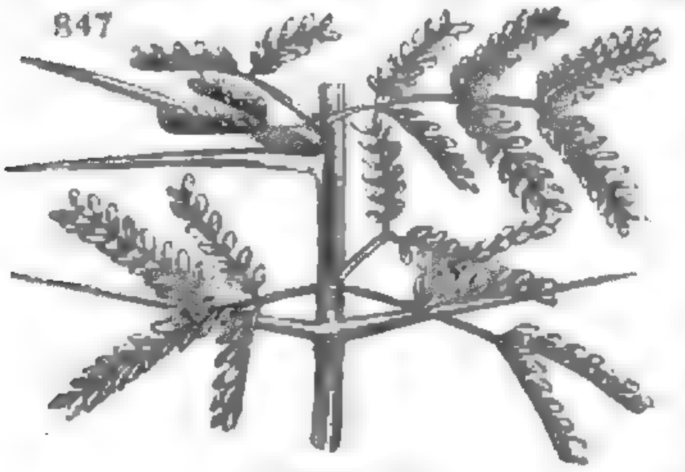

ACACIA CAPENSIS.

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[*] "A Hottentot being severely wounded by the bursting of a gun, his companions expressed so much faith in the powers of Bockoe-azyu (*Bookoo vinegar*) as a wash to cleanse and heal the wound, that I allowed it to be used. Our small stock of this liquid soon failing, we had recourse to an infusion of the Diosma leaves in brandy, with which the wound was washed night and morning for two or three weeks, the effect of this application being very satisfactory. This Bockoe or Bucku-azyu is made by simply putting the leaves of Diosma serratifolia, or some other species of the same genus, into a bottle of cold vinegar, and leaving them to steep; the vinegar being esteemed in proportion to the time during which the infusion has been made, and sometimes turning to a mucilage."

oval pod of a solid mealy substance within, and which never opens as those of other Acacias: in this resembling only the A. atomiphylla. The head of it is thick and spreading, and of a highly peculiar form, which distinguishes it at a great distance. It is called Kameel-doorn (*Camel-thorn*), because the camelopard browses chiefly on it; and is one of the largest trees in these regions. Its wood is excessively hard and heavy, of a dark or reddish brown colour, and is used by the Bichuanas for their smaller domestic utensils, as spoons, knife-handles, &c. Though other species resemble the A. Giraffæ in form and growth, yet the pod alone is sufficient to distinguish it easily from all others. A. detinens is so called by Mr. Burchell from the following circumstance. Describing the country about Zand Valley (Sand Valley) in lat. 29° 48′, he says: — "The largest shrubs were nearly five feet high, a plant quite new to me, but well known to the Klaarwater people by the name of Haakedoorn (*Hookthorn*). I was preparing to cut some specimens, when, though proceeding with the utmost caution, a small twig caught hold of one sleeve. While trying to disengage myself with the other hand, both arms were seized by these rapacious thorns, and the more I tried to extricate myself, the more entangled I became: till, at last, it seized hold of my hat also, and convinced me that there was no possibility of getting free but by main force, and at the expense of tearing all my clothes. I therefore called for help, and two of my men came and released me by cutting off the troublesome branches. In revenge for this ill-treatment, I determined to give to the tree a name, which should serve to caution future travellers against venturing within its clutches." The roots of A. elephantinum constitute a favourite food of the elephant. The Compositæ are extremely widely dispersed; many being woody kinds, especially of Aster, while the number and variety of the Gnaphaliums and Xeranthemums (*fig.* 848.) are quite astonishing: many of them retain the form and colour of the flower long after they have been gathered, and hence derive their name of Everlastings. A great variety of timber is found along the tract of coast that stretches to Plettenberg's Bay, a distance of nearly 200 miles; but the indolence or apathy of the Dutch rendered it of little use to the colonists. The only kind that has been introduced into general use is the Geel Hout (*Taxus elongata*), which is employed in house-building. For furniture, they occasionally use Stink Hout (*Laurus teterrima*), though the execrable odour it diffuses for some time after it has been worked, forms a well-grounded objection to its general adoption. It possesses the colour, hardness, and durability of the heart of oak.

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GNAPHALIUMS AND XERANTHEMUMS.

5311. *The vegetable productions of the country surrounding Algoa Bay* are, in many respects, different from those of the vicinity of Cape Town. The Heaths and Proteas almost disappear, and in their room are numerous species of Aloe and Euphorbia. These, for the most part, garnish the rocks and precipices, the Aloe perfoliata alone occupies the plains, and, with its superb scarlet spikes, resembles, at a distance, skirmishing parties of British soldiers. A singular species of Euphorbia (*E. Caput Medusæ?*) grows also in the plains among the grass, where it appears as a round ball, without stem or leaves, and bears a striking resemblance in shape to the common Echinus. In dry weather the cattle eat it for the sake of its juice. Many useful plants grow here, "the stem of Zamia cycadifolia, when stripped of its leaves, resembles a large Pine Apple. It is called the Hottentot Bread Fruit. These people bury it for some months in the ground, then pound it, and extract a quantity of farinaceous matter of the nature of sago. With infinite labour they dig the root of a species of Antholyza, which lodges at the depth of a foot or more in the hardest gravelly soil. To accomplish this, they are under the necessity of using an iron crow-bar, and the produce of half an hour's toil, which they call Untjie, does not exceed the bulk of a chestnut. Various other bulbs of the classes Hexandria and Triandria are esculent; but the long period of time requisite for their full developement will for ever prevent their cultivation as an article of food. The flowering spikes of the Aponogeton distachyon, known by the name of Water Untjie, are in high repute as a pickle. The Arctopus echinatus has recently acquired a considerable share of reputation as an antisyphilitic. It was tried by some British medical men, whose report was favourable. The discovery of its virtues is due to the Malays, who have long used it. The root bears some resemblance to that of the parsnep, and is the only part employed, being boiled in water, and the decoction administered to the extent of a quart daily, operating without any perceptible effect on the constitution. The Candleberry Myrtle (*Myrica quercifolia*) grows along the coast, on dry sandy plains, exposed to the sea air, where hardly any other plant will vegetate. The wax is in the form of a rough crust, investing the berries, and is extracted by boiling them in water, straining the decoction, and suffering it to cool. It is of a greenish colour, and possesses the hardness, without the tenacity, of bees' wax. When made into candles, it gives a very fine light.

5312. *Fungi, as well as Lichens and Mosses,* are so very rarely to be met with in the interior of Southern Africa, that, of the Fungi, the first which Mr. Burchell saw on his journey was at Klaarwater, after travelling for five months. Indeed, it could be hardly expected that the parched soil of the Cape would suit the growth of the Cryptogamiæ, which mostly delight in moisture.

5313. *It is well known that Table Mountain* is an object of attraction to every one who has visited the Cape: its flat top, called the Table Land, is about two miles in length from east to west, and of various breadths, but nowhere exceeding a mile. The height is estimated at 3500 feet above the level of the sea. It is a common saying among the inhabitants of Cape Town, that when the Devil spreads his tablecloth on the mountain, you may look for a strong south-east wind. In the whole system of meteorology, there is not a more infallible prognostic. The Devil's tablecloth is a thin sheet of white vapour, which is seen rushing over the edge of the precipice, while the sky all around is serene and unclouded. The rapidity of its descent resembles that of water pouring over the face of a rock. The air, at the same time, begins to be agitated in the valley; and in less than half an hour, the whole town is involved in dust and darkness. Instantly the streets are deserted, every window and door is shut up, and Cape Town is as still as if it were visited by the plague. Sometimes, instead of a sheet of vapour, an immense cloud envelopes the mountain, and, stretching out on all sides, like a magnificent canopy, shades the town and the adjacent country from the sun. The inferior boundary of this cloud is regulated, probably, by various circumstances; among others, by the strength of the wind and the temperature of the air in the Table Valley. The influence of the latter is to be inferred from the fact, that though the cloud never descends farther than half way into the hot parched amphitheatre of Cape Town, it may be observed on the side of Camp's Bay, rolling down in immense volumes to the very sea, over which it sometimes stretches farther than the eye can follow it. Nothing can be more singular than the appearance of this cloud. It is continually rushing down to a certain point on the side of the mountain, and there vanishing. Fleeces are seen, from time to time, torn from its skirts by the strength of the wind, floating and whirling, as it were, in a vortex over the town, and then gradually dissolving away. But the main body remains, as if it were nailed to the mountain, and bids defiance to the utmost efforts of the gale. There is a constant verdure maintained on this mountain by the moisture deposited from the atmosphere, and it is no wonder that it is frequented by botanists. M. Ecklon gives the following account of his ascent, in a work very little known in this country, namely, the *Botanische Zeitung*, for July, 1827, published at Ratisbon; and with this we shall conclude our already, we fear, too much extended account of the vegetation of this celebrated promontory: —

"Numerous violent showers, accompanied with hail, had, almost daily, for four long weeks, frustrated every attempt of ours to undertake a botanical tour, in which we hoped to examine the vegetation of Table Mountain, during the winter season. The top was constantly covered with clouds, which rendered the ascent impossible: but as the unusual cold of this year gave reason to expect that ice would be found on the summit, I was the more curious to see the effect which it would produce on vegetation; and the occurrence of two fine wintry days enabled us to start. My friend Heil, the companion of all my wanderings, accompanied me on this occasion. It was a beautiful day, scarcely a cloud dimming the clear blue sky. Our ascent lay among the gardens at the foot of the mountain, where the fresh verdure, interspersed with the many-coloured blossoms of Oxalis and Hypoxis, that were called forth by the rain, ornamented the lower region. By the garden walls flowered the shrubs Muralta, Heisteria, Senecio rosmarinifolius, Othonna abrotanifolia, Nottea (*Selago*) corymbosa, Cluytia pulchella, &c. The water of the great stream from the Table Mountain rolled down with great violence. The road ceases at the water-mill above the gardens, and we ascended briskly, finding Erica baccans, Phylica buxifolia with seed, Achyranthes aspera, Mora grandiflora, and Cluytia polygonoides. A little bird (*Sylvia Pastor?*) enticed out by the beauty of the morning, whistled his grasshopper note in the miller's fig trees, and even here, amid all the riches of Flora, the lingering wish that we could but hear the nightingale of our native land, convinced us that there is nothing in this wide world capable of completely satisfying the wider wishes of the human heart. While ascending the rock still more toward the table land, and between the pieces of rock, Penæa mucronata, Agathosma villosa, Blechnum australe, Pteris calomelanos, Cheilanthes capensis, C. hirta, C. pteroides, Asplenium furcatum, and at the great brook, Lomaria capensis and the Calla æthiopica (*fig.* 849.), now appeared with multitudes of blossoms. The beautiful day had attracted another party to the Table Mountain, as we perceived by a

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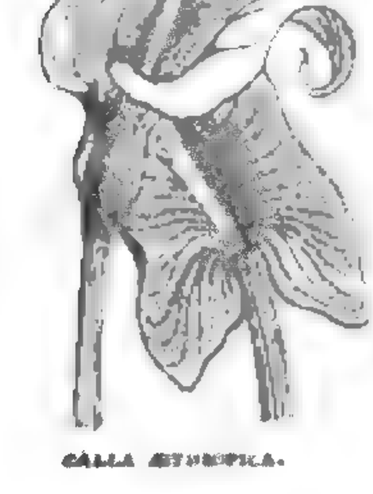


CALLA ÆTHIOPICA.

white flag waving on the summit. The vegetation at Plalle Klipp, owing to the late continued wet weather, had assumed quite an European aspect. I gathered Cyperus lanceus, Viola angustifolia, a Campanula, Cema turbinata, Stachys æthiopica, and Moræa collina. We were here in the region of the Silver tree, 1000 feet above the level of the sea. Leucadendron argenteum forms a small forest, at between 500 and 1000 feet from the Lowenberg, running along the northern side of the Devil's Berg and Table Mountain to Constantia. The lovely Protea mellifera, with red, reddish and white flowers, was here in full bloom, and a Thesium, by the great brittleness of its stem, was near letting me fall, as I clung to it to aid me in the ascent. Cassytha filiformis had almost covered a tree of Virgilia capensis, above 20 feet high. Plalle Klippe consists of granite, striped with horizontal layers of grey greenstone; at some hundred feet higher up is the Witte Klippe, a large granite rock with a sloping top, over which the water runs, and as there was abundance of water at this season, it formed a most beautiful scene. The view was romantic: before us rose the tall steep mass of rock of the Table Mountain, not a cloud obscured the clear sky, and only in the greater distance to the north, a thick whitish fog intercepted the prospect of the whole chain of mountains. The highest point of the Hottentot's Holland Mountain, Stettenbosch, Drakenstein, and Tulbagh, which may be considered as 1000 feet higher than Table Mountain, were covered with snow. The onward road led through various shrubs, among which I observed Bubon galbanum, Royena glabra, R. hirsuta, Celastrus lucidus, Plectronia ventosa, Cassinia Maurocenia, Rhus angustifolium, R. tomentosum and lanceum, Polygala myrtifolia, an Aster, Martynia acris, Gnidia oppositifolia; while among these, in the sandy spots, Romulea fragrans, Lichtensteinia lævigata, and Bulbine recurva, began to shoot up and blossom. Numerous cows, one of which had a calf that suffered us to drive it away far more patiently than a German animal would have done, hurried from us, and they made their escape into flowering plants of Diosma oppositifolia, Hydrocotyle tomentosa, an Aster with blue flowers, Adenandra uniflora, Asclepias arborescens, Euphorbia tuberosa, and E. latifolia. In the third region, about 1700 feet above the sea, a beautiful waterfall invited us to rest and refresh ourselves. A thermometer which we had brought indicated 55° in the shade and 70° in the sun, at 10 A. M. Round the waterfall I saw Kiggelaria africana with fruit, Cunonia capensis out of flower, Hypocalyptus canescens, Todea africana, Eriocephalus racemosus, Myrica serrata, M. quercifolia, Berckheya cihata, and Protea lepidocarpon. Proceeding onwards, and still ascending, we approached the right cleft, which leads to the summit, between steep rocky walls. But, to our great mortification, we found the entire flora of the place destroyed by a fire that had been kindled about two months ago. Nothing but burnt stumps remained of the lovely shrubs that had excited my admiration on a previous excursion, and long must it be ere their former beauty can return. Such fires are kindled and kept up during calm weather by the proprietors of Silver tree plantations, to prevent such a circumstance accidentally occurring during the prevalence of the before-mentioned strong south-east winds, which not only might destroy all the trees, but prove highly dangerous to the town. Only an Oxalis variegata appeared between the consumed stumps, and behind a piece of rock we observed a shrub of Brunia, with all its leaves and most of its blossoms burnt off. Pieces of broken glass and old shoes, which lay scattered every where on the ground, showed the difficulty of ascending the Table Mountain. The fire had not, however, reached the great defile, where some African plants appeared; but nature, in general, seemed as dead, and only Arnica piloselloides, an Arctotis, and some leaves appeared, where I had before found Agapanthus minor, Amaryllis sarniensis, and Atragene angustifolia. To the eye of a botanist, the scorched ground and consumed vegetation looked like Sodom and Gomorrah. Gnaphalium capitatum and Arnica lanata now appeared in separate spots, and broken branches covered with Parmelia and Usnea lay scattered at our feet, wafted by the wind from the ravines of the rock. We were now about 2500 feet above the level of the sea, and here the fire had stopped. At this elevation we found Aster cymbalarifolius, a Buchnera, and Solanum nigrum among the crevices of the rocks. The view around us was truly majestic; added to which, the drops of rain, driven by the wind from the lofty rocks and steep cliffs, reflected back the clear sunbeams, and presented all the colours of the rainbow. A sudden whirlwind lifted up a broken bush of Erica that lay far beneath us, and carried it in a moment high over the Table Mountains. We had accomplished two thirds of the ascent at 11. A. M., and arrived at a small cavern in the rock, where there is always some water, that proves in the warm season a great refreshment to the weary traveller. There Erica purpurea, and some Restiones, were still in bloom. The defile now became narrower, and the pieces of rock over which we must clamber increased in size: the cold was also more sensibly felt at our fingers' ends, the thermometer standing at 43°. Several mosses grew on the moist sides of the rock. We sought the sunshine now as gladly as in this situation we generally court the shade; but its beams gave no more warmth than the March sun does in Germany. An Anthyllis, many species of Restio, and the Osteospermum ilicifolium, an inhabitant of the plain of Table Mountain, here greeted our eyes; and the latter first manifested its presence by the strong smell of its leaves. Many specimens of the Klipp dachren (*Hyrax capensis*) peeped out from among the pieces of rock, but escaped immediately on seeing us; still their curiosity is so great that they soon reappear, and a person, by standing quietly a little while, may easily shoot them. Their flesh is good eating, and has the flavour of hare. Not a bird could be either seen or heard: but the frogs and grasshoppers made plenty of noise. On the sides of the rocky projections are Chinese characters, and many names, which are designed to perpetuate the memory of the heroes who had accomplished this ascent before us, gave assurance that we had attained the highest point, and at 11½ A. M. we had accordingly issued from the defile and gained the plain. The party whose flag we had seen from below was preparing to descend. The horizon to the south-east was covered with thick clouds, which intercepted the otherwise beautiful prospect over the semi-insular Cape, and warned us to prepare for our return. No delay was possible, as the mountain would shortly be covered with clouds. Indeed, every object presented a most wintry appearance. Erica physodes and some plants of Aster linearis exhibited a few blossoms; while others, as Drosera cuneifolia and Villarsia ovata, were beginning to throw out young shoots. The wind now commenced blowing violently from the north-west, and black clouds covered the Kasteelsberg before us, so that we hastened to regain the defile, lest, being enwrapped in clouds, we should lose our way and be precipitated from the steep sides of the rock; as it is common for the dense mist to hide every object beyond two feet before us. Besides the defile by which we ascended, there is another, that goes down on the western side over Van Kamp's Bay; but the steepness of the rocks about the middle do not allow it to be used. About eighty feet from the summit, in this latter defile, is the only spring that is on the top of the Table Mountain, and which never fails in the driest weather. Here we found Erica physodes abundantly in full flower; also E. purpurea, Staavia glutinosa, Protea cynaroides, and P. speciosa, both in seed, Othonna abrotanifolia, Agathosma imbricata, Gnaphalium cephalophorum, Erica Lebana in seed, Phylica ericoides, Gnidia scabra, and a red lichen on the pieces of rock. There were very few plants in blossom in this generally rich defile. The thermometer indicated 43° in the shade and 55° in the sun at 1 P. M.; at which hour it was 66° in the shade at Cape Town. Being very hungry, we sat down in the shade to take our dinners, encamping beside the stream, where our tablecloth was spread of the young verdure of Restiones, Penæa mucronata, Lobelia pinifolia, Hermas capitata, H. depauperata, Clutia tabularis, Osteospermum ilicifolium, Senecio purpurea, and Aster filiformis. Van Kamp's Bay, below us, was covered with white clouds as far as the eye could reach, extending, like a mass of snow, over the Southern Ocean. The wind blew strong through the tops of the surrounding rocks, and lifted the clouds still higher and nearer towards us, though a clear blue sky still appeared immediately over-head. After our meal we again sought for mosses on the rocks, and found, besides an Erica, a Campanula, and Cliffortia, but not in blossom. Cunonia capensis, likewise past flower, grew in the fissures of the rock, and Schizæa pectinata with dried fructification. Above us, on the high rock that surrounded us, we noticed a beautiful shrub, that seemed to be covered with red flowers: my friend determined to obtain it, though I assured him, from telescopic observation, that the apparent red blossoms were only the red fruit of Leucadendron pyramidale, and such it proved to be, though he also brought down fine flowering specimens of Penæa squamosa and several Ericæ. At about half past 2 P. M. we returned to the northern defile, and there began our descent, going back by the way we came. My friend had the misfortune to sprain his foot while returning, which rendered our walk slow and difficult, but, happily, no disagreeable consequence ensued; and, in spite of this delay, we regained Cape Town by moonlight, at about 7 P. M."

Subsect. 8. *Zoology.*

5314. *Of the zoological peculiarities of* Southern Africa, we have already spoken. In no region of the globe does there appear so great a number of quadrupeds, and these, too, of the largest dimensions. The limits of this zoological region is very uncertain; inasmuch as of all this part of the African peninsula, we know little beyond the Gariep to the north-west; while the borders of the Great Fish River (forming the boundaries of the colony on the south-western coast), are the farthest limits, in this direction, hitherto reached by scientific travellers. Mr. Burchell, indeed, has penetrated the interior deserts to lat. 26° south, and his researches lead us to believe that the animals of central equinoctial Africa do not materially differ from those of the Great Karroos which bound the territories of the Cape Colony. The chief seat, therefore, of the zoology of Southern Africa must be sought for in that immense line of forests which border the coast, and have been traced from Bosjesveld to the bounds of the Great Fish River: these extend, in all probability, to an immeasurable distance farther, and form a belt of eternal verdure, between the arid deserts of the interior and the more fertile borders of the coast.

5315. *The surprising number and variety of quadrupeds* which naturalists have detected in this region will be better understood by the following list; equally interesting both to the scientific zoologist and to the future traveller: —

Cercocebus pygerythrus. Red-vented Monkey.
Cynocephalus porcarius. Pig-faced Baboon.
Pteropus Leachii Sw. Leach's Bat.
Rhinolophus Geoffroyii Sw. Geoffroy's Bat.
Nycteris capensis Sw. Cape Nycteris.
Nycteris affinis Sw. Allied Bat.
Vespertilio capensis Sw. Cape Bat.
Sorex capensis. Cape Shrew.
Macroscelides Smithii *Neb.* Smith's Shrew.
Chrysochloris capensis. Cape Mole.
Chrysochloris Hottentotus Sw. Hottentot Mole.
Ratelius Ratel. Ratel Glutton.
Putorius Zorella. The Zorelle.
Lutra inunguis. Clawless Otter.
Canis aureus. Jackall.
Canis mesomelas. Cape Jackall.
Hyæna venatica. Hunting Hyena.
Mangusta cafra. Caffrarian Ichneumon.
Mangusta urinatrix Sw. Aquatic Ichneumon.
Mangusta Levaillantii. Levaillant's Ichneumon.
Ryzæna capensis *Ill.* Surikate.
Proteles Lalandii. Cape Proteles.
Hyæna crocata. Spotted Hyena.
Felis leo. The Black-maned Lion.
Felis Serval. The Serval.
Felis capensis. Cape Cat.
Felis nigricans. Black-footed Cat.
Otaria Peronii. Peron's Seal.
Phocæna Hornei Sw. Cape Seal.
Myoxus avellanarius. African Dormouse.
Myoxus murinus. Murine Dormouse.
Myoxus africanus. African Dormouse.
Mus Donovani. Donovan's Mouse.
Bathyergus maritimus. Coast Bathyergus.
Bathyergus capensis. Cape Bathyergus.
Bathyergus Ludwigii Sw. Ludwig's Bathyergus.
Pedetes capensis. Cape Pedetes.
Dendromus dorsalis Sw. Dorsal-striped Treelover.
Sciurus ginginianus. Gingi Squirrel.
Sciurus oculatus Sw. White-spot Squirrel.
Lepus africanus. Cape Hare.
Lepus rufinucha Sw. Rufous-naped Hare.
Lepus saxatilis. Rock Hare.
Orycteropus capensis. Cape Anteater.
Rhinoceros africanus. African Rhinoceros.
Rhinoceros simus. Burchell's Rhinoceros.
Hyrax capensis. Cape Hyrax.
Equus quagga. Couagga Zebra.
Equus zebra. Common Zebra.
Equus montanus. Mountain Zebra.

Antelopes.

Aigocerus leucophæa. Blue Antelope.
Aigocerus equina. Roan Antelope.
Aigocerus barbata. Bearded Antelope.
Oryx caffra. Caffrarian Oryx.
Gazella pygarga. White-faced Gazel.
Gazella euchore. Springer Gazel.
Antilope melampus. The Pallah.
Redunca eleotragus. Reitbock Antelope.
Redunca isabellina. Cream-coloured Antelope.
Redunca villosa. Riet Rhiebock.
Redunca scoparia. Orebi Antelope.
Tragulus oreotragus. Klipspringer.
Tragulus rupestris. Steenbock.
Tragulus rufescens. Vlackte Steenbock.
Tragulus grisea. Grysbock.
Tragulus pallida. Bleekbock.
Cephalophus platous. Broad-eared Antelope.
Cephalophus Burchellii. Burchell's Antelope.
Cephalophus cærulea. Slate-coloured Antelope.
Cephalophus purpusilla. Kleenebock.
Tragelaphus sylvatica. Boschbock.
Damalis Caama. The Caama.
Damalis lunata. Lunated Sassaby.
Damalis Oreas. Impoofo.
Damalis Canna. Canna.
Damalis strepsiceros. Koodoo.
Catoblepas Gnu. Gnoo.
Catoblepas taurina. Kokoon.
Catoblepas gorgon. Brindled Gnoo.
Bos caffer. Cape Buffalo.

5316. *From this list we can only select* a few for particular notice. The Antelopes are the most conspicuous tribe, and range over the vast karroos, or deserts, with astonishing swiftness. Some, however, inhabit only the forests, while others prefer the mountains.

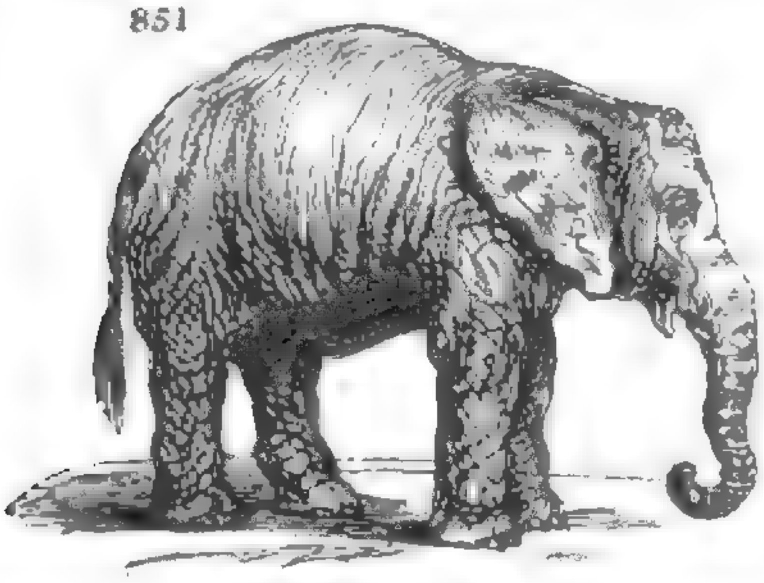
850

SPRING-BOK.

5317. *The Spring-bok or Mountain Antelope* (*fig.* 850.), called by Lichtenstein the Antilope pygarga (*Trav. Af.*, 317. 340.) frequently go in troops of not less than 3000. They run for some time extremely quick; and then, if a bush or piece of rock crosses their path, they spring to the height of four or five feet, clearing at one leap ten or twelve feet of ground. They then stand still a few minutes, till the rest are passed; after which they all set off again, running with astonishing fleetness. The beautiful form of this animal, its elegant markings, and the incredible lightness and grace of its motions, render it extremely interesting.

5318. *The African Elephant* (*fig.* 851.) is, at first sight, distinguished from the Asiatic species by its much larger ears, which descend towards the legs: they are, indeed, so large, that at the Cape they are said to be made into sledges to draw agricultural implements to and from the fields, and even to convey the sick. It is found from the Cape of Good Hope to Senegal; but whether it extends along the eastern coast is uncertain. The annexed figure was taken by Mr. Landseer, from a young and very docile specimen, living in 1830, in the Garden of Plants. This species, although not yet tamed in its native country, has all the docility and wonderful sagacity of the Asiatic Elephant.

851



AFRICAN ELEPHANT.

5319. *The Hunting Hyena* (*Hyæna venatica* Burch.) (*fig.* 852.) is a beautiful animal, first discovered by Mr. Burchell, and, from uniting the characters of the Hyenas and the Dogs, has been thought worthy of a subgeneric name. It is remarkable for hunting in regular packs: though in general a nocturnal animal, it frequently pursues its prey by day; and as it is well formed by nature for speed, none but the fleetest animals can escape. Sheep and oxen, therefore, are particularly exposed to its attacks; the latter are approached by stealth during their sleep, and frequently suffer by the loss of their tails.

5320. *To notice, however briefly, the remaining quadrupeds,* would far exceed our limits. The diversity in the size and habits of the Antelopes exhibits every intermediate link from the smallest and the most delicate to the largest and strongest Buffalo; while the Lion, the true Jackall, and several species of Hyena, are well known inhabitants of Southern Africa.

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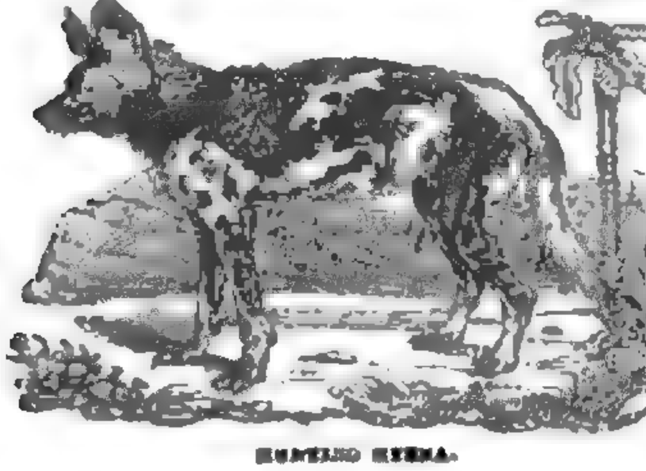
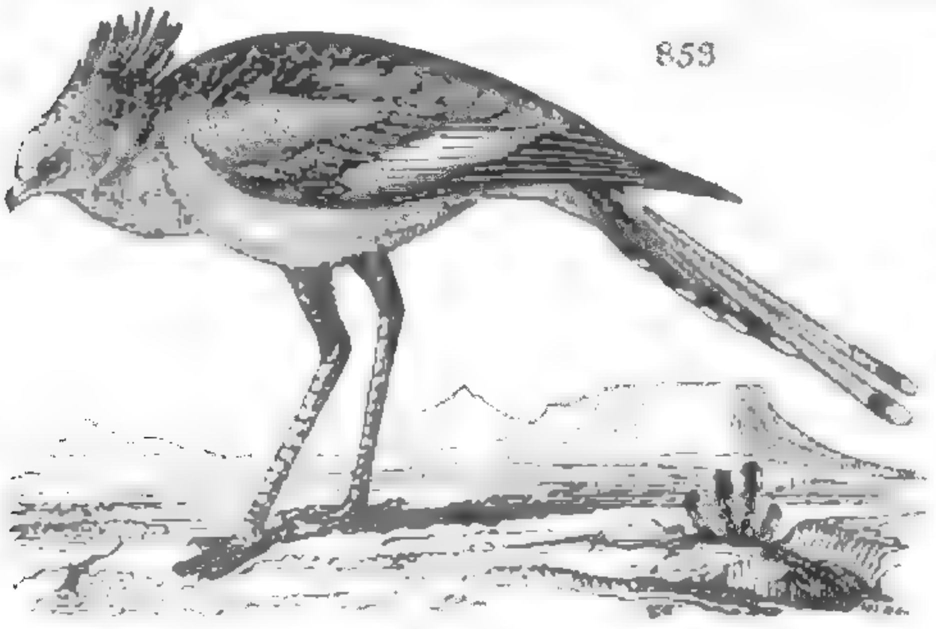


HUNTING HYENA.

5321. *The ornithological subjects are numerous;* but, on the whole, less beautiful than might be imagined. Flocks of Vultures of several species are every where seen in the deserts, where the remains of so many quadrupeds, killed either by beasts of prey or by the course of nature, require to be removed. The Eagles and Falcons are also numerous, and keep under subjection the smaller quadrupeds and birds; while the Snake-eater (*Gypogeranus serpentarius* Ill.) (*fig.* 853.), peculiar to Southern Africa, roams over the sandy plains, carrying on a perpetual warfare with all sorts of reptiles. The Barn Owl and Great-horned Owl of the Cape are supposed to be of the same species as those of Europe. Among the lesser birds of prey are several true Shrikes: the Drongoes, called by the Dutch *Devil birds,* from their uniform black colour, assemble in the morning and evening, and hunt after insects, not unlike swallows: the Puff-backed Shrikes (*Malaconoti* Swains.), on the contrary, search for eggs and young birds in thick bushes; while the Caterpillar-catchers (*Ceblepyrinæ* Swains.) only frequent the loftiest trees, for the sake of the soft insects from which they derive their name.


853

SNAKE-EATER.

5322. *In the perching order of birds, we find many* of beautiful plumage, and others of wonderful instinct. The Crested Kingfisher (*Alcedo cristata*) (*fig.* 854.) is much smaller than our European species, but far surpasses it in the splendour of its colours: the head is adorned with a full crest of narrow and arched feathers, alternately barred with black and brilliant blue: the under plumage is of a rich cinnamon, with the throat nearly white; the bill and legs bright crimson. The Cape Honeysucker (*Melliphaga cafer* Sw.) (*fig.* 855.) and the Cape Coly (*Colius capensis* L.) (*fig.* 856.) are both small birds, of dull-coloured plumage, but rendered conspicuous for the great length of their tails; the first subsists chiefly upon the nectar of flowers: it is remarkable as the only genuine Honeysucker (*Melliphaginæ* Sw.) found in Africa; and it seems abundant at that extremity of Africa which is nearest to Australia, the chief metropolis of its tribe. The Cape Coly is less than a sparrow; of a delicate drab colour, and has all the four toes placed forward, nearly similar to the Swifts: the shortness of the wings very much impedes its flight. M. Le Vaillant says these are called, at the Cape, Mouse Birds, not only on account of their delicate and soft plumage, but from their creeping about the roots of trees like that quadruped. This and several other species found in Southern Africa appear to live entirely upon fruits: their nests are placed in clusters, and they sleep in a most curious manner; each close to the other in the same bush, and suspended to the branches by one foot, with the head lowermost; a position which has not yet been detected in any other genus of birds. The Colies are generally very full of flesh, and are delicious eating.

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CRESTED KINGFISHER.

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CAPE HONEY-SUCKER.

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CAPE COLY.

5323. *The two most extraordinary birds* in their respective instincts, are the Honey-Guide and the Republican.

5324. *The Honey Guide* (*Indicator Sparrmanni* Sw.) (*fig.* 857.) was first discovered and circumstantially described by the celebrated traveller Sparrmann. This bird is smaller than a thrush, grey-brown above and whitish beneath; and is principally found in the forests on the eastern coast towards Caffraria. It feeds chiefly on bees and their honey, and, as if unable always to procure the latter, it would seem to call in the assistance of man, in the following manner: — The morning and evening are the times of feeding: the note of the bird, well known to the African hunters, is then shrill; the latter answer this note from time to time till the bird is in sight: it then flies forward, by short flits, towards the spot where the hive is situated, and thus secures a portion of the spoil from its grateful allies. These birds are, of course, held in much esteem, almost amounting to veneration, by the Hottentots; and the killing of them, by Dr.

Sparrmann, was much resented. Le Vaillant observes, that, on opening the stomach, he found nothing but wax and honey; the skin was itself so thick, as scarcely to be pierced with a pin: this latter fact we have ourselves ascertained from the dead bird. It is a peculiarly wise provision of Providence to fortify this bird against the stings of those insects which constitute its principal food. The ignorance of Bruce, who knew nothing of natural history, but who has presumed to ridicule Dr. Sparrmann's account of this bird, which happens to differ from *another species* found in Abyssinia, deserves notice, as affording a warning to travellers not to write about scientific matters they do not understand.

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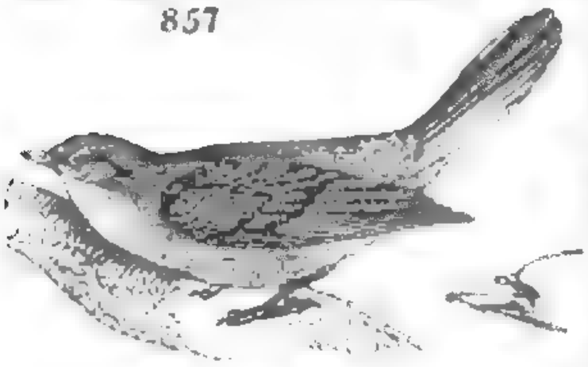

HONEY GUIDE.

5325. *The Republican Weaver* (*Loxia socia* L.), like several other birds of the same family, lives in vast societies, uniting their nests under one common roof, sometimes to the number of 800 or 1000 in a single community. These little towns, indeed, are the progressive increase of several years, for the birds are observed to add to the size of their common dwelling every season, until the trees, unable to support any further weight, not unfrequently fall to the ground; when the birds, of course, are compelled to seek a new site for their habitation. Mr. Paterson, who first made us acquainted with these extraordinary ornithological villages, affirms that there are many entrances, each of which formed a regular street, having rows of nests on each side, at about two inches' distance from each other. He describes the bird itself, however, so loosely, that the precise species is very doubtful. The whole of this tribe of birds (Plocianæ *Sw.*) spread over India and Africa, are celebrated for the skill with which their nests are constructed.

5326. *The Scarlet Weaver* (*Euplectes Orix* Swains.) (*fig.* 858.) is a superb species; with a plumage of the brightest crimson relieved by a velvety black, and is, indeed, one of the most beautiful birds of Southern Africa. It frequents reedy, marshy places, among which it constructs a curious nest composed of twigs closely interwoven with cotton, and divided into two compartments; there is but one entrance, and the whole is so compact, that it is impenetrable to the weather. It has been said that the innumerable flocks of these birds among the green reeds are inconceivably beautiful, the brightness of their colours giving them the appearance of so many scarlet lilies. Both Dr. Latham and Mr. Barrow have confounded several species under this name.

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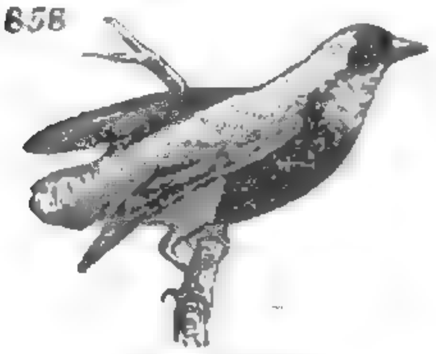

SCARLET WEAVER.

5327. *The insects of the interior*, according to Dr. Smith (*in litteris*), are more numerous than on the coast, being chiefly composed of such carnivorous coleopterous families as live in sandy tracts. But the forests on the western coast appear, from Mr. Barrow's *Travels*, to abound with beautiful Moths. The Locusts and Grasshoppers, on the Karroo plains, are in profusion. Mr. Burchell mentions one that was so exactly alike in colour, and even in shape, to the surrounding stones, that he should never have discovered it but by its motion. Strikingly opposed to this in brilliancy of colour is the Gryllus morbillosus, or Red-winged Locust, having livid tubercles on its thorax exactly resembling the early pustules occasioned by the small-pox.

5328. *Fish of large size*, and mostly of unknown species, abound. It is singular that Eels are only found in those rivers which lie eastward of the Cape; while the Gariep Silurus (*Silurus gariepinus* Burch.) (*fig.* 859). is equally restricted to those of the west: the latter is called *Platte-Rop*. The shells are not attractive: various Limpets, and the *Haliotes Midæ*, or Great Earshell, are common; but those of the land and fresh waters have not been attended to. Among the former, however, is that large and beautiful snail, Achatina zebra.

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GARIEP SILURUS.

5329. *The Ox is the chief domestic animal*, being used throughout Southern Africa for all purposes of draught, and even for the saddle. The Zebras, common in the interior, have never been tamed. Horses are scarce; the breeds in the colony have been partly introduced from Europe, South America, and even from Persia: the latter breed is still preserved in much of its purity in the northern districts of the colony: they are very tall, without being strikingly handsome, strong, and endure much fatigue: the hoofs grow so hard as not to require shoes. (*Lich. Tr.*) The increase of horses in Graaf Reynet, from 1804 to 1811, was only 9084, while that of the draught and breeding oxen was 78,384, or had very nearly doubled in seven years. The Bachapin and Bichuana nations of the interior, Mr. Burchell observes, have no horses, nor are any to be found among the Bushmen tribes or some of the Hottentots. At Litakun there are plenty of dogs, but cats are unknown. The Nimiquas, according to Le Vaillant, possess the most handsome and vigorous breeds of domestic animals of any in Southern Africa. The oxen are equally as strong as those of the colony, but are trained into three different classes: beasts of burden or draught, saddle oxen, and war oxen. These saddle oxen are much superior to the horse in supporting fatigue, and only inferior to him in swiftness. The war oxen seem peculiar to this nation They are chosen from the most savage and ungovernable, and, being driven against the enemy, they become furious at the sight of the adverse host, and rush on the men like wild bulls. These formidable creatures are not only capable of repelling wild beasts, but will even attack them. The sheep of the colony are of the fat-tailed breeds; but those of the Nimiquas resemble the European, but stand higher, and are larger.

Sect. III. *Historical Geography.*

5330. *The discovery and settlement by Europeans* is the only circumstance connected with this region which bears any historical character. The Cape, which forms its most remarkable feature, was descried and rounded, in 1493, by Bartholomew Diaz; but that navigator, appalled by the stormy aspect produced by currents from opposite oceans, returned, and named it the Cape of Tempests. Emanuel, however, who then reigned in Portugal, inspired by a bolder spirit, called it the Cape of Good Hope, and equipped Vasco de Gama, who, in 1497, passed with safety, and even with ease, round this dreaded boundary into the seas of India. The Portuguese, however, engrossed by vast schemes of Eastern discovery and conquest, scarcely deigned to cast an eye over this rude border of Africa. They were content if their vessels, in passing, could be supplied with water and provisions.

5331. *The Dutch*, a prudent and economical people, when they obtained the dominion in the Indian seas, soon discovered the advantages to be derived from a settlement on a coast to which its situation attached so much commercial importance. In 1650 they founded Cape Town, and, from the rude and sluggish character of the people thinly scattered over this immense tract, easily extended their settlement to its present limits of the Nieuweldt Mountains in the north, and the Great Fish River in the east. In consequence, however, of the political union of Holland with France and consequent war with this country, Cape Town was, in September, 1795, attacked and reduced by a British naval force. It was restored by the peace of Amiens, but, on the renewal of hostilities, was recaptured in January, 1806, and was one of the few Dutch possessions retained by Britain in the treaty concluded at the congress of Vienna.

SECT. IV. *Political Geography.*

5332. *Little, in a general view, can be said under this head.* The country consists partly of the Cape territory, which is governed on the usual system of British colonies, partly of a region divided among a multitude of small separate tribes. The usual government is that of a rude monarchy irregularly controlled by the independent spirit of simple and pastoral races. The details respecting both the *government* and *productive industry* of a territory split into so many minute portions, can only be given with advantage under the local divisions.

SECT. V. *Civil and Social State.*

5333. *The population* of a region of which the very boundaries are yet so undetermined cannot even be made a subject of conjecture. We shall, however, be afterwards able to state that of some particular places and districts.

5334. *The classes of inhabitants* in this part of Africa exhibit a considerable variety. They consist of — 1. The British, comprising the officers of government, the troops, and a few thousand agricultural emigrants, whose numbers are not, however, increasing. 2. The Dutch, who farm most of the lands in the territory, and constitute the most numerous part of the population of Cape Town. 3. The Hottentots, the native race, reduced to degrading bondage under the Dutch. 4. The Bosjesmans, a miserable and savage tribe of Hottentots, inhabiting the mountainous districts, carrying on a constant predatory war against the settlers. 5. The Caffres, a fierce pastoral race, inhabiting the country beyond the eastern limit of the colony extending along the Indian Ocean. 6. The Boshuanas, a pastoral and partly agricultural race, of a different character, possessing the country that stretches northward from the boundary chain of mountains. These different classes will be best treated of under the local divisions to which they belong.

SECT. VI. *Local Geography.*

5335. *The three great divisions of Southern Africa* are, 1. The Cape colony. 2. The country of the Caffres. 3. The country of the Boshuanas.

SUBSECT. 1. *The Cape Colony.*

5336. *This colony*, of which the general boundaries and aspect have already been described, is estimated by Mr. Barrow to extend 588 miles in length, and 315 in its greatest breadth; but the average breadth does not exceed 200, and the surface consists of about 120,000 square miles. A great portion consists of mountains of naked sandstone, or of the great Karroo plains, whose hard dry soil is scarcely ever moistened by a drop of rain, so that seven tenths of the territory never exhibit the least appearance of verdure. Along the coast, however, and also far in the interior, along the foot of the Sneuwberg Mountains, there are extensive plains covered with rich pastures. The banks of the rivers are in many places fertile, though liable to inundation. The hills in the vicinity of the Cape are employed in the production of a wine which, by the encouragement of low duties, has been imported into England; but it is very little esteemed, with the exception of that delicate species made from grapes reared near the village of Constantia, the quantity of which, it is said, might, with good management, be greatly augmented. The grain is raised almost exclusively within three days' journey of Cape Town, and serves merely for the supply of that place; all the rest of the territory is devoted to pasturage.

5337. *The Dutch farmers*, or boors, of whom grazing forms thus almost the sole occupation, hold very extensive premises, reaching often for several miles in every direction. Yet spacious limits of domains do not prevent frequent boundary-feuds, which are, indeed, fomented by the plan of measuring them, not by the rod and line, but by the pace of an officer employed for that purpose, who is alleged sometimes to measure his strides according to the favour with which he regards the parties. The boor having covered this extensive possession with flocks and herds, resigns himself to supine indolence, devolving the sole labour on his slaves, who are usually Hottentots. He draws from his farm neither wine, fruits, nor vegetables; nor does he make his herds yield milk or butter. The pipe never quits his mouth except to take his *sopié*, or glass of brandy, and to eat three meals of mutton soaked in the fat of the large-tailed sheep. The mistress of the mansion, in like manner, remains almost immovable on her chair, with hot coffee on a table always before her. The daughters sit round with their hands folded, rather like articles of furniture than youthful and living beings. A teacher is usually employed; but, in addition to his proper functions, he is obliged to employ himself in the most menial offices. Yet they are hospitable in the extreme. A stranger has only to open the door, shake hands with the master, kiss the mistress, seat himself, and he is then completely at home. Those who occupy farms on the borders of the Sneuwberg, where they are exposed to the depredations of the wild Bosjesmans, acquire, in consequence of the necessity of defending their property, more energetic and active habits.

5338. *The Hottentots*, the original inhabitants of this country, have now been completely enslaved, not being indeed liable to sale, but fixed to the soil as bondmen. They have been branded as presenting man in his rudest state, and his closest alliance with the brute; and certainly they have spared no pains to render their external appearance hideous and disgusting. Their persons are studiously invested with a thick coating of grease, which, mingling with the smoke, in which they are almost perpetually involved, forms a black thick cake, through which the yellowish-brown colour of the skin is scarcely ever discernible. For this ornamental purpose, butter is employed by the rich, while the poorer classes besmear themselves with fat from the bowels of slaughtered animals. Yet this coating is said to be really useful in defending them from the solar rays, and preventing cutaneous disorders. Hard and coarse hair in irregular tufts, and prominences of fat jutting out in places where they are least ornamental, complete the picture of deformity. All their habits of life are filthy and slovenly. When a sheep or an ox is killed, they indulge in beastly gluttony; ripping open the belly of the animal while yet half alive, and tearing out the entrails, which they throw on the coals and greedily devour. Their villages, or *kraals*, compose a labyrinth of little conical hovels, reared of twigs and earth, and so low that the inmates cannot stand upright. Yet their aspect of sluggish stupidity seems, in a great measure, induced by the degrading bondage in which they are held. They pursue wild animals with swiftness and dexterity, directing with a sure aim their darts and arrows. They carry on various little manufactures, tanning and dressing skins, forming mats of flags and bulrushes, bowstrings from the sinews of animals, and even moulding iron into knives. In their free state they had a republican form of government, and were led to battle by their *konquers*, or captains, to the sound of the pipe or flageolet; they had also the same passion for the dance and song which is general throughout Africa. The charge of their having been strangers to every religious idea seems now completely disproved.

5339. *The Bosjesmans* appear to belong to the same original race with the Hottentots; but, from the rude haunts which they occupy, have preserved a precarious independence. They inhabit the most inaccessible valleys of the Sneuwberg and Nieuweldt, and the desolate tracts extending thence to the Orange River. Of all human beings, their condition is perhaps the most forlorn. Their food is obtained only by scrambling over the rocks in pursuit of wild animals, swallowing the larvæ of ants and locusts, or carrying off cattle in wild foray from the plantations in the plains beneath. Yet they display energy, activity, and even gaiety. They shoot their little poisoned arrows with surprising accuracy; and, when pursued, bound from rock to rock with an agility which defies European pursuit. They can endure long fasts, during which, however, their frames become extremely lank and meagre; but when they succeed in obtaining a supply of animal food, they devour it voraciously in amazing quantities. Considerable ingenuity is shown in the pictures of animals drawn by them upon the rocks. On moonlight nights, they dance without intermission from sunset till dawn; and sometimes, when cheered by the prospect of fine weather, continue this exercise for several days and nights. They are in a state of continual warfare with the settlers in the plains beneath; not only carrying off their cattle, but putting to death, in a cruel manner, all who fall into their power.

5340. *A British agricultural colony* was some years ago attempted in the district of *Albany*, the most easterly part of the territory, lying between the Zoondags and the Fish Rivers. The fertility of the soil rendered the situation promising; and about ten years ago several thousand emigrants were located upon it. The experience of three disastrous seasons, however, in which the crops were ruined by alternate drought and inundation, appeared to prove the district unfit for tillage, and suited only to pasturage, for which the allowance of a hundred acres made to each emigrant was too small. The distress became extreme, and partial relief was afforded by a subscription of 3000*l.* raised at the Cape. A number quitted the settlement, in consequence of which the lot of the others was improved; but no temptation has been afforded to future emigrants to follow their example.

5341. *Cape Town*, the capital of Southern Africa, and the most important European settlement on the continent, is situated near the isthmus of a peninsula, formed by False Bay on the east, and Table Bay on the west, on which last the city itself is built. Immediately behind rises precipitously the Table Mountain, 3582 feet above the sea, and consisting chiefly of steep cliffs of naked schist and granite. The Devil's Hill, 3315, and the Lion's Head, 2160 feet high, rise on each side. This triple summit forms a most conspicuous object from the sea, over which also these spots command a very striking prospect. Table Bay affords an abundant supply of excellent water, and is capable of containing any number of vessels; but from May to September they are in danger from heavy westerly gales, and it is advisable to take a station at the head of False Bay. Cape Town (*fig.* 860.), being the only good place of refreshment for vessels between Europe and America, on one side, the East Indies, China, and Australia, on the other, must always be a great commercial thoroughfare. The territory itself affords for exportation wine, hides, and skins, with aloes, argol, and a few other articles, which amounted, in 1829, to 23,800*l.*; in 1830, to 171,000*l.* British manufactures were also imported to the value of 257,000*l.* in 1829, and of 330,000*l.* in 1830. The foreign imports amounted in 1829 to 36,000*l.*; in 1830 to 78,000*l.* The Dutch society at the Cape is extremely mercantile, and *koopman*, or merchant, is held as a title of honour; but the prevalence of slavery has diffused habits of indolence, even among the lower ranks, who consider it degrading to engage in any species of manual labour. Since the occupation by Britain, the residence of civil and military officers and the great resort of emigrants and settlers have given it much the character of an English town. A *South African Journal* has been established, which has already produced some valuable papers. The population, in 1824, was 18,668; and has probably, by this time, increased to upwards of 20,000.

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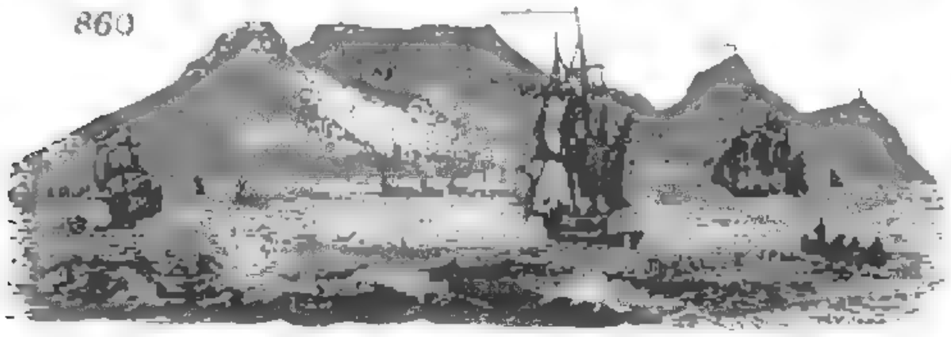

CAPE OF GOOD HOPE.

5342. *The other places in the colony* are, in general, only *drosdys*, or villages, which, in a country entirely agricultural, derive their sole importance from being the seat of the local administration. Constantia and Simon's Town, in the close vicinity of the Cape, are supported, the one by the produce of wine, the other by docks for shipping. Stellenbosch and Zwellendam, the chief places in the two most flourishing agricultural districts adjoining, contained, some time ago, the one only seventy, the other thirty houses. Graaf Reynet and Uitenhagen, at the head of extensive districts in the east, are not more important. Gnadenthal has been made a neat village by the missionaries, who have fixed it as their principal station. The only place which has risen to any importance is Graham's Town, in the district of Albany, near the eastern extremity of the colony. The troops stationed there to watch the Caffre frontier, with the recent colonists, who, disappointed in their agricultural pursuits, sought other employment, have swelled its population to about 3000. It is described by Mr. Rose as "a large, ugly, ill-built, straggling place, containing a strange mixture of lounging officers, idle tradesmen, drunken soldiers, and still more drunken settlers." It is romantically situated in a deep valley, surrounded by hills and glens, through which heavy waggons are seen coming often from a great distance, not only with provisions and necessaries, but skins of the lion and leopard, buffalo horns, eggs and feathers of the ostrich, tusks of the elephant and rhinoceros, and rich fur mantles.

Subsect. 2. *The Territory of the Caffres.*

5343. *This territory extends* from the eastern boundary of the colony along the coast of the Indian Ocean, the north-eastern direction of which it follows. On the west, it is bounded by the country of the Boshuanas, at the distance of about 200 or 300 miles from the sea; but this frontier has never been precisely explored. To the Caffrarian coast, which reaches about as far as Delagoa Bay, the Portuguese have given the name of Natal; which has been followed by navigators, though it is, of course, quite unknown to the natives.

5344. *The Caffres* (a name given by the Portuguese) are extremely handsome in their external appearance. The men, especially, are tall, robust, and muscular, yet of the most elegant symmetry of form. Their manners are easy, and their expression frank, generous, and fearless. The females are less beautiful, their persons are somewhat short and stunted, and the skin of a deep glossy brown; but their features are almost European, and their dark sparkling eyes bespeak vivacity and intelligence. The Caffres are, perhaps, of all nations the most completely pastoral. They lead a roaming life ill suited for agriculture; they have not applied themselves to fishing; and game is scarce: but they understand thoroughly the management of cattle. The men not only tend but milk the cows, and have the skill, by a particular modulation of the voice, either to send out a herd to graze, or recall it to the enclosures. They subsist generally on milk, and never kill a cow but on high occasions. Several branches of manufacture are practised with skill, as making baskets of grass, sharpening iron by stones, though they cannot smelt it. They have engaged in repeated wars with the European settlers; but the blame, in many instances, seems to have been on the side of the latter.

5345. The *Caffres* are divided *into several distinct tribes.* The Tambookies, more remote than those which border on the colony, appear to be more industrious, and distinguished for their skill in working both silver and iron. Beyond them are the Zoolas, or Hollontontes, the most numerous and powerful of all the Caffre tribes. Their king, Chaka, according to Mr. Thompson, has a force of 15,000 men constantly equipped for war, and on urgent occasions can arm 100,000 men, who comprise, we presume, the whole adult male population. He has been the most formidable conqueror in this part of Africa. He has driven before him a number of the neighbouring tribes, who, under the name of Mantatees, or wanderers, seeking new habitations, have desolated a great part, first of the Boshuana and then of the other Caffre territories, and even threatened the colony. Lieutenant Farewell, in 1824, founded a small English colony at Port Natal, with full encouragement from Chaka, the continuance of whose favour, however, could not be very securely depended upon.

5346. *The country of the Boshuanas*, or Bichuanas, occupies a considerable extent of Southern Africa, extending northward from the colony, from which, however, it is separated by a considerable interval, in which are found the Sneuwberg Mountains, the banks of the Orange River, and the pastoral district of the Corana Hottentots. On the east, it has the Caffre territory; on the west, extensive deserts; while on the south is the domain of a numerous and powerful tribe, the Macquanas, or Makooanas, supposed by Mr. Salt to extend as far as Mosambique. The very existence of this people was not suspected by Europeans till 1801, when Messrs. Trutter and Somerville, being sent from the Cape to procure a supply of cattle, after journeying for a long time through pastoral wildernesses, arrived very unexpectedly at Lattakoo, a town so large and regular that it might almost be termed a city. The country was not only covered with numerous herds, but showed considerable signs of cultivation. To improve this discovery, Lord Caledon sent Dr. Cowan and Lieutenant Denovan, with a party of twenty men, to penetrate through the territory to Mosambique. They reached considerably beyond Lattakoo into a country which their accounts described as still improving in beauty and fertility; but, having arrived in the territory of a hostile tribe, and neglected the necessary precautions, they were surprised, and entirely cut off. Since that time, however, Mr. Campbell, animated by a laudable zeal to diffuse Christianity among the African people, has not only twice visited Lattakoo, but has penetrated 200 miles farther to Kurreechane, the most southern and the largest of the Boshuana states. Two intelligent travellers, also, Dr. Lichtenstein and Mr. Burchell, though unable to advance so far, have made accurate observations on the manners and social state of these tribes.

5347. *The Boshuanas are not in their persons* so tall and handsome as the tribes of Caffraria; but they have made a considerably greater progress in *industry and the arts.* Instead of the nomadic and purely pastoral life which the latter pursue, they dwell in towns of considerable magnitude and regularly built. The houses are commodious, constructed of wood, plastered with earth, and in many places encircled by a stone wall, and ornamented with painting and sculpture. They cultivate the ground, rearing millet, two species of bean, gourds, and water melons. A space round every town is appropriated to culture, while a wider range beyond is pastured by the cattle, which are every night brought within the protection of the walls. The labour, indeed, not only of tilling the ground, but of building the houses, is devolved upon the females; but the men, as in Caffreland, both tend and milk the cows. The favourite wives of the kings and principal chiefs are exempted from labour, and are loaded with fantastic ornaments, their large mantles, as well as their persons, being profusely bedecked with furs, feathers, coral, beads, and brass rings (*fig.* 861.). The first discoverers painted their character in the most flattering colours; and they appear really to be honest and friendly to each other, and to strangers who have gained their good-will. But the enmity between neighbouring tribes is as deadly, and the mode of conducting war as barbarous, as among the rudest African hordes. They place their glory in *commandos*, raids or forays, undertaken with the view of carrying off cattle and murdering the owners. In consequence of this mutual hostility, the population is almost entirely concentrated in the towns or their immediate vicinity; the open country, though extremely fertile, is covered with luxuriant grass growing to waste, and tenanted only by a few wandering Bushmen. Notwithstanding their simple manners, a considerable inequality of rank prevails, founded chiefly on wealth, which those in power find the means of increasing during their incessant predatory contests. Mateebe, king of Lattakoo, used to squat on the ground chattering and exchanging pipes with the lowest of the people. The greatest chiefs, in going to war, are provided merely with a light shield, a few darts, and the skin of a wild beast flowing over their shoulders, and leaving the greater part of the body naked (*fig.* 862.). They enjoy even a species of republican constitution, the most important affairs being decided by an assembly of the chiefs. Even in their way to the meeting, they indulge in strange gambols, leaping into the air and brandishing their weapons, as if to attack and stab a mortal enemy. The circle being formed, they join in a song, which the principal person often follows by a dance. The proceedings also are prefaced by dances and cries imitating the barking of dogs; yet when they come to the speeches, these are replete with good sense, and even a rude species of eloquence. The females stand behind, cheering those whose sentiments they approve, and loudly deriding whatever they consider ridiculous.

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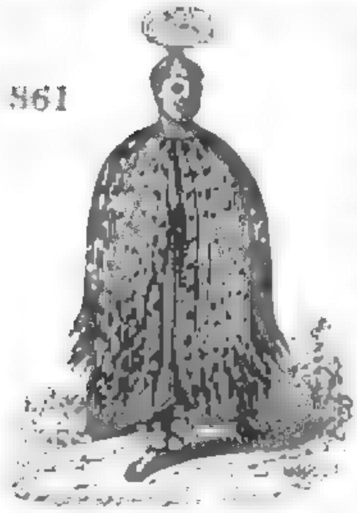

QUEEN OF LATTAKOO.

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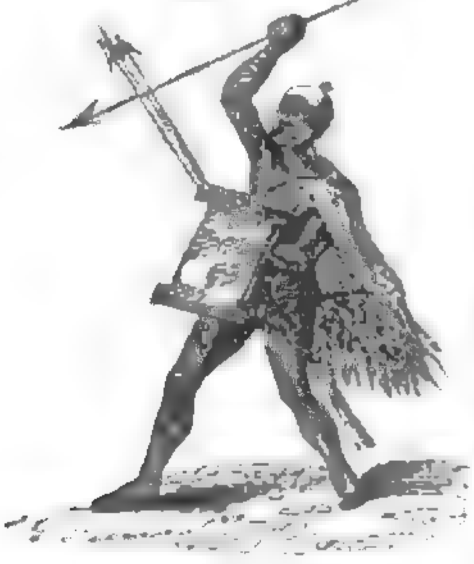

YOUNG KING OF MAROOTZI.

5348. *The towns*, in consequence of the circumstances already mentioned, which have induced nearly the whole population to assemble in them, possess greater magnitude than might have been expected from the state of cultivation and society. Lattakoo was the first visited, and the name remains, though, in consequence of a schism in the tribe, the town has been transferred to a spot about sixty miles farther north. New Lattakoo is supposed to contain about 6000 people. Meribohwey, capital of the Tammahas, is not of equal importance. Mashow, to the north, where the territory of the Barolongs commences, is a fine town with 10,000 inhabitants, beautifully seated on a hill, and surrounded by a number of lesser eminences. Within a circuit of twenty miles there are twenty-nine villages, and almost uninterrupted cultivation: the habitations and furniture are superior to those of Lattakoo. The population is estimated at 10,000 or 12,000. Melita, capital of the Wanketzens, also a tribe of Barolongs, is likewise an important place. But the largest and best built city in Southern Africa, and the one whose inhabitants have made the greatest progress in the arts of life, is Kurreechane (*fig.* 863.). The people are in number about 16,000; they smelt iron and copper in large clay furnaces; their houses are surrounded by good stone enclosures, and the walls, of mud, are often painted, as well as moulded into ornamental shapes. Considerable skill is shown in the preparation of skins, as well as in the vessels of earthenware used for holding corn, milk, and other stores. This city was unfortunately sacked by the Mantatees in their late inroad. Bakarrakari, considerably westward of the places now described, in a country of extensive plains and forests, is as yet little known.

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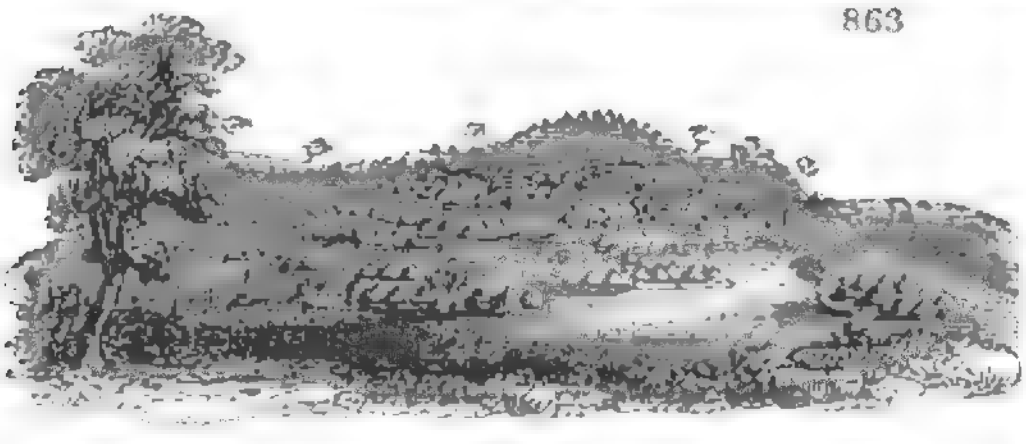

KURREECHANE.

Chap. VIII.

EASTERN AFRICA.

5349. *Eastern Africa* comprises an immense extent of coast, reaching from the Caffre country to the border of Abyssinia, a length of about 3000 miles. It may be considered as extending inland about 500 or 600 miles from the sea, but its contents, for the most part, and all its boundaries on this side, are unknown. This vast range of country contains many grand features of nature, and a large proportion of fertile territory, capable of yielding the most valuable productions; yet scarcely any part of the world is less known, or has excited less interest among Europeans. The Portuguese, as soon as they had discovered a passage into the Indian seas, occupied all the leading maritime stations, from which they studiously excluded every other people.

5350. Extensive, though ill-explored, *natural objects* diversify this region. The coast consists almost entirely of spacious plains, often of alluvial character, and covered with magnificent forests. It appears, however, undoubted, that at 200 or 300 miles in the interior, considerable ranges of mountains arise; geographers have even delineated a long chain parallel to the coast, called Lupata, or the Spine of the World; but Mr. Salt is of opinion that the prolongation of this beyond the region of the Upper Zambeze is very arbitrary. The rivers also are of great magnitude, though only their lower course is at all distinctly known. The Zambeze may rank in the first class, and, according to probable information and conjectures, appears to flow across nearly the entire breadth of the continent. It enters the Indian Ocean by four mouths, of which the principal are Cuama and Quillimane, each of which sometimes gives name to the whole river. Near Quiloa, several great estuaries enter the sea, of the upper course of which nothing is known. The same may be said of the mouths of the Quillimane, near Melinda; for its supposed identity with the river Zebee, which flows through the region south of Abyssinia, is still only conjectural. The only great lake hitherto mentioned is the Maravi, in the interior from Quiloa and Mosambique, which is generally represented as of great extent, and resembling an inland sea.

5351. *We are too ignorant of the line of coast* on the east side of Africa to attempt any notice even of its general vegetation, and shall content ourselves with noticing two interesting and useful plants, for a botanical knowledge of which we are chiefly indebted to the enquiring mind of C. Telfair, Esq. of the Mauritius.

5352. The first is the Colombo Plant (*fig.* 864.), of which the root is a well known article in the Pharmacopœia, as of singular efficacy in strengthening the stomach and bowels, and curing the cholera morbus, dysentery, and other diseases of the alimentary canal. It has been long used in the East Indies, though its history and native country were involved in much obscurity; some having supposed it to be a native of Colombo, in Ceylon, because of its name. It is now ascertained that it grows naturally in the thick forests that cover the shores of Oïbo and Mosambique, as well as inland for several miles. The natives never cultivate it, the spontaneous produce being sufficient; after digging up the root, they cut it in slices, and, stringing them on cords, dry them in the sun. It is held in high esteem by the people, who use it for the cure of dysentery, for healing ulcers, and as a remedy for almost every disorder. The late Sir Walter Farquhar, physician to the king, was very desirous to obtain the Colombo root in a living state, and, after many fruitless endeavours, made by his son, Sir Robert Farquhar, Governor of Mauritius, who was opposed by the Portuguese authorities on various pretences, but mainly because they were unwilling to permit the exportation of so valuable an article, he finally succeeded in obtaining, through Captain Owen, of his majesty's ship Leven, growing roots of the Colombo plant. These were distributed to the Mauritius, New Holland, the Seychelles Islands, &c. and it is thus to be hoped that this valuable plant may be naturalised in these countries, and that its culture may be rendered an object of industry and resource to the planters of the Mauritius.

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COLOMBO PLANT.

5353. The second is the Telfairia volubilis (*fig.* 865.),a climbing plant lately discovered on the coast of Zanzibar, of very easy cultivation, and producing an esculent fruit, three feet long, and full of seeds as large as chestnuts (264 in one fruit), which are as excellent as almonds, and of a very agreeable flavour: they also yield an abundant oil, equal to that of olives. It was originally brought by M. Bojer, of the Mauritius, from Pemba, on the shores of Zanzibar, where it grows in the forests, enveloping the trees with its branches, and sometimes with a stem 18 inches in circumference. The seeds have been distributed to Bourbon and New Holland, and by the missionaries to New Zealand and Tahite. At Mauritius it has thriven so well, that it produced stems 30 feet high, and in the stove of the late R. Barclay, Esq. of Bury Hill, to whom Mr. Telfair sent seeds, it grew so luxuriantly, that the pruning knife was in constant requisition to prevent its filling the whole house. A plant so easy of cultivation must soon become common in all countries, and thus will Mr. Telfair have the honour of giving a most useful vegetable to mankind, as well as a name to a new and very beautiful plant.

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TELFAIRIA VOLUBILIS.

5354. *Our zoological knowledge of this portion* of Africa is lamentably deficient. The whole extent of the eastern coast, from lat. 30° south to 10° north, has never yet been visited by the naturalist; and the zoology of Abyssinia and Egypt having already been noticed, leaves us nothing further to say on this head.

5355. This territory is generally occupied by *negro nations* in a state of barbarism, yet some of them numerous, and not destitute of arts and industry. The coast, however, has, in modern times, been chiefly in possession of two foreign powers. The Portuguese, when, in the close of the fifteenth century, they made their way round the Cape, found almost all the maritime stations in the hands of the Arabs, whom they called Moors, and whom they succeeded in driving successively from each, and occupying their place. It would be illusory to attempt delineating, under regular heads, the political, commercial, or social state of a region composed of such various parts, so imperfectly known; but, in a successive view of its local divisions, we shall endeavour to concentrate the little that modern observation has ascertained on the subject.

5356. *Beginning from the south, we find Sofala*, which at the time of the first arrival of Europeans was very important, as the emporium of the gold and ivory brought in great quantities down the Zambeze. Since Quillimane became the channel by which these commodities were conveyed, Sofala has sunk into a village of poor huts. The Portuguese, however, still maintain there a fort, which holds supremacy over the more southerly stations of Inhambane and Corrientes. An annual vessel comes from Mosambique, with coarse cotton and other articles, in return for which it receives gold, ivory, and slaves. The place is situated on a considerable river; but, in consequence of extensive sand-banks and shoals, which appear to have increased, it is difficult of approach unless for small vessels. The natives seem to be of the Caffre race, well armed, brave, and independent.

5357. *Inhambane*, to the south, has an excellent harbour, and is defended by a fort and 150 men. The other Portuguese do not exceed twenty-five; but there is a numerous coloured population. Few slaves are procured here, the natives being fierce and warlike; but about 100,000 lbs. of ivory, and some wax, are sent to Mosambique. Quillimane, at the mouth of the Zambeze, is now the chief seat of trade on this coast. From eleven to fourteen slave vessels come annually from Rio de Janeiro, and each carry off, on an average, from 400 to 500 slaves. The situation is swampy and unhealthy; but the population is nearly 3000, though only twenty-five houses are occupied by Portuguese or their descendants.

5358. *Mosambique* is the principal establishment of the Portuguese in Eastern Africa. Though it derive its importance from being the emporium of the gold, ivory, and slaves, brought down the Zambeze, it is situated about 300 miles from the mouth of that river, and the trade is in a great measure transferred to Quillimane. It is built on an island, which has a good roadstead and a commodious pier, but affords by no means either a convenient or healthy situation. The principal inhabitants have their houses at Mesuril, on the continent, at the extremity of the peninsula of Caboceiro. The trade in slaves, the most extensive, has been much diminished since the British obtained possession of Madagascar and the Cape, and laudably prohibited the introduction of them into these colonies. The export is not supposed, by Mr. Salt, now to exceed 4000, sent chiefly to Brazil; yet Mr. Bowdich states the number in 1818 at 8164. The population is reckoned, by Mr. Salt, at only 500 Portuguese, 800 Arabs, and 1500 negroes; but the narrative of Captain Owen's voyage reckons the whole at 6000. There is a fort sufficient to defend it against the pirates who infest these seas, but not to secure it against the attack of any regular force. Yet the government-house displays still remnants of the former splendour of the viceroys of Eastern Africa. Like the custom-house, and other public structures, it is spacious, and built of stone, though falling into decay. The governor, and even his negro attendants, are richly loaded with golden ornaments; tea, to which the principal inhabitants are every evening invited, is presented in a full service of gold. The dominion of the Portuguese scarcely extends beyond the peninsula of Caboceiro: and they are with difficulty able, by alliance with the chiefs of Quintangone and Sereime, to make head against the Makooa, a populous and warlike tribe, occupying a great extent of the coast.

5359. *In the interior, on the Upper Zambeze,* the Portuguese possess merely the small forts of Sena and Tete, erected with a view to the protection of their trade, with two still smaller in the more remote stations of Zumbo and Manica. In these settlements, joined to that of Quillimane, they maintain 264 troops, and have a population of 500 Christians, with 21,827 slaves. The ground being generally fertile, and abounding particularly with honey, wax, senna, and other dyeing drugs, they draw from the land attached to these stations a revenue of 2,900,000 reis. Monomotapa, or more properly Motapa (since Mono is merely a general term for kingdom), has been dignified in the early narratives with the title of empire. If it ever deserved such an appellation, it is now broken into fragments, the largest of which is held by Changamera, who, under the title of Quiteve, resides at Zimbao, the ancient capital. He belonged to the Maravis, a race of daring freebooters, who neglect agriculture, and devote themselves entirely to plunder. Farther to the north are the Monjous, inhabiting the country which figures in the early maps as the empire of Monumugi. They are negroes of the ugliest description, of a deep shining black, with high cheek-bones, thick lips, and small knots of woolly hair on their heads. Their only weapons are bows and arrows. Manica is celebrated as the country chiefly affording the gold for which this part of Africa is famous. A Portuguese expedition, in 1569, penetrated thither: they found the mines by no means to answer their reputation, but to consist chiefly of gold dust in small quantities, embedded in sand and earth, from which the metal was laboriously extracted. A small fort, as already observed, is maintained in this district. The Cazembes, a numerous people far in the interior, are completely subject to the will of a despot; yet their country yields in abundance iron and copper, and is the seat of a very considerable trade in ivory and slaves. The Movizas are a comparatively peaceable and industrious race. The Bororos are a great people, reaching, it is said, nearly as far as Mombaza; but they are very little known.

5360. *In the coast north from Mosambique* occur the Querimba Islands, giving name to the opposite coast. They were laid waste by the Portuguese at their first arrival, but were afterwards repeopled by colonists from Mosambique. They have suffered, however, by attacks from the Madagascar pirates. Quiloa, about 100 miles north-west from the bold promontory of Cape Delgado, was found by the Portuguese a great seat of power and commerce. About the end of the seventeenth century it was wrested from them by the Imâm of Muscat, whose officers have since governed it. It is now dwindled into a miserable village. Mombaza is situated on an island about three miles long and two broad, surrounded by cliffs of madrepore, which make it a kind of natural castle. The country is fertile in corn, and fit for the sugar cane, and the small shells called cowries are collected in great abundance on the shore. The harbour is excellent, and a considerable trade is carried on along the coast in dows, often of 250 tons burthen. Britain, for two years, maintained a factory there, but withdrew it in 1827. Melinda, long the handsomest and most flourishing city on this coast, has been completely destroyed by the Galla. Patta, once of great importance, is now much decayed, and a great part of its trade transferred to the neighbouring port of Lamoo. Parallel to this coast, at the distance of about twenty or thirty miles, are the small but fine islands of Pemba, Zanzibar, and Monfia. They are of coral foundation, but the surface is flat, and covered with a soil highly productive in grain and sugar. The climate, however, especially that of Zanzibar, is very unhealthy. They are partly independent, partly subject to the Imâm of Muscat.

5361. *Magadoxa*, called also Mukdeshu, is a considerable town, lying to the northward from Melinda. The prince having succeeded in maintaining his independence, and repelled all European intercourse, allows the country to be very little known. The British ship Albemarle, in 1707, sent a boat on shore, but it was detained, and never recovered; and a party from Captain Owen's vessel were kept in a species of prison. The city makes a handsome appearance from the sea, containing many lofty stone fabrics; but these belong to a part which, containing only tombs, may be called the City of the Dead. The habitations of the living are only low thatched huts. Brava, within the territory of Magadoxa, is also a port of some consequence. The whole coast, from Cape Delgado to the northern limit of Magadoxa, is commonly known by the name of Zanguebar. This territory, when discovered by the Portuguese, was occupied by the Sowhylese, a peaceable and industrious people; but the coast has now been mostly wrested from them by the Arabs of Muscat, while the whole interior is possessed by the Galla, the same ferocious race who have over-run Abyssinia, and who, in the course of a furious warfare, have destroyed every sea-port which was not protected by an insular position.

5362. *The coast of Ajan*, the Azania of the ancients, extends from the northern termination of Zanguebar to Cape Guardafui, where Africa ceases to border on the Indian Ocean. This tract is generally arid and sandy, though in the northerly parts it becomes hilly and fragrant, like the neighbouring one of *Berbera*. That coast, extending from Cape Guardafui to nearly the Straits of Bab el Mandeb, is situated on neither the Indian Ocean nor the Red Sea, but on an intermediate gulf, bounded on the opposite side by the coast of

Arabia. It is hilly and beautiful, and may be considered the native country of incense, myrrh, and odoriferous gums. The celebrity of Arabia, and particularly of Aden, for those elegant productions, is chiefly acquired by its large imports from this coast. The inhabitants consist of the various tribes of Somaulis, an active, industrious, and yet peaceful race, who export the productions of their own country, which is thus less known than it deserves to be. At the town of Berbera is an annual fair, where, according to Lord Valentia, there are sold 15,000 bahars (320 lbs. each) of gum, at 3*l.* 12*s.*; 2000 bahars of myrrh, at 4*l.* 12*s.*; frankincense, to any extent demanded, at 2*l.* 14*s.* Even gold and ivory are said to be brought from Hanim, a country situated twenty days' journey in the interior.

5363. *The country in the interior from this coast*, though most imperfectly known, appears to be occupied by the Galla and other tribes, who surpass in barbarism even the rest of Africa. Here, in a wild and mountainous region, is the kingdom of Gingiro, described by Antonio Fernandez as ruled by a despot, elected with strange and superstitious ceremonies, and who celebrates his accession by the death of his predecessor's ministers and favourites, with whose blood the walls and gates of the palaces are dyed. We stand much in need, however, of recent information respecting this part of Africa.

5364. *Adel, or Adaiel*, and Hurrur, form the most westerly part of this coast, and adjoin to the Straits of Bab el Mandeb. The inhabitants, united under the standard of the Mahometan faith, waged long and bloody wars, embittered by religious enmity, against Abyssinia. For a century back, their power has been broken, and they have been divided into a number of small separate states. Zeyla, the capital, is a place of considerable trade, and, though irregularly built, contains some good habitations.

Chap. IX.

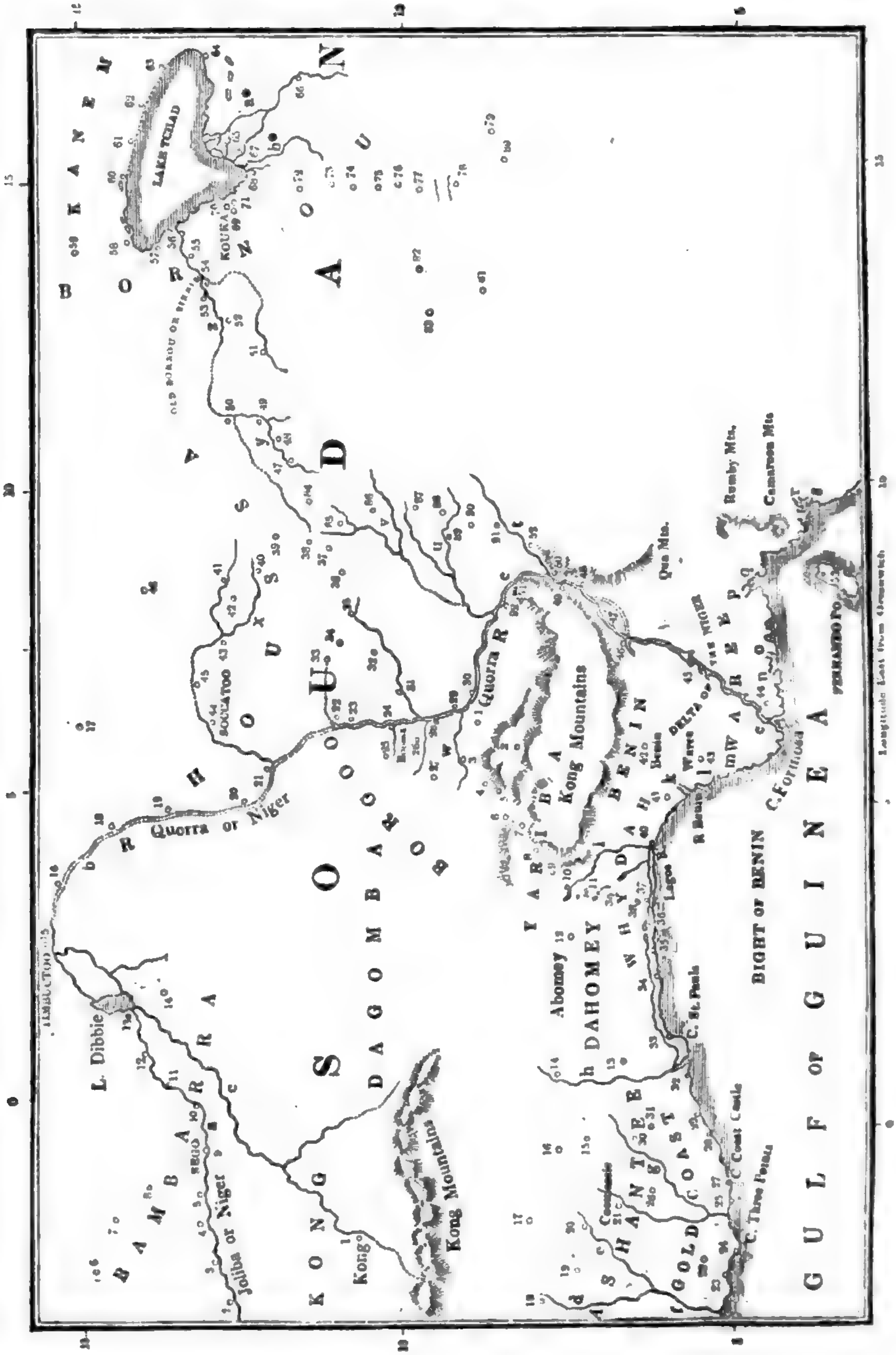
CENTRAL AFRICA.

5365. The appellation of *Central Africa* may with propriety be given to an extensive and fruitful region, in the most interior part of that continent. Consisting of spacious plains, watered by noble rivers, and begirt on the south by lofty mountain chains, it forms one of the finest countries on the globe, and is inhabited by nations who have made considerable progress in industry and civilisation. Separated, however, from the sea-coast, and from the rest of the civilised world, by immense deserts tenanted by fierce and warlike banditti, it remained till lately almost unknown to Europeans, who heard only by vague rumour of its beauty and wealth. It is only within the last forty years that the daring enterprise of British travellers has traversed this region, and purchased, at a costly price, a tolerably accurate and extensive knowledge of it.

Sect. I. *General Outline and Aspect.*

5366. *The extent and boundaries* of a region like this, composed of various detached states and kingdoms, are exceedingly vague. From Western Africa it is separated by the limits already delineated (p. 1210.). On the north it has the uniform boundary of the Great Desert, into which its fertile plains pass by rapid gradations. On the east, the great expanse of the lake Tchad, the sea of interior Africa, separates it from countries almost wholly unknown. The southern boundary, formed by tracts still more completely unexplored, cannot be drawn with any approach to precision. On the whole, however, we may esteem Central Africa as lying between the 15th degree of east and the 4th of west longitude, and the 8th and 16th of north latitude. It may thus include 1300 miles in length, and 560 in breadth, and form a square surface of about 700,000 miles.

5367. *A continuous chain of mountains*, celebrated by the ancients under the appellation of the Mountains of the Moon, traverses the whole territory from east to west. It exerts a most beneficent influence in diffusing through this region coolness and moisture, and redeeming it from that arid desolation to which so great an extent of the continent is doomed. These mountains appear first on the western coast near Sierra Leone, where their lofty peaks, called the Mountains of the Lions, overlook the Atlantic. They then traverse the countries of Foota Jallo and Kankan, giving rise to the Senegal and Gambia; while the Niger, in its upper course, flows through their deep valleys. In this quarter the range is not very lofty, but presents a varied and picturesque aspect. Park, in passing through Konkodoo and Satadoo, was much struck by the appearance of its glens and precipices, and the variety of forms which the rocks assumed, resembling ruined castles, spires, and pyramids. One granite mass had exactly the aspect of a Gothic abbey, with niches and ruined staircase. The same chain was crossed by Captain Clapperton, in the country of Yarriba, where its highest pinnacles were only between 2000 and 3000 feet; but the passes were exceedingly narrow and rugged, enclosed by huge granite blocks 600 or 700 feet high; yet every level spot was covered with fine crops of yams, millet, and cotton, and large towns were built on the very summit of the ridge. Farther to the east, these mountains afford an opening, through which the Niger, swelled to a river of the first magnitude, forces its prodigious mass of waters; but their cliffs overhang the river, which dashes roughly over the rocky bed that it has worn for itself. Farther east still, south of the great plain of Houssa,


BORNOU
LAKE TCHAD
KOUKA
OLD BORNOU OR BIRNIE
SOUDAN
HOUSSA
SOCKATOO
TIMBUCTOO
L. Dibbie
BAMBARRA
SEGO
Jaliba or Niger
R Quorra or Niger
KONG
Kong
Kong Mountains
DAGOMBA
BORGOO
YARRIBA
Kong Mountains
Quorra R
Abomey
DAHOMEY
WHYDAH
ASHANTEE
Coomassie
GOLD COAST
BENIN
Benin
Warree
DELTA OF THE NIGER
Qua Mts
Rumby Mts
Cameroon Mts
FERNANDO PO
Lagos R
R Benin
C. St. Paul
C. Coast Castle
C. Three Points
C. Formoso
BIGHT OF BENIN
GULF OF GUINEA
Longitude East from Greenwich

Lander, in returning from his first journey, learned the existence of a very elevated region, inhabited by a savage race. But this chain appears to attain its greatest magnitude and loftiest height in the region south of Bornou. From the plain of Mandara (*fig.* 866.) above the capital, Mora, its bold steeps were seen rising, not more, indeed, than 2500 feet high; but they were understood to extend far southward, and to become much more elevated. This was confirmed by the appearance of several remote peaks in that direction, particularly one said to be thirty-five miles distant, and which had a most alpine character, much resembling the aiguilles of Mont Blanc, as seen from the Mer de Glace. They were known even to the rude natives by the classic appellation of the *Moon* Mountains.

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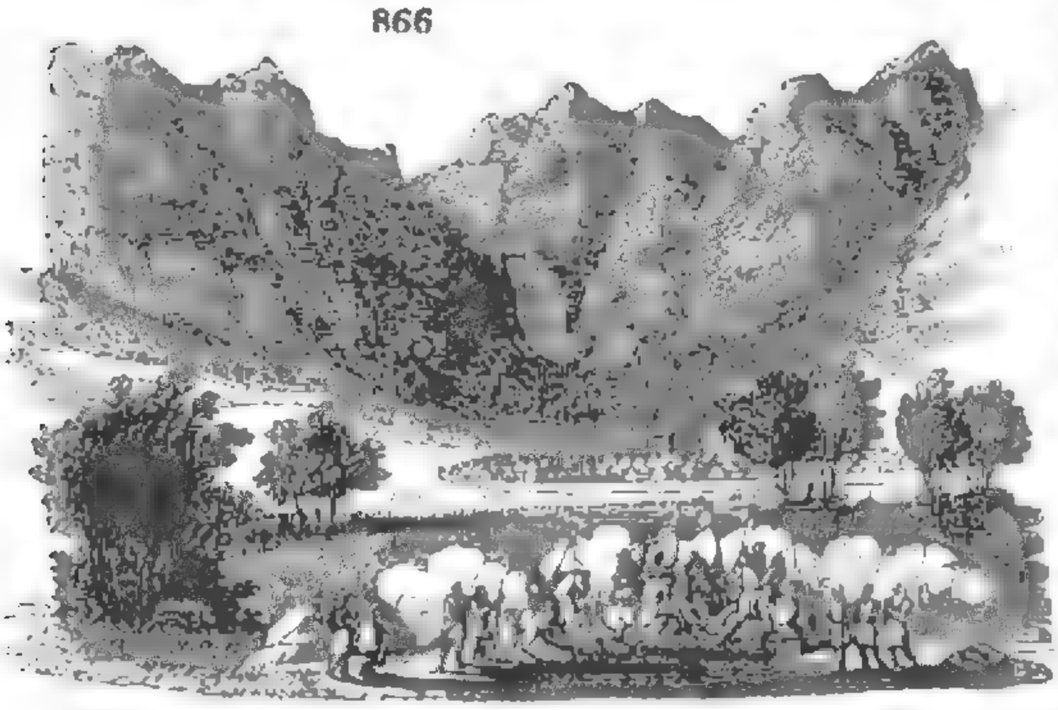

MOUNTAINS OF MANDARA.

5368. *The rivers*, which derive their supply from this great mountain range, form a still more grand and celebrated feature. The great stream of the Niger, long involved in such deep mystery, has at length, through the persevering exertion of British travellers, been very completely explored. Its source, though not actually visited, seems ascertained by Laing to exist in the high country of Kissi, about 200 miles in the interior from Sierra Leone. Thence it rolls through Foota Jallo and Kankan, where Caillié describes himself to have found it a rapid and considerable stream. At Bammakoo, having received the tributary from Sankari in Manding, which Park mistook for the main stream, it begins its course over the fine plain of Bambarra; and at Sego, the capital, is described to be as broad as the Thames at Westminster. In this country it is called the Joliba, but lower down receives the name of the Quolla, or Quorra. Beyond Bambarra it flows through the lake Dibbie to Timbuctoo; and its course from that city to Youri is proved by the fact of Park having navigated from one place to the other. As far as Timbuctoo the Niger has flowed north and north-west; but beyond that city it changes to the south-east and south. From Youri, its course, traced by Lander, is, with some winding, almost due south, till, at Kirree, about 170 miles from the sea, it begins to separate into branches, and forms a delta, the greatest, undoubtedly, in the world, whose estuaries extend along the coast from the river Formosa to that of Old Calabar, a space of about 300 miles. The whole line of this noble river, allowing for all its windings, can scarcely be reckoned at less than 3000 miles, and for several hundred miles of its lower course it forms a magnificent expanse, resembling an inland sea. Thus, though it cannot rank with the Missouri and Orellana, those stupendous floods of the New World, it is at least as large as any of those which water the old continents.

References to the Map of Central Africa.

NORTH PART.
1. Kong
2. Marraboo
3. Taffara
4. Yamina
5. Jabbee
6. Fanimboo
7. Geosorro
8. Doolinkeaboo
9. Sego
10. Sansanding
11. Silla
12. Jenné
13. Sibby, or Dibbie
14. Moossedoo
15. Timbuctoo
16. Gouromou
17. Aadar
18. Gotoijege
19. Kaffo
20. Carmasse
21. Gourmoo
22. Youri
23. Sooloo
24. Boossa
25. Coobly
26. Wawa
27. Kiama
28. Lever
29. Leechee
30. Rabba
31. Tahra
32. Koolfu
33. Cubbie
34. Kotonkora
35. Guari
36. Zaria
37. Ashin
38. Sackwa
39. Kano
40. Fanirore
41. Kashna
42. Borshee
43. Zirmie
44. Soccatoo
45. Kalawawa
46. Samina Cora
47. Boogawa
48. Diguo
49. Katagoom
50. Hadeiga
51. Goobeen
52. Bedekarfee
53. Kabahary
54. Old Bornou, or Birnie
55. Duguwa
56. Yeou
57. Borwha
58. Zari
59. Anoub Mull
60. Mabah
61. Foolie
62. Barri
63. Kongara
64. Bolo[illegible]
65. Showy
66. Kumery
67. Mafatal
68. Angala
69. New Bornou
70. Kouka
71. Angornou
72. Affagay
73. Harberry
74. Ally Maber
75. Mora
76. Hairy
77. Meekwa
78. Musfeia
79. M. Balla
80. Musgow
81. Adamowa
82. Mana
83. Karowa
84. Nansorina
85. Carifa
86. Damoy
87. Fullindushie
88. Lasumee
89. Cokalo
90. Coogie
91. Jacoba
92. Egga.

SOUTH PART.
1. Eyeo, or Katonga
2. Alorie
3. Watatoo
4. Keeshee
5. Bohoo
6. Koosoo
7. Chaadoo
8. Dufo
9. Accodoo
10. Afoora
11. Egga
12. Abomey
13. Nagho
14. Odanty
15. Manboo
16. Couta
17. Ciritoo
18. Briquante
19. Yammy
20. Karaty
21. Coomassie
22. Cura
23. Axim
24. Aquedah
25. El Mina Castle
26. Akrofroom
27. Cape Coast Castle
28. Temma
29. Accarah
30. Akropong
31. Ashoofoo
32. Occu
33. Pourourah
34. Great Popoe
35. Whydah
36. Porto Novo
37. Badagry
38. Wow
39. Jenna
40. Lagos
41. Quansee
42. Benin
43. Waree
44. Brass
45. Eboe
46. Kirree
47. Damuggoo
48. Atta
49. Bocqua
50. Cuttum Currafoe
51. Kacunda
52. Funda.

Rivers.
a Joliba, or Niger
b Quorra, or Niger
c Ba Nimma
d Bara
e Tando
f Assinee
g Bosempra
h Baba Aswady
i Akeeny
j Lagos
k Benin
l Waree
m Ramos
n New Calabar
o Bonny
p Old Calabar
q Rio del Rey
r Cameroons
s Malimba
t Tshadda
u Coodoonia
v Accra
w Mouma
x Quarrama
y Shashum
z Yeou
a* Shary
b* Gambalarum.

5369. The *tributaries of the Niger* are of peculiar magnitude and importance. At no great distance above the point where the delta commences, the Tshadda, or Shary, nearly equal to the main stream, enters, after watering large and fruitful kingdoms, and having formed the theatre of an active navigation. At no great distance above, it receives a smaller tributary, the Coodonia, which was seen, by Lander, flowing through a fertile and highly cultivated country. Considerably higher is the Cubbie, a large stream, from the city and country of that name; and higher still the Quarrama, which has passed by Zirmie and Sackatoo. Between this point and Timbuctoo, we have no means of knowing whether any rivers fall into the Niger. The tributary which passes that city is of no great importance; but at the eastern boundary of Bambarra, Park describes the influx from the south of two great streams, the Maniana and Nimma. Those which fall in during the earlier part of the course consist of numerous mountain torrents, which swell the river, without themselves possessing very great importance. All the rivers in the eastern part of Central Africa fall inte the great receptacle of the lake Tchad. The principal one is another *Shary*, the early course of which is unknown. Major Denham saw it at its mouth, where it was about half a mile broad, and flowed at the rate of between two or three miles an hour. Forty miles up, it was seen rolling in great majesty and beauty; but was not traced any higher. The Yeou, rising in the hills of Dull, to the south of Houssa, flows first north and then east through Bornou, till it falls into the western side of the Tchad. Even at the junction it was only about fifty yards broad in the dry season, and, though of great value for fishery, does not afford the means of any extensive trade.

5370. In regard to *lakes*, the Tchad is greatly pre-eminent, situated in the most central part of the continent, and on the frontier of Bornou. It may be about 200 miles in length and 150 in breadth, and forms thus one of the greatest bodies of fresh water in the world, though it cannot equal the mighty inland seas of Asia. The dimensions are augmented in an extraordinary degree during the rains, when a surface of many miles, usually dry, is laid under water. This inundated tract, when deserted by the waters, is covered with impenetrable thickets, and with rank grass of extraordinary height, and, though unfit for the residence of men, becomes a huge den of wild beasts. The lake contains numerous large islands, some of which are the residence of tribes and even nations. The Dibbie, or Dark Lake, formed by the Niger between Jenné and Timbuctoo, appears not nearly so large, since M. Caillié, in sailing across it, lost sight of land only in one direction. The other lakes yet known to exist in this region are small and local objects, though sometimes very picturesque.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5371. *Soudan, or Nigritia*, in the central and more elevated districts, affords *granite, gneiss, mica slate, clay slate, quartz rock, hornblende rock, limestone*, &c. These deposits are variously traversed by greenstone and other trap rocks. At Goree there are fine displays of columnar basalt. Great tracts of flat country extend to the eastern limit, including Soudan, of which the kingdoms are Houssa and Bornou. In the flat and desert regions, *salt lakes* and *natron lakes* occur. Beds of rock salt are also met with. The salt is arranged in beds several feet thick; it is mined into large slabs, which are afterwards sawn into blocks for the market. These mines form the riches of the country. *Gold* is found in different parts of Africa, but most abundantly in this region, which furnishes most of the gold which is sold on the western coast of Africa, as well as that which is brought to Morocco, Fez, Algiers, Cairo, and Alexandria. According to accounts furnished to Mr. Jacob, from the records of the late African Company, the whole quantity of gold brought to England by ships of war, from the year 1808 to 1818, both included, amounted to 81,905 ounces. Of this, in the seven years of war, from 1808 to 1814, there were 51,569 ounces, valued at 205,340*l.*, and in the following four years of peace, 30,569 ounces, valued at 125,330*l.* The eastern coast of Africa, where the Portuguese still retain some settlements for carrying on the slave trade, may be slightly noticed. According to some authors of the sixteenth century, Melinda, Sofala, Mozambique, and other tracts on that side of Africa, afforded large quantities of gold; but their accounts are not to be implicitly relied on. Mr. Salt, the latest traveller, who visited those places in 1809, represents their present supply of gold as very inconsiderable and has removed much of the delusion which prevailed respecting the ancient produce of that metal. After remarking that the only way by which gold is now procured is by washing the sands of the rivers, he says, "In this manner a considerable quantity is still annually accumulated, though it seems to be rapidly decreasing; for, in 1593, the governor of Mozambique collected for himself and the viceroy of India 100,000 crusades (a crusade is worth about 2*s.* 6*d.*), and I do not believe that one third of this amount is now altogether annually produced."

Subsect. 2. *Botany.*

5372. *There are as yet no materials* for delineating the Botany of this part of the continent, which probably does not differ much from that of the western coast.

Subsect. 3. *Zoology.*

5373. *The little yet known on the Zoology of Central Africa* will scarcely allow of its being treated under a distinct head, particularly as it appears blended with that of Nubia and Abyssinia to the east, Congo and Sierra Leone to the west, and Southern Africa to the south. There are a few quadrupeds, however, stated to inhabit the inland provinces more particularly, and which we shall briefly notice: —

Manis longicauda. Long-tailed Manis.
Phascochœrus africanus. Ethiopian Boar.
Camelopardalis antiquorum Sw. The Northern Giraffe.
Camelopardalis australis Sw. The Southern Giraffe.
Aigocerus grandicornis Sw. Long horned Antelope.
Gazella corinna Sw. Corinna Gazelle.
Antilope furfer. Gambian Antelope.
Antilope adenota. Kob Antelope.
Neotragus pygmæa Sw. Pygmy Antelope.
Damalis senegalensis Sw. Koba Antelope.
Bos Pegasus. Pegasse.

Google

5374. *The Manis* is analogous to the American Armadilloes, being, like them, entirely covered with an impenetrable coat of mail; this, however, is disposed not in rings, but like the scales of a fish. *The Ethiopian Boar* is a hideous animal, with long tusks and fleshy protuberances on each side of the head. *The Great-horned Antelope* is a species deserving the attention of future travellers: its horns, which have only yet been seen in Europe, are erect, with the point bent back, and are no less than two feet and a half long in a straight line. The animal is supposed to inhabit the interior of Western Africa. The *Gambian Antelope* has been also brought from the same region; its aspect is peculiarly soft and engaging, but it is uncommonly shy. *The Pegasse* is a species of Buffalo, inhabiting the interior of Congo and Angola, and thus intimated by two of the Catholic missionaries, Galleni and Carl: — "On the road to Loando, in the kingdom of Congo, we saw two Pacasses, roaring like lions, the male and female being always together. They are white, with rufous and black spots, with ears half a yard in length, and the horns straight. When they see human beings they do not flee, nor do they harm, but stand and look on." This vague account would not have deserved notice, had not Major Hamilton Smith detected a drawing of this very rare animal among those which formerly belonged to the great and famous Prince Maurice of Nassau, now in the Berlin library. The *Eland* is the only antelope on which a quantity of fat is found sufficiently hard to make candles.

5375. *The Giraffe* will be here noticed, as a genus whose geographic range appears more especially confined to the inland parts of Africa. The ancient writers appear to have understood these quadrupeds much better than the moderns; for Jonston was not only well convinced of their existence, but he figures several which he supposes are distinct species. The new and valuable information on the Giraffe of Northern Africa, published by Rüppell, first led us to suspect that it was, in reality, a distinct species from that of Southern Africa, and this idea has been fully confirmed by a further investigation of the subject, and by verbal information communicated by Mr. Burchell. We cannot, in this place, say more on this interesting discovery, the details of which we propose communicating to the public through a more appropriate channel. It will be sufficient to observe that the Giraffe of Northern Africa (*C. antiquorum* Sw.) was known to the Romans; but the moderns long doubted the existence of such a quadruped, until the Dutch traveller, Colonel Gordon, and our own countryman, Paterson, found the Giraffe of Southern Africa (*C. australis* Sw.), and brought its skin to Europe. In an adult state the latter is said to be sometimes near twenty feet high, and the specimen in the British Museum, brought home by Mr. Burchell, measures seventeen feet and a half. In a state of nature the manners of both, as far as we yet know, are nearly similar. They live in small families, principally in the plains of the interior, where there is occasional herbage or succulent vegetation. Their ordinary food, however, is the leaves of the mimosa trees. Their gait, when walking, is rather stately than awkward: but, as Le Vaillant well observes, it is ridiculous enough to see them trot, for the Giraffe then resembles a limping beast, with the head perched at the extremity of a long neck which never bends, swaying backwards and forwards; the head and neck playing in one piece between the shoulders, as on an axis. Their short horns appear useless as means of defence, but they kick with prodigious force, and the jerks are so quick, that the eye cannot count them. (*Vaill. Trav.* ii. 279.) The disposition of the Northern Giraffe is remarkably gentle; nothing can exceed the mild and beautiful expression of its full dark eye. It is certainly the most interesting quadruped we ever beheld; and we considered a journey to Paris well recompensed, had it only afforded us the gratification of contemplating the noble Giraffe, now living (1833), in perfect health, in the Garden of Plants, where Mr. Landseer sketched the figure given at p. 1179.

Sect. III. *Historical Geography.*

5376. *The history of this extensive region* is altogether unknown till the twelfth century, when, during the flourishing period of Arabian literature, the eminent geographers Abulfeda, Edrisi, and others, described the settlements formed by their countrymen on the southern side of the Great Desert. The Arabs appear to have migrated thither in numerous and probably successive colonies. The movement took place chiefly in consequence of the contest between the dynasties of the Abbasides and Ommiades, when the vanquished party sought refuge in the remotest extremities of Africa. Being probably possessed of superior skill in the military art, they easily prevailed over the undisciplined natives, and established powerful states along a river, which they called the Nile of the Negroes, but which appears to be only the Zirmie, or Quarrama, a tributary to that which we call the Niger. The principal kingdoms were Ghana (Kano), and Tocrur (Sackatoo), while to the east was the powerful negro state of Kuku (Bornou). The court of Ghana displayed a splendour, derived chiefly from the gold imported from the countries in the south, which appeared dazzling even to those who had witnessed the greatness of Bagdad and Cairo.

5377. *Various revolutions*, only imperfectly reported to us, appear since that period to have agitated this part of the continent. In general, one powerful chief seems to have aspired at, and in a great measure attained, a supremacy over the others, of which he was speedily deprived by the revolutions to which these turbulent states are liable. In the fourteenth century, Leo Africanus, visiting Timbuctoo, found it in possession of Izchia, a powerful chief from Morocco, who held then the chief sway over Ghana and the principal countries of Central Africa. At the end of last century, Mr. Lucas understood that Cassina had gained the supreme rule over the Mussulman states in this quarter. About the beginning of the century, however, Danfodio, chief of the Fellatahs of Sackatoo, not only asserted his independence, but made himself master of all Houssa, then conquered Bornou, and finally extended his dominion westward as far as the Niger. The Fellatah empire, thus founded, has since, however, suffered much dismemberment. The standard of independence was raised in Bornou by a native of Kanem, who, under the title of Sheikh el Kanemy, drove out the invader, and assumed the real sway over the country. In the heart of Houssa, Goober, Zegzeg, and other countries, have thrown off the yoke. Yet the Fellatahs, under other chiefs, are extending their conquests to the westward, and have even passed the Niger into Yarriba. Timbuctoo, meantime, has long lost the supremacy it possessed in the days of Leo. It became even tributary to the emperor of Morocco; and, though it has shaken off this yoke, the king's dominion does not now extend beyond the city and its immediate vicinity. Bambarra, when visited by Park, was found the most extensive and powerful kingdom on the upper course of the Niger; but it has since been dismembered by Sego Ahmadou, a Foulah chieftain, who has obtained possession of the flourishing city of Jenné, and the surrounding territory.

Sect. IV. *Political Geography.*

5378. *The government in the countries of Central Africa is completely despotic;* and in the native states the homage paid to rulers and grandees is even more abject and debasing than in any civilised empire. In Eyeo, the greatest lords, when they approach the sovereign, throw themselves flat on their faces, kissing the earth, and piling heaps of dust upon their heads. The sacrifice, on the death of any prince or chief, of his principal officers and favourite wives, though not carried to the same bloody extent as in Ashantee and Dahomey, is considerably prevalent in Eyeo and other native states. Yet the greatness of the monarchs is not supported by much of outward pomp and state. Their mansion, usual attire, and daily habits, differ little from those of their meanest subject. The king of Youri, one of the greatest of these potentates, received the English mission in a small square spot, which might be compared to a clean English farm-yard; and his audience of leave was given in an apartment unswept and dirty, with swallows flying about, and a number of naked girls and boys passing and repassing. The king of Wawa, to give his state reception, placed himself in a niche of the city wall. The pomp of the sovereign consists chiefly in the multitude of his wives; and it was the boast of the king of Eyeo that his queens, linked hand in hand, would reach from one end of the kingdom to the other. These ladies, however, are in a very different situation from that which in Europe is suggested by the word queen: slave would be the more appropriate, so varied are the services of every description exacted from them. They act as body guards, perform the most menial offices, and are seen in every part of the kingdom, carrying on their heads heavy burdens from place to place, favoured only with an exemption from tolls. The Mussulman princes maintain courts more resembling those of Northern Africa, with fewer wives, and those more secluded, preserving greater pomp and exercising equal power, but not exacting the same degrading testimonies of homage. We may observe, moreover, that each city enjoys a species of municipal government, which, particularly in some parts of Bambarra, has even somewhat of a republican constitution, the mansa or governor being elected by the body of the people.

5379. *The revenue of these princes* does not appear to equal their power, or even to be derived from any regular source, if we except the dues exacted from the caravans. They enrich themselves by presents, and thus particularly appear to accumulate such an extravagant number of wives. They also carry on a good deal of traffic, and scruple not to employ both power and stratagem in turning it to their own advantage. Lander scarcely met one prince from whom he did not experience every species of roguery and extortion. The treasures thus acquired consist chiefly in articles of show and ornament, which are piled in huge heaps for the sake of boastful exhibition. Their peculiar delight is to display these to important strangers, as a child does his toys and gewgaws.

5380. *The armies of these princes* consist chiefly of turbulent militia, taking the field on the summons of the prince, and supporting themselves by plundering the country through which they pass. The cavalry of Bornou and Begharmi have a very martial appearance, the horses being small and active, and, as well as their riders, completely enveloped in chain and sometimes in plate armour. Unfortunately they want the power of standing any brisk charge from an enemy, but on every such occasion take precipitately to flight. They are serviceable only when the victory has been decided, and all the enemies' backs are turned, when they are very active in cutting down and plundering the fugitives. The Kanemboo spearmen (*fig.* 867.), organised by the present sheik of Bornou, form the most regular and effective force in interior Africa. They march by tribes, almost naked, with only a skin round the waist, their only arms being a long shield with which they ward off the arrows of the enemy, and a spear with which they press forward to charge him; yet they have much of the organisation of a regular army, maintaining in front a chain of piquets, and the sentinels passing the war-cry along the line. The Fellatah archers, and those of a very rude people called the Mungas, fighting with poisoned arrows, have shown themselves very formidable; yet Lander saw the army of Sackatoo, 50,000 or 60,000 strong, employed in the siege of Coonia, a rebel city: but only a few chiefs, dressed in quilted armour, made some display of valour; the others, upon being struck by a false alarm, took precipitately to flight, upsetting every thing in their way, most of the men and animals tumbling over each other, and rushing together to save what they could by flight. A camp, as elsewhere seen by Clapperton, was like a village, composed of a number of huts, resembling bee-hives arranged in regular streets; and was "filled with weavers, tailors, women spinning cotton, others reeling off; some selling foofoo and accassons, others selling yams and paste; little markets at every green tree, holy men counting their beads, and dissolute slaves drinking roa bum." The musket is almost wholly unknown in the wars of those nations. The greatest monarchs have only a few, which they keep as objects of pride and curiosity. The Arab caravan followers, armed with those weapons, and possessing a certain degree of discipline, are superior to thousands of their opponents, and often decide the battle between the mightiest monarchs.

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KANEMBOO SPEARMAN.

Sect. V. *Productive Industry.*

5381. Almost the whole of this extensive region may rank with *the finest and most fruitful* on the surface of the globe. Though placed nearly beneath the line, and scorched by the intensest rays of a tropical sun, it suffers from this cause less than almost any other country in the same situation. The great chain of mountains by which it is traversed in some degree tempers the severity of the heat, and, by the numerous streams which they pour down, affords throughout the means of irrigation. Even their declivities, sometimes to the very summit, are covered with copious harvests. Thus nearly the whole territory is fitted for the productions of the tropical, and, through the variety of surface, occasionally even of the temperate, zone.

5382. *Agriculture* is practised over the whole of Central Africa, though not by any elaborate or scientific processes. The plough appears never to have passed the desert; the only instrument for turning up the ground being the hoe, which does little more than scratch the surface; yet this slight tillage, on grounds moistened by inundation or artificial watering, is sufficient to produce abundant crops. It has even been doubted whether a deep furrow would not be injurious, by laying the ground too open to the influences of the tropical sun. Considerable pains are bestowed upon irrigating the grounds; and in Houssa the grain is stored in large granaries raised on poles, as a security from the insects. Watch is diligently kept to scare away the numerous birds which would devour the grain. In Bornou, indeed, the imperfect industry of the people produces only gussub, a species of millet, which, instead of being formed into bread, is merely boiled into a paste. So supine is their culture, that in this fine climate they do not rear a vegetable of any description, except a few onions; nor a fruit except limes, and those only in the garden of the sheik. In Houssa, however, two crops of wheat are raised in the year, and the markets are abundantly supplied with fruits and vegetables. Rice is produced copiously on the inundated banks of the Niger, particularly in the kingdom of Youri. Cotton, the material of the staple and universal manufacture, is every where grown, and the beautiful and valuable fabrics woven from it, afford a presumption in favour of its quality. Indigo for dyeing is produced in great abundance, and excellent. Oxen are reared in great numbers, and often of very valuable breeds, but almost exclusively by the Arabs and Fellatahs; and there appears a presumption that they have been imported by these races from Northern Africa, since in the districts purely negro, the domestic animals consist only of sheep, goats, pigs, and poultry, reared often beneath the same roof with their owners. The forests and the inundated swamps on the great rivers abound with wild animals, — the lion, the elephant, the leopard, the hyena, — which commit formidable ravages; yet their spoils form frequently objects of trade, particularly the tusk of the elephant, composing the valuable substance of ivory. The swarms of insects are tormenting, and sometimes even dangerous; but the bees afford an abundant supply of honey, the chief dietetic luxury. Gold is extracted in considerable abundance from the sands of almost all the streams that descend from the western part of the great mountain chain.

5383. *Manufactures* are not numerous, but carried on with considerable skill and activity. The most important, by far, is that of cotton cloth, which is said to be beautifully woven, and skilfully dyed with fine indigo. This appears to be quite a negro manufacture, being carried to the greatest perfection in countries occupied exclusively by that people; Loggun in the east, and Nyffé westward on the shores of the Niger. The manufactures in Houssa are chiefly conducted by slaves from the latter country. Denham describes the people of Loggun as steeping their cloth thrice in indigo, then laying it on the trunk of a large tree, and beating it with wooden mallets, till it acquires the most brilliant gloss. Mats, being universally used to sit and sleep upon, form also an extensive branch of manufacture, which is carried to peculiar perfection at Rabba in Nyffé. The gold found along the western part of the chain of mountains is worked with considerable skill into rings and ornaments.

5384. *Commerce*, throughout this region, is carried on with considerable activity, though in modes somewhat peculiar. Maritime trade is precluded by its situation, far distant from any coast. Even river navigation is not practised with much diligence, unless on the Niger, and that chiefly on its lower course, as it approaches the sea. Waggons are unknown, and would perhaps be too cumbrous for the rude tracts through which they would have to be conveyed. Single travellers, also, could not proceed with safety through routes of such length, many parts of which are beset by predatory tribes. Commodities are conveyed by large troops, sometimes resembling little armies, called caravans, kafilas, or coffles. Those which pass between Northern and Central Africa, across the immense expanse of the desert, employ camels, whose patience of thirst, and their soft and elastic hoofs, almost exclusively fit them for travelling over this wide surface of sand. In the rugged and mountainous tracts, burdens are chiefly conveyed by means of asses; but in the great fertile plains of Houssa and Eyeo, the human head is the most frequent vehicle: those of females, not excepting the wives of the great men, and even of the monarch, are decidedly preferred. These fair bearers have been seen carrying with alacrity loads which it required the labour of three men to place on their heads. The African caravan merchant is a very different person from him who, while his vessels are traversing the ocean, remains seated in a snug counting-house, reckoning the silent accumulation of his profits: he must accompany his investments to their remotest destination, through desolate tracts, the domain of warlike and ferocious tribes. Passing through regions which own no law but that of the strongest, he is obliged to arm himself and his followers, and to defend as a warrior what he has earned as a merchant. Unhappily, he is often tempted to imitate those with whom he contends, and to consider plunder as a cheap and even not dishonourable mode of completing his assortment of goods. He holds himself thus equally ready, according to circumstances, to act as thief, pedlar, merchant, prince, or warrior. His band being armed with muskets, and forming a little standing army, are truly formidable to the nations of interior Africa. They form there a sort of state within the state, and are at once courted and dreaded even by great sovereigns. As commodities, in crossing the desert, rise in value from 150 to 500 per cent., and sometimes are procured by mere violence, the merchant who passes safely through a series of such adventures acquires immense wealth, and can often rival the pomp of princes. The caravans which traverse on foot the negro countries in the west, and which consist in a great measure of females, though often very noisy, and addicted to convivial and even dissolute habits, bear by no means the same warlike character. The female traffickers act not merely in a servile capacity as bearers, but carry on extensive transactions, and acquire considerable property.

5385. *The commodities* conveyed across the desert, and exposed for sale in the markets of Central Africa, are chiefly of a showy and ornamental kind: coarse woollen cloths of gaudy colours, and red silk thread to be woven into their cotton robes; coarse French writing paper, beads, rings, and ornaments made of silver, glass, coral, amber, and even pewter; and with regard to the material of these articles imposition is very easily practised. Scissors and knives, with other iron implements, and, still more, arms, are in constant demand. A welcome is even given to the gaudy cast-off dresses of the Mamelukes, and to the old sword-blades of the knights of Malta. Salt, in large quantities, is brought from pits in the interior of the desert; and goora or kolla nuts, — a favourite luxury, which is even called the African coffee, — are transported from the western to the eastern parts of this region. The returns made to Northern Africa from Timbuctoo consist partly of gold and ivory; but slaves are the chief article sent from thence, and almost the sole one from Houssa and Bornou. These unfortunate victims are caught by armed expeditions in the mountainous regions to the south, the inhabitants of which, being mostly pagan, are considered by orthodox Mussulmen as lawful prey. These inroads are undertaken not by private marauders, but by powerful chiefs, and even by the greatest princes. On occasion of the marriage of the sheik of Bornou with the daughter of the sultan of Mandara, a combined expedition was sent against the Musgow nation, which, after a desperate struggle, brought in 3000 slaves; and the nuptials were celebrated with barbaric pomp, furnished out of the tears and captivity of so many victims.

5386. *Neither roads, canals*, nor other modes of improving the interior communications, are employed in this region. The routes are merely spaces left vacant, and beaten by the continued tread of men and animals. They are often encumbered by swamps, trees fallen across, and even by the large nests of white ants. Where they are crossed by broad rivers or lakes, a large raft is placed on the bank, by which, not without some difficulty and danger, the caravans are ferried over.

Sect. VI. *Civil and Social State.*

5387. *The state of society*, though it has not passed the limit of what must be denominated barbarous, has yet made a greater approach towards civilisation than among any other African nations, except those which border on the Mediterranean. Nor is this solely owing to the migrations from that region, though these have been numerous, and a great part of the population is derived from them. The states purely negro, which have imbibed no portion of Arabic religion and literature, have made nearly an equal advance in arts and improvements. The total absence, however, of alphabetic writing, and of any written or even painted records, seems to place these last decidedly beneath the least improved among the great nations of the Asiatic continent.

5388. *In the moral existence of the African* there are many very dark features. War is carried on with all the ferocity of the most barbarous nations; many tracts, formerly flourishing, were seen, by the recent travellers, reduced by it to a state of entire desolation. Another deep blot is the extensive prevalence of robbery, practised not merely by desperate and outlawed individuals, but as the great national and state concern of almost every community, great and small. In other parts of the world, robbery is carried on by the poor against the rich: in Central Africa, it is equally or more by the rich against the poor; for there, he who is destitute of every thing else, has at least himself, who, converted into a slave, forms the richest booty that can tempt the plunderer. The treatment of the numerous bands of captives who are conveyed across the desert is also attended with many circumstances of remorseless cruelty. Yet it must not be concluded that an unbroken gloom hangs over the moral condition of Africa. There seems even to be something peculiarly amiable and engaging in the social feelings and habits there prevalent. Warmth of friendship, hospitality, and humanity, are virtues of which Park and other recent travellers have given many shining instances. They are furnished even by Moslems, notwithstanding the hostile feelings cherished by a bigoted creed. When Major Denham was fleeing from battle in a naked and miserable state, a young African prince pulled off his own trousers, and bestowed them upon him. Both Clapperton and Lander paint the Fellatah shepherdesses in the most engaging colours; describing their dress as arranged with taste, their hair braided with peculiar neatness, their manners artless and simple, their conversation at once modest and full of kindness.

5389. *In regard to religion*, the nations of this region are pretty equally divided between two systems, the pagan and Mahometan; one native, the other introduced by migration and intercourse from Northern Africa. The Niger, in a general sense, forms the boundary of Moslem influence, which has, however, penetrated at several points beyond that river. The Fellatahs, who form the ruling people in the fine territory of Houssa, appear to have migrated from Egypt and Barbary, bringing with them the Mahometan religion. The people of Bornou, and of the adjacent countries of Mandara and Begharmi, have been converted to this faith, and profess it with a still more bigoted zeal. The Christian travellers were considered by them not only as doomed to perdition, but as destitute of any claim to the rights and courtesies of humanity. One fixed article of belief among all these nations is, that they may lawfully reduce to slavery all the *kerdies*, or pagans, who people the southern mountain districts. In other respects, they do not strictly conform to the recluse and contracted habits of life generally prevailing among nations of this profession: the females are not closely immured; intoxicating liquors are not rigidly abstained from; and various amusements which it proscribes are indulged in without scruple. The pagan tribes are free from this intolerant spirit; but their superstition is mean and puerile in the extreme, consisting in implicit reliance upon fetiches, charms, and amulets of the most ridiculous nature. The barbarous system, also, of human sacrifice, though prompted by the extravagant veneration in which their great men are held, has evidently an intimate connection with superstitious impressions.

5390. *Learning*, throughout Central Africa, appears in a very depressed state. The reading even of the Koran is confined to a very few of the great *fighis*, or doctors. Its verses are chiefly employed as amulets to secure triumph over enemies, or success in the different pursuits of life. Its contents are frequently imbibed by writing the characters with a black substance on a wooden board, washing them off, and drinking the liquid. The Arabs, who possess somewhat greater information, often practise most scandalous impositions on the credulity of the negroes. The princes, both in Bornou and Houssa, show a disposition to enquire into and cultivate the arts and sciences; but they have no channel of information, unless from Barbary, where these pursuits are in an almost equally depressed state. Sultan Bello and his minister had each a library, but no communication has been made to us as to the contents of either. Yet extemporary poetry, sung by the composers, is repeated at almost all the African courts. Singing men and singing women are constant attendants on the chiefs and caboceers; and their songs, though conceived probably in terms of the grossest flattery, appear to contain a large portion of national history. The Arab caravan drivers also cheer their long expeditions by reciting poems, where the talent displayed is often considerable, and is derived less, probably, from any acquired literature, than from the excited state of passion and feeling, which arises in a life of wild and wandering adventure. In the most improved of the native states, there appears to exist a considerable taste for sculpture, and in their edifices, the doors, with the other ornamental parts, are adorned with pillars, on which are carved the exploits of their warriors, combined with the various movements of favourite animals.

5391. *The amusements of these nations* are not extremely refined. Wrestling and gaming are favourites in Bornou. The wrestling exhibitions are made by slaves captured from the neighbouring and hostile countries of Begharmi and Musgowy. The masters place their pride in the victories achieved by these slaves, cheering them during the combat, and often on a favourable issue throwing to them valuable robes and other presents. A powerful wrestling slave will sell for 100 dollars; but a defeat, the disgrace of which is never forgotten, causes him to fall at once to four or five. Ladies, also, even of rank, delight in a strange exercise, where they beat particular parts of the body against each other with such force, that the vanquished party is thrown flat on the ground. The principal game, and one skilfully played, is a species of rude chess, carried on by beans, with holes made in the sand. At Kano, the most flourishing of the cities of Houssa, boxing is practised with some science, and such excessive fury, that a thorough set-to not unfrequently terminates in the death of one of the combatants. The performers exhibit for pay; and when Captain Clapperton hired a party, the whole population, male and female, quitted their occupations, and thronged to view their favourite spectacle. In Eyeo, there is a species of dramatic exhibition, consisting, however, merely in a display of mimicry, tricks, and buffoonery. Persons enclosed in sacks pursue each other with surprising agility; out of one comes a representative of the boa constrictor, who exhibits an excellent imitation of the movements of that animal; there was also exhibited to Captain Clapperton the "white devil," a caricature of the European; a thin figure, painted white, shivering with cold, and performing very naturally a variety of movements which appear strange in the eye of an African. We may conclude with dancing, which, over all native Africa, is the standing and universal amusement, continued often for whole nights, and practised in every form, from slow movements resembling the stately minuet, to curvets that might rival those of Grimaldi. Even the kings place a peculiar glory in their skilful performance of this exercise; to be an expert dancer is thought almost as flattering as to be a successful warrior; and even those monarchs, whose advanced age disqualifies them from any real eminence in this performance, strain every nerve, by elaborate displays of it, to extort the flattery of their subjects.

Sect. VII. *Local Geography*

5392. *The eastern part* of this territory, comprising the kingdoms of Bornou, Mandara, Loggun, and Begharmi, will be most convenient for commencing our survey of its local divisions.

5393. *Bornou*, one of the most powerful kingdoms of Central Africa, extends about 200 miles in every direction, on the westward of the great inland sea of the Tchad. The extent of that sea, and the variations on its surface, have been already described. When, in consequence of the rains, its waters swell, and overspread the large encumbered tract abandoned during the dry season, the numerous bands of wild animals which it harboured, elephants, lions, panthers, and hyenas, are obliged to quit their cover, and seek their prey among the habitations of men. At this disastrous period, travellers, and the slaves employed in watching the corn-fields, often fall victims to their fury; the hyenas have even been known to force their way into walled towns, and devour the herds that had been driven into them for shelter.

5394. *With the exception of this peculiar district,* Bornou, watered by the tropical rains, and often partially inundated, is a very *fertile* country. The soil, after being merely scratched with a hoe by the female slaves, and the seed scattered, rather than sown, yields very considerable crops. Cities, containing from 10,000 to 30,000 inhabitants, and many walled towns, rise along the shores of the lake. The markets present a most crowded scene, the principal one at Angornou attracting sometimes 100,000 people. Yet the nation is remarkably deficient, not only in refined and intellectual pursuits, but in the humblest of the useful arts. Instead of wheat or rice, they raise *gussub*, a species of small grain, which, being boiled to a paste, and having melted fat poured over it, is in Bornou considered the most delicate of dishes. Even iron tools, notwithstanding their value to a martial people, are handled in the most clumsy manner. The only fabric in which they have attained any kind of excellence is that of cotton cloth dyed blue with their fine indigo, the tobes or pieces of which form the current coin of the realm; yet even in this staple they do not equal the natives of Loggun and Nyffé. They have, however, the absolute necessaries of life in abundance. Numerous herds of cattle are bred by Arab tribes, who have transported into Bornou all their pastoral habits. The most numerous are the Shouaas, who in the towns are described as deceitful, arrogant, pretended fortune-tellers, and greatly resembling gypsies; but in the country display greater simplicity of manners. Major Denham describes the daughter of a rich Shouaa loaded with ornaments of amber, silver rings, and coral, her hair streaming with fat, a black rim of kohol, at least an inch wide, round each of her eyes. She sits astride on a bullock, over which carpets and tobes have been spread, guides him by the nose, and tortures his sluggish form into something like caperings and curvettings. The Bornouese are characterised by simplicity, good nature, and ugliness. They have in excess the thick lips, face sloping backwards, and other characteristics of the negro. The principle of speculative curiosity is one to which they are not only strangers, but which they cannot at all conceive as swaying the human mind; and the recent travellers could by no means obtain credit for this motive in visiting Africa.

5395. *The government of Bornou is absolute;* but when the English mission lately visited the country, they found it in a somewhat singular political situation. The sheik, surnamed El Kanemy, who by his valour had rescued the kingdom from Fellatah invasion, possessed all the real authority, which he exercised with justice and vigour; but he found it prudent to confer the ostensible dignity of sultan on a member of the ancient royal family, who lived in empty pomp at New Bornou. There is probably no court of which the taste is so absurd, grotesque, or preposterous. The primary requisite for a fine gentleman and a courtier is a huge belly; and where feeding and cramming will not produce this beauty in sufficient perfection, the part is swelled out by stuffing and cushioning. This unwieldy bulk is then covered with ten or twelve successive robes of rich and varied materials. Fold after fold is wrapped round the head, till only a small part of the face, and that all on one side, can be descried. Numerous amulets, enclosed in green leather cases, envelope their clothes, horses, and arms. Surrounded by a train of such attendants, the sultan of Bornou received the British mission in a cage or crib, barely capable of containing his own person (*fig.* 868.). Thus attired, however, the Bornou cavalry take the field; but they are there totally inefficient. Indeed, the sultan, who ought to be still more protuberant and encumbered than the rest, is subject to the convenient necessity of never fighting; but if his army is defeated, and he cannot escape by flight, he seats himself in state beneath a tree, and quietly awaits the stroke of death. Lander heard it reported at Boussa, that the sheik had recently been put to death by the sultan, who had resumed the supreme sway.

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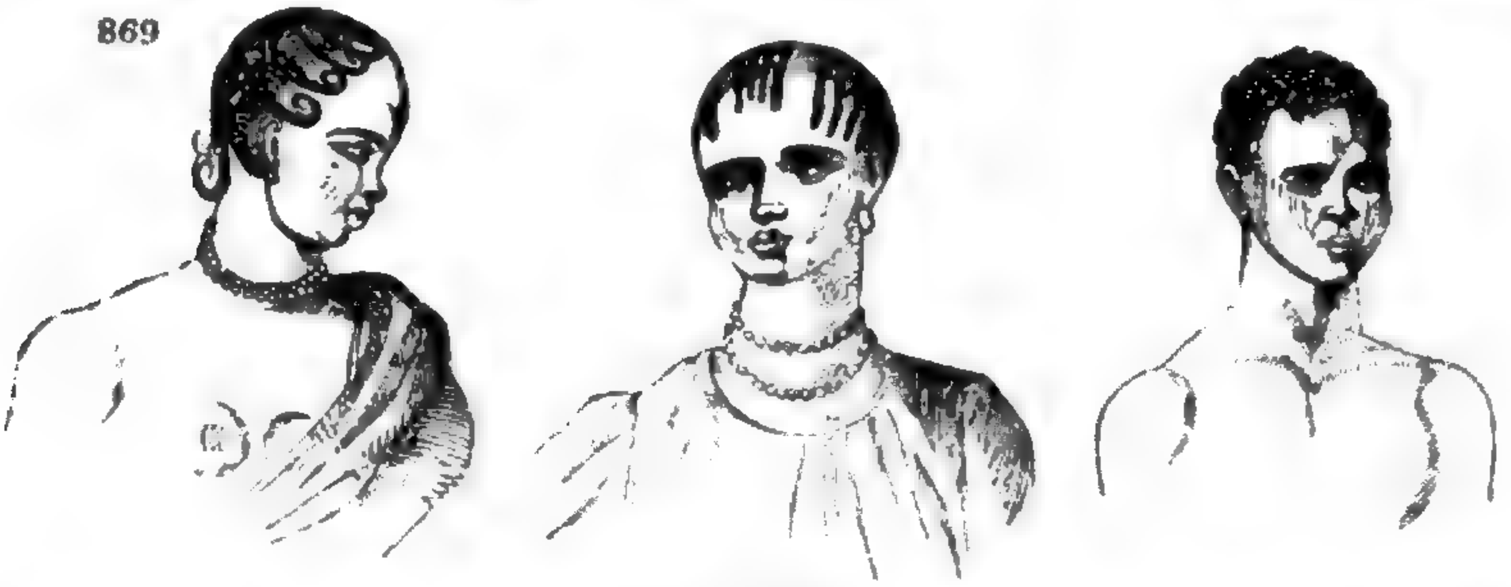
AUDIENCE OF THE SULTAN OF BORNOU.

5396. *The towns of Bornou are considerable*, though not of the first magnitude. New Bornou, the present residence of the sultan, is said not to contain more than 10,000 people; and Kouka, where the sheik kept his court, is still smaller. Angornou is the largest place in the kingdom, containing at least 30,000 people, and, during the crowded markets held there, often from 80,000 to 100,000 are assembled. All these are in the heart of the kingdom, on the western bank of the Tchad. Angala, on the southern or Begharmi frontier, and Woodie on that of Kanem, are also considerable: at the latter, the caravans are made to stop till permission to proceed is obtained from the sovereign. Kanem, in the north, is a ruder district, partaking somewhat of the character of the bordering desert; but its inhabitants are peculiarly brave. Lari, the capital, is a town of 2000 inhabitants, consisting of clusters of rush-huts, in the shape of well-thatched corn-stacks. The largest cities, however, appear to have been formerly situated on the lower course of the Yeou; but they have been entirely destroyed, and the whole country laid waste, by the desolating inroad of the Fellatahs. The ruins of Old Bornou were seen covering a space of five or six square miles; and Gambarou, the former residence of royalty, displayed in its ruined edifices a degree of elegance not observable in any of the modern capitals. The territory round these cities, formerly in a state of the highest cultivation, is now covered with labyrinths of thickets, and the meadows overgrown with wild plants. It contains only a few scattered villages, whose inhabitants live in constant dread from the predatory inroads of the Tuaricks. Farther to the west, beyond a large town called Kabshary, are the almost savage tribe of Mungas, who fight with poisoned arrows, and yield a reluctant submission to the dominion of Bornou.

5397. Mandara, situated to the south of Bornou, consists of a fine valley, containing eight large towns, the principal of which is Mora. The whole country, and even the capital, are overlooked by the great central range of the Mountains of the Moon, which to the southward of this territory appear to attain their loftiest height. They are inhabited by numerous and barbarous races, comprehended, by the Mandaras, under the appellation of *kerdies*, or pagans, and thence considered as lawful prey. These people paint their bodies, wrap themselves in the skins of wild beasts, and subsist chiefly on fruits, honey, and the fish drawn from large lakes. The Musgow, the most distant and rudest of those races, were seen mounted on little fiery steeds, covered only with the skin of a goat or leopard, and having round their neck long strings of the teeth of their enemies. Dirkullah, a part of this mountain territory, is occupied by Fellatahs, who have their villages strongly fortified, and fight desperately with poisoned arrows, by which they once put to flight the whole force of Bornou and Mandara, though aided by a numerous and well-armed body of Arabs.

5398. *Loggun*, situated immediately to the south of the lake Tchad, and watered by the lower course of the river Shary, which falls into that great receptacle, appears to be one of the most improved and industrious countries in all Africa. The Loggunese, amid the furious warfare waged by the surrounding states, have, by a skilful neutrality, maintained themselves in peace. They work steadily and skilfully at the loom, an occupation elsewhere abandoned to slaves. Their cloth, after being thrice steeped in a dye of excellent indigo, receives a brilliant gloss by being placed on the trunk of a large tree, and beaten with wooden mallets. The tobes thus fabricated are much superior to those of Bornou, and only equalled in Nyffé. The people rank also above their neighbours, in having a coinage, though rudely made of iron, somewhat in the form of a horse-shoe. Provisions are abundant; the banks of the river are bordered with fine woods, and a profusion of variously tinted aromatic plants. The inhabitants, however, suffer cruelly from the multitude of tormenting insects. "Flies, bees, and mosquitoes, with immense black toads, vie with each other." It is impossible to stir out for two or three hours at mid-day, without the hazard of serious illness. Some seek a protection by building one house within another; others by kindling a fire of wet straw, and sitting in the smoke; but this remedy seems worse than the evil. The ladies of Loggun (*fig.* 869.) are described as the handsomest and most intelligent of the negro race, with a lively and agreeable expression and engaging manners. They are by no means distinguished, however, by those virtues which form the ornament of their sex, and, in particular, used the utmost dexterity in snatching from Major Denham every thing they could reach, searching even the pockets of his trousers, and, when detected, treating the whole as a jest. Loggun, the capital, is a handsome town, with spacious streets, finely situated on the Shary, about forty miles above its entrance into the lake.

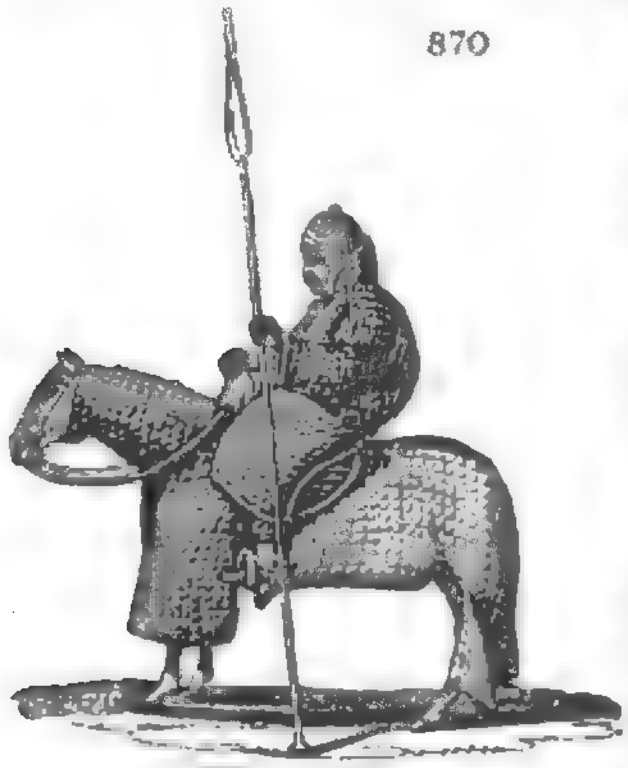
869



LADIES OF LOGGUN.

5399. *Begharmi*, or *Begherme*, is a considerable country, to the south-east of the lake Tchad. The people, who are stout and warlike, wage almost continual war with Bornou, which boasts of having subjected them; but they always find a retreat beyond a considerable river, which flows through their country, whence they return and regain possession of their territory. Their chief force consists in mounted lancers (*fig.* 870.), which, with their horses, are cased still more completely in iron mail than those of Bornou; but they do not in the field display any higher degree of courage.

870



LANCERS OF BEGHARMI.

5400. *The islands in the lake Tchad*, which are numerous, and many of them large, are inhabited by tribes that have made themselves formidable to the surrounding countries. The Biddomah, occupying the eastern quarter, have a fleet of a thousand large canoes, which they employ entirely in piratical inroads. They maintain the doctrine that their deity left them without grain or cattle; instead of which, he bestowed strength and cunning to snatch those good things from others who possessed them. This destination they zealously fulfil; there being not a spot round this wide expanse of water which is for a moment secure from their attack, the vicinity of the capital not excepted. They carry off many of the people as slaves, but treat them well, and even bestow wives upon them. No attempt to check their ravages seems made by the most powerful of the Bornou sovereigns, who merely say, "The waters are theirs: what can we do?" The La Salas, a pastoral people, inhabit a number of small verdant islands near the southern quarter, separated by channels so shallow, that those acquainted with them can ride on horseback from one to the other. These islands are covered with rich pastures and numerous herds.

5401. *Houssa* is an extensive territory in the most central part of Africa, reaching from the upper course of the Yeou nearly west to the Niger; but its boundaries both on the north and south seem to be yet undecided. Although it is ascertained not to reach the main stream of the Quorra or Niger, it is yet well watered by the river Quarrama or Zirmie, which, with several tributaries, flows westward to join the Quorra. On the eastern border, also, it is traversed by the upper course of the Yeou, and on the southern by the Shary or Tshadda, which also falls into the Niger. This region derives its social character from the Fellatahs, descended apparently from the Arabs, who migrated thither in large bodies in the tenth and eleventh centuries, and have ever since continued to be the ruling people. It appears to be more elevated, and the climate less sultry, than that either of Bornou or the countries on the Niger; travellers have even occasionally suffered from cold. The face of the country exhibits evident marks of superior cultivation and a superior people. The fields are covered with large crops of wheat, two of which are annually produced, and the grain is stored in large granaries raised on poles as a security from insects. Irrigation is practised with diligence. The grain is made into bread, and the markets are well supplied with fruits and vegetables. The Moslem faith is professed, having the iniquitous right founded upon it, of carrying into bondage the southern tribes of *kerdies*, or infidels; yet the same bigoted spirit does not prevail, and the Arabs even allege that the Fellatahs are not true

Moslems. Their commercial habits, and intercourse with the negro nations to the westward, are probably the chief causes which introduce this more liberal train of ideas.

5402. *Sackatoo*, probably the Tocrur of the Arabians, situated nearly at the western extremity of Houssa, is at present the ruling country over that region. The territory appears to be fertile and populous, and its capital the largest city in interior Africa. The houses are built closer than usual, and more regularly laid out in streets. The place is surrounded by a wall between twenty and thirty feet high, with twelve gates, always shut at sunset. The dwellings of the principal inhabitants consist of clusters of cottages, and of houses built with flat roofs in the Moorish style, enclosed by high walls. There are two mosques, one of which, unfinished when Clapperton resided there, was 800 feet in length, supported by wooden pillars plastered with clay, and richly ornamented. The palace, as usual, forms a sort of enclosed town, with an open quadrangle in front; while a painted and ornamented cottage contains the hall of audience. Of late the residence of the court having been transferred to the neighbouring town of Magaria, Sackatoo is likely to experience a decline.

5403. The countries of *Goober and Zamfra*, or *Zanfara*, are of a ruder character, inhabited by a warlike race, who have sometimes ruled over Houssa, and are at present in open rebellion against the power of Sackatoo. Even the high road between that city and Kano is continually infested by them. The merchants venture to pass it only in numerous and close bodies, every one striving to be foremost, and exclaiming, "Wo to the wretch that falls behind, he will be sure to meet an unhappy end at the hands of the Gooberites!" In 1829, Coonia, the strongly fortified capital of Goober, repulsed with loss the whole military force of Houssa, amounting to 50,000 or 60,000 men. Zirmie, the capital of Zamfra, is represented as forming a sort of outlawed city, where runaway slaves find protection, and the inhabitants are esteemed the greatest rogues in all Houssa.

5404. *Kano*, though declined from its ancient greatness, is still the centre of commerce and civilisation in interior Africa; yet it is built in a very scattered manner, occupying only about a fourth of the circuit of fifteen miles enclosed by its walls. The inhabited part is divided into two by a large morass, dry during a part of the year, at which period is held a great market, the most crowded and best regulated in Africa. It is under the superintendence of a sheik, who has even the exorbitant power of fixing the prices. Such is the confidence established, that packets of goods are very commonly carried away without being opened; and if any fraud is discovered, the packet is sent back, and the *dylala*, or broker, is compelled to procure restitution. The market is crowded from sunrise to sunset every day, not excepting Friday, the Mahometan sabbath. The slaves, who constitute the staple commodity, have a special market, composed of two long ranges of sheds, one for males, and the other for females. The poor creatures, decked out for the purpose, are seated in rows, and are nicely scrutinised by the purchaser, who inspects the tongue, teeth, eyes, and limbs, causing them to cough, and move in different directions, so that any defect in their persons may become apparent. The current coin in traffic consists of the small shells called cowries, 480 of which are worth only a shilling, so that the task of counting them is laborious. Kano is supposed to contain 30,000 or 40,000 inhabitants.

5405. *Kashna, or Kassina*, to the north of Kano, is a considerable kingdom, which at no distant period held the supremacy over Houssa, and has even lately shaken off the yoke of Sackatoo. Its walls, like those of Kano, are of immense circuit; but the inhabited part does not amount to above a tenth of the enclosed space. It is still, however, the seat of a considerable trade with the desert, with Timbuctoo, and with caravans coming across the desert by the way of Ghadamis and Tuat.

5406. To the south of Sackatoo and Kano is the country of *Zegzeg*, one of the finest in all Africa. It is covered with plentiful crops and rich pastures, yields particularly good rice, and is beautifully variegated with hill and dale, like the finest parts of England. Zaria, the capital, is like an enclosed district, occupying a great extent of ground, which comprises even woods and corn-fields; the population is estimated at about 50,000. The country to the south of Zegzeg, though diversified by rising grounds, is still fertile and well cultivated, containing a number of considerable towns. Cuttup, a compound of 500 villages, or rather clusters of houses covering a beautiful plain, forms the market for a great extent of country. Farther south, however, there is stated to be a rugged and mountainous region inhabited by the Yam-yams, a savage race, represented as cannibals, and who, some time ago, had killed and eaten a whole caravan. The same people are mentioned, six centuries ago, by Edrisi, as bearing the same character. Dunrora is situated in a country fertile, though rocky; and about half a day's journey from it is Jacoba, described as a large city on the river Shary; while farther to the east, on the same river, is stated to be another great city, Adamowa: but here our knowledge in this direction terminates.

5407. The western tracts of Houssa do not contain any cities of great magnitude. Yet the late travellers mention Bershee, probably the Berissa of Edrisi; Katungwa, surrounded by a fine country; Zangeia, picturesquely situated amid rocky hills; and Girkwa, on a river of the same name, tributary to the Yeou. Katagum, capital of a province once included in Bornou, contains 8000 inhabitants; and in the same district is Sansan, a large market-place, divided into three distinct towns. To the north is a rude tract, inhabited by the Bedees, a fierce, independent, pagan race, between whom and the Moslems a constant war is waged.

5408. *The countries on the lower course of the Niger* form an extensive and important part of Central Africa. Being copiously watered, and in many parts liable to temporary inundation, they are endowed with profuse natural fertility, yielding rice and other valuable species of grain in abundance; though, in approaching the sea, the ground becomes swampy, and overgrown with dense forests. A negro population, with its original habits and superstitions, generally fills this region; but the Fellatahs are making rapid encroachments; and several of the states have been converted, though, in a very superficial manner, to the Moslem faith. The kings hold generally an absolute though mild sway; their splendour consists chiefly in the multitude of their wives, who perform all menial functions, and even act as body guards: the royal exactions are chiefly from travellers and merchants, out of whom they draw as much as possible, both in the way of presents and trade. We shall begin from the northern or higher region of the river.

5409. *Youri, or Yaoori,* consists of a very fertile plain, partly overflowed by the Niger, and thus rendered peculiarly fitted for the production of rice. It is even cultivated with great diligence, though chiefly by an oppressed, half servile, but patient and industrious race, called the Cumbrie. Youri is a very large city: its walls of wood, rudely strengthened with plates of iron, enclose a circuit of twenty or thirty miles; but this space is covered to a great extent with pastures and corn-fields, among which clusters of huts are interspersed. The people, being numerous and brave, have repelled every attempt by the Fellatahs to subdue them. The king maintains a higher state than prevails in the neighbouring courts, yet both the structure and the accommodations of his palace would, in Europe, be considered extremely mean. This prince has incurred deep dishonour by the attack on Park, which terminated in the death of that celebrated traveller; and his conduct to Clapperton and Lander was far from praiseworthy. Below Youri the navigation of the Niger is obstructed by formidable cataracts, though it is passable during the rainy season for vessels of some magnitude.

5410. The kingdom of *Boussa,* immediately below Youri, was represented by the first accounts as forming one, and even the chief, of the states of a more extensive region called Borgoo; but Lander learned, in his last expedition, that neither it nor Wawa, over which it has a certain supremacy, are included in that region. Boussa is a considerable town, capital of a fertile and well cultivated country of the same name. It was at one time occupied by the Fellatahs; but they were afterwards expelled. The Niger, immediately above and below Boussa, presents a magnificent body of water; in passing that city it is obstructed by those rocks and straits in which Park was intercepted and perished. A little below Boussa is the ferry of Comie, which forms the principal passage for the caravans on their way from Houssa to the coast.

5411. *Wawa,* the capital of a small dependent kingdom, is situated in a very fertile country, particularly celebrated for producing excellent yams. The town, supposed to contain 18,000 inhabitants, is also enriched by the constant passage of the Houssa caravans. The people and merchants take advantage of their wealth, to indulge in feasting and jollity, and drink harder than in almost any other city of Africa. During the whole night, the town resounds with the song, the dance, the castanet, and the Arabian guitar.

5412. *Borgoo,* forming a cluster of states to the west and north-west of Boussa and Wawa, presents an aspect entirely different. It is composed, in a great measure, of rugged mountain tracts, though interspersed with fertile and beautiful valleys. The elevated districts are covered with extensive forests, crowded with wild animals of every description, and infested with numerous bands of robbers. Kiama, the only part of Borgoo visited by English travellers, is inhabited by a people proud, courageous, spirited, delighting in martial exercises, and warm both in their resentments and attachments. The king professes the Mahometan religion; yet his attachment to paganism is displayed by numerous fetiches and uncouth figures, stationed, as guardian powers, at the entrances and along the walls of his houses. Here the English travellers saw a great Mahometan festival, followed by a horse-race. The animals were gaily caparisoned, with strings of brass bells on their heads, pieces of red cloth, silk and cotton tassels, and little charms in coloured cases. The ladies, not subjected to the usual Moslem seclusion, appeared gaily adorned in coarse Manchester cloths, and bed-furniture of glaring and gaudy patterns, for which a high price had been paid. The palace, or rather hut, in which the king resides, is adorned with good prints of George IV., the Duke of Wellington, and other eminent British characters. Niki, however, is considered the chief of the states of Borgoo, its capital the largest, and its territory the most improved; it holds also a certain sway over the others. They are comparatively poor, with the exception of Loogoo, enriched by the commerce between Gonjah and the interior. Pandi has shaken off all dependence upon Niki, but has used its liberty only to organise a destructive system of plunder against the neighbouring states.

5413. *The banks of the Niger, below Boussa,* are occupied by two great and flourishing kingdoms: Eyeo on the west, and Nyffé, or Nouffie, on the east.

5414. *Eyeo,* called also Hio, or more properly Yarriba, is a very extensive country, extending from the frontier of Boussa nearly to the coast, from which it is only separated by the territory of Badagry, while from the Niger it reaches west to the frontier of Dahomey. It is one of the most fruitful countries on the globe, and is also well cultivated and densely peopled. The fields are covered with thriving plantations of Indian corn, millet, yams, and cotton. The loom is busily plied, though its products are not equal to those in the neighbouring country of Nyffé. The scenery is beautiful, the woods exhaling a delicious fragrance, and being filled with myriads of brilliantly-tinted butterflies. The females, likewise, are actively employed in the conveyance of goods, which they bear on their heads, executing this laborious task with surprising cheerfulness. A range of rugged mountains, from 2000 to 3000 feet high, crosses one part of the country; yet such is the mildness of the climate, that cultivation, and even large towns, are found on their very summit. The government is most despotic; the greatest chiefs, in approaching the sovereign, throw themselves flat on their faces, and heap on their heads sand and dust. Yet, in the general administration of the government, there seem few instances of cruelty or wanton oppression. The property of the sovereign consists chiefly, as already observed, in his innumerable wives, and the various functions performed by them. The habitations are in general mere huts, and the residence of the chiefs is only distinguished by the number of these within an enclosing wall; but the gates and panels of some, though only of wood, are adorned with elaborate sculpture. The practice of human sacrifice prevails extensively, though not quite to the same degree as in Ashantee and Dahomey. On the demise of the king or of any great chief, his principal officers and favourite wives are doomed to die along with him. Most tragical scenes are thus presented, as the devotion is by no means voluntary, but the necessity of it imposed by public opinion produces the deepest distress both in the prospect and in its actual arrival. The Fellatahs, it appears, have already passed the Niger, and are preparing to attempt the conquest of Eyeo, in which it is thought that they will probably succeed.

5415. *Among the cities of Yarriba,* the first place is held by Eyeo, the capital, situated in a fine plain, and, like most African towns, covering a very large space. It is, indeed, fifteen miles in circumference, so that the mission had five miles to march from their quarters to the palace. There are, however, many fields and open spaces in this wide circuit, and the population can scarcely be even conjectured. Bohoo, the former capital, though much declined since the transference to Eyeo, is still a very large place, in even a superior country, resembling the finest parts of England. Since the Fellatahs obtained a footing, they have founded Alorie, which, being increased by runaway slaves from every quarter, is now reported to be greater than Eyeo. A number of other large towns are mentioned. Jenna is the first on the southern, and Keeshee on the northern frontier. Chaki, though on the very summit of the mountain ridge, is large and populous.

5416. *Nyffé,* on the eastern bank of the Niger, is a very fine country, occupied by the most industrious and improved of all the negro nations. Their cotton cloths are held in the highest estimation, and even the finest of those manufactured in Houssa are by slaves from Nyffé. It has, however, of late been dreadfully ravaged by the Fellatahs, who have made themselves nearly masters of the country; and who, though mild in their domestic intercourse, carry on war in the most desolating and ferocious manner. Rabba, the capital, is considered, next to Sackatoo, the largest town in possession of this people. The surrounding territory is highly productive, covered with rich crops, and with numerous and fine breeds of horses and cattle. The mats made there are reckoned superior to all others in Africa. Koolfu and Kufu, two towns on the northern frontier, and on the high road of the Houssa caravans, being protected by strong walls, have escaped the desolation of the late wars, and are flourishing seats of trade. The people have been converted to the Moslem religion, which has not, however, introduced that gloomy bigotry, or that seclusion of the female sex, which usually accompanies it. The women, on the contrary, are the most active mercantile agents, going from market to market, and acquiring often considerable wealth. Lever, or Layaba, and Bajiebo are two thriving towns on the Niger; and the latter, being situated below a succession of shallows, enjoys an uninterrupted navigation down to the sea. Both have changed their site from the eastern to the western side of the river, in order to escape the ravages of the Fellatahs, but without fully attaining that object. The Niger spreads here into a most magnificent channel, from two to six miles in breadth, and contains several beautiful and fertile islands. Patashie is on the frontier of Boussa, while Belee, lower down, borders on Nyffé. But the finest by far is Zagoshi, immediately adjoining to Rabba. It is about fifteen miles long and three broad, in the mid-channel of the Niger, whose broad stream on each side separates it from the continent. The surface, scarcely raised above the level of the waters, is composed of mud, frequently inundated, and so soft, that a slender cane may be thrust even into the floors to any depth. Yet the island is highly cultivated and productive; and its manufactures pre-eminently display the general superiority of those of Nyffé. The cotton cloths there woven are valued beyond all others by the chiefs and great men throughout Africa. The people possess also numerous canoes, 600 of which, being armed and belonging to the sovereign, enable him to secure his country against those revolutions which have desolated the neighbouring continent. Egga, the town of Nyffé which lies farthest down the Niger, extends four miles along its banks, and has numerous boats belonging to it. The population is half Mahometan, half negro. With Egga terminates Nyffë, and with it the range of wealthy and populous kingdoms that extend along the Niger, from Youri downwards.

5417. *The states which succeed* consist of little more than single towns, each governed by its own chief, with little or no mutual dependence, and many of them addicted to fierce and lawless practices. Kacunda, however, composed of a cluster of three large villages, under the absolute sway of a single chief, though independent of Nyffé, contains a peaceable, industrious, and friendly people.

5418. About forty miles below Kacunda, several yet unknown towns intervening, *the Niger receives its greatest tributary, the Tshadda,* called sometimes the Shary, and which has been traced flowing by Jacoba on the south of Houssa; but its origin and early course is unknown. At the junction, it is little inferior to the main stream, and navigated by numerous boats. Funda, reported the greatest emporium of this part of Africa, is about three days' sail up the Tshadda. At the junction of the two rivers is a commercial town, of very considerable magnitude, named Cuttumcuraffe.

5419. *Towns of importance* continue to occur in the course of the Niger downwards. Bocqua, about eighty miles below Kacunda, is the seat of a very large market, frequented by numerous strangers from the interior, and from the upper and lower course of the Niger. It is followed by Atta, Abbazaca, and Damuggoo, the latter governed by an enlightened though despotic ruler. Here a commercial intercourse with Europe becomes manifest, and the people are dressed, though somewhat scantily, in Manchester cottons.

5420. *Kirree,* a large market town, the citizens of which possess numerous boats, is about fifty miles below Bocqua. Here commences the delta of the Niger, which, immediately above this place, detaches a branch, supposed to flow to Benin. The country ceases to be fertile and beautiful; the superabundance of moisture converts it into an alluvial swamp, covered with vast entangled forests, which conceal the villages. Grain no longer grows in the fields, nor do cattle feed on the meadows. The subsistence of the inhabitants is solely derived from the banana, the plantain, the yam, and from the fish caught in the river. The palm tree, however, affords not only a refreshing juice, but the material of an extensive trade in the oil which it yields.

5421. *Eboe,* about seventy miles below Kirree, is a very large town, called commonly the Eboe country. It forms the great mart from which the ports on the coast are supplied with slaves and palm oil. The people send up and down the river fleets of large armed boats, fantastically adorned with flags, and with representations of chairs, tables, decanters, glasses, and other European objects. Some of them are capable of containing seventy persons, many of whom have no habitation unless in the vessel. The place presents a scene of busy industry. The houses are superior to those in the interior, being composed of clay plastered over, adorned with wooden pillars in front, and surrounded by well-fenced court-yards planted with bananas, plantains, and cocoas. Yet the character of the people, corrupted by intercourse with European slave-traders, is bad, and even atrocious. They are ever ready to engage in deeds of violence, and indulge also in very dissolute habits, spending whole nights in carousal, and over their cups quarrelling with such violence, that the travellers imagined some one was suffering death amid the most inhuman tortures, till they heard the same wild tumult nightly repeated. Below Eboe the territory belongs to the coast, and has already been described.

5422. To complete the picture of Central Africa, it remains to describe *the countries on the upper Niger,* as celebrated as any of those now enumerated. For 400 or 500 miles above Youri, indeed, the shores of this great river are almost entirely unknown, as Park, unfortunately, never returned to relate his navigation down to that city. At the end of the above reach, however, occurs the most important city in this part of Africa.

5423. *Timbuctoo,* or *Tombuctoo,* the celebrated emporium of the commerce in gold, has always shone in the eyes of Europeans with a dazzling and brilliant lustre. Most of the daring and often tragical expeditions into the interior of the continent had for their object to reach that city. Yet its actual condition, and even magnitude, are still involved in very considerable uncertainty. The relation of Adams is of very doubtful authenticity. Major Laing resided there for a considerable time, and made the most diligent enquiries; but the result, in consequence of the catastrophe which terminated his career, never reached the European public. If, as has been surmised, his papers were transmitted to Tripoli, it was under circumstances which will probably prevent them from coming at all before the world. Caillié, supposing that he really visited Tombuctoo, which we are not disinclined to believe, was far from being a careful or an accurate observer. From the few positive notices, however, thus obtained, we may infer that the city is neither so large nor so splendid as rumour represented it. That dominion which, in the time of Leo, it had extended over the neighbouring countries, and even over Houssa, has ceased for several centuries. It then became subject to the yoke of Morocco; and since this was shaken off, has been governed by a negro king, and the negroes have been the ruling people. The place is described as containing some handsome mosques, and a spacious enclosed palace; but a great proportion of the habitations, like those in other negro countries, are mere conical hovels, like bee-hives. Timbuctoo, however, being the place where the caravans from Morocco, and most of those from Algiers and Tunis, first touch on the fertile regions of Central Africa, must always possess great commercial importance; and a depôt is found there of the commodities which it affords for exchange with other countries. Gold, and still more slaves, are the staple articles. Timbuctoo, also, being situated in an arid and barren territory, is dependent upon Bambarra for grain and provisions, which are brought down the Niger, and landed at the port of Cabra, a small town about a day's journey distant, consisting merely of a range of houses along the water.

5424. *At some distance below Timbuctoo* occurs a very extensive lake, called the Dibbie, formed by the waters of the Niger. Its greatest dimension seems to be from east to west, on which side alone, in sailing across, its termination cannot be descried. Its shores are chiefly occupied by the kingdom of Masina, a pastoral country, inhabited by a tribe of Foulahs, who are ruled by a brother of Sego Ahmadou, the sultan of Jenné.

5425. *Jenné, or Jinnie,* is a city second only to Timbuctoo in commercial importance: it is situated, according to Park, on a tributary of the Niger, but according to Caillié, on a branch separated from, and then reuniting to, that river. It appears to collect from Bambarra and the countries to the south all the commodities wanted for the market of Tombuctoo, which it transmits by vessels of considerable size, though of slight construction, and merely bound together with cords. In Park's time it was subject to Bambarra; but it has since been occupied, with several of the neighbouring territories, by Sego Ahmadou, a Fellatah prince. The population, rated probably too low by M. Caillié at 8000 or 10,000, consists of a great variety of tribes, Foulahs, Mandingoes, Bambarrans, and Moors, attracted by the extensive commerce which centres there. Transactions on a great scale are carried on by thirty or forty Moorish merchants, while the negro traffickers conduct it on a more limited footing. The merchants are said to be hospitable, and polished in their manners.

5426. *The kingdom of Bambarra* consists of a beautiful and extensive plain, through which the Niger rolls for about 300 miles, from the point where it becomes navigable for large canoes. The territory is fertile and well cultivated, being to a great extent inundated during the rains. The hills to the south contain considerable quantities of golden earth, from which the metal is extracted and brought to Bambarra. Some of the northern districts partake of the character of the desert, and are covered by the Moors with their flocks and herds. Sego, the capital, in the centre of the kingdom, is divided by the Niger into two parts, the communication between which is maintained by ferries, which are under the control of the government. The place is surrounded by high mud walls, the houses are built of clay, but neatly whitewashed, the streets are commodious, and mosques rise in every quarter. The numerous canoes on the river, the crowded population, and the cultivated state of the surrounding country, exhibit altogether a scene of civilisation and magnificence scarcely to be expected in the centre of Africa. Park estimated the population at about 30,000. Sansanding is a great commercial town, higher up the Niger, supposed to contain 10,000 people. Its market was the best arranged and supplied that Park saw in Africa. Bammakoo, where the Niger first becomes navigable for large canoes; Maraboo, a great market for salt; Samee, and Silla, near the eastern frontier; are all considerable towns on the Niger.

5427. *Several small kingdoms intervene* between Bambarra and Gallam, which, with Bambouk, are included in Western Africa. Kaarta is extensive, but has a sandy soil, yielding little except the lotus. The capital is Kemmoo; but the king has the strong fortresses of Joko and Gedingooma, to which he retires when hard pressed by his neighbours of Bambarra and Ludamar. Kasson, between Kaarta and Gallam, is a small but beautiful and fertile kingdom; the capital is Kooniakary. Satadoo, Konkodoo, Dindikoo, Brooko, Fooladoo, are little kingdoms, extending along the upper course of the Faleme, Ba Fing, Ba Lee, and other streams, which combine in forming the Senegal. They are elevated, rocky, woody, with very picturesque sites; and gold, in considerable quantities, is found in the sand of their rivers.

5428. *M. Caillié* has described several *territories to the east of Foota Jallo* and the south of Bambarra. Among these is the district of Bouré, abounding remarkably in gold, which, as elsewhere, is found embedded in alluvial earth. It is carried southwards into Kankan, a fine country, traversed by the Niger in its early course. Kankan, the chief town, is the seat of a great market held thrice a week, where are exhibited not only gold, provisions, honey, and cotton cloth, but fire-arms, powder, Indian calicoes, and other goods obtained from

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Europeans. To the east is Ouassoulo, a rich territory, diversified by numerous villages, inhabited by an industrious and hospitable people. Their neighbours of Sambatikila, through supine indolence, derive little benefit from the bounties of nature. To the east of them, however, is Timé, a very finely watered and cultivated territory, abounding in various fruits and vegetables, particularly the shea or butter-tree, and the goora or kolla nuts. A similar fine country continues to Jenné.

Chap. X.

THE SAHARA, OR GREAT DESERT.

5429. *The Sahara, or Great Desert*, forms an immense range of territory, which would, indeed, cover the whole northern half of Africa, but for the partial exemption produced by the mountain range of Atlas, and the course of the Nile. Its actual and almost uninterrupted extent may be stated as from the 15th to the 30th degree of north latitude, and from the 30th of east to the 15th of west longitude. It may thus amount to nearly 3000 miles in length, and 1000 in breadth. This vast expanse, the most dreary and terrible on the face of the earth, forms an obstacle to the intercourse of nations greater than is opposed by the widest oceans. Yet the daring spirit of enterprise has induced human beings to occupy every extremity or corner in which subsistence could by any means be procured; and they have formed routes by which, though amid suffering and deadly peril, regular journeys may be performed across this vast and desolate region.

5430. *The surface of the Sahara* does not consist entirely of one uniform plain of sand. In the most level tracts it has been blown into heaps or hillocks, steep on one side, which remarkably increase both the dreary aspect of the region, and the difficulties with which the traveller has to contend. In other places it is traversed by dark ranges of naked rock, which sometimes approach so close as to leave only a narrow path for caravans to march through. The terrible spectacle of human bones which strew the ground, and sometimes crackle unexpectedly beneath the tread of the traveller or his camel, lends, at intervals, additional horror to the scene. The most dangerous encounter is that of the sand wind, (*fig.* 871.), when the sand, blown up by tempests from an extensive moving surface, fills and darkens the air, and threatens to suffocate the passenger. Yet some covert can generally be found during its fury; and the disasters indicated by the bones which whiten the desert appear to arise almost solely from the failure of provisions, and particularly of water. The privation falls always first upon the slaves, who on such occasions perish in great numbers.

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5431. *The most remarkable and important feature*, however, which diversifies the great African desert, consists in the *oases*. This eastern term, which signifies island, is very appropriately given to those detached spots, over which springs, bursting forth amid the desert, diffuse some partial verdure and fertility. The view of these spots inspires travellers with emotions peculiarly pleasing; sometimes from mere contrast with the encircling desolation, but sometimes also from the peculiarly elegant landscape which they themselves present. They are embellished with flowering shrubs of peculiar beauty; whole tracts are covered with forests of acacia, from which rich gums distil, and with groves of the date and lotus, yielding sweet fruits and berries, which form the food of whole tribes; while mild and graceful animals, chiefly of the antelope species, trip along the meadows. These districts, on a great scale, occur chiefly on the northern and southern borders, where the desert generally mitigates its stern aspect, and imbibes some portion of that moisture which fertilises Central Africa and the region of Atlas.

5432. *This vast central and flat region* of Africa is covered more or less completely with a quartzy and calcareous sand. Here and there solid fixed rocks rise through the sandy covering, or even form tracts of country; and in the eastern part of the Sahara the rocks are principally secondary, and chiefly limestone, sandstone, gypsum, and rock salt, which in some places appear to be traversed by trap rocks. Fertile tracts, named *oases*, occur here and there in the desert, and also lakes, the waters of which are in some instances impregnated with carbonate of soda, in others with muriate of soda, forming the *natron and salt lakes* of travellers. The rocks on the sea-coast of the Sahara, and the islands that lie along it, are said to be principally composed of igneous rock, and chiefly basalt.

5433. *The Botany and Zoology* of this desolate portion of Africa are scanty, and too imperfectly known to admit of any regular description.

5434. *Inhabitants*, in as great numbers as the soil can support, are found occupying both the borders and the interior oases of this vast and desolate region. They are of various races, and have entered from different quarters. The large oases of Fezzan and Darfur appear to have been partly or wholly peopled from Egypt and Tripoli. Wandering tribes from Morocco have covered with their herds all the habitable tracts of the western desert nearly as far south as the Niger. The negro tribes have seldom quitted their fertile and wooded plains to encroach on this gloomy domain: they are found chiefly in Darfur and Kordofan. But the most interior tracts, to the south and west of Fezzan, are thinly peopled by tribes of peculiar character, the Tibboos and the Tuaricks, judged to be remnants of an aboriginal race, who occupied all Northern Africa, till it was covered by the tide of conquest and emigration from Asia. With a few exceptions, the character of all these desert tribes is gloomy and sinister, like that of the regions through which they wander. Agitated by want, and exempted by their position from almost any restraint, they seek, by violence and plunder, to wrest from the caravans which pass through their domain, or from the richer nations which border it, a portion of those good things which nature has denied to themselves. These habits, with the absence of culture, have given a rude and unsocial character, which, inflamed by bigotry in the Mahometan tribes, has rendered a journey through their territory peculiarly distressing and dangerous to Europeans. It would be nearly impossible, under general heads, to describe a region so vast, and composed of such varied portions. We shall therefore endeavour, under its different districts, to class all the little information which European research has been able to procure. The description may properly begin with the northern tracts.

5435. *Almost immediately west* from Egypt and the Nile the desert commences, presenting the aspect of a plain from which the sea has receded. It is covered as it were with the fragments of a petrified forest; large trunks, branches, twigs, even pieces of bark, all converted into stone. When ten days' journey have been passed without seeing a human habitation, the traveller descries Ummesogeir, a village perched on a rock, with 120 inhabitants, who live a peaceful life almost secluded from intercourse with all human beings. A day's journey westward is the larger oasis of Siwah, a deep hollow valley, watered by numerous springs, and fertile in dates, the staple product and food of this region. The people, estimated at from 1500 to 2000, form a turbulent aristocracy, but derive some wealth from the continual passage of the caravans. Yet the chief interest which attaches to Siwah arises from its being supposed to contain the celebrated shrine of Jupiter Ammon. The distance from Egypt nearly corresponds; and at Ummebeda, in the vicinity, are the remains of an ancient edifice, though not corresponding in magnitude or style of architecture with our idea of that celebrated temple. The difficulty is increased by the occurrence of other oases of similar aspect, and containing similar remains; though the preponderance seems, on the whole, to be in favour of Siwah.

5436. *Augila*, the Aegila of Herodotus, a few days' journey westward, is a dirty, ill-built place, about a mile in circuit. There are some more fertile spots in its vicinity; the country abounds in dates, and the inhabitants have established some active commercial relations with interior Africa. Farther to the westward is a most gloomy, rocky region, called the Black

Harutsh, a succession of narrow defiles, enclosed by rugged steeps, and obstructed by loose stones. West of it is the White Harutsh, a long range of limestone rocks, which appear as if glazed, and abound in shells and marine petrifactions.

5437. *Fezzan*, which opens at the end of the mountain region of Harutsh, is a very large oasis, about 300 miles long and 200 broad, sometimes dignified with the title of kingdom. Nature has scarcely distinguished it from the surrounding desert: it is not irrigated by a stream of any importance. The inhabitants, however, by laborious processes, have raised up the water, which is always found at a certain depth under ground, and have thus formed a number of little oases, in which dates and a little grain can be reared, and where a few asses and goats, and numerous camels, are fed. It is the inland trade, however, that the inhabitants regard as the source of animation and wealth. Fezzan being due south from Tripoli, and about midway between Egypt and Morocco, is the most central point of communication with interior Africa. The arrival of a caravan on its frontier produces a species of jubilee; and on its reaching the capital, the demonstrations of joy are redoubled, and the sultan gives them a state reception. There are also very extensive merchants belonging to the country itself. Through these resources Fezzan is enabled to maintain a population of about 70,000. The sultan is tributary to the Bashaw of Tripoli. Mourzouk, in a low, unhealthy situation, but well watered, is the residence of the prince, and the chief seat of commerce. It contains remains of stone edifices; but the present structures are poorly built of mud. Germa, the Garama of the Romans, who made it the capital of this part of Africa, contains monuments of its ancient consequence, but is now much decayed. Zuila, Temissa, and Gatrone are small towns on the western frontier. Traghan, to the south, bordering on the desert, is an industrious place, with a thriving manufactory of carpets. Sockna, in the desert to the north, on the road from Tripoli, forms a great caravan station.

5438. *Gadamis, or Ghadamis*, an oasis to the west of Fezzan, derives importance from the passage of the caravans from Tripoli and Tunis to Timbuctoo, though these are not so considerable as those from Fezzan and Morocco. This place, and the surrounding villages, exhibit many traces of ancient Roman occupation. It has the singularity of being divided between two hostile tribes, each enclosed by a separate wall, with a common gate, which is shut when they are engaged in mutual warfare.

5439. *Tafilet, Darah, and Sigilmessa*, to the south of the Atlas, and loosely appended to the empire of Morocco, enjoyed a great celebrity during the middle ages, but have been little heard of in modern times. The caravans to Timbuctoo, which once rendezvoused in this territory, now generally prefer the more westerly route through Suse, by which they avoid the steep passage of the Atlas. These countries, however, are understood to contain many fertile tracts, abounding in excellent dates, and producing a valuable breed of goats.

5440. The state of *Sidi Heschem*, or Ischim, on the southern extremity of Morocco, combining portions of Suse and of the surrounding desert, is now the chief theatre of the Moorish trade with Tombuctoo. The prince, who rules over a mixed population of Moors and negroes, has made himself nearly independent of the empire; and his country has become a depôt of the goods which pass and repass between Morocco and Timbuctoo. Akka and Tatta are the principal stations from which the caravans take their departure.

5441. We shall now survey *the more southerly states* enclosed in the Sahara, and the tracts by which they communicate with those on the opposite side.

5442. *Darfur* is a considerable country, almost due south from Egypt, and west of Sennaar, whence it is separated by Kordofan. The route by which the caravans pass from Egypt is of the most dreary character, since travellers, after leaving the greater oasis, do not for about 700 miles meet with a human habitation; however, at Sheb and Selime they are refreshed by springs of water. The country itself is of a very arid character, destitute of every thing resembling a river or lake. The tropical rains, however, within whose influence it is, fall at the proper season with great violence, when they fill the dry beds of the torrents, and inundate a considerable extent of the country. The operations of a rude agriculture, carried on by the females, are then sufficient to produce, in a few places, wheat; and in a great number the inferior species of *dokn*, a kind of millet. Camels abound, and are noted for their power of enduring thirst; the horned cattle and goats are good; but horses, sheep, and asses are of inferior breeds. The people, not supposed to exceed in number 200,000, are a mixture of Arabs and negroes, the former of whom hold the chief power. They profess the Mahometan religion with bigotry, but do not submit to the secluded habits and abstinence from fermented liquors which it enjoins; on the contrary, they are jovial, and even licentious. The king is absolute, though obliged to court the soldiery, who, when discontented, sometimes depose and strangle him, electing in his room another member of the royal family. They are about 2000 in number, distinguished neither for valour nor discipline, but endowed with an almost preternatural endurance of thirst, hunger, and fatigue. Large caravans, at somewhat irregular intervals, pass between Egypt and Darfur, interchanging slaves, ivory, ostrich feathers, &c. for cloths, carpets, toys, and beads. A considerable intercourse of religion and trade is carried on with Mecca by way of Jidda and Suakin. Cobbe, the capital, is not supposed to contain more than 4000 inhabitants; it is about two miles long, but consists merely of ranges of detached houses surrounded by wooded inclosures. The sultan resides at a neighbouring village, called El Fasher.

5443. *Kordofan*, on the west, and separated by deserts from Darfur, forms a country nearly similar. Its warriors, like those of Bornou, are invested in chain armour. Kordofan has been subjected at different times to Sennaar and Darfur, and in 1820 was obliged to yield to the arms of the Pacha of Egypt, who continues to claim the sovereignty, which, however, over so distant and rude a tract, must always be very precarious.

5444. *To the south of Darfur* is *Fertit*, inhabited solely by negroes, and containing valuable mines of copper. Farther south still is the mountainous country of *Donga*, possessed by a barbarous people, and in which, according to Mr. Brown's information, numerous streams unite in forming the Bahr el Abiad, or main branch of the Nile.

5445. *Bergoo*, called also Saley, Waday, or Mobba, is an extensive country, reaching eastward from Darfur to nearly the confines of Begharmi and Bornou. According to the imperfect accounts yet received, it appears to be greater and more populous than Darfur or Kordofan. Wara, the capital, is represented as a considerable city. Near it passes a large river, called the Bahr Misselad, which, according to Brown's information, traverses the country in a north-westerly direction. In this quarter, also, the great lake of Fittré is reported to exist, but our materials do not enable us to fix its site with any precision.

5446. The most interior part of the desert, between Fezzan and Central Africa, is occupied by two remarkable native tribes, *the Tibboos and the Tuaricks.* The former are found on the caravan route to Bornou; the latter, more westerly, on that to Kano and Kassina.

5447. *The Tibboos* are nearly as black as the negroes, but with a different physiognomy: their hair is longer and less curled, their stature low, their features small, and their eye quick. They subsist on the milk of their camels and the produce of a few verdant spots scattered amid the desert; this they seek to aid by a little trade with Fezzan, and not unfrequently by the plunder of the caravans. They are themselves, however, exposed to a mightier race of spoilers, the Tuaricks, who, at least once a year, make an inroad into their territory, sweeping away every thing, and sparing neither age nor sex. The cowardly Tibboo dare not even look them in the face; their only resource is to ascend certain perpendicular rocks with flat summits, beside one of which they take care to build each of their towns; and they are thus secured against enemies who have neither the means of escalade nor the patience to carry on a blockade. Though, however, they have lakes containing the purest salt, they are obliged to see the best part of it carried off by these sturdy marauders. Amid these distresses, the people are gay and thoughtless, delighting, like other Africans, in the song and the dance: they dance gracefully, with movements somewhat analogous to the Grecian. Bilma, the Tibboo capital, is a mean town, built of earth, and the other villages, of course, inferior. To the south of this town is a desert of thirteen days' journey, perhaps the most dreary on earth. There is neither a drop of water nor a vestige of animal or vegetable life. The sand, which often drifts in dark volumes through the air, forms hills, which rise and disappear in a night, and whose often perpendicular sides are passed with great difficulty. "Tremendously dreary are these marches: as far as the eye can reach, billows of sand bound the prospect."

5448. *The Tuaricks,* that barbarous race of warriors, who spread terror through the half of Africa, appear in their domestic character under a much more favourable light. Captain Lyon thought them, as to external appearance, the finest race he ever saw; tall, erect, and handsome, with an imposing air of pride and independence. Their skin is not dark, unless where deeply embrowned by exposure to the sun. They hold in contempt all who live in houses and cultivate the ground, deriving their subsistence solely from pasturage, commerce, and plunder, with a considerable preference of the latter pursuit. They keep all the borders of Soudan in constant alarm, carrying off great numbers of slaves. Yet at home they have been found frank, honest, and hospitable, paying an unusual respect to their females, and in their social life much resembling Europeans. They have even written characters, probably very ancient, which they inscribe, only indeed on the dark rocks that chequer their territory; but these are almost entirely covered with them. The chief Tuarick tribes are the Ghraat, in the neighbourhood of Gadamis; the Tagama, who border on Houssa; and the Kolluvi, who occupy most of the intermediate territory. They possess, in particular, the powerful kingdom of Asben, whose capital, Agades, has been long celebrated as a commercial emporium, and said even to equal Tripoli; but our information respecting it is very scanty.

5449. *In the western region of the desert,* the tribes occupying its scattered habitable portions appear to be all Moors or Arabs migrated from Morocco, and who have brought with them their usual pastoral, wandering, warlike, and predatory habits. These last they exercise with a relentless cruelty elsewhere unusual. A splendid booty is frequently opened to them by the vessels which suffer shipwreck on the dreary and dangerous shores of the Sahara, and which are always plundered with the most furious avidity: the only hope of the wretched captives is to be able to tempt their masters, by the promise of a high ransom, to be paid at Mogadore. Yet these dreary regions are animated by the constant passage of the great caravans between Morocco and Timbuctoo. In the most western quarter, also, at Hoden, Tisheet or Tegazza, and Taudeny, are extensive mines of rock salt, an article which is wanting and in extensive demand over all the populous regions of Central Africa. The passage of these caravans, and the formation of depôts of salt, have given to Walet an importance said nearly to equal that of Timbuctoo. Aroan, also, in the very heart of the desert, derives from these two trades a population of about 3000 souls. Of these rude wandering tribes, it may be enough to name the Woled Dleim, or Ouadelim, the Labdesseba, the Mongearts, Braknars, Trasarts. But the chief state occupied by the Moors is Ludamar, on the frontier of Bambarra, which almost claims the title of kingdom. The bigotry and ferocity of the race were strongly marked by the treatment which Park met with during his captivity. Benowm, their capital, is merely a large Arab encampment of dirty, tent-shaped huts. In the heart of the desert, between Gadamis and Timbuctoo, is the district of Souat or Tuat, inhabited by a mixture of Arabs and Tuaricks, in no respect better than the rest of the desert tribes. Major Laing sustained among them a signal disaster. Aghably and Ain-el-Salah, their chief towns, are frequented as caravan stations.

Chap. XI.

THE AFRICAN ISLANDS.

5450. Africa does not, like Asia or America, enclose within her bordering seas any grand archipelago. Yet she is begirt at a certain distance with *numerous islands*, some single, but the greater number, especially on the western coast, arranged in groups. These islands are mountainous, and many of them volcanic; they include a great extent of fertile territory, and present grand, picturesque, and often beautiful features. Yet they are so entirely distant and detached from each other, and possess so few objects in common, that they cannot afford room for any description under general heads; and our only division must be made by considering each island or group in succession.

5451. *The Azores, or Western Islands,* have, on plausible grounds, been referred to Europe; yet, on a general view of their site and aspect, we adhere to the old arrangement, which makes them African. They lie between the 37th and 40th degrees of north latitude, and the 25th and 32d of east longitude. They are nine in number: St. Michael and St. Mary, closely adjoining each other; Terceira, Fayal, Pico, Graciosa, St. George, nearly a group by themselves; Corvo and Flores, considerably to the westward. These islands bear evident marks of having been produced by the action of subterraneous fire, the symptoms of which are still visible, though no volcano is at present burning. Islets have even been thrown up from the surface of the neighbouring sea. In 1720, an English captain saw one emerge with an explosion resembling the discharge of a train of artillery. A similar phenomenon was observed in 1811; flames, like a host of sky-rockets, were seen bursting from under the sea; but the rocks ejected did not rise above the surface of the water. The internal heat, however, manifests itself by very striking phenomena. Such, on the island of St. Michael, are the *termas*, or warm baths, the springs supplying which are so hot as often to burn the hand which touches them. Elsewhere the *caldeiras*, or boiling springs, rise in columns, not exceeding twelve feet high, but of various diameters, and the burning vapours are formed into clouds, which exhibit a variety of fantastic figures and brilliant tints. The water will boil an egg in two minutes, the atmosphere is strongly impregnated with sulphur, and suffocating vapours issue from various fissures. Not far from the *caldeiras* is the Muddy Crater, a vast cavern filled with mineral substances in a state of constant ebullition, and making a noise mightier than the waves of the sea.

5452. Amid these turbulent elements, *the soil is extremely fertile,* yielding in the plains abundance of grain, while even from the crevices of the volcanic rocks grow the delicate oranges for which St. Michael is celebrated, and the vines, yielding a wine that resembles without equalling Madeira, which clothe the steep sides of the mountain of Pico. These, with grain, afford materials of an export trade, in exchange for European fabrics and colonial produce. The population is vaguely estimated at between 200,000 and 300,000.

5453. Though *St. Michael* is the largest island, being above 100 miles in length, and is also the most fertile, its capital, Ponte del Gada, is not the seat of the general government. This distinction is enjoyed by Angra, in Terceira, in consequence of its comparatively safe harbour. It also derived, of late, a considerable interest from being occupied by the adherents of Maria, the young queen of Portugal, in opposition to the usurpation of Miguel. By its good harbour it likewise obtains the exportation of the wine of Pico, which is hence known by the name of Fayal. The amount, in good years, has been stated at 8000 or 10,000 pipes; but England, in 1830, took only 2780 gallons.

5454. *Madeira*, in about 32° north lat., is a beautiful island, consisting of a cluster of mountains, or rather one single mountain with various peaks, rising abruptly from the Atlantic. It is covered all over with rich vegetation; and to the traveller, who penetrates into the interior of its valleys, nothing can be more picturesque than the varied forms of the rocks, the verdure which clothes them, the glitter of the streams, and the country seats, churches, and monasteries placed in striking situations. This fertile island was first distinguished for producing the best sugar known; but, after the rivalry of the West Indies rendered this culture no longer profitable, the islanders applied themselves to wine, which was soon raised to high perfection. Being favoured by the Methuen treaty, it was imported in large quantities into England, where it was used more extensively than any, except port and sherry, bearing a higher price than either. Of late, the frequency of adulteration and the preference of French wines have somewhat lowered its estimation. In 1830, the quantity consumed in Britain was only 228,000 gallons (about 2000 pipes). A considerable quantity is besides sent to America and the East and West Indies; and a voyage to tropical climates with a return to Europe is supposed to improve its quality. The very best, however, called "London particular," is imported direct to that capital. The island yields a small quantity of a very rich sweet wine called *Malmsey*. Funchal, the capital, is almost an English town, nearly all the opulent inhabitants being merchants of that nation employed in the wine trade, while the Portuguese are generally very poor. Madeira has adjacent to it Porto Santo, a small high island with a good roadstead; and two *Desertas* answering to their name; but these do not seem entitled to rank with it, so as to form a group.

5455. *The Canaries*, distinguished under the appellation of the Fortunate Islands, are among the most celebrated and beautiful groups of small islands in the world. They lie about the 28th degree of north latitude, and between the 13th and 18th of west longitude. They are properly seven, to which Humboldt, after Ledru, assigns, in 1790, the following dimensions and population:—

Teneriffe, -	73 sq. leagues;	70,000 pop.	Fuerteventura,	26 sq. leagues;	9,000 pop.
Grand Canary,	60 —	50,000	Gomera, -	14 —	7,400
Palma, - -	27 —	22,000	Ferro, -	7 —	5,000
Lancerola, -	63 —	10,000			

These islands, especially the two principal, consist of mountains which rise abruptly from the shore, and shoot to an amazing height. The Peak of Teneriffe, the great landmark to mariners through the Atlantic, is 12,000 feet high. The rocks rise from the shore in basaltic forms, whence they bear often the aspect of castles, for which they have even been mistaken by the passing navigator. In the interior, they are high and naked, bristling with sharp points, and presenting often singular indentations on their bold summits. Yet being often covered with forests of laurel, pine, arbutus, and other trees, they exhibit picturesque and even magical scenery. Humboldt considers the steep ascent of the peak as presenting the most rapid transition known from a tropical to an arctic vegetation. On the coast are valleys blooming with the orange, myrtle, and cypress; above, declivities crowned with the vine and the most valuable species of grain; higher up, forests of the laurel, chestnut, and oak; these are succeeded by the dark pine and Scotch fir; then a plain strewed with dust of pumice stone is followed by the Malpays, entirely composed of loose fragments of lava. The summit bears the marks of a volcanic crater not very long extinguished; for even early in the last century it made destructive eruptions.

5456. *The soil* in these islands displays much of that luxuriant fertility which distinguishes tropical countries, when profusely watered, like this, by the streams from the high mountains and the vapour from the ocean; yet their western sides are parched by arid and pestilential breezes from the African desert, the streams are often absorbed in the porous lava, or rush down in torrents which would sweep away the earth, were not walls formed to retain it. The principal exportable produce is that afforded by the vines, which grow on the lower declivities of the peak, and yield a wine which, though inferior to Madeira, has, from its cheapness, come into considerable use. The export has been estimated at 8000 or 9000 pipes; but the quantity consumed in Britain in 1830 was only 106,000 gallons (about 900 pipes). There is also some export of brandy, soda, and archil. The chief seat of this trade is Santa Cruz, in Teneriffe, which enjoys the advantage of an excellent roadstead, and is what Humboldt calls a great caravansary on the road to America and the Indies; where numerous vessels of all nations touch for refreshment. The place is, however, intensely hot, and the natives not engaged in business prefer the residence of Laguna, 2000 feet above the sea, which enjoys a delightful coolness. Grand Canary is more uniformly fertile than Teneriffe, supplying the other islands with grain, and yielding a little of the fine wine called sack. Las Palmas, its chief town, is the ecclesiastical capital; but the seat of government is at Santa Cruz. Ferro, small, arid, and rocky, was once supposed to form the most westerly point of the Old World, and has often been used by geographers as the first meridian.

5457. The native inhabitants of these islands were a remarkable race, called *Guanches*.

They had attained a considerable degree of civilisation, cultivated music and poetry, showed a high respect to the female sex, and had even a class of *magades*, or vestals, to whom they paid divine honours. They practised agriculture with diligence, and possessed the art of embalming bodies; the mummies, still found wrapped in goat-skins, prove them to have been a tall and handsome people. The Guanches maintained also, for nearly half a century, a most valorous struggle against the Spanish invaders, but were at length completely exterminated. The modern Canarians are a sober, active, industrious people, who have migrated to all the Spanish dominions in America and the Indies, and form the most useful part of the population.

5458. *The Cape Verd Islands*, about eighty miles from Cape Verd, in 16° to 17° north lat., are ten in number, three of which are large, St. Jago, St. Antonio, and St. Nicholas; the rest small, Mayo, Bonavista, Sal St. Vincent, St. Lucia, Brava, and Fogo. The large islands rise in the interior into high mountains, and Fogo (fire) contains a very active volcano. In general, however, the surface is arid, rocky, and much less productive than the Canaries. The chief growth is cotton, which is exported to Africa; and a very fine breed of mules and asses is reared, many of which are sent to the West Indies. Goats, poultry, and turtle abound. Salt is formed in large quantities by natural evaporation, particularly in Mayo, where there is an extensive pond, into which the sea is received at high water, and the salt completely formed before next tide. These islands are not much visited by vessels destined for America and the Indies, which, after quitting the Canaries, stand to the westward, in order to obtain the benefit of the trade-winds. The Portuguese, since the first discovery, have claimed the sovereignty, and maintain a governor-general, who resides at Porto Praya; but the natives have of late regained a good measure of independence.

5459. *Ascension* is a solitary rock, far out at sea, in lat. 8° 8′ north, long. 14° 28′ west. It is completely rocky, barren, and long uninhabited; yet from its situation ships often touched there, and letters were even lodged in the crevice of a rock, called "the sailors' post-office." Of late, the East India Company have formed a small settlement there.

5460. *St. Helena*, so celebrated lately as the ocean-prison of the greatest of modern warriors, has now reverted to its original destination, as a place of refreshment for the returning East India ships. It presents to the sea, throughout its whole circuit of twenty-eight miles, an immense perpendicular wall of rock, from 600 to 1200 feet high, like a castle in the midst of the ocean. On the summit is a fertile plain, interspersed with conical eminences, between which picturesque valleys intervene. The climate on the high grounds is very agreeable and temperate, though moist. There are only four small openings in the wall of rock, on the largest of which, where alone a little beach appears, has been built James Town, where the governor resides, and where refreshments, though on a limited scale, are provided for ships.

5461. Turning the Cape of Good Hope, and entering the Indian Ocean, we arrive at *Madagascar*, one of the largest and finest islands in the world, placed between 12° and 26° south latitude: it may be about 840 miles long, and 220 in its greatest breadth. The interior is traversed from north to south by a chain of very lofty mountains, of which the highest are Vigagora in the north, and Botishmenil in the south. Their aspect is grand and picturesque, and strikes with surprise the traveller who surveys their awful precipices, covered with trees as ancient, perhaps, as the world, while he hears the roar of stupendous, almost unapproachable, cascades. Beneath these, however, appear rural views, delightful hills, vast savannahs covered with cattle, and secluded valleys. The forests abound with varied and beautiful trees, palms, ebony, dyeing woods, enormous bamboos, orange, and citron. The plains along the sea, finely watered by numerous streams from these mountain recesses, are extremely fruitful in rice, sugar, silk; fitted, indeed, for almost every tropical product, though there seem few plants peculiar to the island. The mountains contain, also, valuable mines, especially of iron, but only partially worked.

5462. *The population of Madagascar* has been variously estimated at from 1,000,000 to 4,000,000: perhaps, with M. Balbi, we may take 2,000,000 as a probable conjecture. The people are not savages: they cultivate the ground, and practise some arts; yet are, on the whole, very rude and uninformed. They are described as a peculiarly gay, thoughtless, and voluptuous race, void of care and foresight, always cheerful and good-humoured. They are divided into a number of small tribes, who wage very frequent wars with each other. On the eastern coast are the Antavarts, within whose territory is the fine bay of Antongil; the Betanimenes, holding the most fertile tracts in the island, and having the large and commercial port of Tamatave; the Betimsaras, in whose limits is the frequented harbour of Foul Point; the Antaximes, having Malatane and Andevourante. On the western coast the principal people are the Muquez, a warlike race, in whose domain is St. Augustine, a port where the English, in their way to India through the channel of Mozambique, often seek refreshment; the Seclaves, an extensive country long ruled by a queen, and comprising the frequented port of Bembetoke, and the large town of Mouzangaye, asserted to contain 30,000 inhabitants. But the most important people, lately, have been the Ovas, occupying an extensive and high plain in the interior, whose sovereign, Radama, had reduced to vassalage the largest and finest part of the island. He had formed a train of artillery, and armed a great part of his troops with muskets, and had also sent a number of young natives to obtain instruction in Paris and London. With the aid of the English missionaries, he had established a printing-press, and trained a number of teachers, both male and female, who were distributed through different parts of the kingdom. Unhappily this prince, in July, 1828, was poisoned by his wife, who immediately raised an unworthy paramour to the throne. This event has introduced great anarchy, inducing several subject states to shake off the yoke; and there seems much room to fear that it will arrest entirely the career of improvement commenced under such prosperous auspices. The French have made frequent attempts to form colonies in Madagascar, which they even repeated in 1829, but never with any important result. They have small stations, however, at St. Mary, Tamatave, Foul Point, and near Fort Dauphin.

5463. *Bourbon*, about 400 miles east of Madagascar, though it can bear no comparison as to magnitude with that island, is not inconsiderable, being forty-eight miles long and thirty-six broad. It consists entirely of the heights and slopes of two great mountains, the most southerly of which contains a volcano in perpetual activity, throwing up fire, smoke, and ashes, with a noise truly tremendous. These substances are ejected, not from the crater, but by lateral openings, presenting at a distance the appearance of fiery cascades. Even in the northern mountains, basaltic colonnades, deep fissures, hillocks thrown into the valleys and the beds of the rivers, announce ancient and powerful volcanic agitations. A great part consists of what the French call burnt country, a complete desert of hard black soil, with numerous holes and crevices. The rest, however, well watered by numerous torrents, is favourable not only for the ordinary tropical products, but for some fine aromatic plants. The Portuguese discovered this island in 1592, but being taken by the French in 1642, and raised by M. de Flacourt to an important establishment, it was called Bourbon, which name it has resumed, after bearing, during the revolutionary period, that of Réunion. Coffee, brought from Mocha in 1718, succeeded so well, that the Bourbon coffee was considered second only to the Arabian. At a later period, its cloves came into some rivalry with those of Amboyna. All other objects of culture, however, have lately become secondary to that of sugar, which has been found profitable beyond any other.

5464. *The population of Bourbon* in 1831 was 97,231; of which 14,059 males, and 13,586 females were free; 46,083 males and 23,483 females were slaves. The exports were valued at 396,000*l*., the imports at 293,000*l*. The island labours under the disadvantage of not having a secure harbour, or even a roadstead.

5465. *Mauritius* is about 120 miles west of Bourbon, not quite so large, yet still 150 miles in circuit. The rugged mountains, which cover a great part of the island, give it a somewhat sterile character, and it does not yield grain even for its limited population; yet the lower slopes produce coffee, cotton, indigo, and sugar of improved quality. The Portuguese in 1505 called it Cerne, for which the Dutch in 1598 substituted Mauritius, from the Prince of Orange; but neither nation formed any permanent establishment. The French, too, for some time, sent only a few casual settlers from Bourbon; but, in 1734, La Bourdonnaye, its able governor, raised it to a naval station of the first importance: it was called Isle of France, and became the capital of the French possessions in the Indian seas. It was considered impregnable, and remained in their undisputed possession, after the greatest disasters which befell their arms on the continent. It became, then, a strong-hold for privateers, who are said, in ten years, to have taken prizes to the value of 2,500,000*l*. At length, in 1810, it yielded to the arms of Britain with less resistance than was expected. Since 1812, when its sugars were admitted at the same duties as those from the West Indies, this branch of culture has taken a great precedence over all others; the produce, from about 5,000,000 pounds, having risen, in 1830, to about 64,000,000. In that year the export of coffee was only about 20,000 pounds. Its ebony, the finest in the world, and its tortoise-shell, are each worth about 9000*l*. The imports, in 1826, were estimated at 657,000*l*., and the exports at 572,000*l*. The island, in 1827, contained 94,600 inhabitants, of whom about 8000 were whites, 15,000 free negroes, 69,000 slaves, the rest troops and resident strangers. Port Louis is a good harbour, with rather a difficult entrance: it affords every convenience for careening and refitting; but provisions, being all imported, are not very abundant.

5466. *A considerable number of islets*, single or in groups, spot the Indian Ocean to the east of Africa. Of dependencies on Mauritius, Rodriguez contains only 123 inhabitants, Diego Garcia 275, Galega 199. The Seychelles, nearly south from Madagascar, with the bordering group of the Amirantes, are a cluster of very small islands, high and rocky, and little fitted for any culture except cotton; but they abound with cocoa nuts, and their shores with turtle and excellent fish. The population in 1826 was 7665, of whom 6525 were slaves.

5467. The *Comoro Islands*, a group of four, between Madagascar and the continent, are very elevated and mountainous in the interior; but the lower tracts abound in sheep, cattle, and all the tropical grains and fruits. The inhabitants are mild and industrious, but they have been most dreadfully infested and their numbers thinned by the Madagascar pirates, who make an annual inroad, laying waste the open country, and blockading the towns. Comoro is the largest, containing a mountain supposed to rise 6000 or 7000 feet high; but Anjouan, or Johanna, is the most flourishing, its chief town being supposed still to contain 3000 inhabitants. Mohilla and Mayotta are comparatively small.

5468. *Socotora*, forty leagues east from Cape Guardafui, is governed by a sheik dependent on the Imâm of Muscat. It is twenty-seven leagues long and seven broad, mountainous, rocky, and arid; yet it yields the best aloes in the world, and a small quantity of dragon's blood. Though the coast is bold, it affords excellent harbours; and ships may procure bullocks, goats, fish, and excellent dates, at reasonable prices.

Botany and Zoology.

5469. *Respecting the Botany and Zoology* of several of the African islands, we can communicate some curious particulars, which will be best collected under one general head.

5470. *Tristan d'Acunha.* — This island, if indeed it may be considered as belonging to Africa, is situated in 37° S. lat. and 11° W. long. The whole is a solid mass of rock in the form of a truncated cone, rising abruptly from the sea, and ascending, at an angle of 45 degrees, to the height of 3000 feet. This mass is surmounted by a dome, upwards of 5000 feet high, on the summit of which is the crater of an old extinguished volcano. The face of this mountain, as far up as the base of the dome, is mostly covered with brushwood, intermixed with fern and long grass, that veil its native ruggedness. Along the N. W. side of the island there runs a belt of low land, constituting a plain about six miles long, and presenting to the sea a perpendicular front from 50 to 300 feet high. The whole is a mass of stony fragments, scoriæ, and other volcanic products, mixed with black indurated earth. Part of this plain has been cleared, by fire, of its wood, though the scorched trees still encumber the ground; and the rest is in a state of nature, covered with an impenetrable copse. This plain is the only part of the island that is in the least susceptible of vegetation; and, could the needful and laborious preparations be made, there is no doubt it might yield a fair return in all sorts of European grain.

5471. *The ascent to the peak*, which, though practicable in some places, is difficult and dangerous, was performed by the late Captain Carmichael, of whose remarks on the botany of the Cape we have already availed ourselves. Two plants he observed as particularly deserving of notice; the Spartina arundinacea, whose close entangled tufts much impeded the progress of the party, and the Lomaria robusta, a fern which trails along the ground, and the stems of which, like junks of old cable, cross and recross each other in so intricate a manner, that it required great circumspection to avoid falling over them. The ascent to the peak is extremely steep, and the rocks of so loose and incohesive a nature that it is dangerous to touch any one, lest it should bring down many more; while, in availing themselves of the branches of the arborescent Phylicæ to aid their progress, the travellers saw no less a risk, the greater part of these being rotten, so that a fatal issue might follow any dependence upon them. No vegetation exists on the dome itself, not so much from the elevation, as from the total want of any soil wherein plants could fix their roots.

5472. *The climate of Tristan d'Acunha is so mild*, that the herbage remains unimpaired throughout the year. Snow never falls on the low land, but the island is almost constantly enveloped in fog or rain; which does not, however, prevent its being a very healthy spot. The Flora is perhaps as copious as the extent and situation of the island would lead us to expect; but, except the Cryptogamic tribes, there is nothing of peculiar interest. The only plant that approaches to the size of a tree is a species of Phylica. This plant not only occupies all the plain, but has spread over the face of the mountain, wherever its roots could insinuate themselves into the crevices of the rock. In favourable situations it grows to the height of 20 feet and upwards, measuring from 12 to 18 inches in diameter. Its trunk is extremely crooked and twisted; but the wood is hard, close-grained, and, according to the report of a ship carpenter who examined it, would make excellent timber for vessels of sixty tons and under. Its bark possesses a slight degree of astringency. Owing to the lightness of the soil, and the frequency of high winds, these trees rarely stand upright, but lean against the ground, and cross each other, in such a manner as to make it a business of extreme difficulty to penetrate to any distance through the wood. Besides the Phylica, there are only two shrubby plants on the island, both of which belong to the genus Empetrum, and may be but varieties of one species. They possess no quality to recommend them, but that they grow on the most barren spots, where nothing else could vegetate. But of the herbaceous plants, the most remarkable is the gigantic species of Spartina (*S. arundinacea*), above alluded to. This grass over-runs the whole island, from the upper edge of the table-land down to the sea shore, accommodating itself to all soils and situations. It springs up in large close tufts, which, when full grown, are borne down by their own weight, and lean on each other in such a manner, that a person may roll himself over them, without any danger of sinking. Its stems grow to the length of six or seven feet, and are of a solid almost ligneous texture, and covered with a profusion of leaves. This grass makes an excellent and durable thatch, and the young foliage is eaten by horses and oxen. The Wild Celery grows in great abundance over all the low ground, and attains a great size, its stem sometimes measuring upwards of three inches in diameter. It possesses, in a high degree, the flavour of the Garden Celery, and by proper management might be brought to equal it in every respect. A species of Chenopodium (*C. tomentosum*), of a strong balsamic odour, is common. An infusion of the dried leaves of this plant is used as a substitute for tea by the Hottentots sent down in charge of the cattle. The soldiers use for the same purpose the leaves of the Pelargonium, which hardly yield to the others in strength of odour. The low ground is over-run with a species of Acæna (*A. sarmentosa*), a plant of no apparent utility, but an intolerable nuisance to such as have occasion to walk over the ground where it grows. Its fruit is a sort of bur, which, on the slightest touch, fixes itself on the clothes, and, falling in a hundred pieces, covers them with an unseemly crust of prickly seeds, not to be got rid of without infinite labour.

5473. *On quitting the shores of the Cape of Good Hope,* and directing our attention to the eastern side of Africa and the adjacent islands, we shall find that very little is to be collected that can convey any thing like a satisfactory idea of their vegetable productions. The Cape lies in the highway, if we may so term it, to the most important of our colonies, and it has consequently been frequented by men of science as well as by the sons of commerce. It is quite otherwise when we have rounded that vast promontory, and proceeded northward. Madagascar, which seems next to offer itself, though visited by Michaux, who found an untimely grave there, by Du Petit Thouars, who published some memoirs on the plants, by Dr. Thomson, F. L. S. staff surgeon, with a copy of whose manuscript journal we have been favoured by C. Telfair, Esq. of the Mauritius, by MM. Helsinger and Bojer, whose journal is published in the third volume of the *Botanical Miscellany*, and lastly, by Dr. Lyall; yet has been but imperfectly investigated by these able men, who could do little more than testify how much remains to be explored.

5474. *Agriculture seems to be most carelessly* performed throughout the vast island of Madagascar. The indolent natives stir the ground with a spade, and drop in a few seeds, when they are sure of reaping such a harvest as shall supply their wants throughout the year. Rice is the chief object of culture, and the principal article of food; it is grown on the low lands in the damp woods, and by river sides; sometimes being put into the ground as we do kidneybeans, but oftener transplanted, and it yields a hundred fold, without giving other trouble than that of keeping the soil free from weeds. Women and children only are employed in setting the rice, the men helping to clear the ground. Thus the inhabitants of Madagascar could hardly maintain themselves without the existence of those extensive marshes, which are necessary for the culture of rice, but which constantly exhale pestilential miasmata, and to which the insalubrity of the climate may justly be attributed. After Rice, Manioc and Batatas are the chief articles of food. The roots of Manioc often acquire an enormous size, measuring fifteen feet long, and almost a foot in diameter. Then come Maize, "seasoning Herbs, Giromonds," Calabashes, Earth Nuts (*Arachis*), Sugar Canes, Pine Apples, Bread Fruit, and the Vine, and among the articles of manufacture are Cotton and Hemp. Potatoes, that were introduced by Mr. Hastie, the British resident, have thriven admirably, and the same may be said of other European vegetables, as Beans and Peas. It is much to be regretted that the eager desire of gain which characterises the Malagassy rarely allows them to wait till the productions of the soil are ripe; they gather their vegetables and fruit and carry them to the bazaar not half matured, that they may secure some paltry pieces of coin.

5475. *An exact enumeration of all the Indigenous Madagascar Plants* is, and will long remain, a desideratum in botany. Centuries must previously elapse, and the knowledge can only be obtained through the exertions of Europeans, who will gradually render the climate of Madagascar less prejudicial by extending the limits of its cultivation, and exploring the hitherto undiscovered districts. The productions of the west, north, and southern coasts, and of all the interior, remain almost unknown, and the slender documents that have been furnished as to the vegetation of the north-east, by French naturalists, most of whom have perished from the effects of the climate, serve rather to stimulate than to satisfy a botanist's curiosity.

5476. Two plants, peculiar, we believe, to Madagascar, are eminently worthy of notice; the Hydrogeton fenestralis (*fig.* 872.), and the Tanghin tree (*Tanghinia veneniflua*). The first is an aquatic plant, bearing tuberous and esculent roots, and throwing up from these roots elliptical leaves, pierced with holes, arranged with the greatest regularity and in the form of parallelograms; or, in other words, the whole leaf seems to be composed of a latticework of vascular tissue, presenting the appearance of what is called the skeleton of a leaf. We possess beautiful specimens, gathered by the late Dr. Lyall, and we are informed by Mr. Telfair that living plants have been introduced to, and are cultivated at, the Mauritius.

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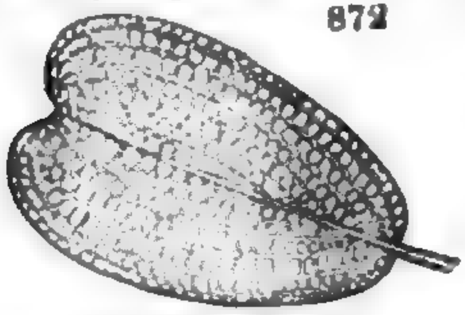

HYDROGETON FENESTRALIS.

5477. The famous Tanghin Poison is the fruit of Tanghinia veneniflua (*fig.* 873.), formerly called Cerbera Tanghin. Its botanical history and a figure of it were first published in the *Botanical Magazine*, tab. and page 2968; and, since, still more

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TANGHINIA VENENIFLUA.

copiously, from communications by C. Telfair, Esq. in the *Botanical Miscellany*. To these works, therefore, we may refer for full details; and not to occupy too much space here, we shall confine ourselves to a relation of the extraordinary and truly diabolical use that is made of the seed of this plant in its native country, Madagascar. The kernel, though not much larger than an almond, is of so poisonous a nature, that a single one suffices to destroy more than twenty individuals. Radama, the late enlightened sovereign of Madagascar, abolished the use of it in the native ordeal; but it has been unhappily revived by his successor to an extended degree. It was with great difficulty that Radama could induce the chieftains to admit of the discontinuance of an usage which had existed from time immemorial, and whose unerring efficacy in the detection and punishment of crime had never been questioned, until Mr. Hastie, the British government agent, had acquired such an influence over the king's mind as to expose its fallacy. But this was the work of years; and though Radama was at last himself convinced that nothing could be more unjust than the practice, yet he feared to shock the prejudices of his subjects, by commanding its discontinuance. Even the chief performers in the ceremony, the "skids" as they are called at Tannarivoo (the capital of Madagascar), who unite in their own persons the offices of priests and physicians, and who administer the poisonous kernel to the victims, never doubt its power of revealing guilt and clearing innocence. The last occasion on which the ordeal was practised in Radama's reign, and of which he availed himself to procure its discontinuance, personally regarded his court and attendants. The king was affected with a complaint of the liver, for which the "skid" prescribed some inefficacious remedies; and as the disease became worse, Mr. Hastie gave him calomel powders, which he had found, by experience, to relieve himself under similar circumstances. The disease vanished, but ptyalism was produced, and alarmed the king's family, who believed that he was poisoned, and insisted on all his immediate attendants being put to the ordeal of the Tanghin. The royal skid was most earnest in pressing to have it performed, although he himself, from his rank and place, would be among the first to whom it would be administered. In vain the king protested that he felt himself cured, and that the indisposition and soreness of the mouth were caused by the medicine that had relieved him, and would pass off in a few days. The skid insisted; the ministers and principal chieftains joined with the family in requiring the ordeal, to which the king reluctantly consented, stipulating that it should be the last exhibition of the kind, and bewailing the necessity which thus deprived him of so many attached dependants, whose fate he predicted, while he protested his conviction of their innocence. The king's servants, including the skid, were more than twenty in number; they were shut up at night separately and forbidden from food. Next morning they were brought out and paraded in procession before the assembled people, the presiding skid had the Tanghin fruit in readiness: after some prayers and superstitious evolutions, he took out the kernel, which he placed on a smooth stone, and with another stone broke down a part of it, to a softness like pounded almonds. The victims were then brought separately forward, and each questioned as to his guilt: if he denied, his arms were tied behind, and he was placed on his knees before the skid, who put a portion of the pounded kernel on his tongue, and compelled him to swallow it. Thus the kernel was shared among all the king's personal servants. On some, the effect appeared in half an hour or less. The skid takes particular notice how they fall; — on the face, to the right hand or left, or on the back; — each position indicating a different shade of guilt. Convulsions generally came on, accompanied with violent efforts to vomit. Those whose stomachs reject the dose at an early period, usually recover: on this occasion there were but two with whom this was the case. The others were flung, in a state of insensibility, into a hole ready dug, and every person present at the ceremony was obliged to throw a stone over them. Thus their burial was soon completed. The royal skid was among the first that fell. Those that recover are supposed to bear a charmed life ever after, and are respected as peculiar favourites of the gods.

5478. *The isles of France* (or *Mauritius*) and of *Bourbon* have indeed been investigated by the labours of several naturalists; and the result, as far as regards their characteristic vegetation, has been communicated to us in a letter from M. L. Bouton, and the same has very recently been published in the twenty-fourth volume of the *Annales des Sciences Naturelles*, p. 247. This able and zealous botanist particularly notices the opinion of M. Achille Richard, and says: "After casting a rapid glance on the kind of vegetation that is observable in the islands of Bourbon, Mauritius, and Madagascar, M. Richard, in the introduction to his *Monograph of the Orchideæ*, considers, as do all geographers, these three islands as belonging to Africa, lying, indeed, as they do, much nearest to this continent.

'But,' continues M. Richard, 'in the character of their vegetation, they differ from that of Africa, and more assume the peculiarities of the Indian Archipelago, from which they are separated by widely extended seas.' Farther on, M. Richard thus expresses himself: — 'We may perceive that the Flora of Mauritius and Bourbon has more analogy with that of the Indian islands than with the vicinity of the Cape of Good Hope; and that, though geography may rank these islands as appertaining to Africa, they belong to India, and consequently to Asia, in consideration of their vegetation. Without presuming to give a satisfactory explanation of this phenomenon, we will simply add two observations, from which it seems easy to deduce such conclusions as may throw light on this point. 1. The regions of the Cape of Good Hope are extra-tropical; while the isles of France and Bourbon, and the Indian Archipelago, are situated within the tropics: and it is well known what an influence this situation exercises on the character of vegetation. 2. It appears that the prevailing winds of the Indian Archipelago are from the east and north-east; that is, exactly those which come in the direction of the Indian islands.' These remarks appear to me conclusive; the first, especially, is highly important. All naturalists, who have explored the most extensive regions of our globe, have observed an extraordinary identity in the productions of the tropics. On this subject I shall quote M. Dumont Durville, who, in a note communicated to the Institute on the voyage of circumnavigation performed in the Coquille, says, 'more than half our voyage lay in the torrid zone, and among the numerous archipelagoes that are scattered over the immense Pacific Ocean. In all these islands, starting, as it were, from the most easterly ones, to those that are on the confines of Asia and even of Africa, the Flora is but the same; herbs, shrubs, and even almost all the trees, are alike, and the only shade of difference is, that the number of species increases as we draw near the continents.' Mauritius, Bourbon, and Madagascar," proceeds M. Bouton, "are comprised in these general remarks; but the Cape of Good Hope, situated beyond the tropics, and fourteen degrees south of Mauritius, is necessarily an exception. The Flora of the African promontory is stamped with a peculiar character, that to me presents more points of affinity with that portion of New Holland which is placed nearly in the same parallel. Several identical genera may be observed in the mass of vegetation of these two localities. Many Proteas, certainly, grow at the Cape; but a few of the species are also found in New Holland; with very similar genera, as Banksia, Embothrium, Hakea, and Persoonia. Gnaphalium, Elichrysum, Diosma, and several genera belonging to the Irideæ, Leguminosæ, and Ficoideæ, grow equally at the Cape of Good Hope and New Holland. The prevailing natural families in the latter country are, according to M. Leschenault, the Proteaceæ, Ericinæ, Synanthereæ, Leguminosæ, and Myrtaceæ; now these families constitute the gross of the vegetation on the promontory of Africa. A third spot on our globe seems to present some traits of resemblance to the two localities I have just described, and that is the southern extremity of America, where there are many of the genera which grow in the south-west of New Holland. Again, the vegetation that obtains in these three points has no resemblance to that of the Mauritius, while the productions of our island bear more analogy with those of that portion of Africa which lies under the same parallels as Madagascar, Bourbon, and the Mauritius. Now this wide extent is yet hardly known, the part lying near the sea alone having been explored; and this is pronounced by my esteemed friend, M. Bojer, who examined the coasts of Mosambique and Zanguebar, to possess many of the plants which grow in our islands, or others which hold a similar rank in the same natural orders. It is no less true that some genera do exist peculiar to the Mauritius, and which form, as M. Richard expresses it, its peculiar physiognomy; but every thing tends to confirm the opinion that these detached features will sink in the general mass, when we shall become better acquainted with the botany of that portion of Africa which lies between the tropics, and which, more than any part of our globe, contains the vegetable productions whose congeners exist in the Mauritius."

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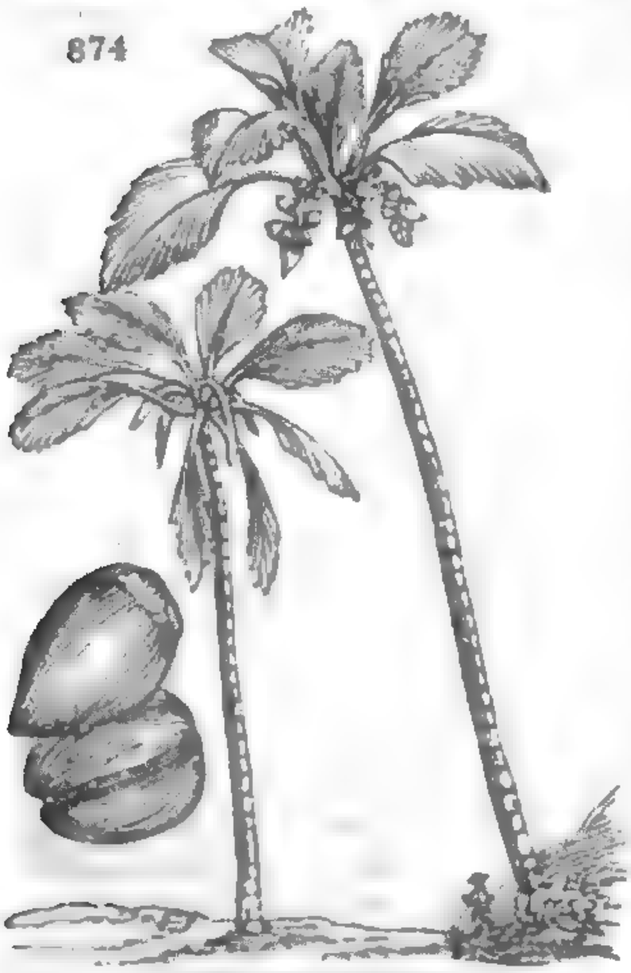


DOUBLE COCOA-NUT TREES.

5479. About eight or ten degrees north of Madagascar lies a small group of islands, called *the Seychelles*, which are rendered famous by the production of a Palm, not known in any other part of the world, and whose history is too remarkable to be passed over altogether in silence. Even of this small group of islands, three only, lying within half a mile of each other, produce the Palm that bears the Double Cocoa Nuts (*fig.* 874.), or, as they are called, *Cocos de Mer*, from an erroneous idea that they were marine productions. Until the discovery of these islands in 1743, Double Cocoa Nuts were only known from having been found floating on the surface of the sea, in the Indian Ocean, generally destitute of husk, and with the inner part decayed, but still so highly prized as to be spoken of by Rumphius as "mirum miraculæ naturæ, quod princeps est omnium marinarum rerum, quæ raræ habentur." This author further assures us that "the Double Cocoa Nut is no terrestrial production that may have fallen in the sea and there become petrified, as others ignorantly stated; but a *fruit, growing itself in the sea*, whose tree has hitherto been concealed from the eye of man." The Malays asserted that the palm that bore it was sometimes seen at the bottom of the ocean; but that, if dived for, it instantly vanished: while the negro priests further affirmed that its submarine branches harboured an enormous griffin, which nightly came to shore, and, seizing elephants, tigers, &c., carried them as a prey to its nest; and, not satisfied with these, attracted such ships as came near to the spot, and devoured the luckless mariners. With such and even stranger ideas respecting its place of growth and history, there is no wonder that this nut should be highly prized; indeed, in the Maldivian islands, it was death to any man to possess it, and all that were found belonged to the king, who sold them at high prices or distributed them as regal gifts. From 120 to 150 crowns were paid for each nut, and even kings have been so greedy of obtaining these fruits as to give a loaded ship for one. Rumphius certainly states his suspicions that the Chinese and Malays may have, *perhaps*, set too high a value on the Double Cocoa Nut, when considering it an antidote against all poisons. The albumen, or meat which lines the nut, was thought to be the part where this virtue resided: it was mingled with red coral, black ebony, stags' horns, and many such anomalous ingredients, and drunk from vessels of porphyry. All inflammations of the body were likewise believed to be subjected to its powers: it was a preservative against colic, apoplexy, paralysis, *et id genus omne*. The shell, being less precious, was granted to the great men for drinking-vessels; a single slice being sufficient, if used as the lid, to neutralise the effect of any noxious ingredient that might mingle with the drink, tobacco, betel, &c. that were held in it. The discovery of the Seychelles islands, and the knowledge thus obtained that these mystical nuts grew upon trees, caused a speedy reduction in their value; though the botanical history of the Palm that produced them continued long a desideratum. Some imperfect notices served but to stimulate the curiosity that was finally gratified by Mr. Telfair, who entreated Mr. Harrison, a friend resident in the Seychelles, to obtain the necessary specimens and delineations. "To behold these trees," says Mr. Harrison, "growing in thousands, close to each other, the sexes intermingled, a numerous offspring starting up on all sides, sheltered by the parent plants, the old ones fallen into the sear and yellow leaf, and going fast to decay, to make room for the young trees, presented to my eyes a picture so mild and pleasing, that it was difficult not to look upon them as animated objects, capable of enjoyment and sensible of their condition." A new leaf is formed annually, which, falling off at the year's end, leaves a scar or ring, by counting which it is estimated that this Palm requires 130 years for its full growth. The foliage is finest on young plants, shooting up perpendicularly, folded close like a fan, to 10 feet or more. In this state it is pale yellow, and used for hats and bonnets; afterwards, it expands in all its beauty, and becomes green. The crown or cabbage, in the midst of the leaves, is eaten; the trunk is used for building, and the foliage serves for thatching, and even for the walls of houses, a hundred leaves sufficing to construct a house, including the partition, doors, and windows. The down, attached to the young foliage, serves for filling mattresses and pillows, while the ribs of the leaves make baskets and brooms. Vessels of different forms and uses are made out of the nut, some of them holding six or eight pints; and, being very strong and durable, they are much valued. Among other articles, shaving dishes, black, beautifully polished, set in silver and carved, are formed of these nuts.

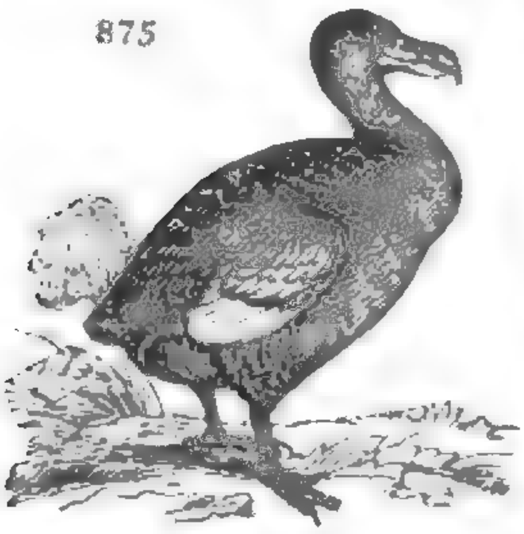
5480. *The Zoology of Madagascar* is as little known now as it was a century ago, while the recent intemperate conduct of the French naval commanders towards the native authorities destroys all those hopes which had been raised for the success of a scientific naturalist of that nation, who left France, two years ago, to explore this most interesting country. The zoology of Madagascar, in fact, from the scanty gleanings that have as yet reached Europe, is of such a peculiar character, that it can scarcely be assimilated to that of Africa, while it appears equally distinct from that of Australia. It is said that neither the Lion, Tiger, Elephant, nor Horse is here known; while the Apes and Monkeys of Africa and the Asiatic islands are replaced in Madagascar by the family of Lemurs. A list of these curious monkey-like animals is here subjoined. Our knowledge of the ornithology is still more defective, although it is probably very distinct from that of the neighbouring continent. Some singular Shrikes, allied to the Vanga of Buffon, belong to this island; less known to the naturalist than any other of moderate size in the whole world.

5481. *The quadrupeds*, as intimated by various writers, are arranged in the following list: —

Lichanotus niger *Ill.*	Black Indri Lemur.
Lichanotus laniger.	Flocky Lemur.
Lemur Macaco.	Ruffled Lemur.
Lemur rufus.	Red Lemur.
Lemur Mongoos.	Mongoos Lemur.
Lemur Catta.	Ring-tailed Lemur.
Lemur niger.	Black Lemur.
Lemur fulvus.	Yellow Lemur.
Lemur albimanus.	White-handed Lemur.
Lemur collaris.	Collared Lemur.
Lemur albifrons.	White-fronted Lemur.
Lemur nigrifrons.	Black-fronted Lemur.
Lemur cinereus.	Ashy Lemur.
Otolicnus madagascariensis *Ill.*	Little Galago.
Otolicnus crassicaudatus.	Great Lemur.
Tarsius fuscomanus *Ill.*	Yellow-handed Tarsier.
Cheiromys madagascariensis *Cuv.*	Aye Aye.
Pteropus Edwardsii.	Edwards's Vampire.
Centenes semispinosus.	The Tendrac.
Centenes setosus.	Tanrec.
Sciurus madagascariensis.	Madagascar Squirrel.
Sus larvatus.	Masked Boar.

5482. *The native Zoology of the Mauritius*, as may be supposed, is but scanty; yet the judicious exertions of the French have introduced several animals beneficial to the island. The African Serpent-eater is said to have become domesticated, and is highly useful in destroying reptiles. The Locust-eater (a species of *Lamprosternus?*) has likewise been brought from the same continent, and has several times preserved the crops from complete destruction. The Goromy (*Osphroemus olfax* Com.), a small but most delicious fresh-water fish of China, is here completely naturalised, and has multiplied to such a vast extent, as to be considered the greatest delicacy of the island.

875



THE DODO.

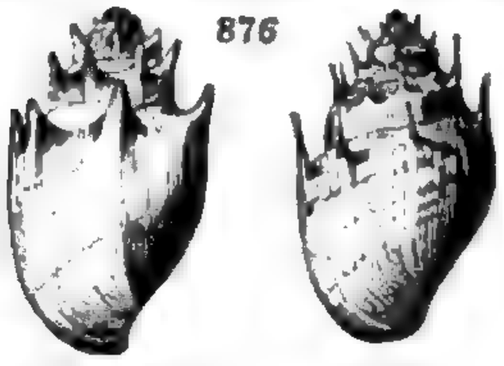
5483. *The celebrated Dodo* (*fig.* 875.), a bird no longer known to exist, was unquestionably a former inhabitant of the island of Mauritius. Old Tradescant, whose museum appears to have contained an entire specimen, mentions it as "not being able to flie, being so big." Some very interesting particulars on this strange uncouth animal have been collected and published by Mr. Duncan, the present zealous and intelligent curator of the Ashmolean Museum, where the bill (probably belonging to the specimen named in Tradescant's catalogue) attests the veracity of the early voyagers; while a foot is in the British Museum. This latter induces us to view the Dodo as the Rasorial type of the order *Raptores*, its relation to the *Rasores* being only analogical.

5484. *The few native quadrupeds* noticed by authors are the following: —

Pteropus vulgaris.	Common Vampire.
Pteropus rubicollis.	Red-collared Vampire.
Taphozous mauritianus.	Mauritian Bat.
Centenes setosus.	The Tanrec.
Mangusta galera.	Mauritian Mangouste.

5485. *The Marine Shells* are conspicuous for their beauty and profusion; although very few are different from those species found in the Indian Ocean. The Olives, Harp-shells, Cowries, Cones, &c. might furnish a long list; but the Many-ribbed Harp (*Harpa nobilis*) must not be omitted. The fresh waters furnish the Melania Amarula *Lam.* and the Melania setosa *Sw.* (*fig.* 876.): the latter is of great rarity; it is crowned with vaulted spines, each of which encloses two or three setaceous bristles; a singularity seen in no other shell yet discovered.

876



MELANIA AMARULA. M. SETOSA.

BOOK IV.

AMERICA.

5486. *America is a vast continent,* comprising one of the grand divisions of the globe. The western hemisphere, in fact, contains scarcely any continental land that is not American; though it includes but a small portion of land, as compared with the eastern hemisphere. This continent, having remained for thousands of years unknown to the most learned and enlightened nations of the East, is called commonly the New World; while Europe, Asia, and Africa are called the Old World; and America includes an extent of territory nearly equal to half of the three united.

◆

Chap. I.

GENERAL VIEW OF AMERICA.

5487. *America is bounded* on each side by the greatest of the oceans. On the west, the Pacific separates it from Asia, and, from an almost immeasurable breadth, gradually narrows, till it terminates at Behring's Straits, where the two continents come almost into contact. On the north is the Arctic Ocean, divided by huge frozen islands into numerous bays and inlets. On the east the Atlantic separates it from Europe and Africa. On the south it presents a stormy cape to the expanse of the Southern or Antarctic Ocean. The whole northern boundary of America is now found to range about 70° N. lat., but Leopold South Island, its highest known and probably existing point, is in 74°. Cape Horn, then, being nearly in 56° S., these extreme points are situated at the interval of 131° from each other. Hence this continent comprehends the whole of the tropical and temperate, with part of the arctic climates, on both sides of the equator. This line, however, which would amount to above 9000 miles, cannot be considered as measuring the dimensions of a continent so irregular in its form, and of which the southern portion is so nearly detached, and lies almost entirely east of the northern. It seems, therefore, necessary to view these two portions separately. The greatest dimension of North America appears to be in about the 60th degree of latitude, where it extends east and west across about 100° of longitude, or 3500 miles. From its arctic boundary to the shores of the Gulf of Mexico (excluding the peninsular part of California) will be about 44° of latitude, or 3000 miles. South America, again, may be taken from 9° N. to 56° S. lat., a space of 4550 miles; while the greatest breadth, about lat. 6° S., will be 35°, or 2440 miles. This does not include the long winding range of territory including Mexico and Guatimala, by which the two continents are connected, but which seems not very strictly to belong to either.

Sect. I. *General Outline and Aspect.*

5488. *Mountain ranges,* peculiarly distinguished by their magnitude and continuity, pervade this quarter of the world. One chain, the longest, and, with a single exception, the loftiest on the globe, appears to extend from its northern to its southern extremity. By far the most distinguished portion is that colossal range which, under the name of Andes, traverses South America parallel to and at a small distance from the Pacific. Commencing at the northern border of Columbia, and throwing some lateral branches along its coast towards Coro and Caraccas, it continues in its progress southwards, always swelling in magnitude, till, almost beneath the equator, it shoots up into the summits of Chimborazo and Antisana, believed till lately the loftiest points on the earth; while it spreads terror by the tremendous volcanoes of Pinchincha and Cotopaxi. In passing through Peru, it continues still very lofty, and, on reaching its southern or upper region, forms a vast knot or mass, amid whose peaks tower Illimani and Sorata, which recent observation has proved to surpass even Chimborazo, though still inferior to the highest among the Himalayah. In its progress behind Chile, this great chain continues to form an immensely steep though not very broad ridge. It becomes less considerable as it approaches the southern limit of the continent, and the peculiarly dreary and desolate aspect which it there assumes is owing less to elevation than to the wintry severity of the climate. The heights on the adjacent isle of Terra del Fuego do not exceed 6000 feet; and even the formidable cliffs with which Cape Horn faces the tempests of the Southern Ocean do not rise higher than from 1500 to 1600 feet.

5489. *The same chain* must now be traced in its progress through the more northern parts of America. The Isthmus of Panama, indeed, that narrow neck of land which connects

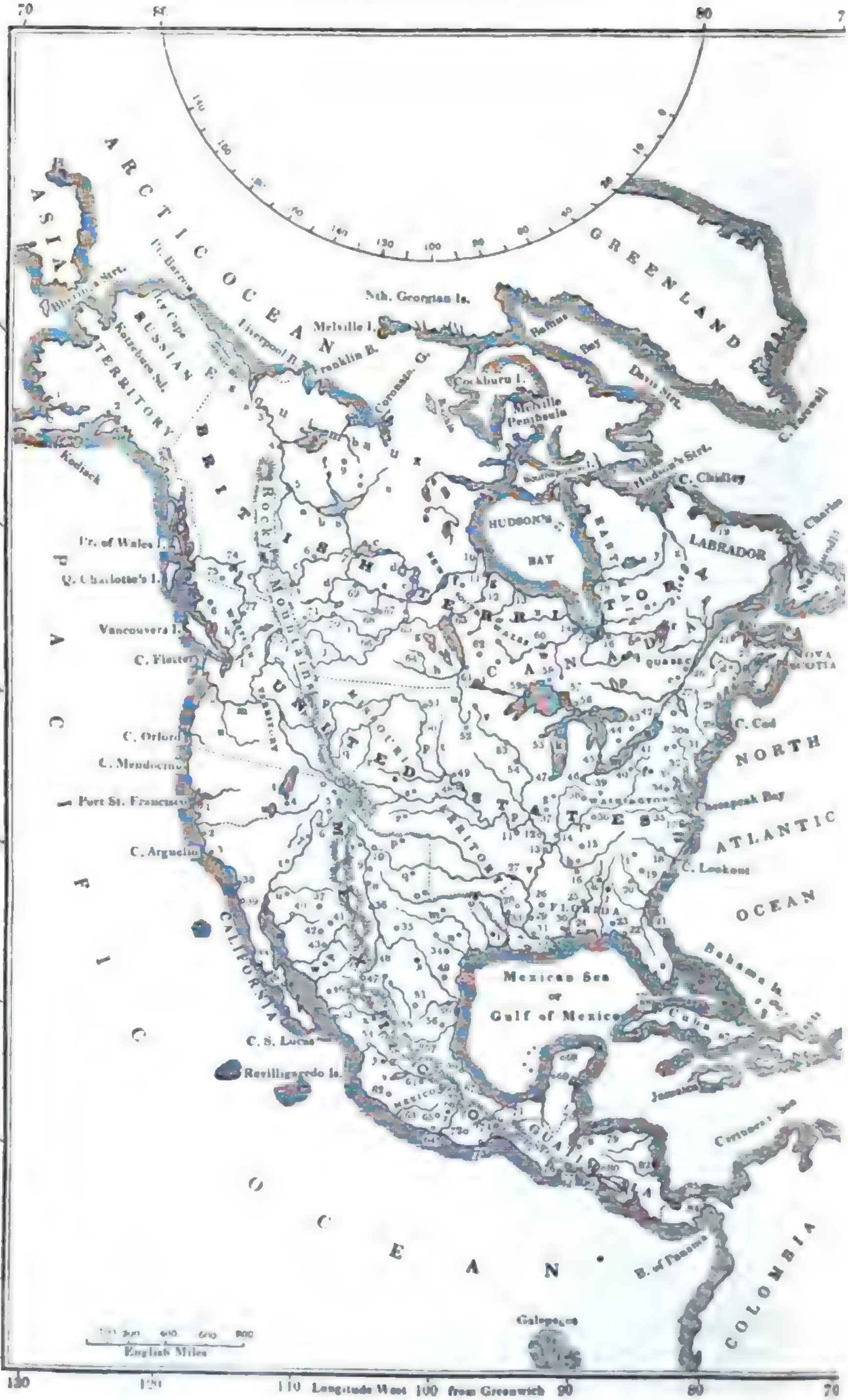
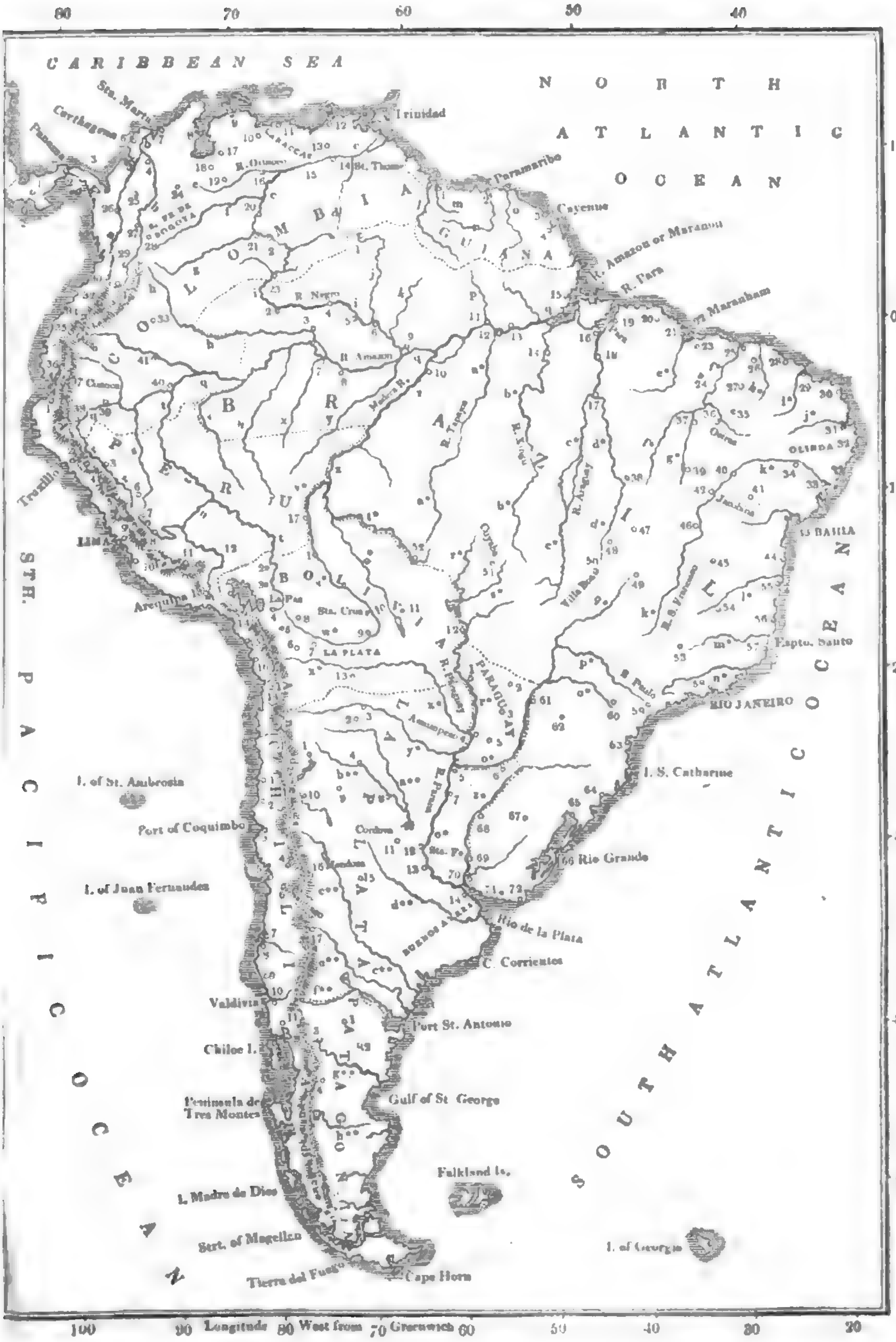

ARCTIC OCEAN
ASIA
Bhering's Strt.
Icy Cape
RUSSIAN TERRITORY
Kotzebue's Sd.
Kodiack
Pt. Barrow
Liverpool B.
Franklin B.
Melville I.
Nth. Georgian Is.
Coronation G.
Cockburn I.
Melville Peninsula
Baffins Bay
Davis Strt.
GREENLAND
C. Farewell
Hudson's Strt.
C. Chidley
HUDSON'S BAY
LABRADOR
C. Charles
BRITISH AMERICA
ROCKY MOUNTAINS
Pr. of Wales I.
Q. Charlotte's I.
Vancouvers I.
C. Flattery
C. Orford
C. Mendocino
Port St. Francisco
C. Arguello
PACIFIC OCEAN
CANADA
QUEBEC
NOVA SCOTIA
C. Cod
NORTH ATLANTIC OCEAN
UNITED STATES
TERRITORY
WASHINGTON
Chesapeak Bay
C. Lookout
FLORIDA
Bahama Is.
CALIFORNIA
C. S. Lucas
Revilligigedo Is.
MEXICO
Mexican Sea or Gulf of Mexico
Cuba
Jamaica
GUATIMALA
Carribean Sea
B. of Panama
COLOMBIA
Galopagos
English Miles
200
400
600
800
Longitude West 100 from Greenwich
70
80
90
100
110
120
130
0
10
20
30
40
50
60

Fig. 878. MAP OF SOUTH AMERICA.



these two great continental masses, is filled only by a ridge of moderate elevation, so as to allow hopes that a canal may unite the two opposite oceans. But after a short interval it swells into that great table plain, upwards of 6000 feet high, which covers the greater part of Mexico and Guatimala, and converts there a tropical into a temperate climate. From this level shoot up much higher the snowy conical peaks of Orizaba, Popocatepetl, and Toluca, the first two of which send forth formidable volcanic eruptions. Beyond Mexico this great elevation is partly prolonged in the great chain of the Rocky Mountains which run parallel to the Northern Pacific, and bounds on the west the valley of the Mississippi. Though their cliffs be steep and rugged, they by no means equal the elevation of the Andes, scarcely at any point surpassing 12,000 feet. Beyond the 55th parallel they rapidly sink, though a branch, about 2000 feet high, runs along the western bank of the Mackenzie River, and even along the shores of the Arctic Ocean. It may be observed that very high mountains are seen at different parts of the shore of the Northern Pacific; particularly in the 60th parallel, where Mount St. Elias is supposed to exceed 17,000 feet; but whether these form a parallel chain to the Rocky Mountains, or are branches detached from them, is not yet duly ascertained.

5490. *An eastern chain* pervading America, though not quite in so uniform and connected a manner, seems traced by Humboldt. In North America, the Apalachians, or Alleghanies, form a continuous ridge parallel to the Atlantic, and bounding the maritime territory of the United States. Detached, somewhat irregular, branches from them spread through Canada, Labrador, and the vicinity of Hudson's Bay. The mountains which, rising around the Gulf of Mexico, form the West India islands, appear to be elevated summits of the same range. After disappearing for a small interval in the delta of the Orinoco, it appears again in numerous ridges, which spread wide over Guiana, and of which the central mass appears to be the Sierra de Parime. On the southern side of the Amazons, again, Brazil is traversed by several successive ranges, which are in some degree prolonged to the La Plata, beyond which they sink finally into the vast plains of the Pampas. The whole of these eastern ranges are very low, when compared with the grand western chain; they reach generally from 2000 to 3000 feet, and seldom exceed 6000; they are not the seat of violent volcanic action. Several of the West India peaks, however, are somewhat higher than the above, and one or two are volcanic.

5491. *The plains* of America form almost as great and remarkable an object as its mountains. We may remark in this continent three systems. One is the plain along the Atlantic, between that ocean and the eastern range of mountains. To this belong the original territory of the United States, and that of Brazil, the former moderately, the latter luxuriantly, fertile. The second plain is that on the opposite side of the continent, between the great western chain and the Atlantic; it is narrow, moist, of very various aspect and produce. But the plains which extend through the centre of the continent, between the great ranges

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References to the Map of North America.

NORTH PART.
1. Fort Alexandrovskaia
2. Russian Factory
3. Fort Good Hope
4. Fort Norman
5. Fort Simpson
6. New House
7. Fort Chipewyans
8. Fort Resolution
9. Fort Enterprise
10. Fort Churchill
11. York Factory
12. Rock House
13. Severn House
14. Albany Fort
15. Moose Fort
16. Rupert's House
17. East Main Factory
18. Whale Bay House
19. Nain
20. Perce
21. Dalhousie
22. Chatham
23. St. John's
24. Halifax
25. St. John's
26. Quebec
27. Montreal
28. Portland
29. Boston
30. Albany
31. New York
32. Philadelphia
33. Baltimore
34. Washington
35. Richmond
36. Frankfort
37. Vandalia
38. Indianapolis
39. Columbus
40. Franklin
41. Buffalo
42. Kingston
43. York
44. London
45. Detroit
46. Fort Wayne
47. Chicago
48. Fort Calhoun
49. Yanktons
50. Ricaree Village
51. Fort Mandan
52. Columbian Fur Company Establishment
53. Fort St. Anthony
54. Fort Crawford
55. Fort Howard
56. H. B. Company's Establishment
57. Michipicoton
58. Hudson's Bay Settlement
59. Fort William
60. Gloucester House
61. Fort Alexander
62 Red Lake House
63. Norway House
64. Albany House
65. Cumberland House
66. Carlton House
67. N. W. House
68. H. B. House
69. La Crosse House
70. Fort George
71. Nelson's House
72. Athabasca
73. Fork Fort
74. Rabine
75. Stilla
76. Village of Rascals
77. Attuas
78. Fort George.

SOUTH PART.
1. Fort St. Francisco
2. St. Antonio
3. St. Barbara
4. St. Isabel
5. St. Rosa
6. Osito
7. St. Fernando
8. Sibilleia
9. Albuquerque
10. Santa Fé
11. Jefferson
12. Jackson
13. New Madrid
14. Cadiz
15. Columbia
16. Fort Deposit
17. Eldendon
18. Raleigh
19. Columbia
20. Augusta
21. St. Augustine
22. St. Pedro
23. Tallahassee
24. Pensacola
25. Cahawba
26. Jackson
27. Little Rock
28. Fort Mira
29. Natchez
30. Mobile
31. Fort Adams
32. New Orleans
33. Natchitoches
34. St. Antonio
35. Fort del Altar
36. Jacome
37. Santa Cruz
38. St. Gabriel
39. St. Diego
40. Caborra
41. Arispe
42. Petic
43. Matape
44. St. Maria
45. Loretto
46. St. Roque
47. St. Pedro
48. Chihuahua
49. Dolores
50. Monterey
51. Castaneula
52. Victoria de Durango
53. Sonora
54. Santiago
55. Zacatecas
56. New Santander
57. St. Luis Potosi
58. Guadalaxara
59. Juapan
60. Mexico
61. Valladolid
62. Colima
63. Zacanda
64. Acapulco
65. Tuxpa
66. La Puebla
67. Vera Cruz
68. Merida
69. Campeachy
70. Balize
71. Chiapa
72. Oaxaca
73. Port Colorado
74. Tehuantepec
75. Santiago
76. Guatimala
77. Sonsonate
78. Santiago
79. Truxillo
80. Leon
81. Realejo
82. Bluefields
83. Nicoya
84. Panama
85. Porto Bello
86. Kingston
87. Cuba
88. Havanna
89. St. Domingo
90. Port au Prince.

Lakes.
a Great Bear Lake
b Great Slave Lake
c Athabasca, or Lake of the Hills
d Wollaston
e Deer Lake
f Winnipeg
g Little Winnipeg
h Manatoulin
i Lake of the Woods
j Superior
k Michigan
l Huron
m Erie
n Ontario
o Champlain
p Temiscaming
q Abbitibbe
r Mistisinny
s Clear Water
t Timpanagos
u Teguayo
v Chapala.

Rivers.
a Mackenzie's River
b Coppermine
c Peace
d La Biche
e Missinipi
f Churchill
g Hayes
h Assiniboine
i Saskatchawan
j Red Deer
k Tacoutche Tesse
l Caledonia
m Columbia
n Multnomah
o Saptin, or Lewis's River
p Missouri
q Yellow Stone
r Big Horn
s Running Water
t James's River
u Red River
v Mississippi
w Albany
x Equan
y Great Whale River
z Caniapuscaw
a* East Maine
b* Rupert's River
c* St. Lawrence
d* St. John's River
e* Delaware
f* Ohio
g* Great Wabash
h* Tennessee
i* Savannah
j* Apalachicola
k* Alabama
l* Sabine
m* Colorado
n* Guadalupe
o* Red River
p* Arkansas
q* Canadian
r* Kansas
s* Platte
t* Colorado
u* Gila
v* Bravo, or Rio del Norte
w* Hiaqui
x* Rasila
y* Rio Grande de Santiago
z* Mescala.

of the eastern and western mountains, are of prodigious extent, exceeding even those which cover so great a part of Africa and Asia. While the latter two have a vast portion of their surface doomed to hopeless sterility by heaps of moving sand, the interior plains of America are almost throughout completely watered, and overgrown in many places with even an excessive luxuriance of vegetation. It is true they display solitudes as vast, and tenanted by races as savage, as the most dreary deserts of the Old World. But this backward state is evidently owing to the unfavourable and inland site of these vast tracts, destitute of maritime intercourse, and only of late become the theatre of European settlement. Even the rich moisture of the ground, covered with dense and entangled forests, and with gigantic grasses, though it marks the natural luxuriance of the soil, obstructs the first efforts of unimproved culture. But the tide of emigration has now completely set in to these vast interior tracts; great states have been founded in them; and it is evident that in a few ages they will be covered with a numerous and increasing population. This is remarkably the case with the great plain of the Missouri-Mississippi, between the Rocky Mountains and the Alleghanies, forming what is called the western territory of the United States. The plantations formed in this region are proceeding with such rapidity, that it must evidently, in a few generations, become one of the most populous and flourishing regions of the globe. This plain is prolonged without interruption northward to the country watered by the upper courses of the Mississippi and the St. Lawrence, and even as far as the Polar Ocean; so that, as Humboldt observes, one of its borders is covered with the palms and the splendid foliage of the tropic, while in the other the last buds of arctic vegetation expire. These northern plains, however, present a very gloomy aspect, overspread with dreary pine forests, intersected by frozen lakes, and affording shelter only to numerous tribes of the elk, the deer, and other fur-bearing animals. The extent of this plain is estimated by Humboldt at 2,430,000 square miles. Another, almost equally vast and luxuriant, occurs in the heart of South America, where it occupies the basin of the Amazons, between the Andes and the mountains of Brazil; but it is covered, as yet, with unbroken native forests, and tenanted by rude and savage tribes. The same great authority reckons it at 2,340,000 miles. In the northern quarter is that great expanse of the Llanos of the Orinoco, estimated at 261,000 miles, covered with gigantic grasses, yet still, too, almost uncultivated, while in the southern part of the continent, the immense surface of the Pampas, bordering the La Plata, displays its fertility only by the numberless herds of wild cattle, which have multiplied amid its pastures. The area, according to Humboldt, comprehends 1,215,000 miles.

5492. *Table-lands*, or elevated plains, form a characteristic feature in the geography of America, though not so striking as in that of Asia. The principal is the one which covers

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References to the Map of South America.

COLOMBIA.
1. Veragua, or Santiago
2. Panama
3. New Edinburgh
4. Mompox
5. Tolu
6. Carthagena
7. Santa Martha
8. Maracaybo
9. Coro
10. Valencia
11. Caraccas
12. Cumana
13. Concepcion del Pao
14. Fort Thome, or Angostura, or New Guiana
15. Alta Gracia
16. S. Fernando
17. Truxillo
18. Merida
19. Varinas
20. Atures
21. S. Fernando de Atabasea
22. S. Barbara
23. S. Carlos de Rio Negro
24. Pampeluna
25. Remedios
26. Antioquia
27. Mariquita
28. Santa Fé de Bogota
29. Neyva
30. Popayan
31. Timana
32. Pasto
33. La Concepcion
34. Mira
35. Quito
36. Guayaquil
37. Cuença
38. Jaen
39. S. Borja
40. S. Joaquim de Omaguas
41. S. Xavier.

GUIANA.
1. Georgetown
2. Paramaribo
3. Cayenne
4. St. Louis, or Oyapock.

BRAZIL.
1. Santa Rosa
2. S. Antonio de Castanheiro
3. S. Antonio de Marapi
4. Thomar
5. Barcellos
6. Moura
7. Valla de Ega
8. Avellos, or Coary
9. Rio Negro, or Fortaleza de Barra
10. Borba
11. Obidos, or Pauxis
12. Santarem
13. Oiteiro
14. Pomba
15. Villa Nova da Madre de Dios
16. Villa Vicoza
17. S. Joao das duas Barras
18. Alcobaça
19. Para
20. Gurupy
21. Alcantara
22. Maranham
23. Itapicuru
24. Caxias
25. Parnaiba
26. Vicoza
27. Marvad
28. Seara, or Villa del Forte
29. Aracati
30. Natal
31. Paraiba
32. Olinda } Pernambuco
    Recife }
33. Villanova
34. Pambo
35. Valencia
36. Oeiras
37. Jurumenha
38. Carmo
39. Pernagoa
40. Joazeiro
41. Jacobino
42. Arcado
43. Bahia, or S. Salvador
44. Ilheos
45. Joazearo
46. S. Rosa
47. Arraya
48. Agoaquente
49. Paracatu
50. Villa Boa
51. Cuyaba
52. Villa Bella
53. Villa Rica
54. Bom Successo, or Fanado
55. Porto Seguro
56. S. Jose do Porto Alegre
57. Espiritu Santo
58. Rio Janeiro
59. Sao Paulo
60. Villa Nova
61. Guaira
62. S. Antonio
63. Paranagua
64. Conventos
65. Portalegre
66. Rio Grande
67. Botoli
68. S. José
69. Almagro
70. Loriana
71. Monte Video
72. Maldonado.

PERU.
1. Tumbez
2. Truxillo
3. Caxamarquilla
4. Huara
5. Caxabamba
6. Huanco
7. Tarma
8. Ocopa.
9. Lima
10. Pisco
11. Chalhuanca
12. Cusco
13. Arequipa
14. Ila
15. Arica
16. Tarapaca
17. La Exaltacion de la Cruz.

BOLIVIA.
1. S. Xavier
2. Apolobamba
3. Zarata
4. La Paz
5. Oruro
6. Potosi
7. La Plata
8. Cochabamba
9. Florida
10. Santa Cruz de la Nueva
11. S. Lourenzo de la Frontera
12. Albuquerque
13. S. Bernardo de Tarija
14. S. Francisco de Atacama.

LA PLATA.
1. Palcipus
2. Salta
3. Jujuy
4. Tucuman
5. Corrientes
6. Condelario
7. Santa Lucia
8. Santiago
9. Catamarca
10. Rioja
11. Cordova
12. Santa Fé
13. Rosario
14. Buenos Ayres
15. S. Luis
16. Mendoza
17. El Diamante.

CHILE.
1. Copiapo
2. Huasco
3. La Serena
4. Aconcagua
5. Valparaiso
6. Santiago
7. Concepcion
8. Arauco
9. Lamuo
10. Valdivia
11. Calbuco
12. S. Carlos.

PATAGONIA.
1. Colpe
2. Sanchada
3. Gitonel
4. Chuilliabul.

PARAGUAY.
1. Itapecaguaca
2. Voquita
3. Villa de Curaguaty
4. Assumpçao
5. Villa Rica.

Rivers.
a Cauca
b Magdalena
c Orinoco
d Paragua
e Apure
f Meta
g Guaviare
h Coqueta, or Yapura
i Negro
j Branco
k Juaguapira
l Essequibo
m Demerara
n Surinam
o Marony
p Oriximina
q Amazon, or Maranon
r Lauricocha
s Huallaga
t Ucayal, or Paro
u Apurimac
v Hyabary, or Juvary
w Jutay, or Hyutaby
x Tefe, or Teffe
y Puru, or Purus
z Madera
a* Tapajos, or Topayos
b* Xingu
c* Uruguay
d* Tocantins
e* Meary, or Mearim
f* Parnaiba
g* Gorguca
h* Camozin
i* Seara
j* Paraiba
k* S. Francisco
l* Rio Grande do Belmonte
m* Doce
n* Paraiba
o* Parana
p* Tiete
q* Paranahyba
r* Paraguay
s* S. Lorenzo
t* Guapare
u* Ubahy, or S. Magdalena
v* Mamora
w* Rio Grande de la Plata
x* Pilcomayo
y* Rio Grande
z* Uruguay
a** Salado
b** Dolce
c** Mendoza, or Colorado
d** Saladillo
e** Sanguel
f** Secu Leuva
g** Camerones
h** Port Desire.

the whole of Mexico, with part of Guatimala, rising to the height of 6000 feet. The Andes within their lofty ridges enclose very elevated sites, on which even cities are built; but, in general, these level spots are too limited to constitute more than a mountain valley hemmed in by lofty perpendicular steeps; and often from the bed of the river to the top of the mountain is a continued and laborious ascent. Bolivia, or Upper Peru, with the bordering districts of La Plata, comprises certainly a very large extent of elevated land, and cities are built on a higher level than in any other quarter of the globe. Yet its general rugged and irregular surface seems to constitute rather a mountainous territory than a table plain.

5493. *The rivers of America* constitute perhaps her grandest natural features, or at least those in which she claims the most decided preeminence over the other quarters of the globe. They are unequalled both in the length of their course, and the masses of water which they pour into the ocean. The principal of these rivers take their rise in the great western chain, from its eastern side, whence, being swelled by numerous streams, they roll broad and spacious across the great interior plain, till they approach the eastern range of mountains. Thence they derive a fresh and copious series of tributaries, till, bearing as it were the waters of half a continent, they reach the ocean. Thus, the Missouri (which, notwithstanding the error which has given the name of Mississippi to the united channel, is undoubtedly, in a physical view, the main stream,) takes its rise in the Rocky Mountains, then flows westward into the deep valley, where it is joined by the Mississippi, and there receives from the Alleghany the copious tributaries of the Ohio, the Wabash, and the Tennessee. In its course thence southward, it receives tributaries both from the eastern and western range. In South America, again, the Amazons, after a long course along the foot of the loftiest Andes, and collecting all the waters which descend from them during a range of upwards of 1000 miles, rolls westward across the great plain, till it comes to receive ample tributaries from the eastern ranges, of Parime on one side, and Brazil on the other, and, before reaching the Atlantic, is swelled almost to an inland sea. The La Plata, after having by itself, the Pilcomayo, and other tributaries, collected all the southern waters of the Andes, in its south-western course across the continent, receives the Parana, which, after its long course through the valleys of the Brazilian chain, disputes the rank of principal; after which, the united stream, in its junction with the Atlantic, bears the magnitude of a great bay or inlet. There are other rivers which from different and much more limited sources swell to the first magnitude. In North America, the St. Lawrence and the Mississippi proper derive their ample stores not from any mountain chain, but from that cold watery region of forests and swamps which forms the northern prolongation of the great central plain. In South America, again, the Orinoco, though the Andes send to it some considerable tributaries across the Llanos, is formed chiefly during its winding course around the Parime and other ranges that traverse Guiana; yet such is the store lodged in this region of forests and swamps, that it pours by its seven mouths into the Atlantic a flood almost as ample as its greatest rivals. The rivers which flow through the comparatively narrow valleys which intervene on the east and west between the mountain chains and the nearest ocean, cannot reach any great magnitude; though often valuable for navigation, they belong only to the particular district which they traverse. The Coppermine, the Mackenzie, which flow through the north into the Arctic Sea, have a longer course, but, from the barren regions which they traverse, are of no commercial value.

5494. *Lakes* in the most northerly part of the continent are numerous and important. They are not, however, mountain lakes, nor formed by mountain streams. They originate in those great wooded watery plains whence the Mississippi and the St. Lawrence take their rise. The chain of connected lakes on the upper course of the former river, the Ontario, Erie, Huron, and Superior, form the largest bodies of fresh water in the world. Communicating with the sea by the broad channel of the St. Lawrence, and in a country whose population is rapidly increasing, they are becoming of the greatest advantage to commerce. Similar lakes extend northward as far as the Arctic Sea, — the Lake of the Woods, the Athabasca, the Great Slave Lake, the Great Bear Lake; but these, unconnected with any other sea, and frozen for the greater part of the year, cannot serve any commercial purpose. In the heart of the mountain region of Upper Peru is the great lake of Titicaca; but, generally speaking, the Andes, abrupt, lofty, and pouring their waters into deep and narrow valleys, form rivers, and not lakes.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5495. The *Geology* of this continent can only be properly described under the heads of its respective countries.

Subsect. 2. *Botany.*

5496. Of all the quarters of the globe, America offers, unquestionably, the most interesting field to the botanist, extending, as it does, from beyond the Arctic Circle in the north, nearly to the Antarctic Circle in the south, and including a vast range of mountains, the most remarkable in the world, whether considered relatively to their height or their extent; for they literally stretch from one extremity to the other of the whole continent, and in such a manner as to divide it into two very unequal portions, the eastern and the western; thus forming a line of separation between the vegetation of the respective sides, more distinct than that constituted by many degrees of longitude. In relation to other extra-European countries, it may be said that a considerable part of the American territories has been explored by the man of science. North America can boast of Kalm, Bartram, Michaux, Pursh, Bigelow, Torrey, Elliott, Nuttall, Darlington, Boott, and Schweinitz, who have most successfully investigated the botany of the United States. Richardson, Drummond, and the officers of the various arctic expeditions, Lady Dalhousie, Mrs. Sheppard, and Mrs. Percival, have satisfactorily ascertained the vegetable productions of Canada and of the Hudson's Bay Company's territories to the eastward of the Rocky Mountains (or the Cordillera of North America); while the coast of the opposite side, washed by the Pacific Ocean, has been explored by Menzies, Chamisso, Douglas, and Scouler. The botany of Mexico has been described by Humboldt and Scheide. The name of the former highly-gifted individual is intimately connected with the tropical parts of South America, and almost all we know of the plants of the old and extensive kingdom of New Granada is from his labours and those of his companion Bonpland, and their predecessor, Mutis. Peruvian and Chilean botany were long considered the peculiar province of the Spanish literati, and we owe much to the investigations of Ruiz and Pavon; but still more, perhaps, to the indefatigable exertions of Haenke, Cruckshanks, Bertero, Pöppig, Cuming, Mathews, Bridges, Jameson, Hall, and Gillies; the latter, indeed, extending his researches into extra-tropical America, in the latitude of Mendoza, from the Atlantic to the Pacific Oceans. Brazil, whose productions seem inexhaustible, has had the good fortune to be explored by Spix and Martius, Auguste St. Hilaire, Pohl, Mikan, Sellow*, and already affords, perhaps, the most splendid flora of any spot of the globe. Casual, indeed, have been the visiters to the more southern parts and adjacent islands of the vast continent under consideration, and few the observations we can make upon them; nor, indeed, will our limits allow us to enter, as we could wish, upon the more particular nature of the vegetable products of any part of America. We have devoted more space than was contemplated to the former countries of the globe, and on that account are compelled to be more brief in characterising the botany of those that are to follow.

5497. *The most remote land,* the Ultima Thule of the *southern hemisphere,* that has been yet explored, constitutes a group of islands, called New South Shetland, lying off the southern extremity of America, in lat. 65°. "None of these islands," says the enterprising Captain Weddel, "affords any vegetation, save a short straggling grass, which is found in very small patches, on spots where there happens to be a little soil. This, with a moss similar to what is found in Iceland, appears in the middle of January, at which time the islands are partially clear of snow." The eye of the botanist would, perhaps, even here, discover some curious plants; though, undoubtedly, the majority of them, as in the highest northern latitudes, would prove to belong to the families of Mosses and Lichens, and probably are not dissimilar to those of the coldest parts of the South American continent. A few specimens, hastily gathered on the islands, have, indeed, though in a very imperfect state, come into our possession: amongst them, a Polytrichum without fruit. A very beautiful Lichen appears to be common there, bearing large deep chestnut-coloured fructifications. This is described by Dr. Torrey, in *Silliman's American Journal of Science,* under the name of Usnea fasciata (*fig.* 879.), and is figured in *Hooker's Botanical Miscellany,* vol. i. t. 14.; where its great similarity with the Usnea melaxantha of the Andes of Peru, and the U. sphacelata of the arctic regions, is noticed. It is the same Lichen, probably, which is noticed by Lieutenant Kendal, when speaking of Deception Island, one of this groupe, in lat. 64°. "There was nothing," he says, "in the shape of vegetation, except a small kind of lichen, whose efforts seem almost ineffectual to maintain its existence, among the scanty soil afforded by the penguin's dung." Several very interesting plants have recently been gathered on Terra del Fuego and the Straits of Magellan, by the late expedition to survey these coasts, under the command of Captain King, but are unfortunately yet unpublished; so that, although the straits just mentioned are now much frequented by English and American vessels engaged in the seal-trade, almost nothing is known of their vegetation. Sir Joseph Banks landed

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USNEA FASCIATA.

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* While writing this, we learn from the public journals that Mr. Sellow has fallen a sacrifice to his enthusiasm, and that his body was found last December (1831), near the cataracts of the Rio Doce. Pöppig has been more fortunate, and, after successfully exploring the natural history of the western side of South America, has crossed the Cordilleras to the source of the Amazons, and navigated down that great river to its confluence with the Atlantic Ocean.

on the main island of Del Fuego, in the Straits of Le Maire. As he approached the shore, he met with sea-weeds of a most enormous size; one of them in particular (*Fucus giganteus*), having leaves four feet long, and with stems, though not thicker than a man's thumb, yet 120 feet long. On shore, Sir Joseph and his party gathered upwards of 100 species of plants; among them several stems of a Wild Celery and Scurvy Grass (*Apium antarcticum* and *Cardamine antiscorbutica*); the famous Winter's Bark (*Drymis Winteri*) (*fig.* 880.), so called from its having been first discovered in Terra del Fuego by Captain William Winter, the companion of Sir Francis Drake, who in 1579 introduced this plant to the knowledge of European physicians as a valuable tonic, more especially useful in scurvy. It is, however, wholly neglected in the practice of physic; the Canella alba (a tropical aromatic plant, which is totally different from it) having been confounded with it in the shops, and no quantity having been brought to Europe, except as a curiosity, till the return of the ships under Captain Cook. Living individuals of this interesting plant are, we believe, in the garden of Mr. Lowe, at the Clapton nursery. The trees were found to be chiefly of one kind, a species of Birch (*Betula antarctica*), the stem of which is from thirty to forty feet in diameter, so that, in case of necessity, they might supply a ship with topmasts. The Fagus antarctica might likewise be employed as timber. Cranberries were also found in large quantities, both white and red.

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WINTER'S BARK.

5498. *In the Straits of Magellan*, the Evergreen Beech (*Fagus betuloides*) grows in the greatest abundance, and reaches a very large size. Trees of this species, three feet in diameter, are abundant; of four feet there are many, and Captain King says, there is one tree (perhaps the very same noticed by Commodore Byron) which measures seven feet in diameter for seventeen feet above the roots, and there divides into three large branches, each of which is three feet thick. Many of these fine trees, owing, perhaps, to the coldness of the schistose subsoil, are decayed at the heart. Captain King observed but few other timber trees in the Straits, besides the Evergreen Beech just mentioned. Such an appellation only belongs to the other species of Beech and the Winter's Bark. The last, which is also evergreen, is to be found mixed with the first in all parts of the Straits, so that the country and hills, from the height of 2000 feet above the sea to the very verge of high-water mark, are covered with perpetual verdure, which is peculiarly striking in those places where the glaciers descend into the sea; the sudden contrast in such cases presenting to the view a scene as agreeable as it seems to be anomalous. Vegetation, indeed, appears to thrive most luxuriantly, and large, woody-stemmed trees of Veronica and Fuchsia, such as in England are treated as tender green-house plants, are in full flower, within a very short distance of the base of a mountain covered for two thirds downwards with snow, and with a temperature at 36°. What is still more remarkable, these spots are frequented by parrots and humming-birds, the former feeding upon the seeds of the Winter's Bark, while the latter have been seen chirping and sipping the sweets of the Fuchsia and other flowers, after two or three days of constant rain, snow, and sleet, during which the thermometer has been at the freezing point.* The Fuchsia certainly was rarely found but in the sheltered spots: but not so the Veronica (*V. decussata*); for the inlets of the bays on the west side of St. John's Island at Port San Antonio are lined with trees of the latter, growing even in the very wash of the sea. This is the character of the vegetation in the middle of the strait. Towards the western extremity, the decomposition of the granite and other primitive rocks which are found there forms but a poor unproductive soil; so that, although the land is thickly covered with shrubs, they are all small and stunted, the most luxuriant of them seldom attaining a larger diameter than nine or ten inches. On the eastward, clay predominates, and from Cape Negro to the open sea not a tree is to be found; only small shrubs and grasses are seen; the former, thinly scattered over the extensive plains which characterise this region, but the latter are abundant, and, although of a harsh and dry appearance, must be nourishing, for they form the chosen food of numerous and large herds of guanacoes.

Subsect. 3. *Zoology.*

5499. *The Zoology of the New World* is as distinct from that of the Old, as the animals of Australia are from those of Africa and the Indian Islands. There is also a curious analogical resemblance between these two insular continents deserving notice. The northern latitudes of America present us with many of the animals of Europe and Asia; and the faunas of these three divisions unite in the arctic regions. The zoology of Australia, in like manner, assimilates to that of Southern Africa and the Indian Islands; or rather may be said to borrow many of the animal forms common to both. But to what zoological province of the world its southern extremity approximates, is still unknown; and this is precisely the case with America. Upon this question, involving many points of high importance to geographic zoology, we shall not at present dwell; since the only information which might lead to any satisfactory results, namely, a systematic list of the animals of Patagonia and Terra del Fuego, still remains to be supplied.

5500. *The Zoology of America* embraces the productions of such a vast and diversified region, that we must consider it more in detail under three divisions; namely, the arctic or northern, the temperate or intermediate region, and the southern or tropical; a fourth might be made to embrace the regions towards Cape Horn; but the animals of these latitudes, as before observed, are very imperfectly known.

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* See King's Geography of Terra del Fuego and the Straits of Magellan, in the *Journal of the Royal Geographical Society*, vol. i. p. 169.

5501. *In the arctic or northern division* may be included those frigid regions commencing between 55° and 60° of north latitude, and extending to the shores of the Frozen Ocean; and we may name the great Polar Bear (*fig.* 881.) as the typical animal of these regions. The above demarcation, however, is named from conjecture more than from positive evidence; for it is much more natural to conclude that, if any zoological peculiarities attach to the arctic regions of America, they would commence beyond the farthest points in this direction, which are annually visited by the migratory or summer birds of the United States. Many of these are well known to breed in Canada; while the more recent zoological researches of Dr. Richardson, in higher latitudes, prove that the migrations of these birds extend beyond the latitude of 60° N. It seems, therefore, highly probable that the ornithological features of Arctic America are confined to much narrower limits than we have here assigned; and that these limits do not extend farther south than the "Barren Grounds" and "Prairies" of the arctic navigators, those extensive plains which appear to be the chief residence of the Canadian Grouse (*Tetrao canadensis*) (*fig.* 882.), and other species of the family peculiar to this continent. The second volume of the *Northern Zoology* has put us in possession of numerous facts on the ornithological geography of these regions; although much still remains to be discovered before these facts can be generalised. In the mean time we shall avail ourselves of the valuable information already communicated by this enterprising traveller, relative to the ferine inhabitants of Northern and Arctic America.

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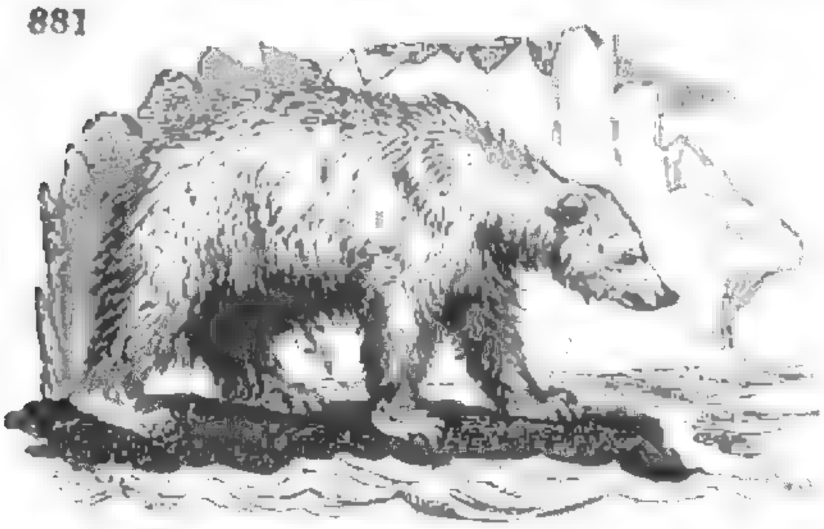

THE WHITE OR GREAT POLAR BEAR.

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CANADIAN GROUSE.

5502. *The quadrupeds of these regions*, according to Dr. Richardson, are geographically distributed in the following districts, under which they will be briefly noticed: — 1. The remote islands of North Georgia. 2. The shores of the Polar Sea, and the Barren Lands. 3. New Caledonia. 4. The Rocky Mountains. 5. The Prairie Lands. 6. The Limestone District. 7. The Eastern District.

5503. (1.) *In the islands of North Georgia*, situated in lat. 75° north, there are only the nine following species of mammiferous animals, of which five are carnivorous and four herbivorous. The first two are only summer visiters; they arrive on Melville Island towards the middle of May, and quit it, on their return to the south, in the end of September.

Bos moschatus.	Musk Ox.
Cervus Tarandus.	Carabou Deer.
Ursus maritimus.	Polar Bear.
Gulo luscus.	Wolverine.
Mustela erminea.	The Ermine.
Canis lupus.	American Wolf.
Vulpes lagopus.	The Arctic Fox.
Georychus hudsonius.	Hudson's Bay Leming.
Lepus glacialis.	Polar Hare.

5504. (2.) *The quadrupeds of the shores of the Polar Sea* are the same as those inhabiting the Barren Grounds. This name has been applied by the arctic voyagers to that north-east corner of the American continent bounded to the westward by the Coppermine River, the Great Slave and other lakes, to the southward by the Churchill or Missinippi River, and to the northward and eastward by the sea. The rocks of this district are primitive, rising only into low hills, with a few stunted shrubs in the valleys; but the soil in general is a dry coarse sand, so poor as to afford no other vegetation than lichens. These dreary and dangerous wastes are destitute of fur-bearing animals. The abundance of lichens supply the favourite food of the small Carabou, or American Reindeer, and the Musk Ox, both of which animals are here common. The following quadrupeds are likewise found in the Barren Grounds: —

Ursus arctos? americanus.	Barren Ground Bear.
Ursus maritimus.	Polar or Sea Bear.
Gulo luscus.	Wolverine.
Putorius erminea.	Stoat, or Ermine.
Putorius Vison.	Vison Weasel.
Lutra canadensis.	Canadian Otter.
Canis lagopus.	Hare Indian Dog.
Vulpes fuliginosa.	Sooty Fox.
Fiber zibethicus.	The Musquash.
Arvicola xanthognathus.	Yellow-cheeked Mouse.
Arvicola pennsylvanicus.	Wilson's Mouse.
Arvicola borealis.	Northern Mouse.
Georychus trimucronatus.	Back's Leming.
Georychus hudsonius.	Hudson's Bay Leming.
Georychus grœnlandicus.	Greenland Leming.
Arctomys Parryi.	Parry's Marmot.
Lepus glacialis.	Polar Hare.

The first eight on this list are more or less carnivorous or piscivorous; and prey much upon the remainder, which are herbaceous.

5505. (3.) *The district of New Caledonia*, on the west of the Rocky Mountains, was not visited by Dr. Richardson; but, from the notes of Mr. Harmon, its zoology presents some peculiarities. The summer is never very warm, and in winter the snow is sometimes five feet deep. This, Mr. Harmon imagines, is the reason why none of the large animals, except a few solitary ones, are to be met with. The quadrupeds are not numerous. The Moose Deer is scarce, and the Black Bear more so. The lesser species consist of Beavers, Otters, Lynxes, Fishers, Martens, Minks, Wolverines, Foxes of different kinds, Badgers, Polecats, Hares, and a few Wolves. The birds are Swans, Geese, Cranes, Ducks of several kinds, and Partridges. The Canadian Goose (*Anas canadensis*) (*fig.* 883.) is here called a Bustard: it appears to be common, and has long been domesticated in both continents. All the lakes and rivers are well furnished with excellent fish.

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CANADIAN GOOSE.

5506. (4.) *The animals found on the Rocky Mountains* are thus enumerated by Dr. Richardson: —

Vespertilio subulatus. Say's Bat.
Sorex palustris. American Marsh Shrew.
Ursus americanus. American Black Bear.
Ursus ferox. Grisly Bear.
Gulo luscus. Wolverine.
Putorius erminea. Stoat, or Ermine.
Putorius Vison. Vison Weasel.
Mustela martes. Pine Marten.
Mustela canadensis. Pekan, or Fisher.
Lutra canadensis. Canadian Otter.
Felis canadensis. Canadian Lynx.
Castor fiber. American Beaver.
Fiber zibethicus. The Musquash.
Arvicola riparius. Bank Meadow-Mouse.
Arvicola xanthognathus. Yellow-cheeked Mouse.
Arvicola novæ-boracensis. Sharp-nosed Mouse.
Georychus helvolus. Tawny Leming.
Neotoma Drummondii. Rocky Mountain Leming.
Mus leucopus. American Field Mouse.
Arctomys empetra. Quebec Marmot.
Arctomys pruinosus. The Whistler.
Arctomys Parryi. Parry's Marmot.
Arctomys guttatus. Spotted Marmot.
Arctomys lateralis. Say's Marmot.
Tamias quadrivittatus. Four-banded Squirrel.
Tamias hudsonius. Chickaree Squirrel.
Pteromys sabrinus (alpina). Severn River Flying Squirrel.
Hystrix pilosus. Canada Porcupine.
Lepus americanus. American Hare.
Lepus glacialis. Polar Hare.
Lagomys princeps. Little Chief Hare.
Cervus alces. Moose Deer.
Cervus tarandus? Carabou Deer.
Cervus macrotis. Black-tailed Deer.
Capra americana. Rocky Mountain Goat.
Ovis montana. Rocky Mountain Sheep
Bos americanus. American Bison.

5507. *The country lying between the Rocky Mountains and the Pacific* is in general hilly; but the wide plains on the upper arms of the Colombia are inhabited by the same kind of animals as occur on the Missouri plains. These are principally as follows: —

Ursus ferox. Grisly Bear.
Canis latrans. Prairie Wolf.
Vulpes cinereo-argentatus. Kit Fox.
Meles labradoria? The Braro.
Cervus macrotis var. a. Black-tailed Deer.
Cervus leucurus. Long-tailed Deer.
Aplodontia leporina. The Lewellel.

5508. *The Bisons* are supposed to have found their way across the mountains very recently; they are still comparatively few, and very locally distributed.

5509. (5.) *The fifth geographic district* comprehends those extensive plains, termed *Prairies*, lying between the foot of the Rocky Mountains and the Limestone District subsequently noticed. These lands are in general level, and the traveller, when crossing them, must direct his course by the compass or by the stars, as an Arab would traverse the Great Desert. The soil, however, although dry and sandy, is tolerably fertile; as it supplies a thick sward of grass, which furnishes food to immense herds of the Bison. This abundance of pasture renders these plains the favourite resort of various ruminating animals, and the Buffalo and Wapiti abound. The following list will better exhibit these peculiarities: —

Ursus ferox. The Grisly Bear.
Canis latrans. The Prairie Wolf.
Vulpes cinereo-argentatus. Kit Fox.
Arctomys ludovicianus. The Wistonwish.
Arctomys Richardsonii. Tawny Marmot.
Arctomys Franklinii. Franklin's Marmot.
Arctomys Hoodii. Leopard Marmot.
Geomys talpoides. The Mole Sand Rat.
Lepus virginianus. Prairie Hare.
Equus caballus. The Horse.
Cervus alces. Moose Deer.
Cervus strongyloceros. The Wapiti.
Cervus macrotis. Black-tailed Deer.
Cervus leucurus. Long-tailed Deer.
Antelope furcifer. Prong-horned Antelope.
Bos americanus. American Bison.

5510. *The fur-bearing animals* also exist in the belts of woods, which skirt the rivers flowing through the plains above-mentioned.

5511. (6.) *The sixth district* is a very flat limestone deposit, bounded by a remarkable chain of rivers and lakes, among which are Lake Winnipeg, Beaver Lake, and the middle portion of the Missinippi River, &c., all to the southward of the Methy Portage; while its northern confines are marked by the Elk River, Great Slave Lake, Marten Lake, &c. The whole of this district is well wooded, and yields the fur-bearing animals in abundance; the following are found in this tract: —

Vespertilio pruinosus. Hoary Bat.
Sorex palustris. American Marsh Shrew.
Sorex Forsteri. Forster's Shrew.
Condylura longicauda (South parts only). Long-tailed Shrew.
Ursus americanus. American Black Bear.
Gulo luscus. The Wolverine.
Putorius vulgaris. Common Weasel.
Putorius erminea. Stoat, or Ermine.
Putorius Vison. Vison Weasel.
Mustela martes. Pine Marten.
Mustela canadensis. Pekan, or Fisher.
Mephitis americana. Hudson's Bay Skunk.
Lutra canadensis. Canadian Otter.
Felis canadensis. Canadian Lynx.
Castor fiber americanus. Amer. Beaver.
Fiber zibethicus. The Musquash.
Arvicola xanthognathus. Yellow-cheeked Mouse.
Arvicola pennsylvanicus. Wilson's Meadow Mouse.
Mus leucopus. American Field Mouse.
Meriones labradorius. Labrador Jumping Mouse.
Arctomys empetra. Quebec Marmot.
* Arctomys Hoodii. Leopard Marmot.
* Sciurus Lysteri. The Hackee.
* Sciurus quadrivittatus. Four-banded Pouched Squirrel.
Sciurus Hudsonius. The Chickaree.
* Sciurus Niger. Black Squirrel.
Hystrix pilosus. Canada Porcupine.
Lepus americanus. American Hare.
Cervus alces. Moose Deer.
* Cervus Tarandus (sylv.) The Wood Carabou Deer.
Bos americanus. American Bison.

5512. *Those marked thus* * are but partially distributed. To this list must be added different varieties of the American Wolf, named the Grey, the Black, the Dusky, and the Pied: together with three varieties of Fox; namely, the Common American, the Cross, and the Black or Silver.

5513. (7.) *The seventh or eastern district* is formed by a belt of low primitive rocks, extending from the Barren Grounds to the northern shores of Lake Superior. It is about 200 miles wide, and, as it becomes more southerly, it recedes from the Rocky Mountains. It differs from the Barren Grounds principally in being clothed with wood. It is bounded to the east by a narrow stripe of limestone, beyond which there is a flat, swampy tract, forming the western shores of Hudson's Bay: its western limits are the limestone deposit last mentioned, and its native animals are these: —

Sorex palustris. American Marsh Shrew.
Sorex Forsteri. Forster's Shrew.
Scalops (sp. ignota). An unknown species.
Ursus americanus. American Black Bear.
Ursus maritimus. Polar Bear.
Gulo luscus. The Wolverine.
Putorius vulgaris. Common Weasel.
Putorius erminea. Stoat, or Ermine.
Putorius Vison. Vison Weasel.
Mustela martes. Pine Marten.
Mustela canadensis. Pekan, or Fisher.
Mephites americana. Hudson's Bay Skunk.
Lutra canadensis. Canada Otter.
Felis canadensis. Canadian Lynx.
Castor fiber americanus. American Beaver.
Fiber zibethicus. The Musquash.
Arvicola xanthognathus. Yellow-cheeked Mouse.
Arvicola pennsylvanicus. Wilson's Mouse.
Georychus hudsonius. Hudson's Bay Leming.
Mus leucopus. American Field Mouse.
Meriones labradorius. Labrador Jumping Mouse.
Arctomys empetra. Quebec Marmot.
Sciurus Lysteri. The Pouched Squirrel.
Sciurus hudsonius. The Chickaree Squirrel.
Pteromys sabrinus. Severn River Flying Squirrel.
Lepus americanus. American Hare.
Cervus alces. The Moose Deer.
Cervus Tarandus (sylv.). The Wood Carabou.

5514. *To these must be added* several varieties of the American Wolf, with the four races of Foxes, called the Arctic, American, Cross, and Black. There seems, also, to be an undetermined species of badger. The Polar Bear does not go farther inland than about 100 miles over the swampy land which skirts the coast.

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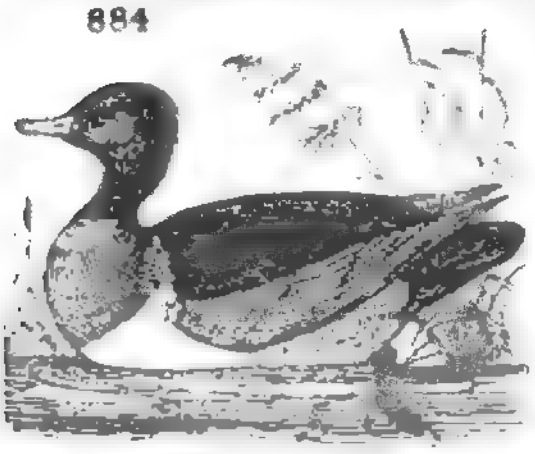

AMERICAN TUFTED DUCK.

5515. *To the remaining tribes of the animal kingdom*, as the birds, insects, fish, &c. of Northern America, we can devote but little space; nor has Dr. Richardson yet given to the world the results of his valuable geographic observations on these classes. It will therefore be sufficient to observe, that most of the European Arctic birds occur in the same latitudes in the American seas. Some, however, are found in these regions which are altogether peculiar to the New World.

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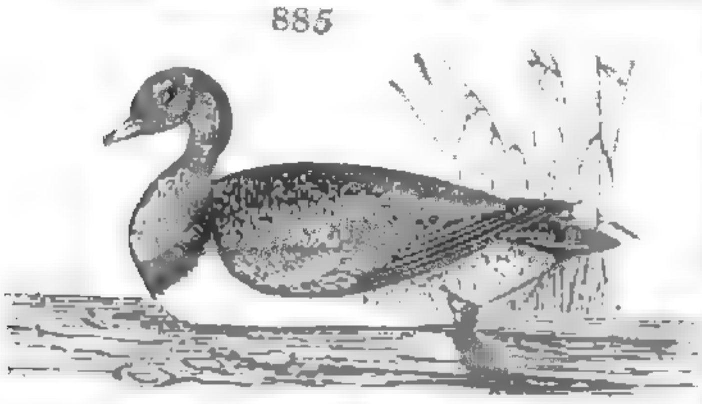

RUDDY DUCK.

5516. *Among these latter birds may be noticed* the American Tufted Duck (*Anas rufitorques*) (*fig.* 884.), which much resembles the crested duck of Europe: the head, neck, breast, and upper parts are black, and there is a chestnut collar round the neck. The Ruddy Duck (*fig.* 885.), so called from its reddish-brown colour: the crown and neck above is black, the sides of the head and throat white. But the most elegant of this family is the Pied Duck (*Anas labradora*) (*fig.* 886.), whose plumage is prettily varied with deep black and pure white: it is a truly Arctic bird, being very rare in the middle states, even during winter. Vast flocks of the different sorts of Geese, Ducks, Gulls, &c., common to Arctic Europe, are spread over the whole of these regions. Yet, notwithstanding this similarity in the aquatic tribes, the land birds of the two polar regions are more distinctly marked. The European Great Snowy Owl, the short-eared and the long-eared species, and most of our Falcons, occur, indeed, in the high American latitudes: but, with the exception of the Crow and the Magpie, there are few among the numerous tribes of perching birds which appear to inhabit both continents. The river fish are also very different.

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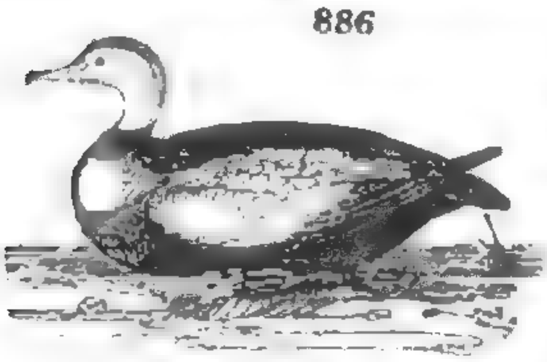

PIED DUCK.

5517. *The second grand division of American Zoology* may be supposed to commence towards Canada, and terminate with the Gulf of Mexico; thus embracing the most temperate and healthful regions of the New World. In regard to its ferine inhabitants, little can be said; for, although the species have been described in systems, no traveller has yet taken those comprehensive views of their geographic distribution, which give such an interest and value to our preceding observations on the northern animals. Many of the northern quadrupeds range over a large portion of these temperate latitudes, while the others, not found towards the Pole, do not exhibit any striking peculiarities in the zoological distribution of genera. But the ornithology is more distinctly marked. Numerous tribes of insectivorous birds, unknown in the temperate latitudes of the Old World, or the equinoctial regions of the New, spread themselves over this fruitful portion of America, either as permanent residents or as annual migrators from the more genial shores of the Mexican Gulf. The most celebrated of these is the Mocking-Bird (*Orpheus polyglottos* Swains.) (*fig.* 887.); plain, indeed, in colours, yet endowed with a perfection of voice far surpassing any other in creation. Towards the beginning of May, when the insect world has just begun to assume life and activity, innumerable flocks of Warblers, Flycatchers, Woodpeckers, Starlings, Thrushes, and other families, appointed to keep the noxious insects within due limits, make their appearance in the United States; prodigiously increasing the usual number of the feathered inhabitants, and making the woods resound with their notes. The process of incubation finished, and the young

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MOCKING-BIRD.

sufficiently grown to undertake their autumnal passage, nearly the whole return to winter in latitudes less cold, and where their animal food does not fail. Very many of these species have been traced to the warm shores and the table-land of Mexico; others appear in some of the West India Isles, the Bahamas, &c.; but not more than one or two have yet been detected on the Terra Firma of Equinoctial America. The birds of game, in comparison with those of the northern regions, are few and insignificant; always excepting the Great American Turkey, for it is this part of the New World which first gave us this noble addition to our farm-yards. Increase of population has had its usual effect, and has long driven these birds from many of their former haunts; they still, however, are to be found in large flocks in the back settlements of Louisiana, &c.

5518. *Of other animals*, there are few which are the same as those of Europe. The Fish are numerous; but no one species, like the cod of Newfoundland, would seem to occur in sufficient profusion to create a distinct branch of commerce. Reptiles, in point of variety, seem also to abound. Morse has enumerated nearly forty kinds, found in the United States; and Virginia, in particular, produces great numbers. The most formidable of these are the well-known Rattlesnakes, of which there now appears to be more than one species: some few of the others are venomous, but none can be compared, in bulk, with the monstrous serpents of South America. The savannas and swamps abound with immense Bull-frogs, five times the size of the European; while a particular species of Alligator is said to occur in the southern rivers.

5519. *The third great division*, under which we are to view the Zoology of America, comprises the whole of the Southern Peninsula, from the Gulf of Mexico to the extremity of Paraguay, beyond which lie countries never visited by the scientific naturalist. No words can do justice to the splendour, the diversity, or the magnificence of the productions of this luxuriant region. Nature every where teems with life, under new and captivating forms, unknown to the naturalist who may be familiar only with the animals of milder climates, or of those distributed in the higher latitudes of the American Continent. This change becomes apparent on the table-land of Mexico; although it may be first traced in the southern parts of Carolina, Florida, and Southern Louisiana.

5520. *In respect to the Quadrupeds* of these regions, our information is brief, vague, and unsatisfactory. Hernandez was sent in the golden days of Spain, towards the close of the sixteenth century, and furnished by Philip II. with an ample salary, to investigate the productions of Mexico; but although he has been styled by some the Pliny of New Spain, his talents were below mediocrity, and both his authority and writings have long ceased to be regarded or quoted. Neither will the brief notices found in Clavigero, and writers of the same period, conduce to any solid information. The tribe of Monkeys begin to appear in Mexico, from whence two species have been recently received; while the increase of the family, both in numbers and variety, is very observable the nearer we approach the Torrid Zone. The different Lynxes of North America give place to the Jaguars, Pumas, Ocelots, and long-tailed Tiger-cats; the two former being the most formidable of the South American ferocious quadrupeds. Bears appear to be unknown, and the largest wild animals are probably the Tapirs. Deer and Antelopes are sparingly scattered; for in this respect America offers a singular contrast to the opposite continent of Africa. Sloths and Armadilloes, on the other hand, characterise the hot countries of the New World, of which the Great Ant-eater (*fig.* 888.) is also a native; while bats, of almost innumerable species, swarm in the brief twilight of a tropical evening.

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GREAT ANT-EATER.

5521. *The Ornithology of Tropical America*, as a whole, certainly exceeds, in splendour, that of any other region of the globe. This, in fact, is the chosen metropolis of the Humming-birds, of which near one hundred distinct species are already known to naturalists. Of these, one only (*Trochilus colubris* L.) is generally known throughout North America, where it appears to range over the whole of the United States, returning to the south in autumn. Cold, however, does not appear to affect these little creatures so much as might have been imagined; for Sir Joseph Banks discovered a lovely species (the Ruff-necked, *Selasphorus rufus* Swains.) (*fig.* 889.) in the chilly climate of Nootka Sound. The late Mr. W. Bullock, jun. assured us that, in Mexico, he has travelled through woods of fir, with snow upon the ground, and Humming-birds on the trees. In

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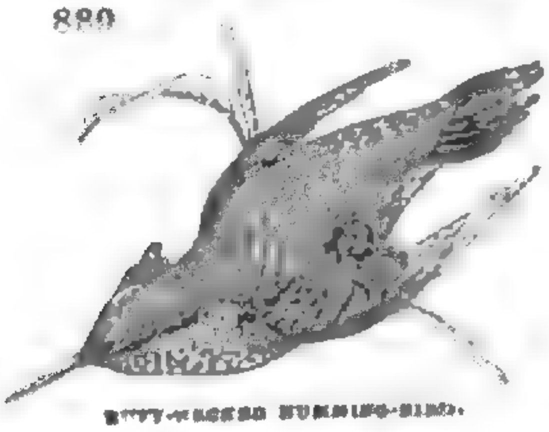

RUFF-NECKED HUMMING-BIRD.

Brazil, where the thermometer is seldom below 68°, this beautiful tribe is particularly abundant; and Azara describes many others, peculiar to Paraguay. Another group of splendid little Honeysuckers (*Nectarinea* Ill.), but of which only three or four species are yet known, represent, on this continent, the Sun-birds of Africa (*Cinnyridæ*), and the Honey-feeders of Australia (*Melliphagidæ*).

5522. *The insectivorous Shrikes* (*Thamnophilinæ* Sw.) first appear in the warm humid woods of Carolina, from whence we derive two species. Several others occur in the West India Islands, but hitherto they have not been detected on the table-land of Mexico. As we approach Cayenne, the species rapidly increase, and continue in undiminished numbers, and in great variety, to the most northern parts of Paraguay that have been yet explored. This extensive family, together with the Ant Thrushes (*Myotherinæ* Sw.), seem peculiarly destined to devour insects concealed in foliage; while those tribes which venture beyond are exposed to the numerous tyrant Fly-catchers, who are continually darting after insects which fly past the particular station which each individual chooses for itself. In these climates, ants are the universal destroyers; but, had they no enemies, their numbers would increase to a frightful extent. The Ant Thrushes are therefore the counteracting agents: these little birds live almost entirely upon the ground, in thick forests, and are perpetually feasting upon these insects.

5523. *The Parrots*, of which only one species, the Carolina Parrot, is found throughout North America, constitute a most striking characteristic of the southern regions. Several species occur on the Mexican Cordilleras, but their numbers increase in the less elevated provinces; and, in the low lands of Guatimala, a recent traveller appears to have seen flocks of splendid Macaws. Others, of the most brilliant plumage, spread over the whole of Brazil, and even extend to latitudes south of Paraguay. The common green and yellow fronted Parrots seen in this country are all brought from Tropical America, and pass by the general name of Amazonian Parrots. The grey and red-tailed species are nearly the only ones found on the opposite shores of the African continent, a striking instance of the total dissimilarity between the zoological productions of the two regions. The little blue-winged or Passerine Parrot of Brazil (*fig.* 890.) is the smallest of its race; it flies in large flocks, and is not bigger than a sparrow. The abundance of this tribe in the New World is in a great measure explained by this continent being so well clothed with forests and fruit-bearing trees, upon which the whole of the Parrot family depend for food. On the other hand, the chief characteristic of Africa is its bare, sandy soil, and hence the fruit-eating birds of that continent are comparatively few.

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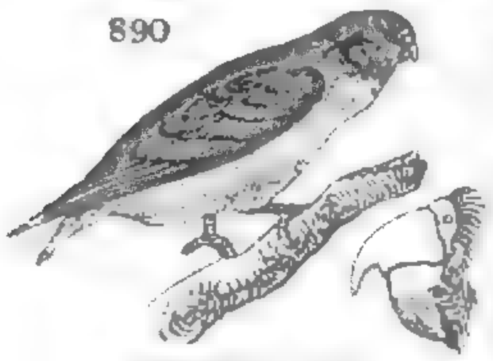

BLUE-WINGED PARROT.

5524. *The Toucans* occupy a prominent station in the Ornithology of South America, and extend from Mexico to the southern extremity of Brazil: they are omnivorous birds, feeding both upon animal and vegetable matter. Their enormous bills are nevertheless very light, and, being vascular within, admit a great developement being given to the organs of smell. By this power, they discover the nests and eggs of other birds, which they are continually plundering. The Red-billed Toucan (*fig.* 891.) is one of the largest species, having the body black and the throat of a creamy whiteness. The Trogons, the Jacamas, the Hermit Birds (*Monassa* Vieil.), and the Puff-backs (*Tamatia* Cuv.), are all confined to this continent, and feed upon the hosts of insects which always accompany an exuberant vegetation. While these birds are appropriated to winged insects, the Woodpeckers and large Scansorial Creepers (*Dendrocolaptes* Ill.) climb the trunks of trees, and devour those tribes which lurk in the crevices or beneath the bark. Both are particularly abundant, and the latter occur in no other part of the world.

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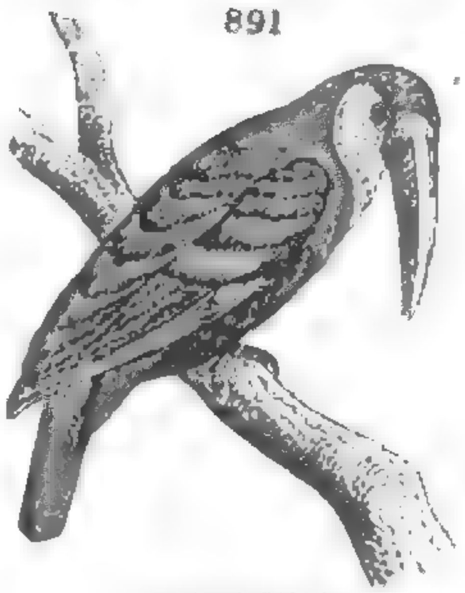

RED-BILLED TOUCAN.

5525. *Among the frugivorous tribes*, we must notice the numerous and beautiful family of Tanagers (*Tanagrinæ* Sw.), as peculiar to America: some few species are among the summer visiters of the Northern States, but the chief metropolis of the family is in the equinoctial latitudes, where the vast tracts of table-lands, thinly but universally clothed with low trees and shrubs, supply those small berries and fruits upon which they feed. In the more lofty woods, bordering on the coast, the traveller meets with groves of trees, thickly hung with the long purse-shaped nests of the *Icterinæ* or Hang-nest Orioles (*fig.* 892.) they form a striking feature in Brazilian scenery, and are woven with great skill by different species, variously ornamented with plumage of a black and golden colour. These birds are chiefly found in the hottest latitudes, although three species are distributed in the United States: like the Tanagers, they live both upon insects and fruits. The Warblers (*Sylvicolæ* Sw.), so abundant in the United States, appear almost excluded from latitudes south of

Mexico. The Stonechats and Wagtails are likewise unknown; the first being supplied by the Ground-peckers (*Opethiorhynchus* Tem.), and the latter by the Water-chats (*Fluvicolinæ* Sw.).

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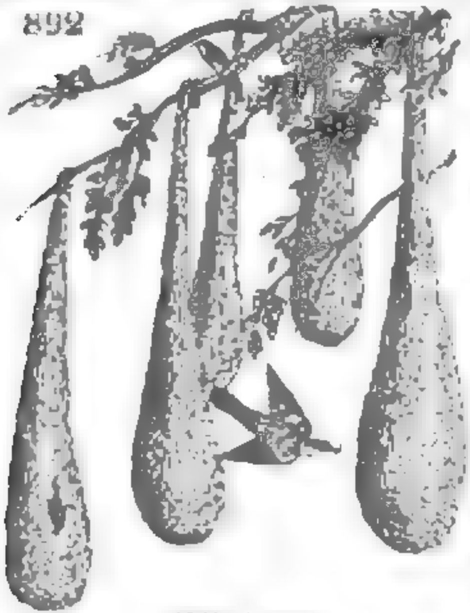

ORIOLE NESTS.

5526. *The most decided fruit-eating birds* are of those superb genera composing or representing the Chatterers (*Ampelidæ* Sw.). Many are as big as crows, and exhibit singular deviations from the usual form of birds. One (*Cephalopterus ornatus* Geoff.), the Umbrella Chatterer (*fig.* 893.), has a large crest of feathers on its head, resembling an umbrella. Another has a pendulous wattle in front, which can be made to assume something of the appearance of the horn of the Unicorn. A third has a naked throat with numerous fleshy caruncles hanging downward; and a fourth is completely bald, with long feathers round its neck, like the mane of a lion. Nothing would be more curious or interesting than the knowledge of the habits and economy of such strangely formed birds; but all this, at present, is a mystery. We only know that they live in the deep recesses of the forests, and that they are sometimes seen perched upon the topmost branches of the loftiest trees, uttering a loud and strange noise, on the rising and setting of the sun.

5527. *The genuine fruit-eaters*, however, form one of the most beautiful groups in tropical ornithology. There are many species, mostly of the size of a thrush, but variegated with the richest shades of azure, purple, and crimson: they are solitary and silent, and must be sought for far from the abodes of men. Others, called Manakins (*Piprinæ* Sw.), are much smaller than sparrows, and live in little flocks in the damp woods, feeding only upon soft berries. Several are conspicuous for their beautiful crimson crests, while one, the Puff-throated Manakin (*Pipra Manacus* L.) (*fig.* 894.), is remarkable for the feathers on the throat being lengthened like a beard.

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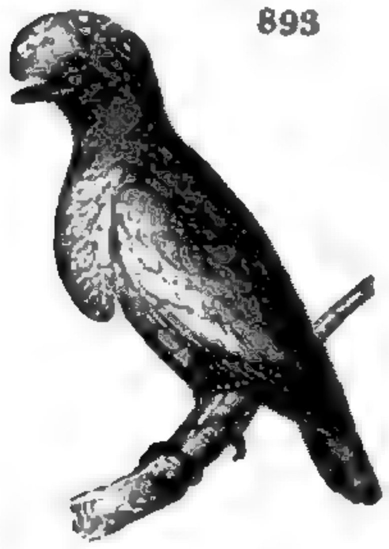

UMBRELLA CHATTERER.

5528. *The rapacious birds* are numerous and formidable: the chief is the famous Condor of the Andes. The King of the Vultures is conspicuous for its colours, while two or three others, of a black colour, are every where found so soon as a carcase is left unburied. The Destroying Eagle (*Aquila destructor* Sw.) exceeds all others in strength; and there are numerous smaller races of Buzzards, Kites, and Falcons, totally different from those of Europe and Africa.

5529. *The gallinaceous birds* of Tropical America materially differ from those of the north. A magnificent species of Turkey is peculiar to the forests of Honduras; while, towards the equinoctial line, we find the Curassow Birds, Penelopes, Guans, and other large-sized genera, which might, no doubt, be domesticated by the natives. Grouse, Bustards, or Pheasants are not known, and Partridges are very scarce; but the Tinamou occur in great variety. Several of the species exceed the largest dunghill fowl, and the flesh of all is most delicious eating; their tails are so short that they appear to have none.

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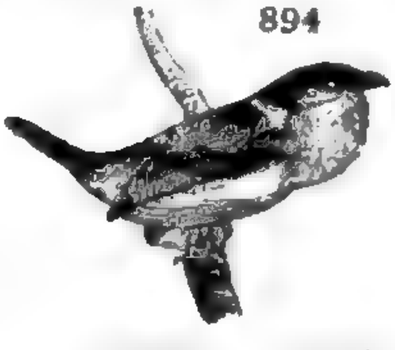

PUFF-THROATED MANAKIN.

5530. *The water birds* are few, from the absence of large lakes, and the partiality of these tribes to more temperate regions. The marshes are frequented by Jacanas, or Spur-winged Water-hens (*fig.* 895.), several sorts of Tiger-bitterns, and a few ducks, of species not known in the Northern States. The lakes of Mexico, however, appear to be profusely stocked with Waterfowl, comprising many of those common species so abundant in Europe and Northern America. But we must no longer dwell upon this charming portion of American Zoology, the investigation of which occupied two of the happiest years of our life.

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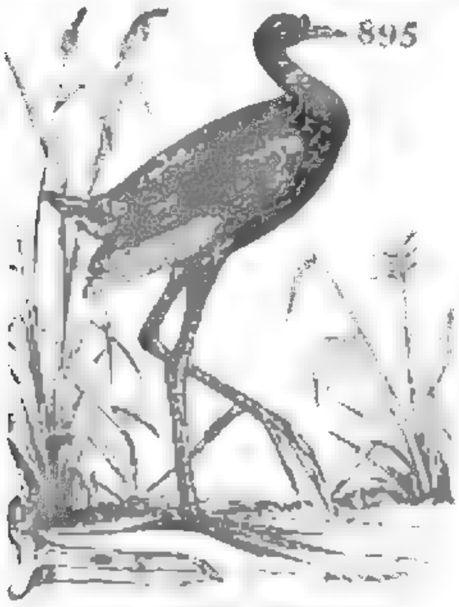

SPUR-WINGED WATER-HEN.

5531. *To enumerate even the tribes of splendid insects*, which render the Entomology of Tropical America far superior to that of any region in the world, would, in this slight sketch, be impossible. As this continent exhibits a more varied and dense vegetation than any other, so are its insect productions more numerous and brilliant, particularly in those tribes which, like the Butterflies and Moths, derive their food from leaves and flowers. The Diamond Beetle (*Curculio* *imperialis* L.) (*fig.* 896.) is one of the most splendid of insects; and, before Brazil was accessible to European travellers, was so rare as to be sold at a high price. Carnivorous insects, and also such as feed upon dead animal matter, are very thinly dispersed. Ants are the universal removers of all such offensive substances as are too small for the food of Vultures; and the diminutive size of these little agents is amply compensated by the inconceivable myriads of their numbers. The Cochineal is nearly the only insect which has been turned to great commercial account. The Honey Bee of Europe is unknown, but there are several wild species of this family whose honey combs are formed in trees, and much sought after by the natives.

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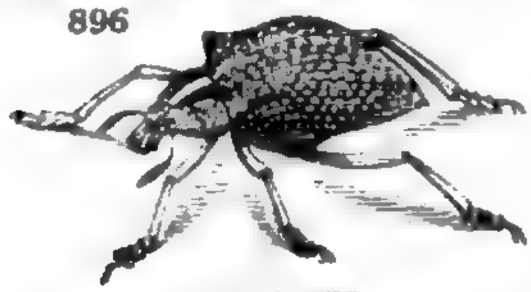


DIAMOND BEETLE.

5532. *Of domestic animals* the list is scanty; the Horse and Mule, originally brought by the Spaniards from the old continent, are the most universally used in the new, where they have multiplied prodigiously. The immense numbers of wild oxen in the plains of Buenos Ayres are well known: these also are of European descent. Nor does Southern America produce any native animal of equal size, the largest being the Tapirs, while the Lama and three or four kindred species are principally confined to the Andes of Peru and Chile.

5533. *The genera and sub-genera of quadrupeds* more peculiar to the New World are these: —

Monkeys.
Ateles *Geoff.*
Lagothrix *Humb.*
Mycetes *Ill.*
Cebus *Cuv.*
Callithrix *Ill.*
Aotu *Ill.*
Pithecia *Ill.*
Hapale *Ill.*

Bats.
Phyllostoma *Cuv.*
Vampirus *Spix*
Glossophaga *Geoff.*
Artibius *Leach*
Monophyllus *Leach*
Mormoops *Leach*
Thyroptera *Spix*
Noctilio *Geoff.*
Proboscidea *Spix*
Molossus *Geoff.*
Ursus *Lin.*
Procyon *Cuv.*
Nasua *Desm.*
Cercoleptes *Cuv.*
Meles *L.*
Gulo *L.*
Didelphis *L.*
Cheironectes *Cuv.*
Castor *L.*
Echymys *Cuv.*
Myopotamus *Desm.*
Arctomys *Cuv.*
Spermophilus *Cuv.*
Pteromys *Cuv.*
Spiggurus *Cuv.*
Erethizon *Cuv.*
Hydrochaerus *Erx.*
Aperea *Marcg.*
Dasyprocta *Ill.*
Caelogenus *Cuv.*
Bradypus *L.*
Dasypus *L.*
Myrmecophaga *L.*
Dicotyles *Cuv.*
Tapirus *Ill.*
Auchenia *Ill.*
Antelopes. (Cervus Antilope *L.*)
Alce *Ham. Smith*
Rangifer *Smith*
Elaphus *Smith*
Mazama *Smith*
Subulo *Smith*
Dicranocerus *Smith*
Aplocerus *Smith*

5534. *The genera and sub-genera of birds* belonging to the American Continent, independent of such as occur in Europe, Asia, or Africa, are as follows: —

Rapacious Birds.
Vultur *L.*
Polyborus *Vieil.*
* Harpyia *Cuv.*
* Morphnus *Cuv.*
Cymindis *Cuv.*
* Harpagus *Vig.*
* Elanus *Lav.*

Perching Birds. Fissirostres.
Prionites *Ill.*
Trogon *L.*
Galbula *L.*
* Monassa *Vieil.*
Tamatia *Cuv.*
Chaetura *Stev.*

Tenuirostres.
Trochilus *L.*
Cynanthus *Sw.*
Phaethornis *Sw.*
Campylopterus *Sw.*
Lampornis *Sw.*
Nectarinea *Ill.*

Scansores, or Climbers.
Dendrocolaptes *Ill.*
Xiphorhynchus *Sw.*
Dendroplex *Sw.*
Anabates *Tem.*
Xenops *Ill.*
Sittasomus *Sw.*
Lochmias *Sw.*
Sclerurus *Sw.*
Oxyurus *Sw.*
* Thriothorus *Vieil.*
Oxyrhynchus *Tem.*
Malacolophus *Sw.*
Melanerpes *Sw.*
Colaptes *Sw.*
Asthenurus *Sw.*
Macrocercus *Vieil.*
Saurothera *Vieil.*
Crotophaga *L.*
Ramphastos *L.*
Pteroglossus *Ill.*

Sturnidae. Starlings.
Quiscalus *Vieil.*
Scaphidurus *Sw.*
Icterus *Sw.*
Xanthornis *Sw.*
Cassicus *Sw.*
Agelaius *Vieil.*
* Sturnella *Vieil.*

Fringillae. Finches.
* Guiraca *Sw.*
Tiaris *Sw.*
Ammodramus *Sw.*
Pipilo *Vieil.*

Tanagrinae. Tanagers.
* Tardivola *Sw.*
Tanagra *L.*
* Ramphopis *Vieil.*
* Lamprotes *Sw.*
* Nemosia *Vieil.*
* Oinobas *Sw.*
* Pyranga *Vieil.*
Tachyphonus *Vieil.*
* Arremon *Vieil.*
Euphonia *Vieil.*
Aglaia *Sw.*
Phytotoma *Mol.*
Loxia *L.*
* Corythus *Cuv.*

Sylviadae. Warblers.
Culicivora *Sw.*
Synalaxis *Vieil.*
* Sialia *Sw.*
Opetiorhynchus *Tem.*
Sciurus *Tem.*
Trichas *Tem.*
Setophaga *Tem.*
Sylvicola *Sw.*
* Vermivora *Sw.*
* Mniotilta *Sw.*
* Zosterops *V. & H.*
Parus *Lin.*
* Hylophilus *Tem.*
* Egithina *Vieil.*

Merulidae. Thrushes.
Donacobius *Sw.*
Icteria *Vieil.*
Orpheus *Sw.*
Grallaria *Vieil.*
Myothera *Ill.*
* Formicivora *Sw.*
* Drymophila *Sw.*
* Urotomus *Sw.*
Dasycephala *Sw.*

Laniadae. Shrikes.
Thamnophilus *Vieil.*
Cyclaris *Sw.*
Tyrannus *Bris.*
* Saurophaga *Sw.*
* Milvulus *Sw.*
* Tyrannula *Sw.*
* Pulliogonys *Sw.*

Todidae. Fly-catchers.
Fluvicola *Sw.*
Nengetus *Sw.*
Alecturus *Vieil.*
* Platyrhynchus *Desm.*
Todus *Desm.*
Psaris *Cuv.*
Pachyrhynchus *Sw.*
Querula *Vieil.*

Ampelidae. Fruit-eaters.
Procnias *Hoff.*
Phibalura *Vieil.*
Ampelis *L.*
Casmorhynchus *Tem.*
* Gymnocephalus *Geoff.*
* Cephalopterus *Geoff.*
Rupicola *Cuv.*
Pipra *L.*
Vireo *Vieil.*

Columbidae. Pigeons.
* Ectopistes *Sw.*
* Peristera *Sw.*
* Chamepelia *Sw.*

Rasores. Gallinaceous Birds.
Meleagris *L.*
Odontophagus *Vieil.*
Ortyx *Stev.*
Crypturus *Ill.*
Rhea *Brisson.*
Ourax *Cuv.*
Crax *L.*
Penelope *Mer.*
Ortalida *Mer.*
Opisthocomus *Hoff.*

Grallatores. Wading Birds.
Phoenicophia *L.*
Aramus *Vieil.*
Cancroma *L.*
Mycteria *L.*
Ereunetes *Ill.*
Eurypyga *Ill.*
Palamedia *L.*

5535. *The number of ornithological groups*, which thus belong exclusively to the American continent, appears greater than those of any other geographic division of the globe; but it is proper to remark, that very many appear to be sub-genera, besides those which have been actually reduced to that station (marked *): on the other hand, there are several genera, defined by us in another work (*North. Zool.* vol. ii.) that are here omitted for want of space.

Sect. III. *Historical Geography.*

5536. *The history of America*, prior to its discovery by Europeans, can be the subject of little more than conjecture. It appeared long a mystery how this continent, separated from the Old World by oceans of such vast breadth, should have been found peopled from one extremity to the other. The difficulty has vanished, however, since the modern discovery, that, at its north-western extremity, it is separated from Asia only by a narrow strait, and connected by chains of islands; and even the imperfect traditions that have been collected seem to confirm that it was in this channel that the tide of migration flowed. It is barely possible, that some vessels may have been driven by stress of weather across the Atlantic; and it has even been supposed that a country, in which the Norwegians from Iceland formed a settlement, was part of America; but, after examining the details upon this last subject, we consider the inference extremely doubtful.

5537. *The discovery by Europeans* forms the real commencement, for us, of American history. This naval achievement, the most splendid in modern times, was performed not by the power of any of the great nations, but by one high-minded individual, with difficulty collecting the scanty means requisite. In 1492, Christopher Columbus, sailing in search of a shorter passage to the East Indies, landed at San Salvador, one of the Bahamas, and, sailing onwards, discovered the greater islands of Hispaniola and Cuba. His next voyage, in the following year, enabled him to discover others of the West Indian group; and his third, in 1498, brought him in view of the continent of America, at the mouth of the Orinoco. Meantime, in 1497-8, John and Sebastian Cabot, employed by Henry VII. of England, not only discovered Newfoundland, but navigated along a considerable extent of the coast of North America. Cortereal, a Portuguese nobleman, in 1501 discovered the mouth of the St. Lawrence, and sailed along the coast of Labrador, as far, seemingly, as the entrance of Hudson's Bay. In 1500, Alvarez Cabral, when sailing to India, came unexpectedly in view of the coast of Brazil. Vesputio and Ojeda had by this time explored nearly the entire circuit of the shores of the Gulf of Mexico. Thus, in ten years after Columbus had set foot on American ground, nearly the whole of the vast length of that continent from north to south had been traced by European navigators. In twenty years more, the South Sea had been discovered by Balboa; and the conquests of Cortez and Pizarro had made Europeans acquainted with a large portion of the eastern coast. In 1519, the grand and first circumnavigation by Magellan ascertained the southern boundaries of the continent; but its northern limit, and the communication on that side between the Atlantic and the Pacific, though a subject of eager interest, with a view to the hoped-for north-west passage, long defied the most strenuous efforts made by Europeans, and particularly by British navigators; and the discovery was reserved for the present age.

5538. *The conquest and colonisation by Europeans* acted most powerfully on the destiny of both worlds, and particularly of the new one. It was attended, in the first instance, with a series of cruelty and iniquity, of which there is, perhaps, no similar example in history. The natives of the West India islands, where the Spaniards first landed, were entirely exterminated, and there remains scarcely a trace of their existence. The people of Mexico and Peru, though their lot was not quite so dreadful, were exposed to remorseless cruelty, and reduced to degrading bondage. Even in North America, where the settlers were actuated by more just and humane principles, the fierce temper of the natives themselves, with the introduction of pestilential diseases, and of ardent spirits, to which they soon became passionately addicted, has extirpated them almost as completely as a war of extermination. The steps taken for filling up the blank thus occasioned in the population of the New World have been almost as inhuman as those by which it was produced. The unfortunate natives of Africa were in vast numbers purchased, seized, crammed into the holds of slave-ships, and conveyed across the Atlantic; so that the negro population of the New World amounts now to several millions. We are happy, however, to state, that within the last century there has been a mitigation of all the wrongs which America had endured from Europe, and even an anxiety to repair them.

5539. *The emancipation of the European colonists* in the New World from the dominion of, and from all dependence upon, the mother country, is a grand event, which has distinguished the last half century, and given the world a new aspect. It is remarkable that this great movement originated with the British colonies, the best governed of any, and whose grounds of complaint were venial when compared to those which the others could reasonably advance. Their determination, however, joined to the extent of the territory, and the aid of European powers jealous of British ascendency, enabled them completely to succeed. Their independence was recognised by Britain in 1783, and they have since formed a great and prosperous state, rapidly growing in numbers and wealth. The southern states, subject to Spain and Portugal, had ample grounds of discontent, which fermented in the minds of the people; who, however, inured to the yoke, would have been long, probably, of attempting to shake it off, had not, in 1808, the family of Napoleon usurped the throne of Spain. The colonies, secured by British maritime ascendency, repelled this claim, and, while they professed allegiance to Ferdinand, declined to acknowledge the provisional government established in the mother country. The Cortes, however, claimed the same supremacy as before; and as they were supported by all the Americans of Spanish origin, a long and desperate struggle was maintained. It issued, however, in the complete independence of all the great states on the continent of America, Spain retaining only her insular possessions. Even Brazil has been separated from Portugal on the condition of being governed by a different branch of the house of Braganza. Thus Europe retains her dominion only over the West India islands, over a large extent of North America still held by Britain, and a smaller one claimed by Russia. All the rest is held by people of European origin, indeed, but who, born and educated in America, consider themselves as entirely belonging to that continent.

Sect. IV. *Political Geography.*

5540. *The political state* of America presents some striking features and contrasts. The native tribes, who still survive, are partly held in subjection by Europeans; but the greater number still wander over their extensive wilds, either in rude independence, or ruled, sometimes very despotically, by their chiefs and caciques. The European colonists, who form now by much the most numerous and important part of the population, were long held in subjection to the mother countries, the chief of which were Spain and Britain; but the greater part of them, by events which have just been detailed, have now established their independence. These new states have adopted very generally the republican form, to which even Brazil, though professedly a limited monarchy, seems strongly inclined. A third political element is formed by the negroes imported from Africa, and held in a state of the most complete bondage. A numerous body of them, however, in one of the finest West India islands, have emancipated themselves, and become the ruling people; while Britain is preparing to bestow liberty and political rights on that large number by whom her islands are cultivated.

Sect. V. *Productive Industry.*

5541. *Industry and commerce* throughout America exist under very peculiar forms. Few of the native tribes have made any advance beyond the hunting state. Previous to the arrival of Europeans, no animals appear to have been tamed for the use of man, except the lama and vicuna. If among many tribes the females were compelled to practise a species of rude agriculture, many others depended entirely on the spontaneous produce of the soil, — the banana in the tropical countries, roots and berries in the northern districts. If some nations, especially the Peruvians, produce fabrics of considerable value, none of them forms an object of exchange with civilised nations. Their only traffic consists in bartering furs and skins, the products of the chase, for European brandy, arms, and toys.

5542. *The colonies founded by Europeans* in America present a much more flourishing aspect. As they brought with them the arts and industry of civilised life, and found abundance of uncultivated land upon which to employ them, they have made a more rapid progress in wealth and population than almost any other people in ancient or modern times. The want of labourers, however, has impelled them not only to treat with great severity the natives of America, but to open with Africa a cruel trade in slaves, by which many millions of negroes have been dragged from their native country, and doomed to the most severe and degrading toil. The industry of colonial America is almost entirely agricultural, carried on with the view of supplying the markets of Europe with sugar, coffee, cotton, tobacco, and other rich tropical products; in exchange for which, and for the timber, hides, and furs of the northern regions, they receive all the variety of manufactures which the improved industry of Europe so abundantly produces.

Sect. VI. *Civil and Social State.*

5543. *The civil and social,* like the political, *state* of America is strikingly varied, according to the races, belonging to remote quarters of the globe, by whom her territory is peopled. The native tribes, who are still suffered to occupy extensive regions, claimed but not occupied by Europeans, exist generally in the savage state, displaying all its bold and terrible, yet sometimes engaging, characteristics. Even the Indians of Mexico and Peru, being mostly of humble rank, and dwelling in remote villages, display few remains of the degree of civilisation which distinguished those empires.

5544. *The European colonists,* who are now in possession of almost all America, retain generally the manners and habits of the mother country, somewhat modified by their peculiar situation. The absence of any old nobility or other aristocratic distinctions has diffused through them a very general feeling of independence and equality, which has been confirmed by the republican institutions now so generally established. The same cause is represented as rendering the tone of society less refined and polished than in Europe. The people, however, have shown themselves active and enterprising, fully capable of availing themselves of all the advantages which their situation presents. Even the Spanish Americans, who, while under the sway of the mother country, were accused of voluptuous indolence, have shown no want of energy, either in the struggle for independence, or in the internal contests which have since unfortunately arisen.

5545. *The negroes imported from Africa,* and held in oppressive bondage, have scarcely room to display any decided character. They retain the rude habits and superstitious ideas, joined often to warmth of heart and amiable feelings. Even those who have obtained emancipation, being still held as a despised and inferior caste, can scarcely attain that self-respect which is the parent of many of the virtues.

5546. The establishment of these three great races in this country has led to the formation of *numerous mixed classes,* in which the blood and complexion of the European, Indian, and negro are variously compounded. Hence, in the absence of the distinction of ranks, has been founded an aristocracy of colour, in which white holds the first place, and each individual, as his complexion deviates from that standard, sinks in the scale of society. The degrees in which it is departed from have been carefully counted, minute subdivisions formed, and various terms, mulatto, mestizo, zambo, &c., invented to express them. In the course of the recent struggle for independence in the Spanish colonies, more liberal and rational ideas have made some progress; but in North America, it is lamentable to state that this barbarous prejudice still continues in full force.

Sect. VII. *Languages.*

5547. *The American languages* being little known, and rude, afford very little room for observation. They have been provisionally classed in eleven groups:—

1. The languages of the Northern region of South America. 2. The languages of the Peruvian region. 3. Those of the Guarani-Brazilian region. 4. Those of the Orinoco, Amazonian, or Andes-Parime. 5. The languages of Guatimala. 6. Of the Mexican region. 7. Of the central plain of North America, and the neighbouring countries east and west. 8. Of the Missouri-Colombian region. 9. The languages of the Alleghany region, and of the Lakes. 10. Those of the Western coast of North America. 11. Those of the Northern region of North America, including the Esquimaux, and the Tchukches, American and Asiatic.

Chap. II.

BRITISH AMERICA.

5548. *The part of America now belonging to Great Britain* is an assemblage of vast, ill-defined, and straggling territories, the remnant of that mighty empire of which the great insurrection deprived her. Even in their present dismembered state, however, their extent and capacities might, and probably will, enable them one day to surpass the greatest of the now existing European monarchies.

Sect. I. *General Outline and Aspect.*

5549. *Of the existing British empire in America* it would be difficult to determine the precise extent and limits. The base line may be said to be formed by the river St. Lawrence, and the great lakes Ontario, Erie, Huron, and Superior. These, unless at a few points, separate the British territory from the United States; but there is to the south of it one great angle, consisting of Nova Scotia and New Brunswick, which has been withheld from the Atlantic states, and remains attached to Britain. The islands at the mouth of the St. Lawrence,—Cape Breton, Prince Edward Island, Newfoundland, the theatre of the greatest fishery in the world,—are also British, some fishing privileges being allowed to other nations. On the continent, Britain claims the right to occupy the immense space extending from the St. Lawrence to the newly discovered Arctic Ocean. Such an occupation, however, even in a prospective view, is so distant, that to include the whole tract would be clearly premature. We reserve, therefore, for a separate chapter, the regions still held by the native tribes of America. The actual occupation extends along the northern bank of the St. Lawrence, of Lake Ontario, and of part of Lake Erie; and it reaches, though only in some instances, thirty or forty miles into the interior. The Company which enjoys the exclusive trade of Hudson's Bay, maintains several forts on its western shore. Further, both they and the Canada Company have small forts on the leading lakes and rivers of the interior, called houses, where they are secure against the attack of the Indians scattered over the expanse of these desolate wilds, and can form a store of the articles necessary for the fur trade. Beyond this occupancy they have not attempted to exercise any jurisdiction, nor, as has lately appeared, could a peaceable colony form itself without imminent danger from these rude tenants of the wild.

References to the Map of British America.

UPPER CANADA.
1. Amherstburg
2. Chatham
3. Baldoon
4. London
5. Town Plat
6. Fort Erie
7. Fort Niagara
8. Dundas
9. Ancaster
10. Oxford
11. Etobicoke
12. York
13. Hamilton
14. Thurlow
15. Kingston
16. Elizabeth
17. Bathurst
18. Richmond.

LOWER CANADA.
19. Plantagenet
20. Cornwall
21. Montreal
22. Odell
23. Shefford
24. Sherbrooke
25. Grantham
26. William Henry
27. St. Antoine
28. Lavaltrie
29. Trois Rivières
30. St. Marie
31. Quebec
32. Tilly
33. St. Nicholas
34. St. Etienne
35. St. Francis
36. St. Thomas
37. St. Joachim
38. St. Jean
39. Granville
40. St. Anne
41. Douglastown
42. Perce
43. Valos
44. New Carlisle.

NEW BRUNSWICK.
45. Bathurst
46. Miramichi
47. Newcastle
48. Chatham
49. Sussex Vale
50. Gage Town
51. Fredericton
52. Monument
53. St. Andrew's
54. Carleton
55. St. John
56. Quaco
57. Cumberland Fort
58. Fort Monkton.

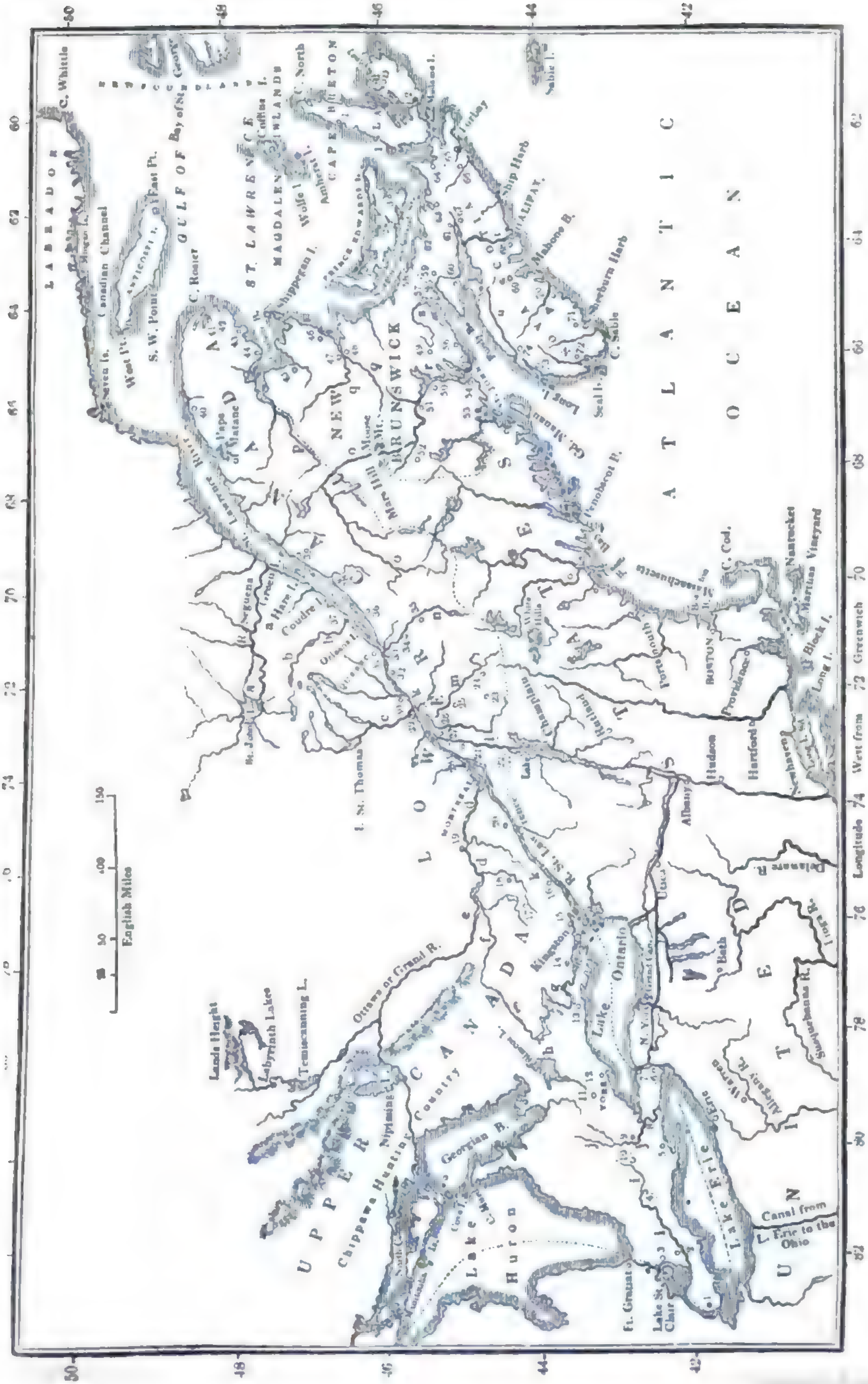
NOVA SCOTIA.
59. Amherst
60. Parsborough
61. Londonderry
62. Faningborough
63. Walmsey
64. Dorchester
65. Hinchinbroke
66. Sherbrooke
67. Truro
68. Halifax
69. Chester
70. Liverpool
71. Shelburne
72. Tusket
73. Weymouth
74. Annapolis
75. Cornwallis.

CAPE BRETON ISLAND.
1. Chetecan
2. St. Peter's
3. Sydney.

PRINCE EDWARD ISLAND.
1. Dartmouth
2. Charlotte Town
3. George Town.

Rivers and Lakes.
a Saguenay, R.
b Great River
c River St. Maurice
d Ottawa, or Grand River
e Chandrie Lake
f Madawasca, R.
g Trent, R.
h Simcoe Lake
i Thames, R.
j Ouse, R.
k St. Lawrence, R.
l Richelieu, R.
m Francis, R.
n Chandieres, R.
o St. John, R.
p Restigouche, R.
q Main, R.
r Grand Lake
s Petit Condiac, R.
t Shubenacadie, R.
u Ferry River
v Liverpool, R.

Fig. 897. **MAP OF BRITISH AMERICA.**



5550. *The climate is very severe*, much exceeding what is felt under the same latitude in the old continent. Lower Canada for six and Upper Canada for five months of the year have a mean temperature below the freezing point, and are buried in perpetual snow; yet after that period the sun breaks out with such force, that large crops of the most valuable grain can be raised on the great extent of fertile land of which the territory consists. Upper Canada, from a careful survey made with a view to emigration, has been found particularly valuable; finely watered, clad with immense forests of valuable timber, and containing about ten millions of acres capable of culture. Nova Scotia and New Brunswick are well wooded countries, but less fertile; and though the winters are less severe, the heavy fogs that prevail for a great part of the year are still more disagreeable than the frosts and snows of Canada.

5551. *The surface of this extensive region* is not very much varied. Two chains of hills cross Canada, each parallel to the St. Lawrence, one at the distance of fifteen or twenty miles, including all its most fertile and productive valleys; the other at about 200 miles' distance, forming the boundary of the province. Some chains also cross the more northern regions; but upon the whole they may be considered as a prolongation of the great level of the Missouri, bounded still on the west by the Rocky Mountains, which reach the farthest extremity of the continent.

5552. *The river St. Lawrence* is the principal feature of this region, and one of the noblest river channels in the world. It is difficult to say where it begins. It has been held to issue from Lake Superior, a vast body of water, fed by about fifty streams, of which the St. Louis and Grand Portage Rivers are the principal; but, in fact, the lakes are merely connected by short canals, through which the surplus waters of one are poured into the other. These canals bear the local names of St. Clair, Détroit, Niagara, &c. The last is distinguished by its falls, the most magnificent in the world. From Lake Ontario to Montreal the river is broken by a succession of rocks, cataracts, and rapids, which render navigation very dangerous. It is after passing Montreal that it rolls in full grandeur in a deep continuous channel, conveying large ships and rafts down to Quebec. The navigation is blocked up for half the year by the ice, which even in spring encumbers it for some weeks with floating fragments. The only considerable tributaries are the Ottawa, which traverses a great part of Canada, and the Saguenay, which falls in about a hundred miles below Quebec.

5553. *Lakes*, in Canada, are on a greater scale than in any other part of the world; and the united chain forms a vast inland sea of fresh water. The outermost and largest is Lake Superior, 381 miles in length, and 161 broad. Lake Huron, with a varied outline and numerous islands, is 218 by 180. From its western angle, the long lake of Michigan stretches southward into the United States' territory. From its southern extremity, the winding stream of Détroit connects it with Lake Erie, which is 231 miles by 63. Lastly, the channel of Niagara carries on the chain to Lake Ontario, which, though the smallest, is still vast, being 171 miles by 59½. These lakes are remarkably deep, clear, and transparent: frigates have been built, and a naval war waged, on them; and at present superb steam packets navigate them. Lakes Superior and Huron are about 600 feet above the Atlantic. Their depth is very extraordinary, estimated by Darby in some places at 900 feet. Erie is only about 300 feet above the sea, and its depth not more than 200 feet. On the other side, in the interior from Lake Superior, are several smaller lakes, of which the principal is the Lake of the Woods, whose winding shores are 300 miles in circumference. Farther to the north is Lake Winnipeg, 270 miles from north to south, and from eighty to fifteen in the opposite direction. The name signifies muddy, and is descriptive of its waters. There is a water communication with Lake Superior by the rivers Winnipeg and La Pluie; but in the course of it Major Long found seventy-two portages, in which the canoes must be taken on shore, and dragged over land.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5554. Canada. — *On the south side of the St. Lawrence*, from Gaspé to some miles above Point Levi, opposite Quebec, the whole country presents high mountains, valleys, and forests. These mountains appear equally as lofty as any of the Alleghany chain, of which range they form a part. The prevailing rocks are granite, greywacke, clay slate, and transition limestone. The lower islands of the St. Lawrence are mere inequalities of the vast body of granite which occasionally protrudes above the level of the river. The Kamouraska Island, and the Penguins, in particular, exhibit this appearance; and in the forest of Kamouraska huge bodies of granite rise into sharp conical hills, one of which is 500 feet high. At St. Roch the post-road leads for more than a mile under a perpendicular ridge of granite, 300 feet high. The city of Quebec is situated on a promontory, on the north-west side of the St. Lawrence, formed by that river and the St. Charles. The extremity of the headland is called Cape Diamond, whose highest point rises 345 feet above the level of the water. It is composed of grey granite, containing in cavities rock crystals, and a species of dark-coloured clay slate. The north coast of the St. Lawrence, below Quebec, exhibits trap rock, clay slate, and occasionally granite; the latter is considered to prevail in the interior of the country, and particularly as forming the base of the mountains of Labrador, and of the country north of Quebec. Cape Tourment, thirty miles from Quebec, is a round massive mountain of granite 1000 feet high. As we approach Quebec, a reddish or greyish black clay slate appears as the prevailing rock, and it forms the bed of the St. Lawrence to Kingston and Niagara. Boulders of granite, limestone, sandstone, syenite, trap, and marble, occur in the same extensive region. Above the rapids of Richelieu a flat country prevails, until we reach Queenston Heights. The greater part of the soil of the lowlands is apparently alluvial; and twenty to fifty-five feet rise of the waters would nearly cover the whole country betweeen the Alleghanies and the highlands of the north. The exceptions to this general rule are, the Belœil mountain, the summit of which is about 1000 feet high. The mountain is an abrupt termination of a branch of the Green Mountains, and divides the waters of Lake Champlain from the sources of the rivers St. Francis and Tamasca. The mountain to which Montreal owes its name, the rocks of which appear to be principally trap accompanied by limestone, is another exception. Whenever rapids occur, we find the elevation of the country increasing, and limestone generally accompanies the prevailing rocks. The step of country formed by the limestone ridge, which commences at Queenston Heights, and which rests upon a bluish clay slate, is elevated about 350 feet above the shores of Lake Ontario; and the upper country, the base of which is limestone, is generally level, until we approach the high lands between Lake Huron and Lake Michigan. The limestone rocks of the Manitoulin Islands, in Lake Huron, contains similar organic remains (those of mountain limestone) to those that occur so abundantly in the limestone rocks which prevail at the base of the island of Anticosti. Along the north coast of Lake Huron and Lake Superior, granite predominates. Indications of *volcanic eruptions* are said to occur at St. Paul's Bay, and on the mountains north of Quebec. The great earthquake of 1663 is said to have overturned a chain of sandstone mountains 300 miles long, north of the St. Lawrence, and levelled them with the plains.

5555. *Canada* is considered rich in minerals. *Petalite*, a rare mineral, was found by Dr. Lyon near York, in Upper Canada; *beryl* is found at Lake of the Woods; *Labrador felspar*, at Lake Huron; *axinite*, Hawkesbury and Ottawa; *aventurine*, Lake Huron; *amethyst*, Lakes Superior and Huron; *apatite*, or phosphate of lime, Fort Wellington; *arragonite*, Laclina; *strontian*, in magnificent masses, Erie, Ontario; *schorl*, St. Lawrence; *precious* and *manganesian garnet*, River Moira, Ontario, &c.; *carnelian, agate, zeolite, prehnite, fluor spar, barytes*, Lake Superior; *brown and green coccolite*, Montreal and Hull, Ottawa; *olivine, augite*, Montreal; *grenatite*, Rainy Lake; *anthophyllite*, Fort Wellington; *marbles* and *serpentine* are common on the north shore of Lake Erie, which exhibits immense beds of *gypsum*, the principal of which is in Dumfries, and quarried largely for the purposes of agriculture.

5556. *Ores. — Iron.* Seven kinds of iron ore occur in Canada; viz. magnetic iron ore, specular iron ore, and red iron ore, brown iron ore, bog iron ore, sparry iron ore, or carbonate of iron, and iron pyrites. The *magnetic iron ore* has been found abundantly, but only in one place, where it is smelted, viz. in the township of Marmora and Belmont, in Upper Canada. *Specular iron ore.* — The only place where it occurs abundantly is close to the mining establishment at Marmora. *Red iron ore* has been noticed in two or three places, but most abundantly in the vicinity of Henderson's Lake, in the Gannanoqui, where it forms an extensive bed in old red sandstone. *Brown iron ore* occurs, but in small quantity. *Bog iron ore*, which is next in abundance to the magnetic iron ore, is found abundantly both in Upper and Lower Canada, particularly behind the two seigniories of Batiscan and Champlain, in Lower Canada. It is the only extensive deposit of this ore which has yet been worked in Lower Canada, and the furnace at the forges of St. Maurice is entirely supplied by it. *Sparry iron ore* is found in the immediate vicinity of the works of Marmora, where it is worked chiefly as a flux for the furnace. *Iron pyrites*, or sulphuret of iron, is found in many places, particularly abundant on an island on the south shore of Drummond Island. *Graphite*, also known under the names *plumbago*, or *black lead*, which is either pure carbon, or carbon united with a small portion of iron, is found rather abundantly in the township of Houghborough, also at Hull on the Ottawa. *Ores of manganese*, in small quantity, are mentioned by some authors; and *ores of silver* are also reported, but on doubtful authority, to have been met with. Traces of *copper ore* and masses of *native copper* have been found, but hitherto no *native gold* has been discovered in either of the Canadas. *Ores of antimony* are reported to exist in the neighbourhood of St. Paul's Bay, in Lower Canada. *Galena*, or *lead glance*, the common ore of lead, has been found in many places, particularly near Lake Memphremagog, in Lower Canada. *Sulphuret of zinc*, or *zink-blende*, occurs in small quantities; and *cinnabar*, the ore of mercury, although reported to have been met with on the shores of Lakes Erie and Michigan, in the United States, has not been found in the Canadian territories.

5557. Nova Scotia appears to be based on *granite*, although this rock is almost every where covered by other, often more recent, formations, or appears only in boulders on the surface. A *transition slate*, and greywacke, with marine organic remains, and containing beds of *limestone*, and very rich beds of *iron ore*, covers the greater portion of the country: the iron ore is an oxide, sometimes a peroxide, and is often beautifully impressed with organic remains, and sometimes a shell is half moulded in the slate, and the other half adherent to the iron ore, thus proving their contemporaneous formation. The *sandstone* formation is next in extent after the slate. Part of it is said to correspond with the *new red sandstone* and *keuper formations* of other countries; and this part also contains great beds of *gypsum*, from which the gypsum imported into the United States is derived; *grindstones*, which also form an important article of commerce between the two countries, are obtained from the same formation; underneath these are beds of *black bituminous coal*, which are worked, and this valuable mineral is finding its way into the Eastern states, both from the peninsula of Nova Scotia and from the island of Cape Breton, which is separated only by a very narrow strait from the north-eastern mainland. As there is no bituminous coal, in any quantity, hitherto discovered in New England; as the Nova Scotia grindstones, having already a great market in the Atlantic States, will continue to maintain it on account of their excellence and of their being so easily transported by water, notwithstanding the successful introduction of the United States fine-grained mica slate and arenaceous quartz rock for the same purpose; and as the gypsum of Nova Scotia can always be brought to the Atlantic ports cheaper than from the interior of New York and of the Western States; it is therefore probable that these interests will long contribute to a friendly intercourse between the countries. A *trap formation* abounds in Nova Scotia: although nowhere more than three miles in breadth, and often not even one mile, it stretches continuously 130 miles along the south shore of the Bay of Fundy. It rises into stupendous precipices, and exhibits basaltic and greenstone columns, 300 or 400 feet in height, and thus fixes a barrier to the tides. These tides twice in twenty-four hours rise to the height of sixty feet, and, whether ebbing or flowing, rush with great fury along this rocky coast, and into the Bay of Mines and Chignecto Bay and their branches, undermining and tearing away immense masses of rocks, and piling them up along the shores. The minerals embedded in the trap afford a rich harvest to the mineralogist, and probably no known trap district of North America is richer in the beautiful minerals that assist in characterising that formation: thus, among others, the following minerals are mentioned as found in the trap formation: — amethyst, rock crystal, calcedony, agate, chabasie, analcime, laumonite, mesotype, stilbite, calcareous spar, and specular iron ore.

5558. New Brunswick. — *The geology* of this province is very imperfectly known. According to Mr. M'Gregor, limestone, greywacke, clay slate, with sandstone, interrupted occasionally by gneiss, trap, and granite, seem to prevail on the southern coast. Among these, however, *limestone* appears to predominate. *Marble* of promising quality abounds at Kennebecasis, and, it is said, also in other parts of the country. *Coal* is plentiful, and iron ore abounds. *Graphite*, or black lead, has been found, also copper and manganese ores. *Gypsum* and *grindstone* are abundant near Chignecto Basin. Along the shores of this province, facing the Gulf of St. Lawrence and Chaleur Bay, sandstone prevails. Grey sandstone and clay slate seem to predominate, as far as Mr. M'Gregor could observe, along the course of the Miramichi; among which granite, mica, quartz, and iron ore occur. *Agates* and *jaspers* are collected in some places. Salt springs also have been observed.

5559. Cape Breton. — *Mr. M'Gregor says, among the primitive rocks* granite prevails in the peninsular country south-east of the Bras d'Or; and it probably forms the nucleus of the highlands between this inlet and the Gulf of St. Lawrence. Syenite, trap, mica slate, clay slate, and occasionally quartz, also appear on the Gulf Coast. Primitive trap, syenite, and clay slate show themselves, together with transition limestone, greywacke, gypsum, and coal, generally, in all parts of the island. The class of secondary rocks appears, however, to be the most extensive; and *coal* exists in such abundance, that persons unacquainted with geology consider it the predominating formation in the island. Coal, in a field or fields of vast extent, abounds in the south-eastern division of the island, surrounded by carboniferous limestone, new red sandstone, &c. The quality of this coal is well adapted for common fireplaces. The extent or quality of the coal-fields north of the Bras d'Or have not been ascertained. Gypsum occurs in great plenty along the shores of the Bras d'Or, at the Gut of Canseau, on the Gulf Coast, and in some other parts of the island. Several *salt springs* have been discovered, which vary in strength from six to twelve per cent. of salt. Situated, says Mr. Bouchette, in the centre of the best fisheries of North America, and where coal is abundant, the manufacture of salt promises to become hereafter a most valuable source of wealth to the colony. *Iron ore* abounds every where, in the coal district about Lingan, Sydney, &c. and at Cape North and Aspey Bay.

5560. Prince Edward Island. — *The soil* of this island is fertile; and there is scarcely a stone on the surface that will impede the progress of the plough. There is no limestone nor gypsum, nor has coal yet been discovered, although indications of its presence have been noticed. *Red clay*, of good quality for bricks, abounds in all parts of the island; and a strong white clay, fit for the potter, is met with, but not in great quantity. A solitary boulder of granite presents itself occasionally to the traveller. The base of the island is a sandstone, which appears to extend under the bed of Northumberland Strait into the northern part of Nova Scotia, and into the eastern division of New Brunswick, until it is lost in its line of contact with the granite base of the Alleghanies, about the river Nipisighit.

5561. NEWFOUNDLAND. — *The only geognostical information* we have been able to procure in regard to this island is derived from an "*Account of a Journey across the Island of Newfoundland*, by W. E. Cormack, Esq.," published in the 10th volume of the *Edinburgh Philosophical Journal.* This enterprising gentleman, in the beginning of September, 1832, left Smith's Sound, at Random Island, on the east side of the island, accompanied by one Micmac Indian; and, along with two of that tribe, reached St. George's Harbour on the west side of the island in the beginning of November: having thus been the first person to travel across Newfoundland. The first rocks met with were granite and porphyry, these were succeeded by alternations of granite and mica slate, which in their turn were replaced by granite. Granite, syenite, porphyry, mica slate, clay slate, and quartz rock, occur in the district occupied by Melville Lake. In the same district there are several kinds of secondary sandstone, probably belonging to the coal and red sandstone formations. The primitive rocks extend onwards to Gower's Lake. From Gower's Lake, by a series of lakes, to Richardson's Lake, the country is almost entirely composed of primitive rocks; the only indications of secondary formations being in the agate near Gower's Lake, the basalt at Emma's Lake and Jeanette's Lake, and the indication of coal and iron near Stewart's Lake. A serpentine deposit is succeeded by a great tract of granite, gneiss, and quartz, which extends from Jameson's Lake by Bathurst's Lake, Wilson's Lake, King George the Fourth's Lake, to St. George's Harbour, in the Bay of St. George, on the west coast of the island.

5562. *About the centre of the island* there are several ridges of serpentine, which exhibit this rock in all its beautiful and numerous varieties. The finest kinds occur on the shores of Serpentine Lake, and on Serpentine Mountain and Jameson's Mountain.

5563. *The west coast is by far the richest* in minerals. There is *coal* of good quality in St. George's Bay, about eight miles from the sea coast, up the South Barrasway River. There are several *salt springs;* one about two miles from the sea coast, up another Barrasway river, some miles north of that where the coal is found; another a few miles still farther north, up what is called Rattling Brook; and a third at Port-à-Port. There is a strong sulphurous spring close to the sea shore, about a mile north of the Barrasway River, where the salt spring first mentioned is found. Gypsum and red ochre abound between these rivers and Flat Bay, at the sea shore; and the former is also found some miles within the country. There is a dark grey coloured marble found at Bay of Islands; but, from report, in no great quantity near the coast. The soil of St. George's Bay is good, and not so rocky as in most parts of the island. Mr. Cormack, in allusion to the names given by him to the mountains and lakes met with in the course of his adventurous expedition, remarks, "I have used the customary privilege of giving names to the lakes and mountains I met with in this hitherto unexplored route, and these are in compliment to distinguished individuals and private friends. The rocks I collected were examined by Professor Jameson."

5564. ANTICOSTI ISLAND *is said to be* a mass of limestone abounding in organic remains.

5565. MAGDALEN ISLANDS *are reported to be* more or less deeply covered with a sandy soil, resting upon a sandstone which forms the prevailing or only rock in this insular group.

SUBSECT. 2. *Botany.*

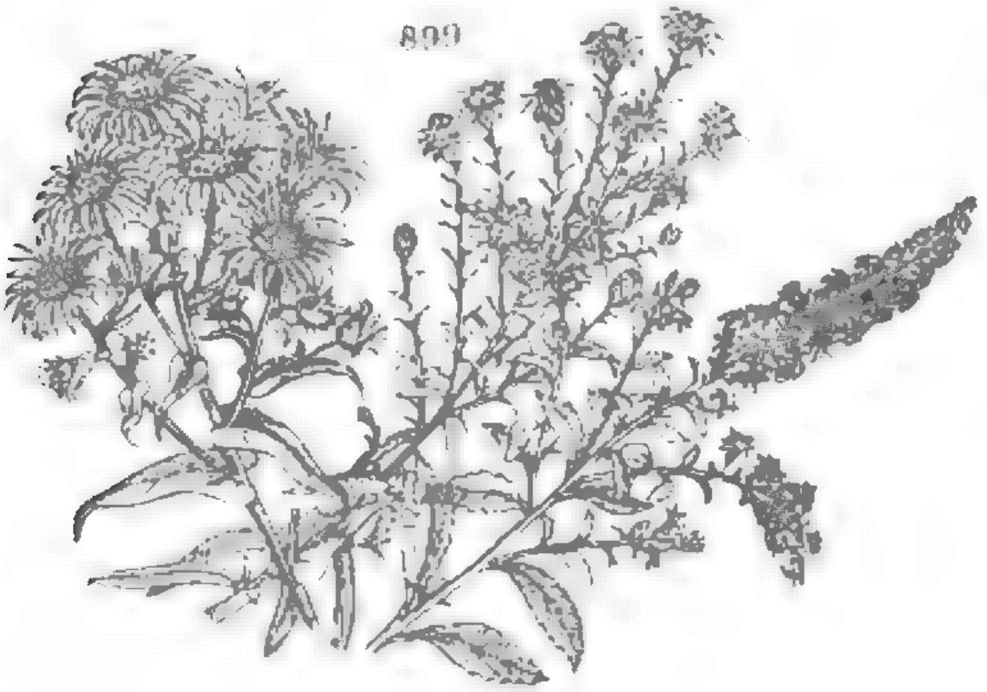
5566. *Under this head* it will be convenient to consider in one view North America, exclusive of Mexico. This portion (chiefly, indeed, to the eastward of the Cordilleras or Rocky Mountains) has been divided into three principal regions. The extreme south, as far as lat. 35° N., is designated the Region of Magnolias (*fig.* 898.); the second, extending to lat. 50°, as that of Asters and Solidagos (*fig.* 899.); and the third as the Region of Saxifrages (*fig.* 900.), stretching to the Arctic Regions. The two former are certainly very characteristic; but the latter is not more distinguished by the prevalence of Saxifrages than are similar latitudes in Europe and

898

MAGNOLIA.

Asia: the genera, indeed, and many of the species, especially in the most northern parts, being very nearly the same in all.

899



ASTERS AND SOLIDAGOS.

5567. *Among the most important* of the vegetable productions of North America must, undoubtedly, rank the forest trees, which originally occupied so vast a portion of the surface of the country a few years ago; but which now, on account of the enormous demand for timber, and the progress of population, are sensibly diminished, especially in the more inhabited parts of the country. The Oaks are very numerous, and extend from Canada to the extreme southern parts of the United States. None of them, however, can compare, as to the quality of their wood, with the British oak. They vary in height, from two feet to the loftiest timber. The Live Oak (*Quercus virens*), not found north of Virginia, is perhaps the best of all for ship-building, and is considered one of the most valuable trees in America; next rank the Laurel Oak (*Q. laurifolia*), the Black Oak or Quercitron (*Q. tinctoria*), especially prized for its bark, the White or Iron Oak (*Q. obtusiloba* and *Q. alba*), found in all parts of the United States, and the Scarlet Oak (*Q. coccinea*), which is a very large tree, and whose foliage, changing in autumn to a bright red, gives the woods a highly picturesque appearance.

900

SAXIFRAGES.

5568. The White Elm of Michaux (*Ulmus americana*) is among the most graceful and most majestic of American forest trees. The Red or Slippery Elm (*Ulmus fulva*) delights in a dry situation, as the preceding prefers a moist one.

5569. *Of Ashes*, eight species are enumerated by Pursh, and ten of Acer, or Maple, including the Negundo, among which the Sugar Maple is well known for its copious saccharine sap, yielding a valuable sugar. The Hickory Tribe afford fruit, as well as timber, which latter is employed for various mechanical and economical purposes. The Juglans nigra is called the Black Walnut; J. cinerea, the Bitter nut, Oil nut, and White Walnut; J. olivæformis, the Illinois nut, much prized in the Southern States for its delicious kernel; J. sulcata, the thick-shelled or Bark Hickory; J. alba, the shag bark Hickory; J. tomentosa, Mocker nut, or common Hickory; J. amara, the Bitter nut; J. porcina, Pig nut, whose tough wood is formed into narrow slips and used as brooms; J. aquatica, Water nut, or Bitter nut Hickory; and, lastly, J. myristicæformis, or Nutmeg Hickory.

5570. *The Pine Tribe* are of acknowledged importance in a commercial point of view; their timber, especially from the British settlements, being largely exported. Besides those of the United States, of which an ample account may be found in the works of Michaux, we possess, in Canada and Nova Scotia, the P. Balsamea, Balm of Gilead Fir, Fir balsam, or American Silver Fir; the P. canadensis, or Hemlock Spruce; P. nigra, Black or Double Spruce, of which spruce beer is so abundantly made; the P. rubra; the P. alba, or White Spruce; P. resinosa, the Pitch Pine; P. Banksiana, the Scrub or Grey Pine; P. Strobus, the Weymouth Pine; P. pendula, the Black Larch; and P. microcarpa, or Red Larch. But of all the known Pines, that which has been recently discovered to the westward of the Rocky Mountains, by Mr. Douglas, is the most remarkable. This most princely of the genus, perhaps the finest specimen of American vegetation, attains the enormous height of from 170 to 220 feet, with a trunk twenty to fifty feet in circumference, and its cones are from twelve to eighteen inches long, measuring ten inches round their thickest part. The trunk is remarkably straight and destitute of branches till within a short space of the top, which forms almost a perfect umbel. The wood is of fine quality, and yields a large portion of resin. Growing trees of this species, that have been partly burned by the natives, to save the trouble of cutting other fuel (a practice to which they are greatly addicted) produce a substance which Mr. Douglas says he is afraid to call sugar, but which greatly resembles it. The tree grows abundantly two degrees south of the Columbia River, in the country inhabited by the Umptqua tribe of Indians. The seeds are gathered by the natives in autumn, pounded, and baked into a sort of cake, which is considered a luxury. The saccharine substance is used in seasoning dishes, in the same way as sugar is in civilised countries.

5571. The Locust Tree (*Robinia Pseudo-Acacia*) (*fig.* 901.) so ignorantly vaunted by Mr. Cobbett, as suited to the soil and climate of England, and even of Scotland, is, indeed, in its native country, a most valuable as well as beautiful tree.

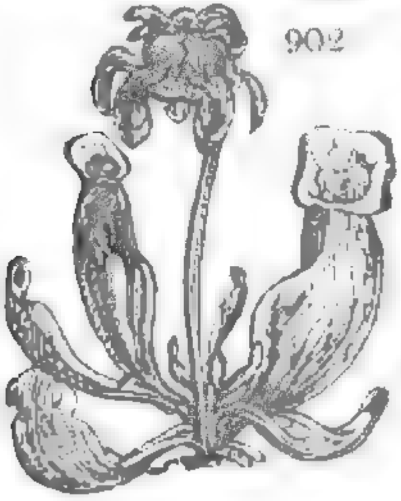
901

LOCUST TREE.

5572. The Tulip Tree (*Liriodendron tulipifera*) is one of the noblest denizens of the American forests, attaining a height of eighty feet, clothed with a light green and very peculiarly formed foliage, and bearing flowers as large as, and not inaptly resembling, those of a tulip.

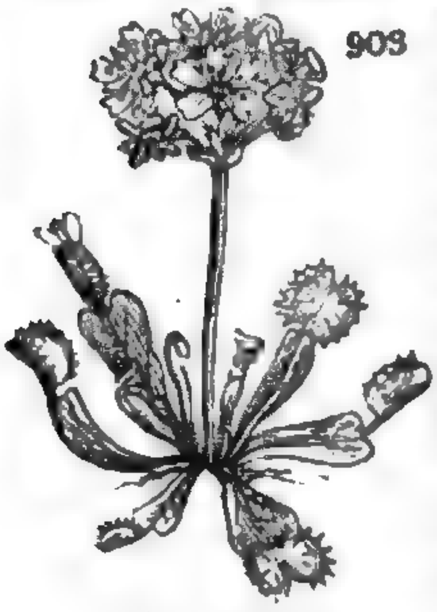
5573. Rhododendrons, Azaleas, and Kalmias, with other shrubs belonging to the same natural family, abound in the swamps of North America, and form, with their evergreen foliage and lovely flowers, some of the chief ornaments of our parterres and pleasure-grounds; and our gardens are indebted to the north-west side of America for the variety of beautiful Pentstemons, Œnotheras, Gillias, and Collomias which have been lately introduced to them, as well as Ribes sanguineum, Eschscholtzia californica, three species of Calochortus, Gaultheria Shallon, and numerous Lupines; almost all the discovery of the indefatigable Douglas.

5574. *Two remarkable genera of plants*, peculiar to North America, must not pass altogether unnoticed: the one (*Sarracenia*) consisting of six species, and extending from New Orleans to Canada; the other (*Dionæa*) is confined, we believe, to one spot, the vicinity of Wilmington, in North Carolina. The Sarracenia (*fig.* 902.), or Side-saddle flower, grows in swampy places; its leaves are not flat, like those of most plants, but tubular and enlarged upwards, so as to resemble a pitcher in shape; the mouth of this orifice is sheltered by a lid, like a cap or helmet. These leaves, notwithstanding the wet places of growth of the parent plant, which would not seem to require any reservoir of moisture to supply its wants, are always more than half filled with water. It has not yet been ascertained what are the properties of this fluid, which render it so inviting to insects; but myriads do enter, and die there; for no sooner has an individual entered the mouth of the tube, than he is apparently urged forwards by the rapidity of the descent, and by the circumstance of the neck of the tube being covered with thickly set hairs, all pointing downwards, so that his struggles to return are effectually prevented by the inverted position of these hairs, and fatigue presently makes him drop into the watery abyss below.


902

SARRACENIA.

5575. The Dionæa muscipula (*fig.* 903.), for there is only one species (or American Fly Trap), possesses a most curious apparatus for entrapping insects. The genus is somewhat allied to our Silene or Catchfly, and bears at the extremity of each of its long green leaves, which lie spreading on the ground, a pair of large, thick, fleshy lobes, united together by their base, and fringed at the margins with a row of long and slender spines. One might fancy that this plant gave the first idea of our rat-trap, and its mode of operating is very nearly the same. No sooner does a fly alight upon the centre between the two lobes, than these suddenly converge, the spines meet and clasp one within another, and the poor insect suffers imprisonment and death. The same effect is produced by touching these lobes with a pin, a straw, or any small object; but this is chiefly observable in fine warm weather; the contractile power being very weak in winter. Sir J. E. Smith is decidedly of opinion that these decaying carcases are serviceable to the plant by administering a peculiar air to it; and Mr. Knight, a nurseryman, near London, found that a growing specimen of Dionæa, upon whose leaves he laid fine filaments of raw beef, was much more luxuriant in its growth than an individual not so treated.


903

DIONÆA MUSCIPULA.

5576. *With regard to the* east side of the British settlements in North America, " the plants of Upper Canada," says Dr. Richardson, in a letter to us, "extend to the south end of Lake Winnipeg, lat. 50° to 51°, where the Oak, Canada Pine, and several other remarkable vegetables disappear. Then, to the westward of this district lie the plains of the Saskatchawan, extending to the foot of the Rocky Mountains, to Peace River in a northerly direction, and uniting with the Prairie country of the Missouri to the southward. This district being open, with interspersed clumps of wood only, has a peculiar vegetation, containing several of Nuttall's plants, gathered on the Missouri. It is the Buffalo district. The Rocky Mountains yield alpine plants, and the country to the westward of them produces Mr. Douglas's plants, which are also peculiar. A line drawn from the south end of Lake Winnipeg to the Falls of the Saskatchawan, and from thence to the west end of Great Slave Lake, cuts off a portion of country, bounded to the eastward by Hudson's Bay, to the southward by Upper Canada, and to the northward by Chesterfield Inlet and Great Slave Lake. This district is more or less rocky, abounds in lakes and swamps and rivers, and is thickly wooded. There is little variety in its plants, which are nearly those of Labrador, and it is the district which has more peculiarly borne the name of the Hudson's Bay Lands. To the northward of it the Barren Grounds extend to the sea-coast. The vegetation in all the open parts of the Barren Grounds is arctic; but some of the Hudson's Bay plants are found on the banks of rivers where there are collections of alluvial soil, sheltered by high lands. This alluvial soil is so abundant on the Mackenzie River, that many of the Hudson's Bay plants and thick groves of White Spruce grow as far north as lat. 68½°. The shores of Behring's Straits are similar in soil and climate to the Barren Grounds, and I should class Newfoundland and Labrador with the island of Anticosti and mouth of the St. Lawrence, along with the Hudson's Bay district."

5577. *An article of food*, extensively used by the Canadian hunters in the arctic and subarctic regions of North America, is afforded by some species of Lichen, all belonging to a distinct tribe, indeed, of the Liverworts, and now constituting the genus Umbilicaria. It was this which, under the name of Tripe de Roche (*fig.* 904.), is described as supporting for many days our enterprising countrymen, Captain Sir John Franklin and Dr. Richardson, and some of their companions, when they were in that country exposed to the most unparalleled hardships and sufferings from a want of every other aliment; while other individuals of the same party perished, incapable of subsisting upon so wretched a diet.

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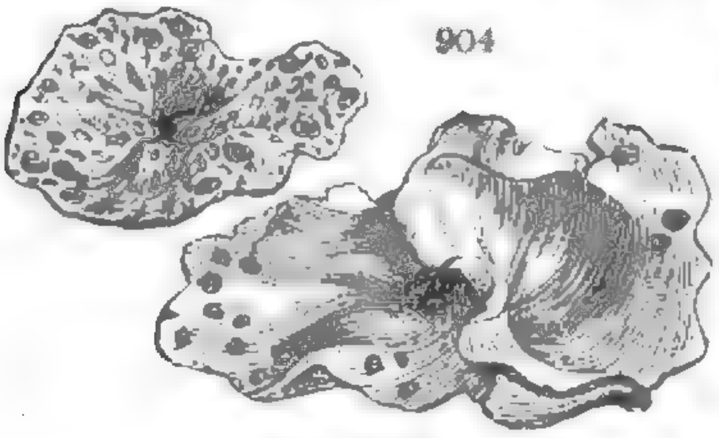
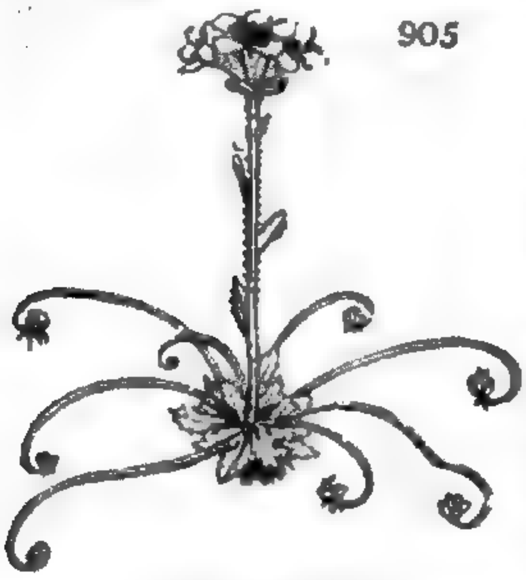


TRIPE DE ROCHE.

5578. *The most northerly land* belonging to North America that has yet been explored, if we except Greenland, is Melville Island, in lat. 75°, belonging to which Mr. Brown has enumerated 130 species, including Cryptogamiæ. The whole of the genera and most of the species are such as are common to high northern regions, or the most elevated mountains of the southern ones. Many are found upon the Rocky Mountains, as is the case with that very singular vegetable, the Saxifraga flagellaris (*fig.* 905.), whose long runners, radiating from a central plant, like the legs from the body of a spider, induced our sailors to call it the Spider Plant.

5579. *Greenland is not* generally considered as part of America; but this is of no consequence, botanically speaking. Its Flora is very similar, but there is this remarkable peculiarity attached to it, namely, that it contains Heath (*Calluna vulgaris*), while no part of America Proper bears one of the genus.

905



SAXIFRAGA FLAGELLARIS.

5580. *The most northerly* speck of land that has yet been visited by our arctic navigators (though, perhaps, not strictly belonging to America) is Ross's Islet, a little spot in lat. 81°, and its produce of plants, half a dozen in number, is chiefly Lichens. But beyond this, a vegetation has been found, of a most singular nature as to its place of growth and its nearness to the pole. At first sight it would hardly be recognised for a vegetable at all. But it is formed from a seed or sporule, it imbibes nutriment from external organs, however minute these may be, it is destitute of locomotion, it grows, bears seed, and dies! But what is its place of growth? In lat. 82°, where Captain Parry found it in the greatest abundance, —

> "There, where the north congeals his watery mass,
> Piles high his snows, and floors his seas with glass," —

there, where, we may say, there is no land, no rocks, no earth, to which it can be attached, does it inhabit the snow itself; and, from the circumstance of many miles of surface and twelve feet in depth being tinged with it, it has received the name of Red Snow* (*Protococcus nivalis*). It was again collected and brought home by Parry's second expedition, having been observed, not only growing on snow, but attached to stones and mosses, covering them with a thin red gelatinous crust; during the third voyage, this highly interesting plant was found in greater abundance, perhaps, than on any former occasion, and in a situation still more remarkable, for it was on the floes of ice, extending to the utmost limit of their progress, and in such profusion, and so completely embedded in the snow, that distinct red lines were left by the track of the boats or sledges on the surface; thus it vegetates in the most northern regions to which man has yet been able to penetrate, and flourishing most in an element (or rather a state of an element) in which no other vegetable, that we are acquainted with, can exist.

Subsect. 3. *Zoology.*

5581. *The geographic range of the quadrupeds* belonging to this distant portion of the British dominions has already occupied our attention. It will, therefore, be sufficient to notice a few of those whose furs constitute an important branch of commerce, and administer so greatly to our individual comfort. On this head, the invaluable work of Dr. Richardson (*Northern Zoology*, vol. i.) again supplies us with the latest and best information.

5582. *The larger quadrupeds* now known in this part of America are the Barren-Ground, the Black, and the Grisly Bears, the Prong-horned Antelope, the American Bison, the Moose Deer, and the Carabou or American Reindeer. The lesser, in which are comprised the greater number of the fur-bearing animals, are the Otter, Racoon, Badger, Ermine, Fisher, Beaver, different species of Marmots and Squirrels, with a great variety of Wolves and Foxes.

5583. *The Barren-Ground Bear* appears confined to those dreary regions which bear its name, lying to the northward and eastward of Great Slave Lake: it is of a dusky brown, and besides being larger than the black species, has longer soles. It feeds, like the Polar Bear, occasionally upon fish, and during the autumn frequents the sea coast for this purpose in considerable numbers. These bears are much dreaded by the Indians, who carefully avoid burning bones in their hunting encampments, lest the smell should attract them. Dr. Richardson relates an amusing anecdote of an old Indian, who, while seated at the door of his hut, pitched upon the bank of a small stream, was surprised by perceiving a large bear coming to the opposite side, attentively surveying him. "The poor Indian considered himself in great danger, and having no one to assist him but his aged wife, made a speech to the following effect: — 'Oh bear! I never did you any harm; I have always had the highest respect for you and your relations, and never killed any one of them except through necessity. Go away, good bear, and let me alone, and I promise not to molest you.' The bear walked off, and the old man, firmly believing in the efficacy of his eloquence, favoured us, on his arrival at the fort, with his speech at length." The common Black Bear is a well-known inhabitant of Canada, while the Cinnamon bear of the fur-traders is considered but an accidental variety. The hunting of this species has been well described by Mr. A. Henry. (*Trav.* p. 142.)

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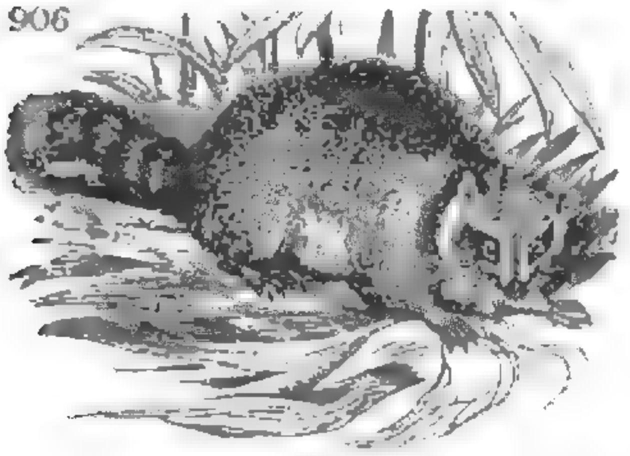

RACOON.

5584. *The Racoon* (*Procyon Lotor* Cuv.) (*fig.* 906.) is frequently seen in menageries; its countenance is fox-like, but its gait bearish. In its wild state it sleeps by day, but prowls during the night after fruit, roots, birds, and insects. At low water it frequents the sea-shore to feed on crabs and oysters, and is fond of dipping its food into water before it eats, hence the specific name of lotor; it climbs trees with facility. The fur is used in making hats, and its flesh, when it has been fed on vegetables, is reported good.

5585. *The Pine Marten* (*Mustela Martes*) (*fig.* 907.) differs not from that of Europe, although certain American races, inhabiting rocky districts, are distinguished by the superior fineness and dark colours of their fur. This is used for trimmings, and will dye so well as to imitate sables and other more expensive furs; hence it has always been an important article of commerce: upwards of 100,000 skins have long been collected annually in the fur countries. The Pekau, or Fisher (*Mustela canadensis*), is a larger and stronger animal, but its manners are similar; its fur, however, is harsher than that of the Marten, and less valuable: some thousands are annually killed in the Hudson's Bay countries.

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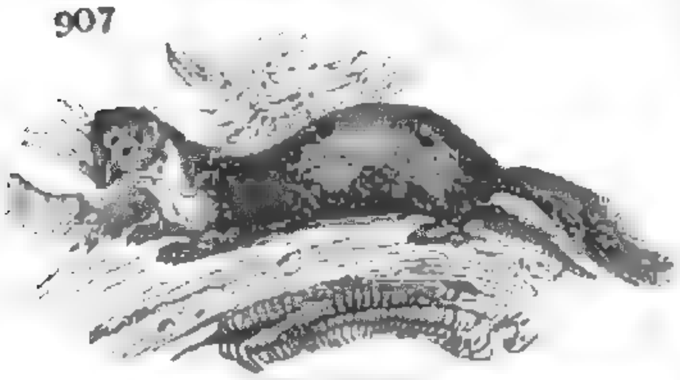

PINE MARTEN.

5586. *The Canada Otter* (*Lutra canadensis*) resembles the European species in habits and food, but is perfectly distinct, measuring near five feet long; while the American Wolf, equally confounded with that of the Pyrenees, has now been ascertained, by Dr. Richardson, to be a different species. The Quebec Marmot is a solitary animal, inhabiting under-ground burrows, yet capable of ascending trees: the Indians take it for food, by pouring water into its retreats; but its fur is of no value.

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* Represented at p. 290. of this work.

5587. *The Canada Lynx* (*Lynx canadensis*) (*fig.* 908.) is not uncommon in the woody districts, since from 7000 to 9000 skins are annually procured by the Hudson's Bay Company. It is a timid creature, never attacking man, and is incapable of injuring the larger quadrupeds. It lives principally on hares: its gait is not much unlike that of its prey; it proceeds by bounds, straight forward, with the back a little arched, and lighting on all the feet at once; it swims well, but is not swift on land. The Indians eat the flesh, which is white and tender.

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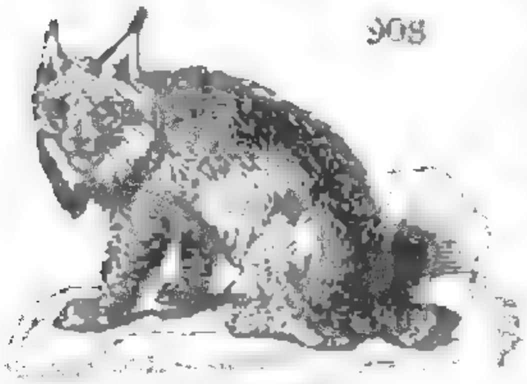

CANADA LYNX.

5588. *Among the birds of rapine and of the chase* may be noticed the two majestic Eagles of northern Europe, the Golden and the White-headed. The Fish Hawk is not uncommon; nor is the booted or rough-legged Falcon (*Buteo lagopus*) so rare a bird as with us; a beautiful specimen (*fig.* 909.) was brought home by the Arctic expeditions. The Marsh Hawk of Wilson seems to be also numerous, but whether this is the young of our common hen harrier is yet doubtful. The Grouse are much more abundant in these northern latitudes than in the United States, but they are all very different from the European kinds; nor is their Ptarmigan the same as that of the highlands of Scotland. These supply food to the Great White Owl, which here frequently hunts his quarry during the day. Numerous small migratory birds enliven the short-lived summer; they visit Canada for the purpose of incubation, and then retire southward; but the Canada and the short-billed Jays (*Disornithia canadensis*, and *brachyrynchus*, Sw.) appear stationary, and are peculiar to these regions.

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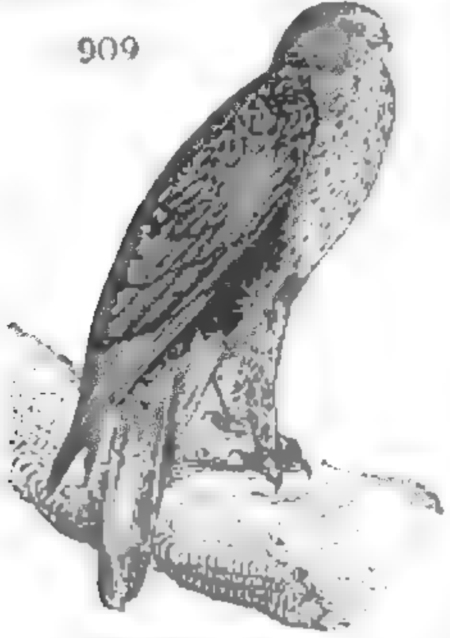

ROUGH-LEGGED FALCON.

5589. *The Waterfowl*, and wading tribes, as may be expected, are in immense numbers, and supply excellent food to the provident natives, by whom they are preserved in the snow as winter provision. Among these the Canada Goose is one of the largest and the most numerous. How far these birds extend their migrations northward is not known: they were seen by Captain Phipps on the dreary coast of Spitzbergen, in lat. 80° 27′; and, Wilson remarks, it is highly probable that they pass under the very pole itself, amid the silent desolation of unknown countries, shut out since the creation from the prying eye of man, by everlasting and insuperable barriers of ice. Certain it is, that the breeding-places of these wanderers have never been discovered. After incubation, the approaching rigours of the arctic pole compel them to retreat towards the south. The Indians are well aware of the period they are to be expected, and make such havoc in their ranks, that in favourable years 3000 or 4000 are said to be barreled for future use: the autumnal flight lasts from August to October; and those which are taken at this season, when the frost begins, are preserved in their feathers and left to be frozen for the fresh provisions of the winter stock, the feathers being imported to England. When in good order, this bird weighs from ten to twelve pounds, and each is estimated to yield half a pound of feathers. The Snow Goose (*Anas hyperborea*) is another of these northern wanderers, but its manners are not so well known: it is a common species in Hudson's Bay.

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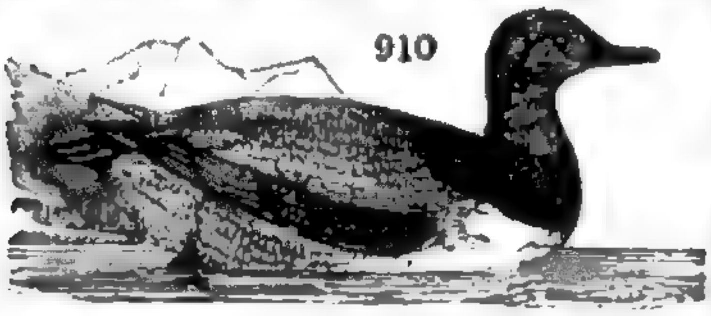

CANVASS-BACK DUCK.

5590. *The American Widgeon* (*Mareca americana* L.) (*fig.* 911.), called also the Bald-pate, is about the size of the European species, but of a handsomer plumage: it does much injury to the rice plantations in the southern states, and is the constant attendant of the Canvass-back Ducks, thieving from those expert divers the fruits of their industry. The Widgeon, who never dives, watches the moment of the Canvass-back's rising, and, before he has his eyes well opened, snatches the delicious morsel from his mouth, and makes off. On this account, the two species live in perpetual contention. The Bald-pate ducks are said sometimes to perch on trees: they feed in company, guarded by one.

911

AMERICAN WIDGEON.

5591. *The Canvass-back Duck* (*Fuligula Vallisneria* Wil.) (*fig.* 910.), is celebrated throughout America for the exquisite delicacy of its flesh; which Wilson describes as rich, juicy, tender, and altogether unrivalled by any other of its tribe: two or three dollars a pair is said to be no uncommon price for these birds on particular occasions. The Canvass-back, in its plumage, very much resembles the English Pochard (*F. ferina*), but is larger; its principal food is the root of a vallisneria, a grass-like plant, which grows at the bottom of the freshwater shoals, at from seven to nine feet deep. In winter, these birds sometimes assemble in such numbers as to cover several acres; but they are very shy, and can only be approached by stratagem.

Sect. III. *Historical Geography.*

5592. *The discovery of this part of America* was effected at a very early period by British skill and enterprise. In 1497 and 1498, very soon after the voyage of Columbus, John and Sebastian Cabot not only explored the coast of what is now the United States, but surveyed the mouth of the St. Lawrence, and sailed even along the coast of Labrador. Some years after, the French navigator, Jacques Cartier, sailed up the St. Lawrence to Montreal, upon which voyage the French founded their claim to Canada; which they did not, however, make good till 1608, when a colony was founded on a great scale, under the pompous title of "New France." The settlements were pushed by that enterprising nation with great activity, and even far into the interior, until they began to enclose those formed by Britain, in New England, so that a collision between these two great rival nations became inevitable. Canada was transferred to Britain by the events of the war 1756–63, and by the glorious combat at Quebec, where Wolfe conquered and fell. By the peace, all this and the other parts of North America were secured to Britain in full dominion. Canada remained to her even amid the great revolution which severed all the southern part of her empire. By a singular contrast, the part of America which was colonised from England, and inhabited by Englishmen, rejected her, while the part colonised by France, and inhabited by Frenchmen, remained firmly attached to her. This was doubtless, in a great measure, a consequence of the very liberal and conciliatory manner in which England treated the conquered province.

Sect. IV. *Political Geography.*

5593. *The constitution of Canada* has been made to embrace many of the benefits conferred by that of the mother country. This boon was given almost unsought, in the year 1783, in reward for the fidelity of the people during the war. From that time, instead of being ruled solely by the governor, who is also commander-in-chief, aided by a council, they received a constitution somewhat similar to that of Great Britain.

5594. *The legislature of Canada* consists of two bodies, the legislative council, composed of fifteen members, elected for life by the governor, and exercising the functions of a House of Lords, though they certainly form a less respectable and independent body. The other is the House of Assembly, corresponding to the British House of Commons, and elected by the nation, upon the moderate freehold qualification of forty shillings. They consist of fifty-two members, are nominated for four years, and sit for three months in the year. There is no exclusion on account of country or religion; so that the French, who form the majority of the nation, predominate also in the assembly; and French is the language usually spoken. For some years considerable discontent has been manifested by this assembly, particularly in regard to the want of an efficient control over the public revenue; but a conciliatory system has of late been adopted towards them.

5595. *The course of justice* in criminal concerns is founded upon the equitable principles of the law of England. The same law was once introduced in regard to civil matters; but it excited such dissatisfaction among the natives that there was no alternative but to restore to them their old French law of property. This is founded on the feudal tenure, often characterised by considerable complexity, which renders it very difficult for the purchaser of an estate to ascertain its titles. There is a singular provision, conferring a moiety of all property upon the wife; so that no man can dispose of it without her consent. The courts are formed somewhat on the model of those of England, though without affording the full benefit of the system of jury trial; and various imperfections are admitted to exist in the administration of justice; but measures to remedy these are in contemplation.

5596. *The revenue of Lower Canada* amounted in 1827 to 93,777*l.* derived almost entirely from customs duties. In 1823, the revenue of Upper Canada was about 25,000*l.* (See papers laid before Finance Committee.) The civil government of both provinces costs nearly 200,000*l.*; and the military and other arrangements connected with the defence of the country may be moderately estimated at half a million or more. They may therefore be regarded as costing Great Britain from 500,000*l.* to 600,000*l.* a year of direct outlay.

5597. *The military and naval force of Canada* consists almost entirely of that part of the British army which circumstances render it expedient to maintain there, and which varies with the circumstances of the country. There is also a numerous militia, who behaved with great intrepidity during the last war. On Lake Ontario, at that period, were built a ship of the line of 102 guns, and two frigates; and two seventy-fours were in frame, but have not been finished since the peace.

Sect. V. *Productive Industry.*

5598. *The natural resources of British America* are more ample than would be inferred from its dreary aspect, and the vast snows under which it is buried. Canada has a very fertile soil, especially in its upper province; and though it be free from snow only during five months, the heat of that period is so intense, as to ripen the more valuable kinds of grain. The vast uncleared tracts are covered with excellent timber. Nova Scotia and New Brunswick are less fertile, yet they contain much good land, and are well timbered. Newfoundland is not so barren as has sometimes been supposed, and has on its shores the most valuable cod-fishery in the world. Even the immense northern wastes are covered with a profusion of animals noted for their rich and beautiful firs, which form the foundation of an extensive and valuable trade.

5599. *Agriculture,* in this country, is still necessarily conducted on a somewhat rude system; yet the whole of Lower Canada, for more than 400 miles along the banks of the St. Lawrence, presents an extensive chain of farms. "Corn-fields, pasture, and meadow lands, embellished at intervals with clumps of trees, snow-white cottages, neatly adorned churches, alternately present themselves to the eye in the midst of the verdant foliage which shades the banks of that noble river." The meadows of Canada are reckoned superior to those in the more southern parts, possessing a fine close turf, well covered at the roots with clover. The French *habitans* have an extremely imperfect mode of culture; they scarcely scratch the soil deeper than an inch, and adhere with pertinacity to old habits. They have none of the enterprise or emigrating spirit of the republicans, but stick to their paternal fields as long as they will yield a support to themselves and families. They cultivate nearly the same kinds of grain which are grown in England, with a little maize and tobacco. Orchards are not much attended to; but culinary vegetables are raised in tolerable plenty, especially onions, garlic, and leeks. Of animals reared for food, hogs are the most numerous; the sheep and cattle are of small size. Culture in Upper Canada is still in an incipient state, but it is advancing rapidly, in consequence of the influx of British settlers. Government for some time allowed to every settler fifty or even a hundred acres upon payment of fees amounting to about a shilling per acre; but since 1827, the lands have been disposed of by public auction. An officer, entitled the Commissioner of Crown Lands, fixes the extent to be sold in each year, and the upset price, which are announced in the Gazette. No lot is to contain more than 1200 acres, and the purchase-money is to be paid by four instalments, one at the time of sale, the rest at intervals of a year; but purchasers under 200 acres may obtain possession, liable to a redeemable quitrent of 5 per cent., payable annually in advance. If the conditions are not fulfilled, the land is forfeited. Government has, however, at different times, during the distress of the labouring classes in Britain, not only made free grants to large bodies of them, but given aid in conveying them across the Atlantic, and settling them on their allotted portions. By Lord Howick's bill, in 1831, it is provided, in the case of any one willing to emigrate, and who it is apprehended may become a burden on the poor rates, that, on payment of a certain sum out of these rates, he shall be conveyed to the colonies; where he may either employ himself as a labourer, or obtain a small assignment of land, for which, however, after a certain interval, he is expected to pay. Among emigrants possessed of capital, a great proportion have of late made their purchases from the Canada Company. This body, incorporated in 1826, bought from government tracts equal to 2,300,000 acres, for which they engaged to pay the sum of 295,000*l.*, by sixteen annual instalments. These are dispersed through every part of Upper Canada; but the largest portion, amounting to about a million of acres, and extending sixty miles in length, is along the eastern shore of Lake Huron. The Company found towns and villages, form roads, lay out the ground in convenient lots: they have agents on the spot, who afford every information and aid to emigrants; they sell their lands from 7*s.* 6*d.* to 20*s.* an acre, requiring only one fifth of this sum to be paid immediately, the rest by annual instalments, which, it is said, the land can easily produce by cultivation; and the company state that they have on no occasion been under the necessity of resorting to compulsory measures to obtain the payment of arrears. The settler must begin with the laborious task of felling the trees, of erecting a log-house for himself, and a commodious barn for storing the grain. The former may cost 12*l.* and the latter 60*l.* The cost of a stock of farm cattle is reckoned by Mr. Howison at 28*l.*; and that of clearing and sowing an acre, 5*l.* 5*s.* The first year's produce is usually twenty-five bushels of wheat, which may sell at 4*s.* 6*d.* each. The second year's crop will be considerably larger. Wheat, the most valuable crop, is raised very successfully; rye and Indian corn also succeed; but oats and barley do not. The best green crop is the squash or gourd. The management here, as over all America, is very slovenly, when compared with good English farming; but circumstances, perhaps, do not admit of better; and the greatest difficulty is the want of a market. The expense of living, so far as concerns the absolute necessaries of life, is very moderate; but wearing apparel and all manufactured goods are double the price at which they sell on the other side of the Atlantic. Servants are very dear, and scarcely to be had at any rate of wages; even those brought from Britain usually strike out an independent career for themselves. A wife, if at all industrious, and a large family, instead of being a burden, are the great source of prosperity on the American lakes.

5600. *Manufactures* form no considerable part of the political economy of Upper Canada; and the policy which will lead Great Britain not to encourage them is, perhaps, fortunate, as they would at present, on any great scale, be decidedly premature.

5601. *The commerce of British America* is an object of much greater importance. The fur trade, the original object for opening an intercourse with this part of the world, was carried on in the first instance chiefly from the shores of Hudson's Bay; but it was there injudiciously placed in the hands of an exclusive company, which greatly diminished its activity. About forty years ago, Mr. M'Tavish, and some other active merchants at Montreal, established what was called the North-west Company, which was opposed for some time by a rival one, under Sir Alexander Mackenzie, but the two at last united. The company then consisted of forty partners, who employed upwards of 3000 clerks, travellers, and Indians. Their agents consist chiefly of tough Scotch Highlanders, who undergo incredible hardships in traversing the vast expanse of these dreary and pathless wastes; but they are enabled to live in splendour at Montreal, and sometimes return with considerable fortunes. The furs are chiefly those of the beaver, which pass for money on the northern lakes; those of the various foxes, black, silver cross, and blue; of the wolverine, the marten, the lynx. Lord Selkirk has laid open all the sins of the North-west agents, which do not appear to have been very few. The medium of exchange was almost exclusively spirits, the excessive use of which had the most ruinous effects, both moral and physical, on the Indians, whom, indeed, it has gone near to exterminate. The eager rivalry of the two companies, operating thus in regions beyond the pale of law, has given birth to many deeds of fraud and violence. Within these few years, however, an union has healed the deadly enmity between them; and, by acting in concert, they have determined, as Captain Franklin affirms, to diminish the issue of spirits, and even to adopt every practicable means for the moral and religious improvement of the Indians. The furs exported from Quebec, on an average of 1830 and 1831, were, 41,225 beaver and otter, valued at 25*s.* each; 466 bear and buffalo, 20*s.*; 936 deer, 3*s.*; 2630 fox, 10*s.*; 12,400 lynx, cat and marten, 10*s.*; 39,000 musk-rat, 6*d.*; 1500 tails of marten, fox, &c., 1*s.* These, with some smaller articles, are valued at 211,000*l.* It is remarkable that they are cheaper in London than at Montreal; owing, it is said, to the superior skill used by the London manufacturers in getting them up, so as to make a small quantity go a great deal farther.

5602. *The timber trade,* the value of which, thirty years ago, did not exceed 32,000*l.*, has now surpassed all others in magnitude. It has been favoured not only by the great demand for ship and house building, but much more by the great difference made in the duty, as compared with that imposed upon Baltic timber; and which, though reduced, is still 2*l.* 5*s.* per load. Britain makes thus a great sacrifice (the wisdom of which has been much questioned), since the timber of Canada is not only loaded with a heavier freight, but is decidedly inferior as to strength and durability. This timber is obtained not from the agricultural districts, but chiefly from the immense forests upon the shores of the great interior lakes. The trees are cut down during the winter, partly by American axemen, who are peculiarly skilful; and the business is attended with great hardship, both from the work itself, and the inclemency of the season. The trees when felled are put together into immense rafts, which cover often acres, and on them are raised small huts, the residence of the woodmen and their families. Ten or twelve square-sails are set up, and the rafts are navigated to Quebec through many dangers, in which nearly a third of them are said to be destroyed. Those which survive are ranged along the river in front of Quebec, forming a line four or five miles in extent, till they are taken down and exported in the shape of timber, deals, and staves. The Canada merchants lately estimated the capital invested in this trade at 1,250,000*l.* It is also carried on to a great extent from Nova Scotia, New Brunswick, and even from Cape Breton. The export to all quarters amounted, in 1831, to 1,877,000 deals and battens; 46,278,000 feet of deals, planks, and boards; 6,925 cords of lathwood; 6783 masts and spars; 25,795 oars; 1,372,000 large, and 7,653,000 small, staves; 14,815,000 shingles; 470,580 tons of fir, oak, &c. timber. The value of these and a few minor articles, is estimated by Mr. Bliss at 1,038,000*l.* sterling.

5603. *Other considerable articles* are pot and pearl ashes, which, in 1831, amounted to 200,300 cwt., value 325,000*l.*; wheat and wheat flour, limited chiefly by the want of demand. In 1831 there were exported 1,341,278 bushels of wheat, value, at 6*s.* 8*d.*, 447,092*l.*; flour, 82,406 barrels, at 35*s.*, 144,210*l.*; barley, 214,562 bushels, at 3*s.*, 32,184*l.*; beef and pork, 15,802 barrels at 60*s.*, 47,406*l.*; cattle, 2055 head, 5*l.*, 10,275*l.*; vegetables, 369,000 bushels at 1*s.* 6*d.*, 27,686*l.*; butter, 157,475 lbs. at 1*s.*, 7,873*l.*; biscuits, 7348 cwts. at 17*s.* 6*d.*, 6429*l.* These, with some minor articles, amounted to 656,584*l.* For some time, however, the ports of Britain have been shut against foreign grain; and, though some relaxation has been granted with respect to Canada, it seems very doubtful if the free admission which its cultivators demand for their grain will ever be accorded by the British landholders. The value of grain imported from these colonies into Britain amounted in 1825 to 95,000*l.*; and on an average of twenty-five years to 256,000*l.* The shipping employed between Britain and her American colonies was, in 1829, inwards, 1609 ships of 431,124 tons; outwards, 1652 ships of 418,142 tons. The value of the imports into Britain in 1829 was 1,088,622*l.*; of the exports, 2,064,126*l.*

5604. *To the West Indies* the northern states export staves, timber, grain, provisions, and salted fish; receiving in return the well-known produce of these islands. With the United States, Canada holds a great intercourse across Lake Champlain, sending chiefly salt and peltry, taking in return some provisions, timber, and potash; and, clandestinely, tea, tobacco, and other luxuries, which the strict colonial rules would require her to receive from the mother country.

5605. *The fishery* is pursued upon these shores to an extent not surpassed any where else upon the globe. The rich supply of cod on the Newfoundland bank is wholly unparalleled. This bank may be termed a vast submarine mountain, 330 miles in length, and 75 in breadth. The approach to it is announced by flights of penguins, and the shore covered with shells and a profusion of small fish, which serve as food to the vast shoals of cod, which resort to the bank. Although all the nations of Europe have been lading cargoes of them for centuries, no sensible diminution has been felt. The English employ about 40,000 tons of shipping, and 3000 men, in this fishery. In 1814 and 1815, the British exported upwards of 1,200,000 quintals, but the amount has since diminished. In 1831, they exported 889,380 cwt. of fish at 10*s.*, 444,690*l.*; 87,788 barrels of herrings at 20*s.*, 87,788*l.*; 14,068 tuns of oil at 25*l.*, 351,650*l.*; 737,449 seal skins at 1*s.*, 36,872; which, with some minor articles, made up an estimated value of 834,182*l.* The French and Americans are allowed by treaty to share in this trade; and the former, on an average of five years, carry off annually 245,000 quintals, at 1*l.* 1*s.* per quintal; the latter, in 1831, exported 208,000 quintals, and 76,000 barrels, the value of which was about 425,000*l.*

5606. *The interior communications of Canada* are almost solely by the river St. Lawrence and the lakes, which open a very extensive navigation into the country. It is seriously obstructed, however, at one point, between Montreal and Lake Ontario, where a series of rapids occur, over which only canoes can shoot; and all heavy goods must be landed and reshipped.

5607. *Great exertions have been made* to improve *by canals* the interior communications of Canada, though the advantage of those made by the government has been a good deal controverted. The chief object has been to obviate the continued series of obstructions to the navigation of the St. Lawrence above Montreal. One canal has been conducted from that city to the village of La Chine, a distance of eight miles, avoiding the formidable cascade, called the Sault St. Louis. Considering the moderate distance, the expense of 130,000*l.* is very large; but the works are said to be admirable, and the canal is of great use. Government then determined to form a grand circuitous communication with Lake Ontario by the Ottawa. The object held forth was, that in the event of war with the United States, military stores might be conveyed from Lower to Upper Canada, without the dangers which would be incurred by the route of the St. Lawrence, the opposite bank of which would be in possession of the enemy. In the prosecution of this plan, the Grenville canal, eight miles long, divided into three sections, was constructed, to avoid certain falls and rapids in the lower navigation of the Ottawa. It is forty-eight feet wide, and five feet deep. The grand operation on this line, however, is the Rideau canal, reaching from the Ottawa to Lake Ontario, near Kingston. It is 135 miles long, connecting together a chain of lakes which admit of steam navigation; and the dimensions are such as to allow vessels from 100 to 125 tons to pass. The estimated expense was 486,000*l.*, which it will have considerably exceeded. It seems much to be regretted, when so much expense was incurred, that it was not employed upon a canal parallel to the St. Lawrence, which, whenever it is accomplished, will, in a commercial view, supersede the Rideau. Estimates have accordingly been formed of two dimensions, according to one of which such a canal would cost 92,000*l.*, and to another, 176,000*l.*; and it is thought the larger scale will prove profitable, and remunerate the undertakers. The enterprise of private individuals has constructed the Welland canal, which, at an expense of 270,000*l.*, has united the lakes of Ontario and Erie. It is forty-two miles long, fifty-two feet broad, and eight feet and a half deep; and the chambers of the locks are of dimensions sufficient for vessels of 125 tons. It is thus much more capacious than the great New York canal, though not nearly of equal length.

Sect. VI. *Civil and Social State.*

5608. *The population of the British North American provinces*, according to the latest enumerations, made mostly between 1827 and 1832, was as follows: —

Lower Canada (1831) - - -	511,917
Upper Canada (1832) - - -	257,814
New Brunswick - - -	72,932
Nova Scotia and Cape Breton - -	142,548
Prince Edward Island - - -	23,473
Newfoundland . . -	60,088
	1,068,772

It is evident, from Mr. Bouchette's statements, that these enumerations have been by no means complete; and the number must have been greatly augmented by the strong tide of emigration which has flowed from Britain into this quarter of the world. In each of the years 1831 and 1832, the emigrants landed at Quebec have exceeded 50,000, the bulk of whom have proceeded to Upper Canada.

5609. *The people of Lower Canada*, and of the interior of Nova Scotia and New Brunswick, consist almost entirely of French, known under the name of *habitans* (*fig.* 912.). The stranger who passes into Canada out of the United States is much struck with the change of aspect and address. The visage of the *habitant* is long and thin, his nose prominent, inclining to the aquiline; his eyes small, dark, and lively; his chin sharp; his complexion swarthy and sunburnt, and often darker than that of the Indian. Instead of displaying the hardy bluntness of the American, he is courteous and polite in the extreme. Even carmen and peasants are seen taking off their caps, bowing and scraping to each other as they pass along the streets. In their demeanour they are easy and unembarrassed, like persons that have passed their lives in good company. Indeed, Mr. Lambert observes, that the original settlers consisted partly of the noblesse of France, disbanded officers and soldiers, and other persons accustomed to good society. They have imbibed nothing of that stirring, restless, and adventurous spirit for which the Americans are almost proverbially noted. They are described by Mr. Duncan as "of habits altogether hereditary and monotonous, content to pace along in the footsteps of their forefathers." They also cherish a mortal and almost superstitious antipathy against their republican neighbours, especially the Bostonians; to whose machinations, according to Mr. Hall, they are wont to ascribe fire or any other public calamity which befalls their cities. This feeling, with the mild and liberal treatment which they have experienced, has secured them from all disposition to take part with the United States in any of the recent contests. They enjoy a happy mediocrity of condition, possessing in abundance the necessaries of life, and some of its luxuries. They are a contented, gay, harmless, ignorant, superstitious, gossiping race. They emigrate reluctantly and rarely, adhering to their paternal spot, and dividing it as long as possible among the members of their family.

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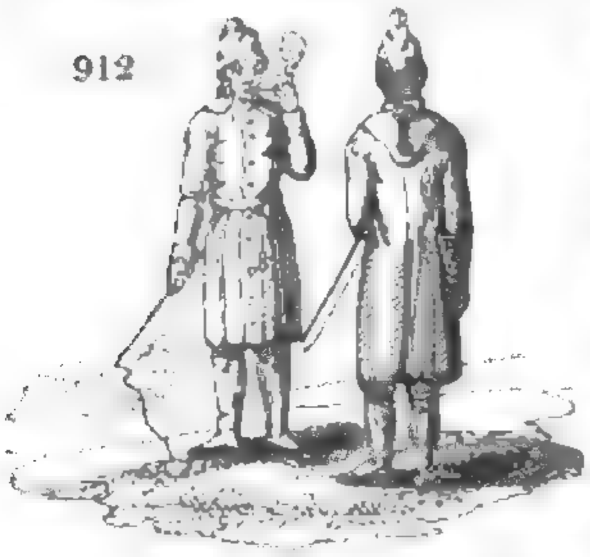


CANADIAN HABITANS.

5610. *In religion*, the *habitans* have always adhered to their original catholic profession. In this the British have fully protected them, continuing to support the establishment, and levying a small land-tax to defray the expense. The Canadian clergy are represented as exemplary in their conduct, diligent in the discharge of their functions, and by no means possessed of that violent spirit of proselytism, which has been often ascribed to them. Catholics are admitted to the house of assembly, and to all offices, and are perfectly loyal. A protestant establishment of the church of England is also supported on a small scale. The church of Rome has 191 churches, 298 other places of worship, called *cures*, or *presbytères*, 20 convents, and 10 colleges. Of the convents, six are large nunneries in the great towns; the others are dispersed over the country, serving chiefly for purposes of female education. The church of England has 39 places of worship; the church of Scotland, four; the Wesleyan methodists, five.

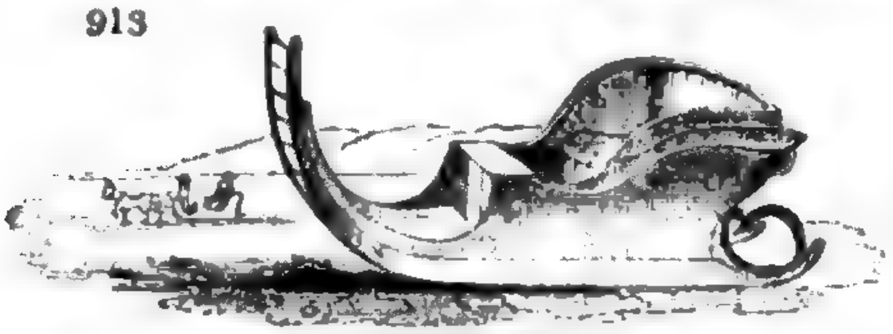
5611. *Canadian literature* affords little room for observation. Of the French inhabitants scarcely any can read, except a few ladies, who employ that attainment chiefly in perusing novels and fashionable poems. The British come out almost solely intent upon making a fortune. Even in the great cities no literary taste prevails. An attempt to establish Lancasterian schools was not successful, being discouraged, as Mr. Duncan alleges, by the heads of the protestant church. As to the fine arts, they appear to be quite in embryo.

5612. *The houses of the Canadians* are constructed of logs slightly smoothed with the axe, laid upon each other, and dovetailed at the corners. The interstices are filled with clay or mud, and the surface whitewashed. The roof is constructed with boards, generally covered with shingles, to which the weather gives the appearance of slate. There is only one story, or ground floor. The Frenchwomen are said to have improved in cleanliness by the example of their English neighbours, having before been accustomed to leave the dust and dirt on their floors unmolested for a twelvemonth, only sprinkling a little water to prevent the dust from rising. They have still much to learn in this particular, and argue against the constant scouring practised by their new neighbours, as injurious to health. The mansions are usually adorned with pictures, or images of the Virgin and the saints, the execution of which bears unequivocal testimony to the low state of the arts.

5613. *The amusements of Canada* are not varied. The French, always fond of dancing and of social parties, gave to the towns the character of being gay and hospitable; but Mr. Lambert says, that, since British residents have multiplied, a spirit of party, a propensity to scandal, and jealousy as to rank, have considerably marred this harmonious disposition. The theatre is in a very low state; but the most national amusement is that of driving over the snow in the clear months during the depth of winter, in a vehicle called a cariole, with a sharp bottom, which glides over the snow like a skate (*fig.* 913.).

5614. *The dress of the Canadian habitant* consists of a large dark grey cloth coat or frock, with a hood, which, in wet weather, he draws over his white or red nightcap, like the cowl of a monk. It is tied round with a worsted sash of various colours. He has a waistcoat and trousers of the same cloth, and mocassins or long boots, fitted for making his way through swamps. A jacket and petticoat is the original dress of the females; though they have begun to adopt, at a long interval, the changing fashions of the mother country.

913



CANADIAN CARIOLE.

5615. *The food of the rural Canadians* is chiefly pork, boiled in pea-soup, which is the standing dish at breakfast, dinner, and supper. During Lent, fish, vegetables, and sour milk supply its place. Knives and forks are accounted superfluous; and, to meat which can be eaten with a spoon, the whole party sit round and help themselves from one general dish. Tea and coffee are only occasional treats. Unfortunately, from its cheering influence, rum is too much in request, and the *habitant* seldom returns from market without rather an undue portion of it. At certain seasons, and especially after Lent, they have their "*jours gras*," in which fifty or a hundred sit down to a table, covered with enormous joints, huge dishes of fruit and fowl, and vast tureens of milk and soup. Dancing concludes the merriment.

Sect. VII. *Local Geography.*

5616. *In detailing the geography of British America*, we must divide this extensive territory into two portions: — 1. Canada; 2. The countries and islands at the mouth of the St. Lawrence.

5617. (1.) Canada, the most important and productive of the British American territories, lies along a line of upwards of 800 miles, from the mouth of the St. Lawrence to the extremity of Lake Superior. From the line of the river and lakes Canada stretches towards the north, with a small depth of actual occupation, till it touches on the ill-defined boundary of the Hudson's Bay territory. It is divided into Lower and Upper Canada.

5618. *Lower Canada* extends along the bank of the St. Lawrence up as far as the Lake St. Francis, a little beyond Montreal. Till of late, this was the only part of the country which was settled and peopled to any extent, and to the upper province there was little resort, unless with a view to the fur trade. It is still the most densely occupied, and all the trade must necessarily pass through it. The great body of the French *habitans* are included within it. Lower Canada is divided into four districts: — Quebec, Trois Rivières, Montreal, and Gaspé. We need not here attempt to particularise the subdivisions made in 1792 into twenty-one counties.

5619. *For these four districts* the estimates of Mr. Bouchette, formed, seemingly, with very great care, so as nearly to approach the truth, enable us to present our readers with the following table. Allowance, however, must be made for the increase within the last few years: —

	Quebec.	Trois Rivières.	Montreal.	Gaspé.	Total.
Population	143,761	51,657	268,631	7,777	471,676
Square Miles	125,717	15,811	49,769	7,389	198,686
Acres, Arable	291,403	125,902	580,006	4,887	1,002,198
Acres under Fallow, or Meadow	612,443	244,878	1,081,966	5,100	1,944,387
Wheat, Produce in Bushels	793,872	362,974	1,752,386	12,008	2,931,240
Oats —	627,053	317,722	1,379,856	16,898	2,341,529
Barley —	123,604	25,841	213,672		363,117
Peas —	192,469	81,261	546,783	2,805	823,318
Other Grains —	171,000	86,000	596,000	1,500	854,500
Potatoes —	1,848,104	606,965	4,121,721	219,820	6,796,310
Horses	39,022	18,822	81,199	1,389	140,432
Oxen	35,498	19,344	89,361	1,559	145,012
Cows	78,797	32,218	147,324	1,676	260,015
Sheep	248,042	93,674	482,810	4,596	829,122
Hogs	86,596	30,228	120,906	4,005	241,735
Looms	4,315	2,073	6,756	99	13,243

5620. *The city of Quebec* (*fig.* 914.), the capital of Canada, is the chief feature in the district bearing its name. It is singularly situated, half on a plain along the northern bank of the St. Lawrence, the other half on the top of a steep perpendicular rock, at least 350 feet high, which rises immediately above. These are called the Lower and the Upper Towns. The Upper Town contains the government buildings, the residence of the governor, the military, and the most opulent inhabitants, the best and handsomest streets, and the most

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CITY OF QUEBEC.

agreeable mansions. The Lower Town is more crowded; its houses are less handsome, and have a gloomy and monotonous aspect; but it is the sole seat of the traffic by which Quebec is enriched. The communication between the two is maintained by a narrow track through a cleft in the rock, called Mountain Street, to which name it fully answers. During the long winters, when this steep track is a sheet of ice, it can be passed only with great caution, by the aid of Shetland hose, iron cramps, and similar expedients. Quebec is by strict statute built of stone, as a security against the dreadful conflagrations which have laid waste the wooden cities of the west. There are three nunneries, containing each from thirty to forty inmates, which number is kept up without difficulty. Two of them devote themselves to education and the care of the sick; so that they are of real use to society. The male orders were not allowed to recruit their numbers, and as they successively died, their funds were appropriated by government, which, from the Jesuits alone, derived an income of 12,000*l.* a year. The cathedral and other public buildings are respectable, without any of them being very remarkable. The life of the inhabitants of Quebec is varied chiefly by the vicissitudes of the season. Towards the end of November, winter sets in, and for several weeks heavy falls of snow, hail, and sleet closely follow each other. The snow often rises to a level with the top of the smaller houses; and it is with the utmost difficulty that the inhabitants can keep open a narrow path between them. Towards the end of December the weather becomes clear, the snow ceases to fall, and its white solid mass covers the entire expanse of the surrounding country. Then is the time for the citizens to sally forth with horse, sledge, and cariole, and drive over the smooth snowy plain, where, as every trace of a path has been obliterated, the route is marked by pine branches, stuck in at short distances, and varying the monotony of the scene. Every precaution against the cold must now be employed, of which buffalo robes, lined with green baize, have been found the most effectual. Thus passes the time till March, when the weather becomes mild, and even hot, and in April the ice of the St. Lawrence breaks with a mighty crash, and floats down for eight or ten days in large masses, bearing along with it fragments of earth and rock from the upper parts of the river. May and June are usually wet; in July and August the inhabitants suffer from the intense heat and tormenting swarms of insects: September is the most agreeable month of the year; but in October the biting frosts of winter begin to be felt.

5621. *Quebec, as a military position,* is excessively strong. The rock on which it stands can be approached only on the western side, where a citadel and a great range of other works render it almost another Gibraltar. Quebec was one of the most brilliant scenes of British glory. Near it, on the plains of Abraham, Wolfe, at the cost of his life, gained the splendid victory which annexed Canada to the British empire. In the beginning of the American war, General Montgomery, in attempting to carry it, was defeated. It is considered as securing the possession of Lower Canada, which, without it, would be untenable.

5622. *The commerce of Quebec* is considerable; as all the vessels from Britain and other foreign quarters stop there and unload their cargoes. The communication with Montreal is carried on by steam packets, of which nine, whose tonnage varied from 600 to 350 tons, were plying in 1829. One of between 700 and 800 tons has been recently built to carry on the intercourse with Halifax.

5623. *The country round Quebec* is broken, wild, wooded, and highly picturesque. About seven miles distant is the Fall of Montmorenci (*fig.* 915.), one of the most striking and beautiful objects in North America. It bears no comparison to Niagara in magnitude and the mass of its waters; but the ample woods with which it is fringed, the broken rocks which surround and intersect its channel, tossing it into a foam resembling snow, render it perhaps a more beautiful scene.

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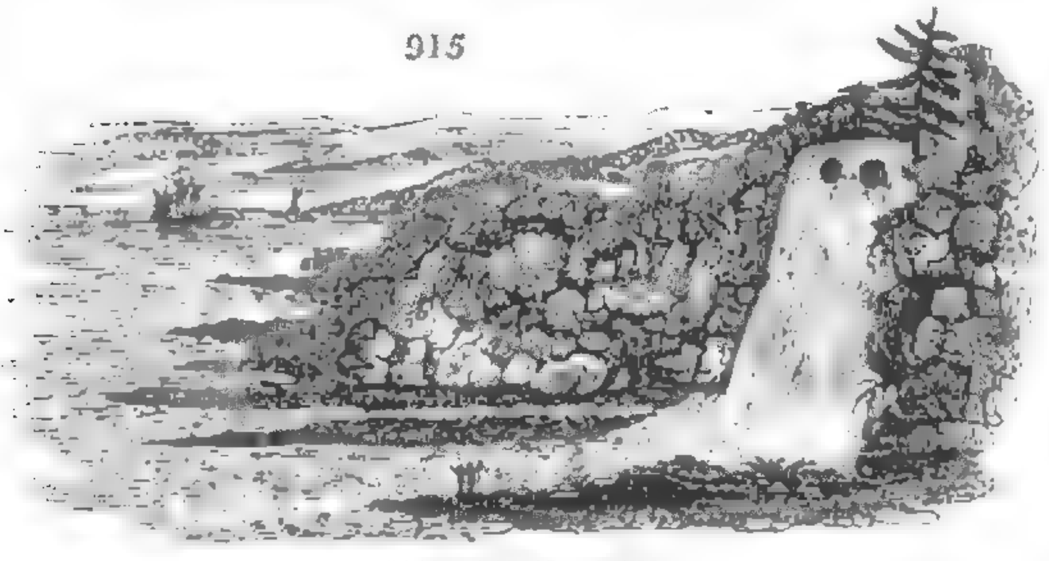

FALL OF MONTMORENCI.

5624. *The town of Trois Rivières* is situated about ninety miles below Quebec, with a free navigation. It had, in 1825, only 2453 inhabitants, and may now contain about 3000. The place is built of indifferent wooden houses. The Indians formerly came to exchange their furs here; but these are now intercepted at Montreal, by the North-west Company. The town has a good natural wharf, but its only trade consists in supplying the district with European and West India goods. There is, however, an iron-work in the neighbourhood, where good stoves are said to be made. The inhabitants are almost entirely French.

5625. *Montreal* is situated immediately above the rapids, at a point where the ample stream of the Ottawa flows into the St. Lawrence. It is the commercial capital of Canada;

and most of the business, even in Quebec, is carried on by branches from the Montreal houses. It derives a great impulse from the transactions of the North-west Company, here established; and it is the centre of the commerce with the United States, carried on by Lake Champlain and the Hudson. Vessels of 600 or 700 tons can, notwithstanding some difficulties, come up to Montreal; its wharf presents a busy scene, — the tall masts of merchantmen from the Thames, the Mersey, and the Clyde, with the steam packets which ply between Quebec and Montreal. These are of large size; one, of 600 tons, in one voyage brought up 1360 emigrants. These steam vessels are also much employed in the conveyance of goods. The island of Montreal is about thirty miles in length, and seven in breadth; it is of alluvial soil, the most fertile in Lower Canada, and also the most highly cultivated. The view over it, of fruitful fields, gay country-houses, and the streams by which it is encircled, is one of the most pleasing that can be imagined. The interior of the town is not so attractive. It is substantially, but gloomily, built of dark grey limestone, with roofs of tin, the only kind, it is said, which can stand the intense cold of winter; while the windows and doors are shut in with massive plates of iron. The streets, though tolerably regular, were inconveniently narrow; but of late several have been formed, extending the whole length of the town, that are commodious and airy. The new cathedral, opened in 1829, is considered one of the handsomest structures in America. It is 255 feet long, 134 broad, 220 feet high in its principal front; and it is capable of containing 10,000 persons. Two Catholic seminaries, the English church, and the general hospital, are also handsome structures. Mr. M'Gill, a citizen of Montreal, left lately a considerable estate, with 10,000*l.* in money, for the foundation of a college, which was opened in 1828. The population amounted in 1825 to 22,357, and is now supposed to have reached 30,000. The district of Montreal extends for some distance south of the St. Lawrence, taking in a corner of Lake Champlain. This tract does not present any remarkable features. The village of La Prairie, on the south bank of the river, is the medium of communication between the two states. A number of townships have been formed along the northern bank of the Ottawa, the part of Lower Canada chiefly resorted to by emigrants. The country is level and fertile, but its progress is much obstructed by the number of old unimproved grants; so that the population does not much exceed 5300.

5626. *The district of Gaspé* remains to complete the description of Lower Canada. It is on the south side of the St. Lawrence, near its mouth, bordering on New Brunswick. It is a country of irregular and sometimes mountainous surface, containing numerous lakes, and watered by several rivers, of which the Restigouche is the principal. The territory is covered with dense forests, inhabited by 7000 or 8000 woodmen and fishermen, and exports some fish, oil, and timber. The cod-fishery employs 1800 men, and produces about 50,000 quintals of fish, and 20,000 barrels of oil; and about 4000 barrels of herrings, and 2000 of salmon are shipped for Quebec. Its capital, New Carlisle, is a mere village of forty or fifty huts.

5627. *Upper Canada* is a vast region, commencing at the Lake St. Francis, a little below Montreal, and extending along the whole chain of the great lakes, to at least the western boundary of Lake Superior. Its general features have already been noticed. Its existence as a country has been very recent. The French, while they held Canada, merely maintained a chain of military posts, to keep in check the savage tribes by whom this region was occupied. It remained a mere district attached to Quebec till 1781, when a number of American loyalists and disbanded soldiers were located upon it, and the name of Upper Canada bestowed. It slowly increased till 1811, when it contained 77,000 inhabitants, and in 1824 had rapidly risen to 151,000, and in 1828 to 188,000. Since that time the tide of emigration to Canada has been very strong, and of the 50,000 who in each of the years 1831 and 1832 landed at Quebec, most proceeded to Upper Canada. The population has thus been augmented till it amounts to the number above stated.

5628. *Upper Canada* is estimated by Mr. Bouchette to contain 141,000 square miles, of which, however, only 33,000 have been laid out into townships. The space thus organised composes a species of triangle, two sides of which are formed by the lakes Ontario, Erie, and Huron, with their connecting channels. This tract, about 570 miles in length, and 50 to 80 in breadth, is one of the most fruitful on the face of the earth, and capable of supporting a most numerous population. It is reckoned to contain 16,800,000 acres, of which about 7,000,000 have been granted to settlers in free and common soccage; 4,800,000 are reserved for the crown and clergy; but part have been sold to the Canada Company; 5,000,000 remain to be disposed of.

5629. *Upper Canada* is divided into eleven districts, the names and population of which, in 1828, were as follow: — Eastern, 18,165; Ottawa, 3732; Johnston, 17,399; Bathurst, 14,516; Midland, 31,293; Newcastle, 13,337; Home, 22,927; Gore, 15,834; Niagara, 20,177; London, 19,813; Western, 8333. In tracing the details of the country, however, we shall follow the line of the great water communications, which form its most prominent feature.

5630. *The rapids* commence at the Lake St. Francis, and continue to the village of La Chine, about ten miles above Montreal. The river is there confined in narrow, rocky, broken channels, through which it dashes with violence, agitated like the ocean in a storm. For nine miles there is a continued succession of rapids, the most formidable of which are

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CASCADES OF THE ST. LAWRENCE.

those called the Cascades (*fig.* 916.), where there is a considerable fall or descent; and the channel, for two or three miles below, is like a raging sea. Previous to the formation of the canal of La Chine, all ordinary vessels stopped at that village, and discharged their cargoes, which were conveyed by land to Montreal. There are several modes, however, in which the enterprising hardihood of man contrived to leap over (*sauter*, as it is called) these formidable perils. The Durham boats are very long, very shallow, and almost flat-bottomed, carrying sometimes twenty-five tons. They are pushed through the rapids by poles, ten feet long, pointed with iron, which the crews even fix in the channel, and apply their shoulders to; the sides being guarded by thick planks. They are chiefly navigated by United States' men. The bateaux are smaller, also flat-bottomed, draw less water, taper to a point at each end, and are constructed of such materials as will bear a good deal of hard knocking. They are guided by Canadian voyageurs, who know every channel, rock, and breaker; and this is recommended by Mr. Duncan as the safest conveyance. The La Chine canal now enables the navigator to avoid the dangers of this part of the river; but as similar obstructions occur in other portions of its upper course, the use of the vessels above described is still necessary. The timber rafts are also obliged to shoot the rapids.

5631. *The country along the St. Lawrence* from the Rapids to Lake Ontario is covered with immense and ancient forests, which the labours of the emigrants are beginning to clear The oaks, judging from their appearance, are from 300 to 600 years old. The soil is a deep mould of decayed vegetables, which is injured by its exuberant richness, so that, of several successive crops, each is better than the preceding; and instances are frequent of twenty-one crops having been drawn from it without any need of manure. Mr. Howison complains that the Scottish occupants of the Glengarry and other settlements on this line have not availed themselves to the utmost of these advantages; that each has cleared from thirty to at most seventy acres; and continues to reside in a poor log-house, with only a single apartment. Prescot, called now Fort Wellington, at the end of the upper sloop navigation, is only a village of forty or fifty houses; but from its situation must greatly improve. Twelve miles farther down is Brokeville, a new neat village, with 500 or 600 inhabitants, named in honour of the late General Broke. The Americans have corresponding towns on the opposite bank; and mortifying remarks are made on the stir and bustle which prevails among them, compared with the apathy which reigns on the British side. Then follows a remarkable feature; the expansion of the river into what is called the Lake of the Thousand Isles. The expression was thought to be a vague exaggeration, till the isles were officially surveyed, and found to amount to 1692. A sail through them presents one of the most singular and romantic successions of scenes that can be imagined. The isles are of every size, form, height, and aspect; woody, verdant, rocky; naked, smiling, barren; and present as numerous a succession of bays, inlets, and channels, as occur in all the rest of the continent put together.

5632. *Lake Ontario*, a much grander expanse, follows immediately after the Lake of the Thousand Isles. This inland sea is in some places of such a depth, that a line of 300 fathoms could not reach the bottom. It is subject to violent storms, and the swell is sometimes as heavy as in the Atlantic. It bears the largest ships of the line, and was in 1813 and 1814 the theatre of all the great operations of naval war. The current is distinctly perceptible which bears this vast body of water along to the eastward, at the rate of about half a mile an hour. Large and commodious steam vessels, one of them 740 tons, ply between the British and American sides. The Canadian shore is covered with similar majestic forests, which, when removed, show equally a rich and luxuriant soil.

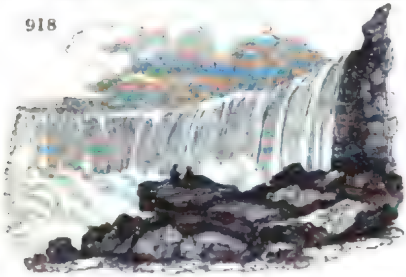
5633. *Kingston and York*, at the opposite extremities of Lake Ontario, are the two principal towns in Upper Canada, the latter the official capital, but the former the most important place. This distinction it obtained last war, when it became the chief naval depôt. It lies on or near the north-eastern point of the lake, and has a commodious harbour. The plan is elegant and extensive, and, being well though but partially filled up, makes a pretty little town. The population in 1828 was 3528, and has doubtless increased. The little navy raised here during the late war is laid up, and some of the ships are only in frame, but all in a state to be finished and sent out in a short time. York, near the north-west end of the lake, owes its support to its being the seat of government, and of the courts; and to the extensive settlements recently formed to the north and east of it. It consists of one long street, along the lake, with the beginnings of two or three others parallel to it. The houses, barracks, and government offices are all neatly and regularly built of wood, and whitewashed. The inhabitants have increased to about 4000.

5634. *The Niagara channel*, about forty miles in length, brings into Ontario the waters of Lake Erie and of all the upper country. On this channel occurs an object the most grand and awful in nature, the Falls of Niagara. The accumulated waters flowing from four mighty lakes and all their tributaries, after being for two miles agitated like a sea by rapids, come to a precipitous rock where they pour down their whole mass in one tremendous plunge of 160 feet high (*fig.* 917.). The noise, tumult, and rapidity of this falling sea, the rolling clouds of foam, the vast volumes of vapour which rise into the air, the brilliancy and variety of the tints, and the beautiful rainbows which span the abyss, the lofty banks, and immense woods, which surround this wonderful scene, have been considered by experienced travellers as eclipsing every similar phenomenon. The noise resembles that caused by the discharge of a thousand pieces of ordnance; and it is heard, and the cloud of vapours seen, at the distance of thirty or forty miles. The fall on the Canadian side is 600 feet wide, of a semicircular form, that on the American side only 350 feet. The one, called the Crescent or Horse-shoe Fall (*fig.* 918.) descends in a mighty sea-green wave, the other, broken by rocks into foam, resembles a sheet of molten silver. Bold travellers have ventured down, amid broken rocks, with the certainty of being drenched to the skin, and with some little danger, to the foot of the fall, and even below it. Others, with still bolder daring, venture out in a skiff, and view it in front at the distance of twenty paces; but, though there is here little or no danger, so awful is the scene, that few can summon the requisite courage. There are now excellent inns on both sides of the falls, which are crowded with visitants. On the Niagara frontier are three villages; one, that of Niagara, with about 1500 inhabitants, situated not at the falls, but at the mouth of Lake Ontario, with a fort facing another on the American side; Queenston, twelve miles below the falls, which suffered severely during the late war, but is recovering; and Chippewa, the same distance above, containing several neat houses, and at the mouth of a river, the banks of which are covered with excellent timber.

917

FALLS OF NIAGARA.

918



THE HORSE-SHOE FALL

5635. *Lake Erie* is a still grander expanse than Ontario, and its waters are equally clear and transparent. The navigation, however, is by no means so commodious. It is shallow, not averaging a depth of more than fifteen or eighteen fathoms, and at the same time liable to violent storms. Long sunken reefs and precipitous rocky banks occasion dangers, greatly increased by thick mists, which often hide from the mariner all view of his course. Scarcely a summer passes in which some vessels are not lost. Steam packets are best calculated for steering through these perils, and they are accordingly employed to a great extent. There is a number of fine wooded islands on Lake Erie. The country along its northern shore is varied, and on the whole exceedingly fine. Near its eastern extremity it receives the Grand or Ouse River, which is navigable for schooners thirty miles up, and for boats considerably higher. The banks are very fertile and finely wooded, and abound in gypsum, which proves an excellent manure. The next district is that called Long Point, forming a promontory projecting into the lake. It is composed of a light sandy soil, covered, not with thick woods, like the rest of Upper Canada, but only with scattered groves and trees, which render it very beautiful, and are an extreme convenience to the settler, who here finds himself released from the herculean task of hewing down enormous forests. To the west of Long Point is the Talbot settlement, formed, in 1802, by Colonel Talbot, a gentleman of birth and fortune, who devoted himself to the formation of this colony; all the arrangements of which are still left to him. It extends seventy or eighty miles parallel to the lake, with many branches stretching into the interior. Numerous examples are here afforded of persons who arrived in a state of destitution, and who now possess in abundance all the necessaries of life. As we proceed westward, the settled tracts become more thinly scattered, and beyond the river Thames commences the tract called the Long Woods, being forty miles of uninterrupted forest, with only one habitation, an inn, placed in the heart of this wild wilderness. At the end of it, the traveller comes to the lower bank of the Thames falling into Detroit River, which, with the small lake of St. Clair, connects Lake Erie with the northern expanse of Lake Huron. This district is a thickly planted old settlement formed by the French Canadians. It is a delightful tract, in which fruits of every kind grow to a perfection unknown in other parts of Canada. In summer, the country presents a forest of blossoms, which exhale the most delicious odours; the climate is mild and agreeable, and the meanest peasant has his orchard and plenty of cider at his table. This class of settlers, however, attached to old customs, do not seem likely to make the same progress as the enterprising European colonists. Amherstburgh, at the head of Lake Erie, is an agreeable little town of 1000 people, the most westerly of any in Canada.

5636. *Lake Huron* is still larger than Lake Erie, and its greatest extent is from north to south, almost in a pyramidal form, with its base towards the north, from the eastern end of which, however, the large bay of Machaladosh branches off. It is crowded with islands, which stretch along the northern coast in close and successive ranges, and, combined with the storms to which this lake, like the others, is subject, render the navigation peculiarly intricate and dangerous. The northern coast of this lake is not at all settled, nor indeed fully explored; it is reported, as compared with the lower lakes, to have an unfruitful soil, and a cold, humid, and tempestuous climate; but the cutting down of the woods, and a careful culture, after the more tempting lands shall have been exhausted, may probably yield more favourable results. Along its eastern shore there is a great extent of very fruitful territory.

5637. *Lake Superior*, the farthest of this great chain, is of still larger extent, being nearly 400 miles in length. Its northern coasts are rugged and winding, formed of precipitous rocks, often penetrated with deep caves. Major Long, who coasted it, says that no scene can be more dreary than its northern shore: nothing appears on its surface but barren rocks and stunted trees; the climate is cold and inhospitable; game very scarce; fish plentiful, but difficult to take. No one attempts to travel by land, unless in winter, when the rivers are frozen. The coast, however, is picturesque, from the clearness of the water, the bold and varied forms of the rocks, and the numerous cascades. Only half a dozen of Chippewa families were met along its whole course. The North-West Company have a post at Michipecoten, where a good deal of business is done. The climate is extremely severe; potatoes and turnips are the only vegetables which can be raised.

5638. *Nova Scotia* is a large peninsula, on the south of the St. Lawrence, and forming, as it were, a fragment detached from the great mass of the territory of the United States. It is bounded on the north by the bay, or rather narrow straits, separating it from Cape Breton and Prince Edward Islands; on the east and south-east, by the Atlantic; on the west, by the Bay of Fundy, which penetrates so deep as to leave only an isthmus, about nine miles broad, connecting it with New Brunswick. It is about 380 miles long, and from 50 to 100 broad, comprising about 16,000 square miles, or upwards of 9,000,000 acres. The land varies much in respect of fertility. The coast facing the Atlantic, presenting a rocky and barren aspect, conveyed the idea, which was long prevalent, that sterility formed the prevailing character of the soil; but when the interior and the banks of the rivers had been explored, this was found to be very far from being generally the case. Bouchette calculates that of the 9,000,000 acres of which it consists, upwards of 2,000,000 are of the very first quality; about three are good, and only the remaining four inferior or bad. The unoccupied lands were at first disposed of by grant, but they are now, as in Canada, sold annually by auction. About 4,000,000 acres are appropriated, leaving 5,000,000 still to be disposed of. The appropriated part is of course the best; still there are many fine tracts in the interior, hitherto unknown, or to which navigable access has newly been opened. The cultivated land was found, in 1828, to amount to 292,000 acres, producing 153,000 bushels of wheat; 449,000 of other grain; 3,358,000 bushels of potatoes; 163,000 tons of hay. The live stock consisted of 13,000 horses, 110,700 horned cattle, 174,000 sheep, and 72,000 hogs. The population of Nova Scotia, by a census taken in 1827, amounted to 123,808, and has doubtless since that time considerably increased. About one fourth of the number are French Acadians, who live very much by themselves, and are a quiet, good sort of people; a fourth from Scotland; 1200 free negroes; 1500 Indians, who, though more and more closely hemmed in, still adhere to their roaming and hunting habits, and look with contempt on those who cannot live without the fantastic luxuries of bread, houses and woven cloth. They have been converted, however, by the French to the Catholic religion; and, when not drunk, make tolerable subjects. The climate of Nova Scotia is not nearly so bad as is reported. From December to March the country is one sheet of snow; but this, as in all northern regions, is the period of gaiety, even out of doors. The spring is foggy, but the autumn delightful; and the country is never subject to those pestilential diseases which desolate the more southern parts of America. It has even been found favourable to longevity In 1828, the exports are said to have amounted to 473,861*l.*; in which were employed 1651 ships, 132,767 tons, and 7304 men and boys. The value of the imports in the same year is stated at 847,530*l.*: ships, 1694; tons, 132,174; men and boys, 7342. We cannot, however, guarantee the above values, though given by Mr. Bouchette as official, for it is not likely that the imports should so greatly exceed the exports; nor do they agree with others which he gives elsewhere respecting the port of Halifax. Fish is the chief article of export; that in 1831 from Halifax is stated at 161,000 quintals of dry, and 53,500 pickled. Timber is the chief article of export to Britain. In 1828, it sent 8,800,000 feet of hard wood, pine, and spruce, and about 33,000 tons ditto; with 1320 masts, &c. The exports to the neighbouring states and the West Indies consist of timber, provisions, butter, coal of fine quality, gypsum, and freestone, of which there are large depositories. The General Mining Association of London have lately invested 130,000*l.* in the mines of Nova Scotia. The administration is vested in a governor, council, and house of assembly. The revenue in 1828 amounted to 55,176*l.*, of which 35,000*l.* was from excise, and 18,000*l.* from customs. The expenditure was 59,700*l.*, of which 30,000*l.* was spent on roads, and 3300*l.* on education. There is a college at Windsor, on a very respectable footing, and another, called Dalhousie College, has been built at Halifax, but is not yet in operation; and it is regretted that the money appropriated to this institution should not have been rather employed in making the other more complete. There are also numerous schools, partly supported by government, for the education of the lower ranks. The means of religious instruction are large, though without any regular establishment. There are ten or twelve catholic clergymen; twenty-eight of the church of England; twenty-five presbyterian; twenty-five methodists, and numerous baptists.

5639. *Nova Scotia* may be divided into three grand portions: — 1. The eastern coast, which extends for more than 300 miles along the Atlantic. 2. The coasts of the Gulf of St. Lawrence, or more strictly the narrow straits, on the opposite side of which are the islands of Prince Edward and Cape Breton. 3. The shores of the Bay of Fundy. About the centre of the eastern coast is Halifax, enjoying one of the noblest harbours in the world, originally called Chebucto, on a bay sixteen miles long, which will contain any number of shipping of any size. It was founded in 1749, by General Cornwallis, and has since carried on almost all the trade of the country. During the impulse given by the last war, the population had risen to 12,000, but has since sunk to 9000. The most extensive dock-yard in British America has been formed here. The society consists chiefly of military officers and merchants. There is on this coast a succession of fine harbours, of which twelve are capable of admitting ships of the line. Lunenburg, chief of the German settlements, contains a population amounting to nearly half that of Halifax, with which it plies a brisk trade. Liverpool also carries on a considerable traffic; but Shelburne, which, at the end of the American war, was the largest place in Nova Scotia, has sunk into a mere village. The northern coast has Pictou, from which, and the neighbouring bays on this coast, is shipped the largest quantity of timber and coal. On a river falling into the Bay of Fundy is Annapolis, the original French capital; but, since the transference of the seat of government to Halifax, it has sunk into a very secondary place. The trade of this great bay is now chiefly carried on from Yarmouth at its mouth; the population of which, since 1791, has risen from 1300 to 4500. Gypsum is the principal export.

5640. *Cape Breton* is a large island, separated from Nova Scotia only by narrow and winding channels, called St. George's Gulf and the Gut of Canseau, a great part of which is not more than a mile broad. The island is about 100 miles in length, and 80 in breadth, containing an area of about 2,000,000 acres. It is penetrated by an arm of the sea, called the Bras d'Or, which divides it nearly into two equal portions, and is throughout navigable. The surface is diversified by hills, none of which rise above 1500 feet; and the soil is fully equal to that of the neighbouring countries. The land granted in 1821 amounted to 685,000 acres; and, allowing for hills, swamps, and barrens, there are supposed to be about 500,000 acres still to be disposed of. Only the coasts, including those of the Bras d'Or, have yet been cultivated; and the population in general is in a less improved state than in the other colonies; part of them, according to Mr. M'Gregor, having almost the character of bandits. The climate resembles that of the neighbouring countries in the intensity of the cold in winter and of the heat in summer; but these follow more irregularly, and a fortnight's thaw occurs often in the midst of frost and snow. Yet these variations are not disadvantageous to agriculture, which, however, is still in its infancy, the valuable cod-fishery attracting the chief industry of the people. Cape Breton, therefore, imports wheat flour, though it affords a small surplus of oats and potatoes. The exports, in 1828, consisted of 41,000 quintals of dry, and 18,000 barrels of pickled fish. About fifty vessels, averaging fifty tons each, are annually built. There are coal mines of great value, granted to the late Duke of York, and leased by him to Rundell and Bridge of London, who are beginning to work them. Cape Breton has excellent harbours, and commands, in a great measure, the navigation of the St. Lawrence. Of the population, exceeding 20,000, the most numerous portion consists of Scottish highlanders, and next to them of Acadians. The island was, in 1820, politically united to Nova Scotia, and sends two members to the house of assembly. A revenue of about 5000*l.* is raised by a tax of a shilling a gallon on spirits. Louisburg, which the French carefully fortified, and made one of the principal stations in their "New

France," is now entirely deserted, and Sydney, a village of 500 inhabitants, is all the capital which Cape Breton can boast.

5641. *New Brunswick* is a large country to the north-west of Nova Scotia, from which it is separated by the Bay of Fundy. It has on the east a winding coast along the St. Lawrence, on the north, part of Lower Canada; on the south-west, the territory of the United States. It is estimated to contain 27,700 square miles, or 17,700,000 acres. The western part is diversified by bold eminences, though Mars Hill, the highest, does not exceed 2000 feet. From these heights flow fine rivers, of which St. John's has a course of about 500 miles, for nearly half of which it is navigable. The soil is believed to be generally fertile; and grain, where tried, has prospered; but agriculture has not, on the whole, made such progress as to render New Brunswick independent of foreign supply. This great country is still almost one unbroken magnificent forest; and under the extraordinary encouragement afforded by Britain, almost all the energies of the inhabitants are directed to the timber trade. This trade is conducted by a class of men called *lumberers*, who carry it on during the depth of winter, in the heart of these immense woods, sheltering themselves in log-huts, four or five feet high, with a large fire in the middle, round which they all sleep. In spring, when the ice melts, and all the river channels are filled, they load the timber in vessels, or form it into rafts, during which operations they suffer much from cold and wet. Having brought the produce of their winter's labour down to the ports, they obtain a liberal remuneration, which in the course of a few months is squandered, usually in empty show and reckless indulgence. In the year 1824, the timber trade seemed to be at the height of prosperity. The exports, amounting to 320,000 tons of wood, and including sixty newly built ships, were valued at above 600,000*l.* The merchants obtained advances and drew bills on England, with the view of enlarging their transactions, when they were struck by a terrible blow. The price of timber fell one half, and became scarcely sufficient to defray the expense of conveyance; the bills of the most respectable houses were dishonoured, and many were totally ruined. The country, however, has gradually recovered from this shock; and in 1829 the exports were stated at 346,000*l.*, and the imports at 483,000*l.* The revenue, derived chiefly from duties on imports, amounted in 1829 to 34,700*l.*, and rose in 1830 to 49,000*l.* The population, by a census in 1824, was 72,900, and is supposed to have now reached 93,000. A "New Brunswick Land Company" has been formed, on the plan of the Canada Company, with a view to promote agricultural settlement, and thus establish the prosperity of the country on a more solid basis than the timber trade. The government is similar to that of Canada.

5642. *The towns* are built almost entirely at the mouths of the rivers, and supported by the trade brought down their streams. The only exception is in Fredericton, the seat of government, which has been established eighty-five miles up the St. John; and that river being still navigable for vessels of fifty tons, makes it the seat of a great inland trade. It is a small town of 1800 inhabitants; rather regularly built of wooden houses, with government offices, several churches, and a college. St. John's, on a fine harbour at the mouth of the river, possesses much greater importance, and contains about 8000 people. It is built on a rugged and rocky spot, which renders the passages, especially between the upper and lower town, steep and inconvenient; but much has been done to remedy this defect. The exports from St. John's, in 1829, amounted to 210,000*l.*, being nearly two thirds of the amount from all the other ports. St. Andrew's, at the head of the bay of Passamaquoddy, besides its timber trade, has a considerable fishery, and is supposed to contain about 5000 inhabitants. The river of Miramichi is distinguished by the extensive forests on its banks, whence large shipments of timber are made at the port of that name as well as those of Chatham, Douglas, and Newcastle; yet they are all only villages. This tract of country suffered dreadfully in October, 1825, by one of the most dreadful conflagrations on record. The flames, kindled by accident at several points, were impelled by a violent wind, and fed always with new fuel till they spread over about a hundred miles of territory, involving it in smoke and flame, and reducing to ashes the towns of Douglas and Newcastle. Nearly 200 persons are said to have perished, and more than 2000 to have been reduced to entire destitution. The natural advantages of the country, however, have enabled it to recover with surprising rapidity.

5643. *Prince Edward,* called formerly St. John's, is a fine island, extending to the westward of Cape Breton, and, like it, parallel to the coast of Nova Scotia, from which it is separated, however, by a channel ten or fifteen miles wide. It is about 135 miles long, and 34 broad, but the circuit is very irregular, and deeply indented by bays. The island comprises about 1,400,000 acres; and the surface, compared with that of the surrounding countries, is level, varied only by gentle undulations. Protected, perhaps, by their high lands, it has shorter winters, is exempt from those extremes of heat and cold, and those heavy fogs, which render them often so gloomy. This island, notwithstanding its advantages, was neglected by the French, who bestowed all their attention on Cape Breton, as a naval station. In 1768 it contained only 150 families. It then, however, attracted particular attention, and a number of disbanded troops, particularly Highlanders, were settled upon it. The Duke of Kent, at the end of the century, spent some time there, and made great exertions for its improvement; so that, in honour of him, the name was changed from St. John's to Prince Edward Island. Some years after, Lord Selkirk conducted thither a large colony of Highland emigrants. The population in 1826 had risen to 28,700, and is supposed to have considerably increased. The larger proportion consists of Highlanders, who retain still all their native characteristics; their patriotism, hospitality, and capacity of dispensing with little refinements and comforts. The Acadians rank next in number; and a good many respectable farmers have recently resorted thither from Yorkshire and the lowlands of Scotland. The attention of the inhabitants, as in the neighbouring countries, has been, perhaps, too much attracted by the fishery and the trade in timber; but, the latter being nearly exhausted, agriculture is now more regarded. The soil is light and easily worked, well calculated for wheat and oats, of which it affords a surplus. The horses and cattle are small, but active and useful, though many of them are allowed to run almost wild. Prince Edward has a constitution similar to that of the other colonies. Its revenue in 1826 amounted to 5400*l.*

5644. *Newfoundland* is a large island, 420 miles long and 300 broad, situated at the mouth of the Gulf of St. Lawrence, and forming the most eastern part of North America. The land is by no means so highly favoured by nature as the parts of British America already described: its aspect is rugged and uninviting; and, instead of those noble forests, with which they are clothed, it presents only stunted trees and shrubs. Some tracts, however, are supposed to be well fitted for pasturage. But the prosperity of Newfoundland has hitherto been derived exclusively from the cod fishery on its shores, the banks there being much more productive than in any other known part of the world. So early was its value discovered, that in 1517, not twenty years after the first voyage, upwards of fifty vessels of different nations were found employed in the fishery. The British soon took the most active part, and formed colonies on the island. Their sovereignty was recognised by the treaty of Utrecht, which reserved, however, to the French the right of fishing on the banks. This was confirmed in 1763, when the small islands of St. Pierre and Miquelon were allowed to them for drying their fish. On the revolt of the New Englanders, Britain endeavoured to exclude them from the fishery; but as they were able to withhold provisions and other articles, without which it could not be carried on, this attempt was not persisted in. The Americans are now allowed to take fish at any three miles from the shore, and to dry them on any of the neighbouring coasts unoccupied by Britain; and with these immunities they carry on a most extensive fishery.

5645. *The British fishery* is chiefly conducted from stages or platforms erected along the shore, from each of which, at the dawn of day, issue forth several boats, having each from two to four men on board, who continue fishing till they have filled their bark, then repair and deposit their cargo on the platform, and set out to seek for another. The fish, before they become marketable, must pass through various hands. Along one table are seated the cut-throat, the header, and the splitter. The first functionary with a knife rips open the fish, nearly severing the head, then hands it to the header, who clears away the head, entrails, and liver, throwing the latter into a cask, to be distilled into oil. The splitter then divides the cod, taking out the back-bone. With such celerity are these operations performed, that ten fish are often split in a minute and a half. The salter then piles them in heaps, with layers of salt between each, in which state they remain for a few days, when they are washed and spread out in the sun to dry. There are three qualities of cod fish: the merchantable, which are the very best; the Madeira, little inferior, for exportation to Spain and Portugal; the West India, an inferior description, which are sent to the islands for the purpose of feeding the negroes.

5646. *Newfoundland, by the census of* 1829, contained 60,000 inhabitants, almost entirely fishermen, scattered over sixty or seventy stations on the eastern and southern shores. The government of this island is admitted, by persons least prone to discontent, to have been very imperfect, justice being long administered by what were called surrogate courts, composed usually of captains and lieutenants of his majesty's navy, who, however well-intentioned and able in their profession, could not be supposed qualified for so delicate a function. The recent substitute of a chief justice and two assistants, who go on circuit, is complained of as very expensive. Newfoundland has never received, like the other colonies, the benefit of a representative system; for the exercise of which its fluctuating and irregular population have been considered unfit. A demand for this privilege, however, has recently arisen, which will probably be soon gratified.

5647. *St. John's*, the only place on the island which can be called a town, is little more than a large fishing station, the whole shore being lined with wharfs and stages. The harbour, formed of lofty perpendicular rocks, is safe, though the entrance requires caution. The place is defended by several fortresses, one of which, Fort Townsend, is the residence of the governor. The houses are ranged irregularly along one long street, with lanes branching from it: they are built mostly of wood. This construction exposed the town, in 1815, to a series of four dreadful conflagrations, in one of which 140 houses, and property to the value of 500,000*l.* are supposed to have been destroyed. The population varies much according to the season of the year; Mr. Bouchette estimates its stationary amount at about 11,000.

Chap. III.

THE UNITED STATES.

5648. *The United States* of North America possess a territory of vast extent, including the larger part of what is valuable and productive in this part of the continent. They form also by much the greatest and most influential power that exists in the New World.

Sect. I. *General Outline and Aspect.*

5649. *The extent of the United States* has been calculated upon two different principles. They have been viewed as including only the territory actually occupied, peopled, and divided into states which send representatives to the general congress. On the other hand, their dominion has been made to comprehend a still more vast additional region, stretching far to the westward, over which the American Union claims a right, and according to every appearance will actually possess the power to occupy and settle it in proportion as she is enabled to do so by her increasing population.

5650. *The United States territory*, under the first view, is bounded on the south by the Gulf of Mexico; on the east by the Atlantic Ocean; on the north it is separated from Canada by the St. Lawrence, and a line drawn through the centre of the great lakes. Thirty years ago, it had for its western boundary the long chain of the Alleghany mountains, but since that time a constant tide of emigration has poured across them, and has extended the limit to the great line of the river Mississippi; settlements have even been established beyond it. The form of this vast space, Mr. Warden conceives, may be represented by a cone stretching from south-west to north-east, about 1700 miles in length, and 650 in breadth. Its area is calculated at about 1,000,000 square miles, or 640,000,000 acres. Of this, about 51,000,000 are calculated to consist of water, and a large part is also covered by the broad surface of the Alleghany.

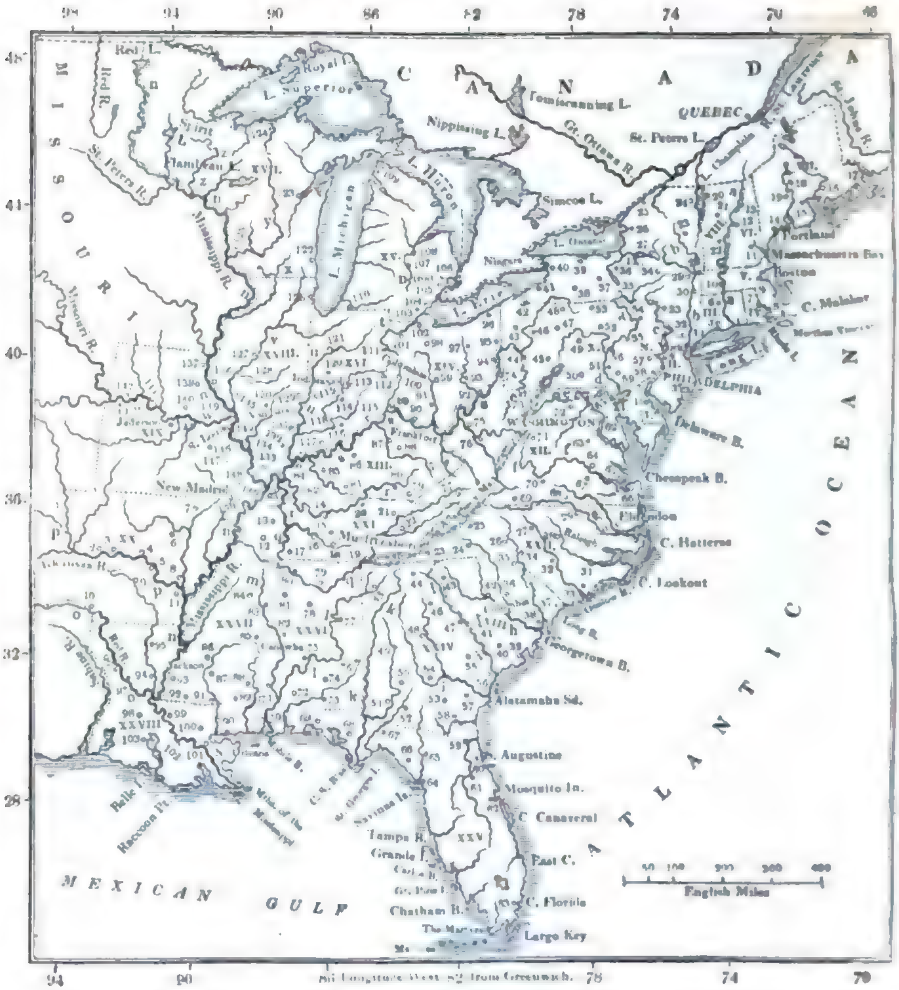
5651. *The division*, founded on the probably effective claims of the United States, has the same southern, and also the same northern boundary, which is prolonged in the line of the Red River. But the western boundary is that vast and long chain traversing the whole continent south and north, and known by the name of the Rocky Mountains. Their missions have even passed these mountains, and surveyed and named a portion of the territory between them and the Pacific; but as this tract is separated by so strong a barrier, and is pressed by Mexico on one side and by Russia on the other, future circumstances must determine how far the claim to it can be established. In the mean time, America can have little reason to complain, if, to this her prospective empire, we assign the Rocky Mountains as a provisional boundary. The United States territory, in this larger sense, will have nearly the same length from north to south. But its line from east to west will be fully 2000 miles; and the entire area will be somewhat more than doubled.

5652. *By another division*, founded on natural features, the eastern territory, between the Atlantic and the Alleghany, is distinguished from the western territory between the Alleghany and the Rocky Mountains. The former does not comprise above a fifth part of the whole, and is inferior also in natural fertility. But having been long cultivated and settled, it comprises the greater part of what America yet possesses of population, wealth, and culture. The other has only one characteristic, but certainly a most remarkable, feature, the vastness of its level surface. It embraces the immense basin of the Mississippi and the Missouri, the largest plain in the world except that watered by the Amazons. Its tracts of fertile land, with its great and numerous navigable rivers terminating in one main trunk, open to it prospects, by no means remote, of opulence and populousness, the extent of which it is difficult to calculate.

5653. *The mountains* of this territory consist almost entirely of the two long parallel chains already mentioned, which are more distinguished by their extent than their elevation. The Alleghany, called also the Apalachian or endless mountains, form the original unbroken western boundary of the states. Their average height is from 2000 to 3000 feet, and they seldom exceed 4000 feet, though at the single point of Mount Washington, in New Hampshire, they rise to 6600. This height, too, is above the Atlantic, whence the base gradually rises to 1400 or 1500 feet; so that the apparent elevation is by no means striking. The Alleghanies, however, to the breadth of 110 to 150 miles, extend to three, four, or five successive ridges, divided by deep and fertile valleys. The Rocky Mountains are more vast in every dimension. The loftiest peak yet discovered, which is seen at the distance of 100 miles, and whose summit is covered with perpetual snow, was measured by Major Long, and found to be 8507 feet above the level of the plain, which being calculated at 3000 feet, would give 11,500 above the sea. The average is not, probably, quite half that elevation, or more than double the Alleghanies. The chain is very broad, in some places not less than 300 miles; but it is crossed by deep and fertile valleys, which afford commodious passes.

5654. *The rivers* of the United States form a grand and most important feature. Those in the Eastern states, indeed, rising all from the chain of the Alleghany, at only a moderate distance from the sea, cannot, even by a winding course, attain any great length. Those in the north, however, form deep bays, and from the level nature of the country are navigable to a great height. The Hudson is navigable for vessels of 80 tons 160 miles, and presents, perhaps, the busiest scene of river navigation in the world. The Delaware, forming the bay of that name, the Susquehannah, the Potowmac, and the Roanoke, terminating in Albemarle Sound, all contribute the greatest benefits to navigation. To the

Fig. 919.



References to the Map of the United States.

North Part.

I. DELAWARE.
Towns.
1. Dover
2. Smyrna.

II. NEW JERSEY.
Towns.
3. Tuckerton
4. Trenton.

III. CONNECTICUT.
Towns.
5. Newhaven
6. Hartford.

IV. RHODE ISLAND.
Town.
7. Providence.

V. MASSACHUSETTS.
Towns.
8. Newport
9. Boston
10. Northampton.

VI. NEW HAMPSHIRE.
Towns.
11. Concord
12. Hanover
13. Lancaster.

VII. MAINE.
Towns.
14. Portland
15. Belfast
16. Edington
17. Machias
18. Solon
19. Norridgewick.

VIII. VERMONT.
Towns.
20. Burlington
21. Montpelier
22. Windsor.

IX. NEW YORK.
Towns.
23. Chester
24. Plattsburg
25. Ogdensburg
26. Watertown
27. Utica
28. Troy
29. Albany
30. Hudson
31. New York
32. Goshen
33. Monticello
34. Cooperstown
35. Oswego
36. Auburn
37. Geneva
38. Angelica
39. Rochester
40. Buffalo
41. Fredonia.

X. PENNSYLVANIA.
Towns.
42. Warren
43. Franklin
44. Pittsburg
45. Greensburg
46. Rossburg
47. Centre
48. Smethport
49. Bellefonte
50. Gettyburg
51. Harrisburg
52. William's Port
53. Wellsborough
54. Tunkhannock
55. Nescopec
56. Sunbury
57. Allentown
58. Philadelphia
59. Lancaster.

XI. MARYLAND.
Towns.
60. Baltimore
61. Fredericktown
62. Washington.

XII. VIRGINIA.
Towns.
63. Fredericksburg
64. Richmond
65. Elizabeth
66. Norfolk
67. Petersburg
68. Lewistown
69. Taylorsville
70. Lynchburg
71. Staunton
72. Winchester
73. Morgantown
74. Wheeling
75. Buffalo
76. Charleston
77. Franklin.

XIII. KENTUCKY.
Towns.
78. Prestonburg
79. Williamsburg
80. Monticello
81. Glasgow
82. Cadiz
83. Nashville
84. Morganfield
85. Hartford
86. Elizabeth
87. Frankfort
88. Lexington.

XIV. OHIO.
Towns.
89. Cincinnati
90. Ripley
91. Chillicothe
92. Marietta
93. Zanesville
94. Steubenville
95. New Lisbon
96. Chardon
97. Moscow
98. Sandusky
99. Columbus
100. Troy
101. Fort Defiance
102. Perrysburg.

XV. MICHIGAN.
Towns.
103. Maumee
104. Monroe
105. Detroit
106. Pontiac
107. Byron
108. Saginaw
109. Old Mackinac
110. Carey.

XVI. INDIANA.
Towns.
111. Wilshire
112. Jacksborough
113. Indianapolis
114. Bloomington
115. Madison
116. Paoli
117. Evansville
118. Vincennes
119. Haute

southward the mountains receding into the interior, allow to the Catahouche and the Alabama an extent of about 400 miles before they reach the Gulf of Mexico.

5655. *But the system of rivers in the grand western basin* reaching from the Alleghanies to the Rocky Mountains, has only one equal throughout the world in extent, and none in the benefits likely to be derived from it as a medium of commercial intercourse. The main trunk consists of the Mississippi, which rises in some small lakes about latitude 47° north, and flows almost due south across 18 degrees of latitude, through a course of 2000 miles, to the Gulf of Mexico. About half way, however, from its source it receives the Missouri, a river much greater than itself, and which ought clearly to be considered as the main stream; for our capricious nomenclature cannot alter the relations of nature. The Missouri, from its source to the junction, has a course of 2300 miles; while the distance from its conflux with the Mississippi to the mouth of that river is 1000 miles; so that we have here a continuous river course of about 3300 miles, which may be presumed nearly equal to that of the Amazons, its only rival. The Mississippi, however, from its straight central course, is always considered as the line to which the numerous tributaries on both sides are to be referred. These tributaries, though inferior to itself, rival the greatest streams of the European continent. From the east it receives the Illinois, after a course of 460 miles; the Ohio (1188), with its tributaries, the Wabash, 1028; the Cumberland, or Shawannee, 1118; the Kentucky, 627; the Tennessee, 1131. The extended valleys through which these great rivers flow form, perhaps, the most fertile region of the globe, and already begin to be covered with luxuriant harvests. From the west, above the Missouri, come St. Peter's and Moingona, each 450 miles long, and both navigable. The Missouri itself then enters, after receiving the Keheetsa, or Yellowstone, nearly 2000 miles long; the Platte, also about 2000 miles; the Chayenne, 800; the Kansas, 1500; the Grand River, 600; the Great Osage, the Little Missouri, and the Great Sioux. Below the junction, the Mississippi receives the White River, 700 miles; the Arkansas, 2173; Red River, 1450. The most important circumstance is, that all the rivers of this grand system are navigable almost to their source. The Mississippi itself is navigable to the Falls of St. Anthony, upwards of 1500 miles from its mouth, and vessels of 300 tons can ascend 400 miles. The Mississippi, which is clear in its higher course, after its junction with the Missouri, and still more with the Arkansas and Red River, becomes, according to Mr. Stuart, the most turbid river known, with the widest alluvial bottom, and beyond all comparison the narrowest channel that carries so much water. It is broader above the junction, with only a tenth of the water, than at New Orleans. The navigation is dangerous, not only from the instability of the banks, and the impetuosity of the current, but from the numerous trunks of trees floated down, which, attaching themselves to the bottom, form islands, sometimes above and sometimes below water, to avoid striking on which requires the utmost skill of the navigator. The Missouri is also navigable, though with some impediments, while the Ohio, and generally all the other rivers, are navigable for boats, at least nearly to their source. It has, therefore, been calculated, that there exists in this region an inland navigation of 23,000 miles, having an outlet, by the Mississippi, into the Gulf of Mexico, and by canals, recently formed, to the Hudson and the Atlantic. The entire extent of what is called the basin of this great system of rivers, or of the countries which they water, is estimated by Mr. Darby at 1,099,000 square miles.

References to the Map of the United States — continued.

120. Crawfordville
121. Prophet's Town.

XVII. NORTH-WEST TERRITORY.
Towns.
122. Chippicotton
123. Fort Howard
124. Copper-mine
125. Fort Crawford.

XVIII. ILLINOIS.
Towns.
126. Chicago
127. Peoria
128. Springfield
129. York
130. Vandalia
131. Palmyra
132. M'Leansborough
133. Vienna
134. Kaskasia
135. Carrollton
136. Atlas.

XIX. MISSOURI.
Towns.
137. Waconda
138. New London
139. St. Charles
140. Elizabeth
141. Chariton
142. Bluffton
143. Fort Osage
144. Jefferson
145. St. Louis
146. Potosi
147. Frederickstown
148. Jackson
149. Winchester
150. New Madrid.

South Part.

XX. ARKANSAS.
Towns.
1. Salt Works
2. Mulberry
3. Spadra
4. Port Remove
5. Arkopolis
6. Batesville
7. Davidsonville
8. Arkansas
9. Hot Springs
10. Pecan Point
11. Arkansasville.

XXI. TENNESSEE.
Towns.
12. Jackson
13. Huntsville
14. Nashville
15. Murfreesborough
16. Columbia
17. Waynesborough
18. Shelbyville
19. Brainerd
20. Monroe
21. Jacksborough
22. Knoxville.

XXII. NORTH CAROLINA.
Towns.
23. Baystown
24. Morganton
25. Jeffersontown
26. Statesville
27. Pittsborough
28. Raleigh
29. Halifax
30. Eldendon
31. Newburn
32. Fayetteville
33. Wilmington
34. Christanville
35. Wadesborough.

XXIII. SOUTH CAROLINA.
Towns.
36. Camden
37. Conwayborough
38. Georgeton
39. Charlestown
40. Pocotaligo
41. Barnwell
42. Columbia
43. Pendleton.

XXIV. GEORGIA.
Towns.
44. Clarksville
45. Etowee
46. Lexington
47. Augusta
48. Milledgeville
49. Knoxville
50. Dooly
51. Early
52. Irwin
53. Appling
54. Jacksonville
55. Tatnall
56. Savannah
57. Tuckersville
58. St. Mary's.

XXV. FLORIDA.
Towns.
59. Jacksonville
60. St. Augustine
61. Rollstown
62. New Smyrna
63. Florida
64. Vicasaney
65. Indian Village
66. St. Pedro
67. Tallahassee
68. St. Andrew's
69. Choctawatchie.

XXVI. ALABAMA.
Towns.
70. Mobile
71. St. Stephen's
72. Sparta
73. Covington
74. Greensdale
75. Cahawba
76. Fort Bainbridge
77. Fort Strather
78. Blountville
79. Huntsville
80. Florence
81. Pikeville
82. Erie.

XXVII. MISSISSIPPI.
Towns.
83. Hamilton
84. Arbachotubbee
85. Pitchlyns
86. Jackson
87. Westville
88. Winchester
89. Greene
90. Shieldborough
91. Fords
92. Liberty
93. Natchez.

XXVIII. LOUISIANA.
Towns.
94. Ocatahoola
95. Monroe
96. Natchitoches
97. Clatlaville
98. Opelousas
99. Franceville
100. Madisonville
101. New Orleans
102. Donaldsonville
103. New Iberia.

Rivers.
a Connecticut
b Hudson
c Delaware
d Susquehanna
e Potowmac
f James
g Roanoke
h Santee
i Savannah
j Alatamaha
k Chattahooche
l Alabama
m Tombeckbee
n Mississippi
o Red River
p Arkansas
q Tennessee
r Cumberland
s Ohio
t Maumee
u Wabash
v Illinois
w Missouri
x Rock River
y Wisconsan
z St. Croix.

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5656. *In regard to lakes*, the United States have a share in the greatest lake-chain in the world, that of the Superior, Huron, Erie, and Ontario. These, however, though the boundary line passes through their centre, belong more strictly to Canada, the masters of which possess the navigation of the St. Lawrence, their connecting stream. Michigan, however, 262 miles long, and 55 broad, is entirely included within the United States' territory; but their greatest benefit is derived from Lake Erie, which has been made the central point, uniting their eastern with their western waters.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5657. *This region* presents extensive tracts composed of primitive, transition, secondary, tertiary, and alluvial formations; but hitherto no undoubtedly volcanic rocks have been detected.

5658. (1.) *Primitive rocks.* The primitive formations extend from N. E. to S. W., through nearly the whole territory of the United States. Eastward of the Hudson, the rocks are, with few exceptions, principally primitive, and have the Atlantic for their eastern boundary. The apparent breadth of this primitive tract is much diminished in the middle states; but in the southern states it is again enlarged. From the Hudson to the Tombeckbee, its visible boundary on the south-east, is, with a very few exceptions, a vast alluvial tract. Its north-western boundary, after crossing the parallel of 45° N. lat., runs nearly fifteen to twenty miles east of Lake Champlain, twelve miles east of Middleburg, and a little westward of Bennington in Vermont, twelve to fifteen miles east of Hudson, and twelve miles south-east of Poughkeepsie in New York; it then bends to the south-west, crosses the Hudson, passes near Sparta, and ten or fifteen miles east of Easton on the Delaware, terminating in a point a few miles north of Bethlehem; it again appears fifteen miles west from Trenton in New Jersey, runs about fifteen miles west of Philadelphia, ten miles west of York, and, passing about twenty-two miles west of Washington, joins the Blue ridge, along which it continues to Magothy Gap; and thence passes in a south-westerly direction, till it meets the alluvial deposit near the river Alabama. Primitive rocks also appear westward of Lake Champlain, and have for their general boundaries, Lakes Champlain and George, on the east, the St. Lawrence on the north-west, and a line drawn from the Thousand Islands in the St. Lawrence, passing near the Mohawk, and terminating at Lake George, on the south-west.

5659. *The strata of this primitive region* vary in direction from N. and S. to N. E. and S. W.; they very generally, it is maintained, incline or dip to the S. E. at a greater angle than 45°, and are not unfrequently vertical. Within the limits already assigned to the primitive rocks are found several transition and secondary deposits, of comparatively small extent, resting upon the primitive: thus transition rocks extend from Rhode Island to Boston. They again appear on the S. W. side of the Delaware, and extend to the upper branches of the Yadkin in North Carolina, forming a narrow tract of great length, and varying in breadth from two to fifteen miles. Secondary rocks extend from Newhaven to Northfield in Massachusetts, lying principally on the western side of Connecticut river. They appear again S. W. of the Hudson; at the Delaware their breadth is much diminished; they pass a few miles west of York in Pennsylvania, and, crossing the transition rocks already mentioned near the Potowmac, they terminate a little south-west of the Rappahannock. A coal formation, composed of secondary rocks, is also found a little west of Richmond in Virginia.

5660. *One of the most remarkable* circumstances, says Professor Cleaveland, connected with these primitive rocks, is the *granite ridge*, which forms the boundary between the primitive and the alluvial regions. This granite ridge appears to have been the ancient line of the sea coast in the southern and middle states, and very probably through Connecticut. It commences at least as far south as Georgia; and its general direction is from S. W. to N. E., sometimes varying to almost north and south, or east and west. The Roanoke crosses it near Halifax; James River at Richmond; the Rappahannock at Fredericksburg; the Potowmac at Georgetown; and the Petapsco between ten and fifteen miles from its influx into Chesapeake Bay. It sometimes disappears under the soil; but at the point where it crosses the Susquehanna it rises to a greater height, and is more rugged than usual. At Trenton it meets the Delaware. After crossing York Island, this granite ridge extends along the north shore of Long Island, dips under the passage between that island and Fisher's Island, which it crosses, and, again dipping under the passage between Fisher's Island and the continent, appears once more at Watch Hill Reef, not far below Stonington in Connecticut.

5661. (2.) *Transition rocks.* The greater part of the transition rocks found in the United States, according to Maclure and Cleaveland, lie N. W. of the primitive, and form a long and narrow zone, extending from a little N. E. of the Hudson nearly to the river Alabama. The breadth of the zone is from 20 to 100 miles. The strata generally dip to the

N.W.; and their inclination, or dip, in most places, is less than 45°. The transition rocks, on their north-western border, are often in contact with secondary rocks, the latter appearing in the valleys, and the former in the surrounding mountains. Among these rocks are found limestone of various colours, greywacke, greywacke slate, flinty slate, and various conglomerates. These rocks are traversed and overlaid by various trap rocks.

5662. (3.) *Secondary rocks.* The great secondary deposit lies north-west of the transition rocks, extending from them to the lakes, and from the Hudson to the westward of the Mississippi. This deposit is equally remarkable both for the extent and uniformity of the formations which it embraces, and which consist of limestone and sandstone in strata often nearly horizontal, and on which rests the great black coal formation. According to Maclure, there is reason to believe that this secondary deposit extends westward of the Mississippi nearly to the foot of the Stony Mountains; thus presenting an area whose diameter from east to west is about 1500 miles, and from north to south about 1200 miles. He further conjectures that all this extent of secondary rocks was once the bottom of a great lake or sea; that the waters of the lake have been gradually discharged by the Mississippi, the Hudson, and the St. Lawrence, the only rivers that have completely broken through the mountains which once surrounded this immense basin of water.

5663. (4.) *Tertiary rocks.* Although considerable deposits of this class of rocks are met with, no accurate account of them has been published.

5664. (5.) *Alluvial deposits.* These cover vast tracts of country in the United States; of these the most considerable is that which is interposed between the Atlantic shore and the Alleghany mountains. The northern extremity of this deposit is at Long Island, all of which appears covered with alluvium, except the margin of the shore at Hurlgate, where primitive strata appear for the distance of four or five miles. On the east and south-east this alluvium is bounded by the Atlantic, and on the south by the Gulf of Mexico to the Mississippi. Its north-western or interior boundary, commencing a little below Newark, runs north of Amboy to the Raritan, and thence passes near Trenton, Philadelphia, Baltimore, Washington, Fredericksburg, Richmond, Petersburg, a little west of Halifax, Smithfield, and Averysborough in North Carolina, and Camden in South Carolina, near Columbia, Augusta on the Savannah, and thence bending to the west, it crosses the Ogeechee, Oakmulgee, Alabama, and Tombeckbee rivers, and reaches the Mississippi near Natchez. The height of this deposit above the level of the sea gradually diminishes in passing from Georgia to New York. From the Mississippi to the Roanoke, the tide does not reach the north-western boundary of this alluvium; but from the Roanoke to the Delaware, it enters the primitive range. This widely extended deposit has not been minutely examined in many points, and in no one to a very great depth. Through its whole extent there is very little which deserves the name of rock, and in those quarters where rocky strata occur, it has not been proved that these are not tertiary. In Maryland, about fifteen miles south from the *granitic ridge*, or border of the primitive, is a bed of *sandstone*, whose direction is parallel to the ridge. In North Carolina, also, a bed of limestone and shells commences about twenty or thirty miles from the border of the primitive, to which it runs parallel through South Carolina, Georgia, &c. In some points, as in Georgia, is a variety of buhrstone; a fact illustrative of the probable tertiary nature of these various beds of limestone and sandstone. The great mass of this alluvial deposit is composed of sand, gravel, pebbles, and clay, the last of which, either white or variously coloured, sometimes forms extensive beds. These beds of sand, either brown and ferruginous, or white and pure, often appear waved; and sometimes, especially in their upper part, contain extensive beds of pebbles of quartz. Sometimes also the gravel or sand is converted into a kind of ferruginous conglomerate or sandstone. This deposit also contains numerous and valuable beds of clay ironstone; and sometimes also iron pyrites. Beds of shells, teeth and bones of sharks, whales, birds, &c., and remains of vegetables, are found in various parts of this alluvial deposit, sometimes at a depth of nearly 100 feet. Beds of marl derived from shells also occur. When this alluvial deposit is composed of fine sand, and without any incumbent soil, very important changes are often produced by the action of wind. Thus, at Cape Henry, in Virginia, hills are formed, and trees buried beneath the sand, which is gradually transported by the wind.

5665. *Gems, and ornamental minerals. — Coal. — Saline minerals; — and metals and ores.* — I. *Gems, and ornamental minerals.* The United States are rich in the more precious and beautiful minerals. Of these the following may be noticed; a complete account being incompatible with our limited space: — 1. *Zircon and hyacinth* are met with in North Carolina, Maryland, Pennsylvania, New Jersey, New York, and Connecticut. — 2. *Opalescent felspar,* or *adularia,* in New York, near Champlain. — 3. *Beryl:* next to Asiatic Russia, the United States is the country that affords the most magnificent masses and crystals of this gem. The following general localities may be mentioned: — Maryland, Pennsylvania, New York, Massachusetts, New Hampshire, Maine. — 4. *Garnet.* The precious garnet is met with in Pennsylvania, and other parts in the United States. — 5. *Chrysoberyl* is met with at Had-dam, in Connecticut. — 6. *Corundum.* This mineral, which is impure or imperfectly crystallised sapphire, is found in South Carolina and Connecticut; and sapphire in Newton township, Sussex county, New Jersey. — 7. *Tourmaline* of beautiful colours in Massachusetts, Maryland, Pennsylvania, New York, Vermont, Maine.—8. *Rock crystal,* in Arkansas territory, Virginia, South Carolina, Maryland, Pennsylvania, New York, Vermont, Massachusetts, &c. — 9. *Calcedony,* in Missouri, Indiana, Ohio, Maryland, Pennsylvania, New Jersey, Connecticut, and Massachusetts. —10. *Opal,* in Pennsylvania. —11. *Agate and jasper,* in Missouri, Virginia, Maryland, New Jersey, New York, Connecticut, Massachusetts, New Hampshire, and Maine.—12. *Asbestus and serpentine,* in Maryland, New Jersey, New York, Connecticut, Massachusetts, and Vermont.—13. *Marbles. White marble,* in Maryland, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Vermont, Massachusetts, and Maine. *Variegated marble,* in Maryland, Potowmac, Pennsylvania, New York, Connecticut, Vermont, Rhode Island, Massachusetts, and Maine. *Flexible marble.* This is found in Vermont, Rutland county, and in Massachusetts. —14. *Calcareous spar.* Of this interesting mineral many varieties occur in the different states of the Union. — 15. *Fluor spar.* This beautiful mineral is found in Tennessee, Virginia, Illinois, Maryland, New Jersey, New York, Connecticut, Vermont, Massachusetts, and New Hampshire.

5666. II. *Coal.* There are said to be four coal formations in the United States: — 1. The true glance coal, or anthracite, found in the transition clay slate. 2. Coal destitute of bitumen, usually called anthracite, but differing from the anthracite found in clay slate. It occurs in a slate rock, said to be in America the lowest of the lower secondary series of rocks; and is conjectured to correspond to the great coal formation of Britain. 3. The proper bituminous coal is at Tioga, Lycoming, &c. This coal is contained in a slate rock, within the lowest of the series of upper secondary rocks. 4. The fourth formation is that which includes the brown coal, or lignite, which is found in a very extensive deposit in the state of New Jersey, along the south shore of the Bay of Amboy; also in Maryland and Massachusetts. *Peat,* the newest of the coals, is found in many parts of the United States, particularly in the states of Ohio, New Jersey, New York, and Massachusetts. The coal at present most extensively mined and used for domestic purposes and for the arts is the glance coal, or anthracite. The following are some of the most important localities of United States coal, including glance coal and black bituminous coal, viz.: — Missouri, Tennessee, Kentucky, Indiana, Ohio, Pennsylvania, New Jersey, Connecticut, and Massachusetts.

6567. III. *Saline minerals.* The principal saline minerals of the United States are saltpetre, or nitrate of potash, and common salt, or muriate of soda. — 1. *Saltpetre* occurs in Georgia in a great cavern; one bushel of the earth of which, containing both the nitrates of potash and lime, yields from three to ten pounds weight of pure nitre, which sells at about 16 cents a pound. The nitrate of lime is decomposed by wood-ashes. In Kentucky, limestone caverns abound, and furnish large quantities of nitre. One of these caves is 646 yards in length; its breadth 40 feet, and its average height 10 feet. One bushel of the earth of this cave commonly yields from one to two pounds of nitre. Kentucky also affords native nitre under a very different form, and constituting what is there called *rock ore,* which is, in fact, sandstone richly impregnated with saltpetre. These sandstones rest on limestone, and sometimes present a front from 60 to 100 feet high. When broken into small fragments, and thrown into boiling water, the stone soon falls into sand, one bushel of which, by lixiviation and crystallisation, frequently yields ten pounds, and sometimes more than twenty pounds, of nitre. The nitre obtained from these rocks contains little or no nitrate of lime, and is said to be superior for the manufacture of gunpowder to that extracted from the earths already mentioned. Masses of native nitre nearly pure, and weighing several pounds, are sometimes found in the fissures of these sandstones, or among detached fragments. Indeed, it is said that these masses of native nitre sometimes weigh several hundred pounds. — 2. *Common salt, or muriate of soda.* In the United States, salt springs are numerous in several districts. These springs sometimes flow naturally, but are more frequently formed by sinking wells in those places where this salt is known to exist, as in salt marshes, and in *salt licks,* so named from having formerly been the resort of wild animals to *lick* the clay impregnated with salt. Salt springs and wells occur in the Arkansas territory, Virginia, Kentucky, Illinois, Ohio, Pennsylvania, New York, &c. When Cleaveland published the second edition of his excellent Mineralogy, in 1822, the whole quantity of salt annually extracted from saline springs in the United States exceeded 1,200,000 bushels; and of this the springs of New York furnished more than 700,000 bushels.

5668. IV. *Metals and ores.* — 1. *Native gold.* The principal gold district in the United States is in North Carolina. There the gold occurs in veins traversing granite and primitive greenstone, or, according to some, in talcose slate; and as an ingredient in the alluvial spots of ground in the ranges of the greenstone formation. The gold workings in Carolina are much richer than the alluvial mines in Brazil. According to Mr. Ayres, one mass of gold weighing twenty-eight pounds was met with. In the year 1810, upwards of 1341 ounces of this gold, equal in value to 24,689 dollars, had been received at the mint of the United States. — 2. *Native silver, and ores of silver.* Small quantities of these minerals have been found in the United States, as in New Jersey, New York, New Hampshire, and Connecticut. — 3. *Ores of mercury.* In the Michigan territory and Ohio, more particularly on the shores of Lakes Michigan, Huron, St. Clair, Detroit River, and Lake Erie to the mouth of Vermilion River. It occurs in the soil in the form of black and red sand, but is usually more abundant in banks of fine ferruginous clay. Near the mouth of Vermont River it is in the form of a very fine red powder, or in grains and small masses, disseminated in clay. It yields by distillation about sixty per cent. of mercury. — 4. *Copper.* Masses and grains of pure or native copper are found in different parts of the United States, as in the Illinois, in the North-west Territory (where, about thirty miles south from Lake Superior, on the west bank of the river Ontonagon, was found a very large mass of native copper, weighing by estimation about 2200 lbs.), Virginia, Maryland, Pennsylvania, New Jersey, and Connecticut. Various *sulphurets of copper*, as yellow, grey, and black, are met with in the Union; in Maryland, Pennsylvania, New York, Connecticut, Massachusetts, and Maine. The *red oxide of copper*, or *red copper ore*, is found in Virginia, Pennsylvania, New Jersey, and Connecticut. The *blue carbonate of copper*, in Pennsylvania and New Jersey; and the *green carbonate of copper*, or *green malachite*, in Maryland, Pennsylvania, New Jersey, and Massachusetts. — 5. *Iron. Meteoric iron* has been met with in Louisiana. A remarkable mass, in the possession of Colonel Gibbs, is three feet four inches long, and two feet four inches broad, and weighs fully 3000 lbs. *Iron pyrites*, or sulphuret of iron, occurs every where throughout the United States. *Black iron ore*, or *magnetic iron ore*, a very important ore of iron, occurs in Arkansas territory, South Carolina, North Carolina, Pennsylvania, New Jersey, New York, Rhode Island, Maine, Connecticut, Massachusetts, and New Hampshire. *Red iron ore*, or *specular iron ore*, occurs in the same states of the Union as the black iron ore. *Brown iron ore*, or *hydrate*, is also a frequent ore in several of the states. These are the chief ores of iron worked for economical purposes; but to these we may add the *chromate of iron*, which affords chromic acid, a substance which, when united with the oxide of lead, forms chromate of lead, a very beautiful yellow pigment. It occurs generally in serpentine, and is found in Virginia, Maryland, Pennsylvania, New Jersey, New York, and Connecticut. — 6. *Lead.* Nearly all the species of lead ore are found in the United States; but of these the only one of importance in an economical point of view is the *common lead ore*, or *lead glance*, the sulphuret of lead of chemists, which is found in Arkansas territory, Missouri, Illinois, Kentucky, Indiana, Ohio, Tennessee, Maryland, Pennsylvania, New York, Connecticut, Vermont, Massachusetts, and Maine. *Black lead*, or *graphite*. This valuable mineral, so important in the arts, is found in Missouri, Virginia, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, New Hampshire, and Maine. Excellent pencils are manufactured at New York: the graphite, from Bucks county, in Pennsylvania, is reduced to powder, formed into masses by some cement, and then sawed into thin tables, as usual. — 7. *Zinc.* All the ores of this metal are met with in the United States. The *sulphuret of zinc*, or *zinc blende*, occurs in Missouri, Maryland, Pennsylvania, New Jersey, New York, Connecticut, and Massachusetts. The *red oxide of zinc*, one of the most valuable ores of zinc, occurs in the Franklin, Stirling, and Rutger iron mines, and near Sparta, in New Jersey. *Calamine*, which is partly a siliceous oxide of zinc, and partly a carbonate of zinc, is found in lead mines in Pennsylvania. — 8. *Cobalt.* The ores of this metal are of rare occurrence, and hitherto not in such quantity as to be of importance in the arts. — 9. *Manganese.* The *oxide of manganese*, or common ore of manganese, is met with in Arkansas territory, Missouri, Kentucky, Virginia, Pennsylvania, New Jersey, New York, Vermont, Connecticut, and Maine. — 10. *Arsenic. Native arsenic* is said to occur at Gayhead, in Martha's Vineyard. *Red sulphuret of arsenic*, on the north-west coast of America, mixed with *yellow sulphuret of arsenic*. — 11. *Bismuth. Native bismuth* is found at Huntington in Connecticut; and it is said, also, in small quantities, in Indiana and Ohio. — 12. *Antimony. Native antimony* is found at Harwinton in Connecticut, associated with grey ore of antimony. *Grey antimony ore*, or *grey sulphuret of antimony*, is found in Missouri, Virginia, Indiana, Ohio, Connecticut, Massachusetts, and Maine. The red sulphuret of antimony occurs in detached masses in the soil near Leesburg in Virginia. — 13. *Molybdena.* The common ore of molybdena, or the sulphuret of that metal, is found in South Carolina, Virginia, Maryland, Pennsylvania, New York, Connecticut, Massachusetts, and Maine. — 14. *Tellurium, Tungsten, Nickel*, and *Uranium* are found in small quantities in a few places. — 15. *Titanium.* The beautiful ore named the *ruby* or *red oxide of titanium*, is met with in South Carolina, North Carolina, Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, and Maine. The *ferruginous oxide of titanium*, the *siliceo-calcareous oxide of titanium*, and the *octahedral oxide of titanium*, are also enumerated among the ores met with in the United States.

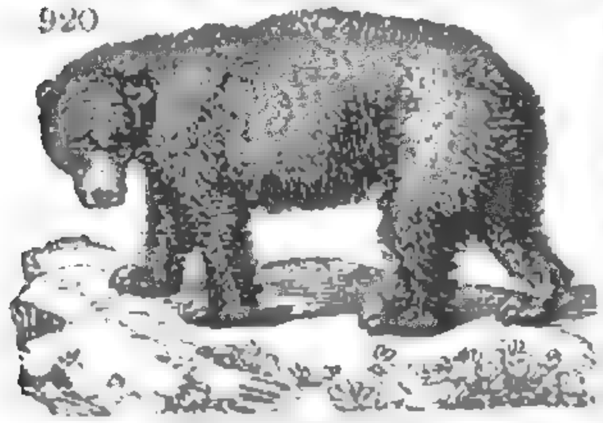
SUBSECT. 2. *Botany.*

5669. *The Botany* of this and the other countries of North America has been described under the head of British America.

Subsect. 3. *Zoology.*

5670. *To our zoological remarks* on North America in general, little more need here be added. The native quadrupeds, particularly those of a large size, have been progressively diminishing as cultivation has advanced, and have retreated to the vast plains beyond the back settlements. The different sorts of Squirrels, &c. among the smaller races, still appear in considerable numbers, and at certain seasons furnish game for the amateur sportsmen. Many of the quadrupeds enumerated by Dr. Richardson are either dispersed, or occasionally appear, over the remaining portions of North America, more particularly to the westward. The American Bison, or Buffalo, never common in the United States, has gradually retired before the white population. Moose Deer, in like manner, were formerly found as far south as the Ohio, but these also are disappearing in the more cultivated states. Two species of Bear, the Black and the Grisly, still retain possession of their former haunts, while the Racoon, American Badger, Fisher, Ermine, &c., are among the more common species.

920



AMERICAN BLACK BEAR.

5671. *The Black Bear* of America (*Ursus americanus* Rich.) (*fig.* 920.) is a different animal to that called by the same name in Europe. It has a milder disposition, and lives more on vegetables; it is the smaller of the American species, seldom exceeding five feet in length; the fur is long, straight, black, and shining, and when the skin was formerly in great request, a "prime" one was worth from twenty to forty guineas, and even more; at present (1830) the demand is small, from their being little used either as muffs or hammer-cloths, so that the best sell for little more than forty shillings. The favourite food of this species are different berries; in the absence of which it preys upon roots, insects, fish, eggs, and such birds or quadrupeds as it can surprise; but it does not, from choice, touch animal food. Timid in its disposition, it will not face a man unless wounded or its retreat is cut off; but in defence of its young it becomes a dangerous assailant. "I have known," observes Dr. Richardson, "the female boldly to confront her enemy, until she had seen her cubs attain the upper branches of a tree, when she made off. When in pursuit, its pace is said not to be quick; but Dr. Richardson has seen a Black Bear make off with a speed that would have baffled the fleetest runner, and ascend a nearly perpendicular cliff with astonishing facility. This species, when resident in the fur countries, almost invariably hibernates, and about 1000 skins are annually procured by the Hudson's Bay Company, from such as are destroyed in their winter quarters. The Black Bear inhabits every wooded district of North America."

921

GRISLY BEAR.

5672. *The Grisly Bear* (*Ursus ferox* Rich.) is a much more formidable species than the last, though its fur is less valuable. Its strength and ferocity is so great, that the Indian hunters use the greatest precaution in attacking it. When adult, it is reported to attain a weight exceeding 800 pounds, and one has been killed, measuring nine feet from the nose to the tail. Some idea of its strength may be had, from knowing that it has dragged to a considerable distance the carcase of a buffalo weighing about 1000 lbs. The following story, Dr. Richardson observes, is well authenticated: — "A party of voyagers up the Saskatchewan had seated themselves in the twilight by a fire, and were busy in preparing their supper, when a large Grisly Bear sprang over their canoe that was tilted behind them, and, seizing one of the party by the shoulder, carried him off. The rest fled in terror, with the exception of a man named Bourasso; who, grasping his gun, followed the bear as it was retreating leisurely with its prey. He called to his unfortunate comrade that he was afraid of hitting him if he fired at the bear; but the latter entreated him to do so immediately, without hesitation, as the bear was squeezing him to death. On this he took a deliberate aim, and discharged his piece into the body of the bear, which instantly dropt its prey to pursue him: he escaped with difficulty, and the wounded man finally recovered." The cubs of the Grisly Bear can climb trees; but when the animal is full grown, it cannot do so: the hunter may thus escape; but the infuriated animal will sometimes keep watch below, and thus confine its enemy for many hours. This is a carnivorous species, but occasionally eats vegetables. It inhabits the Rocky Mountains and the Eastern Plains; while its southern range is stated to reach Mexico. In 1830 there was a live specimen in the Tower, and two others in the Paris garden.

5673. *The American or red Fox* (*Vulpes fulvus*) (*fig.* 922.) bears a close resemblance to the common European Fox; but it has a longer and finer fur, its ears and nose are shorter, and its cheeks rounder. It preys much on the smaller animals of the rat family, but devours all animal food; it hunts chiefly in the night, yet is frequently seen in the daytime. It runs for about 100 yards with great swiftness, but its strength is exhausted in the first burst, and it is soon overtaken by a wolf or a mounted huntsman. The skins of about 8000 are annually imported from the fur countries. The true European Fox (*Vulpes vulgaris*) is said, by naturalists, to inhabit North America; but Dr. Richardson states it does not exist in the countries north of Canada. It is possibly to this species which Dr. Godman alludes, when he says that reddish foxes are numerous in the middle and southern states, and are every where notorious depredators on the poultry yards.

922

AMERICAN RED FOX.

5674. *The Rats and Mice of Europe*, originally unknown in the New World, have been brought thither by the early European visiters. The Black Rat seems to have multiplied very fast until the introduction of the Brown Rat (*Mus decumanus*) thinned its numbers; and from this cause it has now become as rare as it is in Europe. The Brown Rat first appeared in America in 1775; it is now common in *Lower*, but in 1825 it had not advanced much beyond Kingston in *Upper*, Canada. That these, and the Common Mouse, have been so introduced, there can be no doubt; Dr. Richardson found a dead mouse in a storehouse at York factory, filled with packages from England. Neither of these species, however, have yet been discovered in the fur countries.

5675. *The American Field Mouse* (*Mus leucopus* Rich.) is the natural representative of our European field mouse (*Mus sylvaticus*). No sooner is a fur post established, than this little animal becomes an inmate of the dwelling-houses; whilst the Meadow Mouse (*Arvicola pennsylvanicus*) takes possession of the outhouses and gardens. It has, however, a curious habit not observed in ours. It makes hoards of grain, or little pieces of fat; and what is most singular, these hoards are not formed in the animal's retreats, but generally in a shoe left by the bedside, the pocket of a coat, a nightcap, a bag hung against the wall, or some similar place. "Sometimes," says Dr. Richardson, "we found barley introduced into a drawer, through so small a chink, that it was impossible for the mouse to gain access to its store: the quantity laid up in a night nearly equalling the bulk of a mouse, renders it probable that it was made by the united efforts of several individuals."

5676. *The Birds of the United States* are now rendered as familiar to the European naturalist as are those of his own country, for they have been more ably and more beautifully illustrated than those of any part of the world. The delightful histories of their manners given by Wilson, in the nine volumes of his *American Ornithology*, exceed in eloquence and feeling the happiest efforts of Buffon, while they possess a truth and accuracy, resulting from a personal observation of nature, in which it is well known the great French naturalist was lamentably deficient. The magnificent plates by Audubon, in which every species, however large, is to be represented the size of life, are now in a course of publication in this country; while our ornithological volume of "Northern Zoology" has made known several new species, and elucidated others, overlooked or confounded by preceding writers. The Prince of Musignano (Charles L. Bonaparte) occupies a prominent rank among those who have illustrated the ornithology of America; and to this scientific writer we are indebted for the following general observations, highly important to our present purpose. The noble author, in a small tract recently published, calculates the number of species found in Europe at 410, while those of North America are estimated at only 390: the territories, however, comprehended under the last-named region do not appear to be distinctly stated. The species that have been detected more particularly in the Roman States, amount to 247, while those of the Philadelphian province are 281: these latter are distributed under the following divisions: —

Stationary during the whole year, 31.
Partially stationary, 13.
Summer visiters, 60.
Winter visiters, 71.
Transitory visiters, 55.
Accidental visiters, 51.

5677. *It further appears* that although the species in the Roman States are fewer than those of Philadelphia, the former being 247, the latter 281, still it is asserted that the deficiency is largely recompensed by a very great superiority in the number of individuals; a fact, indeed, which the noble writer has had full opportunities to ascertain, but which we should not have credited on any other authority. He further remarks, that Philadelphia is inferior to Rome in the number of stationary species, and of those which come in the breeding season; while Philadelphia, on the other hand, exhibits a much more numerous list of such winter and northern birds as arrive from the arctic regions during intense cold, and are found in the spring and autumn in the more southern provinces.

5678. *Among the rapacious Birds* are several hawks and owls well known in Europe, while others appear restricted to this continent. The Californian Vulture occurs only beyond the Rocky Mountains; but two others, of a black colour, are common throughout the States. One of these (*Cathartes Aura* Ill.) (*fig.* 923.) goes by the name of the Turkey Vulture, the other is called the Black Vulture. The King of the Vultures (*Cathartes*

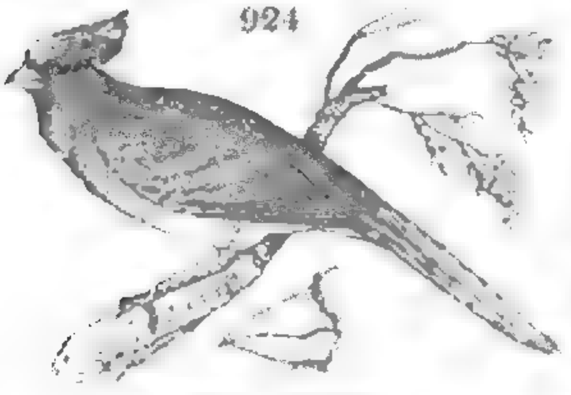
923

TURKEY VULTURE.

Papa) belongs more to South America, but appears occasionally in Florida during summer. The largest Eagle is the white-headed species (*A. leucocephala* Sw.); and the Osprey or Fish Hawk differs not from our British race. The Great Horned Owl is spread over all the regions between Canada and Mexico; but that great northern hunter, the Snowy Owl, seldom wanders, except in severe winters, into the midland states.

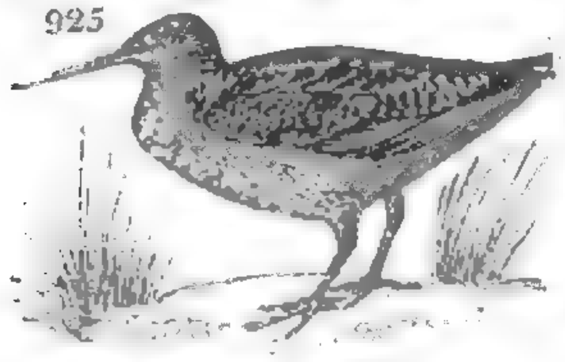
5679. *To enumerate the many species of summer Birds* which annually resort at the breeding season to the United States would far exceed our present limits. Prince Charles Bonaparte calculates the number to be met with in the state of Philadelphia alone at sixty, not more than two or three of which are known to inhabit Europe. America is celebrated for its singing birds; for, notwithstanding the alleged superiority of our own, we must concede the palm to that country which gives birth to the true Mocking-Bird (*Orpheus polyglottos* Sw.). The Wood Thrush, whose notes are so charmingly described by Wilson, represents our Song Thrush; but the Virginian Nightingale (*fig.* 924.) is more deserving admiration for its rich scarlet plumage than for any pretensions it may be thought to have to the melody of its namesake. So totally distinct, as species, are the most approximating birds of the Old and the New World, that even the Shrikes and the Wrens, long thought to be the same, are now proved to be different. The Wild Turkey is still found in flocks towards the southern states, but has long ago disappeared in the more cultivated districts; we have been told, however, that during winter they are sent by the hunters up the Mississippi, and may be purchased in the markets of New York. The other birds of game are two species of Grouse and one of Partridge. The American Woodcock (*fig.* 925.) is as big as ours, but has no bands of black on the under plumage; while the Snipes can scarcely be distinguished from those of Europe, except by their tail feathers.

924



VIRGINIAN NIGHTINGALE.

925



AMERICAN WOODCOCK.

5680. *The Fish, Reptiles, Insects,* &c., present nothing very remarkable to the general reader, although their elucidation would be highly interesting to the naturalist. The number and variety of fish in the Ohio is particularly great. The rivers and lakes abound with a surprising number of Bivalve shells, exhibiting on their internal surface a lustre nearly equal to the oriental pearl counters and other ornaments made from the Pearl oyster; they do not, however, appear to have been turned to any other account than the making of sleeve buttons. The Purple species (*Unio purpurascens*) (*fig.* 926.) is the most richly coloured.

926

UNIO PURPURASCENS.

5681. *The Domestic Animals* may be shortly noticed. America is not destitute of indigenous domestic sheep, but the United States have been attentive to preserve and improve the breeds originally imported from England, and Merinos have been introduced at high prices; nevertheless the woollen manufactories have not yet engaged so much of the national attention as with us. On the cattle, our information is but partial: Michaux remarks that the number in Kentucky is very considerable, often forty or fifty at a plantation: they are bought lean, and sent to Virginia to be fattened. Sheep, in the same province, are very few; and of all the domestic animals, Pigs seem to be the most numerous.

Sect. III. *Historical Geography.*

5682. *The discovery of North America* closely followed that of the Western Hemisphere in general. It was in 1492 that Columbus first landed in Hispaniola; and the century had not closed, when the two Cabots had explored the whole coast as high as Labrador. The Spaniards, however, were the first who formed a settlement upon it, which was in Florida, in 1513, under Juan de Ponce, and they retained it till 1763, notwithstanding some bloody contests with the natives, and the rival efforts made by the French and English.

5683. *It was in Virginia*, and under the reign of Elizabeth, that the first effort was made to establish these important colonies. Spain had already drawn all the brilliant prizes; but the active reign of Elizabeth, and the romantic enterprise of Sir Walter Raleigh, impelled the English towards Virginia, under which name was then vaguely comprehended nearly all the coast now held by the United States. But though Sir Humphry Gilbert and Sir Walter Raleigh made or sent some expeditions thither, there was no final settlement till the reign of James I., when, according to the custom of the age, two companies were formed, having a different sphere attached to each. The first, composed of many persons of rank and officers of distinction, sailed in 1608, and formed a settlement on the river Powhatan, which falls into the Bay of Potowmac. They were soon involved, as usual, in deadly contest with the natives; Captain Smith, the most efficient leader of the colony, was even taken prisoner and about to be put to death by King Powhatan, when his daughter Pocahontas, with the humanity characteristic of her sex, interceded, and obtained for him life and liberty. The hand of the amiable Pocahontas was afterwards bestowed on a young English officer; and the two nations were placed on an amicable footing. This did not prevent many future contests and vicissitudes; but the colonies were continually increased by new detachments, particularly of young females to serve as wives to the settlers; and, notwithstanding many instances of misgovernment, their numbers rapidly increased.

5684. *New England*, now the most flourishing of the states, was peopled in consequence of religious zeal and the persecutions to which some sects were exposed. Charles I. having determined to impose episcopacy on the English nation, many who were attached to puritan principles became willing to quit their native country rather than to resign the freedom of worship. In 1629, a colony, composed chiefly of Brownists, settled at a place in New England, to which they gave the name of Salem. A succession of settlers followed, comprising many individuals superior in character to those who usually emigrate on such occasions. Hampden and Cromwell, afterwards the two greatest men of their age, had actually embarked, but were detained by a mandate, which government had afterwards ample cause to repent. Unhappily, the new settlers had not learned toleration from their own sufferings; but, differing from each other upon some metaphysical dogmas, the superior party drove out the weaker, and obliged them to form new settlements in Rhode Island, Connecticut, and other parts of New England.

5685. *The other states* were successively founded on various occasions. Maryland owes its establishment to protestant persecution, after the puritan party had gained the ascendency. In 1632, Lord Baltimore, one of the leading catholic noblemen, obtained for himself and his followers the grant of an extensive tract, which, after Queen Henrietta Maria, he called Maryland. In 1663, soon after the Restoration, a charter was obtained by Earl Granville and several other English noblemen, for the settlement in a more southern territory, which, after the king, was called Carolina, and its capital Charleston. Locke was even employed to draw up the form of the constitution, which did not, however, succeed very well in practice. Carolina was divided, in 1728, into two governments, called North and South Carolina. In 1682, a colony of Quakers was brought over to Pennsylvania by William Penn, a son of Admiral Penn, and a man whose beneficence has obtained for him the veneration of posterity. The wise and humane principles upon which this colony was founded soon rendered it very flourishing. Lastly, Georgia was settled in 1732, by a number of public-spirited individuals, with the view of finding employment for multitudes of the distressed labouring classes. It suffered considerably by dissension until 1752, when it was taken under the immediate care of government, and placed on the same footing with the Carolinas.

5686. *These settlements continued to flourish under the English sway.* The native Indians were driven to a distance; the charters which had been wrested from the states by Charles II. and James II. were restored; and they advanced rapidly in culture and population. The war of 1756–63 was attended with signal triumphs of the British arms, and its issue added Florida and Canada to the empire, which thus comprised in one united mass all settlements of any value formed by Europeans in North America. But the pride of Britain, thus raised to its utmost height, was soon destined to experience a severe humiliation.

5687. *The American revolution*, already prepared by the distance and increasing greatness of these states, arose immediately out of the claim of Britain to impose taxes on them without their own consent. After a series of discussions, Britain refusing wholly to withdraw this claim, the American colonies rose in rebellion; and being favoured by the extent and local difficulties of the country, and finally aided by France, Spain, and Holland, they, in 1783, wrested from Britain a full acknowledgment of their independence. Since that time these colonies have ranked as a separate and republican power, under the title of the United States of North America.

5688. *The settlement of the Western States*, between the Alleghany and the Mississippi, formed a wonderful addition to the power and resources of the American Union. Before the loss of Canada, the French had begun to settle the Ohio; and in 1767, the Americans began their emigrations to Kentucky. That territory ranked as a back settlement to Virginia till 1792, when, in consequence of its growth in wealth and population, it was admitted to the rank of a state; and Congress afterwards passed a resolution, acknowledging as such every settlement which had reached the number of 60,000 souls. On the same grounds were admitted, in 1796, Tennessee; in 1802, Ohio; in 1816, Indiana; in 1817, Alabama; in 1818, Illinois. Michigan and the North-west Territory remain only as governments, anticipating the sure and rapidly advancing period when they may claim to be ranked as states.

5689. *The vast region beyond the Mississippi* drew the attention of the Americans, as soon as their settlements began to press against that river. Here, as the old territory was peopled, an unbounded scope was afforded for fresh emigration and settlements. The purchase of Louisiana in 1804, from Bonaparte, who had taken it from Spain in exchange for a paltry principality in Italy, removed all obstacles to their views. The expeditions of Captains Lewis and Clarke, and that of Major Long, explored this territory as far as the Rocky Mountains, and even to a point on the Pacific; and Europe acquiesced in the whole being laid down as American. Louisiana Proper, already settled by the French and Spaniards, Mississippi, Alabama, and afterwards Missouri, were admitted into the Union as states. All the remainder of this tract is occupied only at a few scattered points, and is kept chiefly as a vast reserve, to be appropriated whenever the territory now in occupation shall be exhausted.

Sect. IV. *Political Geography.*

5690. *The government of the United States* is in form decidedly republican, but of a prudent and temperate nature, such as has hitherto either repressed the evils incident to republicanism, or prevented them from rising to any alarming height. On the first establishment of independence, a strong party, at the head of which were Jefferson and Madison, sought to introduce almost pure democracy; but Washington, Adams, Hamilton, and other statesmen attached to the federal system, succeeded in establishing a government more nearly approaching to the original model of the British constitution; in which the popular branch is checked by a senate and by an executive of considerable strength; and though the democratic party have since come into power, they have not attempted to change a system of which experience has proved the benefits.

5691. *The principle of the American constitution is federal.* There is a general government, which makes war and peace, conducts all negotiations with foreign powers, and carries on every thing connected with the protection and defence of the nation, considered as an united body. At the same time, there are state governments for the regulation of internal and local concerns.

5692. *The state governments* are a sort of miniature of the general government. They have their senate, their house of representatives, their governor, and council, all elected by the people. The elective franchise belongs in general to the whole body of free citizens, with some distinction as to particular states. In New Hampshire, Pennsylvania, Delaware, the Carolinas, and Georgia, it is confined to citizens paying taxes; in Connecticut and Virginia to freeholders; in Massachusetts, New York, and New Jersey, to persons possessing a certain amount of property. There is a revenue of limited amount raised by local taxes, and a militia composed of all able-bodied men from the age of eighteen to forty-five, excepting clergymen, teachers, and some civil functionaries, and also excluding all negroes. There is a supreme court of justices of the peace and other local magistrates, on the principle of the English courts of judicature; and the English laws are preserved, except in a few instances. The formation and maintenance of roads and canals, and the provision for public instruction, belong in general to the state governments.

5693. *The general government*, or *Congress*, exercises a supreme sway over the whole of America. It has power to impose taxes for national defence, or for all purposes connected with the general welfare of the American people; to borrow money; to regulate foreign commerce; to establish uniform laws of bankruptcy and naturalisation; to coin money, and fix the standard of weights and measures; to declare war; to raise and support an army and navy; to call forth the militia, and provide for organising, arming, and disciplining it; and to carry on all transactions with foreign states.

5694. *The legislative branch* consists of two bodies, the House of Representatives and the Senate. The former are elected every two years by the body of the people, excluding slaves, Indians, and two fifths of the people of colour. There was originally a member for every 40,000 inhabitants, but, that the number may not become too great, the standard has been altered, and is at present 47,700. The senate consists of two members from each state, elected by the legislative bodies of that state. The members continue in office for six years; but one third of their number is changed every two years. Here, as in the British legislature, the concurrence of both houses is necessary before any motion can pass into a law.

5695. *The president* is chosen by the general body of voters, not directly, but by a certain number of electors nominated by them. He continues in office four years, and may be re-elected; but this has not taken place with any except Washington. He is the head of the executive government, and exercises the same functions as the King of Great Britain, except that he cannot make peace or war, and that his nomination to all civil and military offices is not valid till confirmed by two thirds of the senate. Nor does he possess a full veto upon the laws presented to him by congress; but if he disapprove, those laws cannot pass without a concurrence of two thirds of that body. His salary is only 25,000 dollars (about 5300*l.*), with an official residence; not sufficient, it is supposed, to defray the expense of the situation, without some private fortune.

5696. *The supreme judicial power* resides in a chief justice, with six associate judges, who having been appointed by the president, with the concurrence of the senate, hold their offices during life or good behaviour. Under this supreme court are seven circuit courts, sitting in different parts of the union; besides which is the district court, proper to each state, as already mentioned. By a somewhat singular anomaly, the supreme court holds itself independent of the legislature, and, in some respects, superior to it, and has not hesitated to decide contrary to its acts, when it considered them at variance with the fundamental principles of the constitution. The emoluments of the judges are exceedingly moderate; the chief justice not receiving more than 4000 dollars a year.

5697. *The revenue and taxation of the United States* have been moderate in proportion to the extent and wealth of the republic. Yet their independence commenced under a heavy burden, consequent upon the long and arduous struggle by which it had been achieved. In 1783 the debt was 42,000,000, and in 1791 had increased to 75,000,000 dollars. From that time some efficient measures were taken, and by 1812 it was brought down to 45,000,000 dollars. The war in which the States then rashly engaged against England nearly tripled the sum, which, in 1816, was 123,000,000 dollars. By the 1st of January, 1824, it was again brought down to 90,000,000, and by a steady application since that time of the sinking fund, the debt has been very nearly paid off, and revenue will soon be raised solely to defray the expenses of administration.

5698. *The revenue of the States* amounted in 1830 to 24,844,000 dollars; of which 21,922,000 were derived from customs, 2,329,000 from lands, 490,000 from dividends on bank stock, 102,000 from other sources. Of this amount, 12,729,000 dollars were employed in providing for the interest and discharge of the public debt, on the extinction of which the taxes may be greatly reduced. By the late tariff, enormous duties were imposed upon imported commodities, especially in a manufactured state, not with a view to revenue, but to gratify commercial jealousies, and prematurely foster a manufacturing interest. But as they have been productive of no good effects, and had nearly caused the dissolution of the union, an act of congress, passed in 1833, provides that in the course of the next ten years they shall be gradually lowered, till they produce only what is necessary to supply the wants of the treasury.

5699. *The military force of the United States* consists almost entirely of militia, which, in point of numbers, sound exceedingly formidable. In 1815, they amounted to 748,000; and in 1823 had increased to 993,000. This vast mass, however, is described to be greatly and even ludicrously deficient in discipline and subordination. Yet though, at the commencement of the last war, they were exposed to severe and mortifying reverses, they were able, before its close, in a good measure to redeem their character. The regular force, which in the war of independence never exceeded 27,000, was raised, in 1814, to 63,000; but immediately on the conclusion of peace it was reduced to 10,000. It is fixed now at 6188 men, consisting of four regiments of artillery and seven of infantry. The entire expenditure connected with the army amounted in 1830 to 4,767,000 dollars. Economy and political jealousy seem to be the joint causes which induce the states to bring it down so extremely low; and it must be confessed that America has very little reason to apprehend that any other power will ever dream of attempting to reduce her to subjection.

5700. *The American navy*, though yet on a small scale, acquired considerable reputation during the last war, when the few frigates, of which alone it was composed, could encounter British ships of the line. This, however, was partly owing to the larger size of the American frigates, and to the heavier guns they carried in comparison with the British. Both during the war and since, the Americans have expended considerable sums in enlarging their navy, which lately amounted to seven ships of seventy-four guns, seven of forty-four, three of thirty-six, two of twenty-three, thirteen of eighteen, and some smaller vessels. The force in commission consists of five frigates, eleven sloops of war, and seven schooners. The expenses in 1830 were 3,239,000 dollars. During the war, they started the project of steam frigates; several of which have been constructed, but they never found occasion to bring them to the test of practical utility. A sum was also voted to Mr. Fulton, to mature his scheme of a submarine torpedo, to blow up hostile squadrons; but no further proceedings were ordered upon that measure.

Sect. V. *Productive Industry.*

5701. *In regard to industry and wealth*, the United States are already respectable; but they excite a much deeper interest by their vast and unparalleled resources, by their rapid progress, and by the future magnitude which they are almost sure to attain. Possessing, as we have seen, a greater extent of fertile territory than all Europe united, with such a varied range of navigable communications, and with the arts and habits of an improved society, there can scarcely be a doubt that, at no very distant period, they will leave every other nation behind them.

5702. *Agriculture*, though the staple pursuit, with so vast a field for its operation, has still much progress to make. The general aspect even of the eastern states, which are the most improved, is that of an unbounded forest. Even in New York, one of the most advanced, not above a fourth is cleared. Land is so plentiful, in proportion to the population and capital, that rent has scarcely begun to have any existence, the farmer being in almost every case proprietor of the spot which he cultivates. Government lands in the western states may be had to any amount at two dollars, or less, an acre, and even the very best seldom bring above six dollars. The implements and processes are rude. The attempts made by British farmers to introduce a more skilful system have been found premature, and must be deferred until a more advanced period.

5703. *The products of land in America* are very various. Timber of different kinds is obtained by the mere process of clearing land for cultivation; and its price scarcely exceeds the cost of transporting it to a market. Maize, an indigenous American grain, is universally cultivated, and, though of an inferior species to wheat, is suited to a greater variety of soils and situations. Wheat is also general, but succeeds best in the middle and western states, and in the uplands of the southern states. In the northern, oats for horses' food, and rye for distillation, are the prevalent kinds of grain. Maryland and Virginia have the grand staple of tobacco, which is raised there on a greater scale than in any other part of the world. In the Carolinas and Georgia, cotton, for which there is so vast a demand in Europe, becomes the prevailing article; and that produced on the coast, called Sea Islands, bears the highest price of any. The moist lands in the same region are employed in the cultivation of rice to a greater amount than in any other country out of Asia. In those districts of Florida and of Louisiana which border on the torrid zone, the sugar-cane is found to flourish, supplying already a great part of the internal consumption. Even from the maple tree, in the northern states, sugar is made to the extent of 9,000,000 pounds. Flax and hemp are raised in considerable quantities, especially in the west. The breeds of horned cattle have been much improved in Pennsylvania and other states, and the merino sheep have been introduced without apparent degeneracy, though not to a very great extent; the Americans having an unlucky prejudice against mutton as an article of food. Wine, silk, hops, are articles of prospective culture, regarding which the friends of America indulge in sanguine anticipations. The entire value of American agricultural produce was estimated, in 1812, at about 105,000,000*l.* sterling, of which more than 5,000,000*l.* was exported. The amount since that time has greatly increased.

5704. *Manufactures* of a high class are not suited to a country in this early stage, which, in general, finds it more advantageous to purchase with its raw produce the fabrics of other nations. The Americans, favoured by high protecting duties and occasional prohibitions, have made considerable efforts to supply themselves; but they have never been able, in any of the finer fabrics, to cope with the skill and machinery of England. The common and bulky articles, however, are now pretty largely produced. In 1810, the total produce of the loom was estimated at 40,000,000 dollars. Of this nearly half consisted of woollen stuffs, made chiefly at home for domestic use, and supposed to employ 50,000 hands. The manufactures of leather were valued at 18,000,000 dollars; of iron above 14,000,000; of gold and silver, 2,500,000. Distilled and fermented liquors were above 16,000,000. Manufactures of wood amounted to 5,500,000 dollars; hats above 4,000,000; cables and cordage the same. The entire value of American manufactures was, in 1810, after an official enquiry, estimated at 127,000,000 dollars. These manufactures existed, almost exclusively, in a few of the long-settled Eastern states. In Pennsylvania they amounted to 32,000,000; Massachusetts, 17,000,000; the rest of New England nearly the same; New York, 14,000,000; Maryland, 17,000,000; Virginia, 11,000,000. Since 1810 the amount has been greatly augmented; but no equally careful investigation has recently been made. The value of woollen manufactures alone, however, was estimated, in 1830, at 40,000,000 dollars, employing 50,000 persons. Cotton weaving, which scarcely existed in 1800, was carried on by 795 mills, and 33,500 looms, producing 230,460,000 yards, and giving employment to 52,000 persons; while the value of the produce amounted to 26,000,000 dollars. Hats were made to the value of 10,500,000 dollars, employing 18,000 persons. Cabinet ware, 10,000,000 dollars, employing 15,000 persons; iron-works, 191,536 tons, value 13,300,000 dollars, men employed 29,000; paper, value 7,000,000 dollars; glass and earthenware, 3,000,000 dollars. The convention assembled at Harrisburg in 1827 made the following estimate of the entire products of American industry: —

	Dollars.
Food and drink - -	249,000,000
Clothing - - - -	202,000,000
Horses' keep - - - -	75,000,000
Other agricultural products - -	20,000,000
Products of the forest - - -	200,000,000

	Dollars.
Earthen fabrics - -	60,000,000
Mineral fabrics - -	120,000,000
Staples for manufactures - - -	100,000,000
Fisheries - - - -	40,000,000

5705. The following table, from *M'Culloch's Dictionary of Commerce*, gives a most comprehensive view of the commerce of America, and the countries with which it was carried on, for the year ending 30th September, 1829: —

Countries.	Commerce.				Navigation.			
	Value of Imports.	Value of Exports.			Tonnage.			
					American.		Foreign.	
		Domestic Produce.	Foreign Produce.	Total.	Entered into the U. States.	Departed from U. States.	Entered into the U. States.	Departed from U. States.
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Russia - - -	2,218,995	51,684	334,542	386,226	16,420	2,943	1,015	
Prussia - - -	22,935	14,411	- -	14,411	389	188		
Sweden and Norway -	1,020,910	122,663	126,971	249,634	13,453	2,255	2,000	1,114
Swedish West Indies -	285,049	684,523	23,791	708,314	17,969	28,246	815	328
Denmark - - -	32,911	73,597	13,166	86,763	- -	1,046	- -	1,070
Danish West Indies -	2,053,266	1,942,010	282,401	2,224,411	43,463	56,758	482	1,299
Netherlands - - -	1,057,854	3,095,857	889,330	3,985,187	24,453	38,372	1,649	4,951
Dutch East Indies - -	121,348	62,074	176,318	238,392	907	1,985		
West Indies -	438,132	379,874	18,667	398,541	13,325	12,217	241	363
England - - -	23,892,763	21,281,334	1,767,457	23,048,791	169,207	179,843	61,011	60,722
Scotland - - -	1,024,215	895,315	19,493	914,808	2,275	2,609	9,908	7,699
Ireland - - -	362,511	327,728	366	328,094	6,113	4,833	6,185	2,602
Gibraltar - - -	247,471	301,132	160,130	461,262	5,718	8,701		
British African Ports -	7,787	- -	- -	- -	116			
East Indies	1,229,569	69,070	477,629	546,699	3,173	3,050	676	
West Indies -	240,224	1,463	5,058	6,521	32,777	5,418	317	
American Colonies	577,542	2,724,104	40,805	2,764,909	88,492	95,645	4,409	10,569
Newfoundland - -	- -	- -	- -	- -	125	179		
Hanse Towns, &c. - -	2,274,375	1,998,176	1,278,984	3,277,160	12,862	21,962	7,290	10,894
France on the Atlantic -	8,248,921	8,008,923	2,105,573	10,114,496	54,425	73,862	4,429	7,735
on the Mediterranean	590,057	886,122	748,777	1,634,899	9,458	18,843		
French West Indies -	777,992	1,056,639	15,768	1,072,407	40,516	65,019	9,344	4,317
Bourbon - - -	- -	10,502	- -	10,502				
Hayti - - - -	1,799,809	814,987	160,171	975,158	21,370	18,164	3,205	2,988
Spain on the Atlantic -	327,419	545,753	139,732	685,485	7,806	12,719	167	1,550
on the Mediterranean	474,120	185,952	45,700	231,652	8,270	4,516	179	
Teneriffe and other Canaries	25,283	42,839	23,317	66,156	448	1,714		
Manilla and Philippine Islands - - -	209,206	10,802	66,430	77,232	2,137	594		
Cuba - - - -	4,866,524	3,719,263	1,859,626	5,578,889	99,779	114,599	11,848	8,120
Other Spanish West Indies	898,832	209,780	38,900	248,680	19,179	11,051	357	216
Portugal - - -	237,351	42,088	628	42,716	23,570	2,397	562	
Madeira - - -	403,056	175,074	15,089	190,163	3,130	6,091	669	669
Fayal and other Azores -	21,302	7,949	78	8,027	731	672	137	137
Cape de Verd Islands -	26,460	68,528	13,477	82,005	1,310	3,268	- -	83
Italy and Malta - -	1,409,588	289,755	611,257	901,012	13,311	7,031	171	
Sardinia - - -	- -	- -	- -	- -	345			
Trieste and other Adriatic Ports - - -	191,896	409,288	280,200	689,488	4,432	6,384	- -	129
Turkey, Levant, and Egypt	293,237	27,600	47,384	74,984	2,797	687		
Morocco and Barbary States	10,710	- -	- -	- -	137			
Mexico - - -	5,026,761	495,626	1,835,525	2,331,151	20,352	21,682	3,415	4,719
Central Republic of America	311,931	123,631	116,223	239,854	3,435	3,320		
Honduras, Campeachy, &c.	64,847	12,693	8,229	20,922				
Colombia - - -	1,255,310	525,783	241,565	767,348	13,614	8,490	282	138
Brazil - - -	2,535,467	1,510,260	419,767	1,929,927	32,482	40,978	- -	136
Cisplatine Republic -	3,076							
Argentine Republic -	912,114	444,716	181,336	626,052	5,860	7,422	- -	109
Chili - - -	416,118	890,356	530,778	1,421,134	2,018	9,079		
Peru - - - -	1,004,458	91,542	119,615	211,157	5,242	749		
South America, generally -	56,552	147,670	6,175	153,845	310	2,447		
Cape of Good Hope -	- -	- -	- -	- -	- -	165		
China - - -	4,680,847	260,759	1,094,103	1,354,862	8,052	6,351		
West Indies, generally -	3,314	359,496	10,123	369,619	725	10,926	- -	91
Asia, generally - -	66,191	40,721	232,768	273,469	1,170	3,751		
Europe, generally - -	300	102,364	250	102,614	2,392	920		
Africa, generally - -	211,735	108,837	49,516	158,353	2,865	2,369	- -	358
South Seas - - -	20,235	45,969	20,991	66,960	10,044	14,312		
North-West Coast - -	- -	2,911	4,399	7,310				
Uncertain - - -	5,961							
Total - -	74,492,527	55,700,193	16,658,478	72,358,671	872,949	944,799	130,743	133,006

The imports in the following year, ending the 30th September, 1830, amounted to 70,876,000 dollars; the exports to 73,849,000; of which 14,387,000 were of foreign produce.

5706. *Commerce* is carried on with very great activity. As a pursuit congenial to the spirit of republicanism, it is considered the most honourable, and the merchants in the great towns form the only species of aristocracy that exists. Mr. Warden even boasts that business is done more promptly than in any other country; that a vessel will be unladen in a few days, which would require elsewhere as many months; that no vessels are built so expeditiously, or sail so fast. With sloops of sixty or eighty tons, they double Cape Horn, carry on the South Sea whale-fishery, and enter the ports of China. The long suspension of direct intercourse between the European states during the revolutionary war stimulated the commerce of America to a premature activity, and called into existence the carrying trade, usually peculiar to the most advanced stage of industry.

5707. *The exports of America* consist almost entirely of the unmanufactured produce of land, to be either consumed or worked up by foreign states. Grain could be furnished almost to any extent, were it not for the heavy freight with which it must be loaded before reaching Europe. Wheat flour, almost the only form in which it can be transported, was exported in 1827 to the extent of 858,000 barrels, to which was added 505,000 bushels of Indian corn. Cotton, however, has now become greatly the leading article, having risen from 17,000,000 lbs. weight, in 1800, to 322,215,000 in 1832. Tobacco, an old staple, amounted in the same year to 106,000 hogsheads. Rice 120,000 tierces. Naval stores, staves, and timber, to the value of above 2,600,000 dollars. Salted pork, 88,000 hhds.; butter, 1,501,686 lbs.

5708. *The imports* consist of all those various articles of consumption which America does not make or produce within herself; the finer fabrics of wool, which amounted in 1827 to the value of 7,886,000 dollars; cotton, 8,348,000; silk, 8,104,000; flax and hemp, 4,770,000; iron, steel, and brass, 3,170,000, and the luxurious and aromatic products of the East and West Indies: coffee, 37,319,000 lbs.; tea, 10,108,000 lbs.; sugar, 84,902,000 lbs.; spices, &c.; also wines, 3,436,000 gallons; and spirits, 3,718,000 gallons.

5709. *The shipping* of the United States amounted, in 1821, to 1,262,000 tons, of which 619,000 were employed in foreign trade; 588,000 in the coasting trade; and 55,000 in fisheries. In 1831 it had increased to 1,267.846; this apparently slow increase being occasioned by a large number of vessels that had been lost and worn out being included in the accounts for 1821 and several subsequent years. Ship-building is carried on with great activity, the materials being almost every where abundant.

5710. *Fishery* is carried on actively by the northern state of Massachusetts, and by it almost alone. The whale-fishery, in 1830, employed 300 vessels, averaging 340 tons, and its products were 106,800 barrels of spermaceti oil, the same of common whale oil, and 2,500,000 lbs. of spermaceti candles. The fisheries of mackerel, herring, and particularly that of cod on the coasts of Newfoundland, are also very important. The products of the American fishery are annually exported to the value of about 2,000,000 dollars.

5711. *Of the interior water communications*, those bestowed by nature have been already pointed out. No part of the world presents such an extensive river commerce. The vessels of all kinds, plying on the Hudson alone, are said to amount to 2000. Steam vessels, a grand improvement, first introduced in America, amount to 300, of which seventy-eight ply on the great channel of the Mississippi. Neither the states nor private individuals have been inactive in improving the advantages bestowed by nature. They have executed in this department several magnificent undertakings, which have thrown lustre on the American name. The rivers running across the Eastern states have been united at different points, and it is expected that a continued interior line from north to south will be ultimately formed. The most important canal here is that connecting the two grand inlets of the Delaware and the Chesapeake, begun in 1823, and completed in six years, at an expense of 2,000,000 dollars. It is fourteen miles long, sixty feet wide, and ten feet deep. In 1830, there passed through it 5280 vessels. The Delaware and the Hudson are also joined by a canal 108 miles long, completed in 1828. Since the rise of the Western states, however, it became an arduous but important object to form a water communication uniting the two great river systems, that to the east and that to the west of the Alleghany. An insurmountable obstacle seemed to exist in that vast and continuous chain, till the state of New York, after careful surveys, determined on forming a canal from the Hudson at Albany to the Mohawk, which falls into Lake Erie; and this grand work, commenced in 1817, was completed in 1825. It is 363 miles long, 40 feet wide, and 4 feet deep, with 83 locks and 18 aqueducts; it cost above 9,000,000 dollars. It is now the scene of a most busy trade. The number of canal boats, which arrived at and departed from Albany during 1830 was 12,830, carrying more than 100,000 tons of merchandise, besides lumber, wood, &c. The tolls amounted to 954,000 dollars, yielding an ample return even on the large expenditure. An important canal has also been formed, connecting the Hudson with Lake Champlain, and thereby opening a communication with Canada; it is 63 miles long, and cost 875,000 dollars. On the opposite side, the new and flourishing state of Ohio has very nearly — perhaps, now, wholly — completed a canal, which, uniting the Scioto and Sandusky, forms a navigable communication between Cincinnati and Lake Erie. It is 306 miles long, with 11,185 feet of lockage, and executed at less than 10,000 dollars per mile. The same state has also formed a canal 70 miles long, connecting Cincinnati with the Miami. A still grander undertaking is that of the Chesapeake and Ohio Canal, designed to unite the Potowmac at Washington with the Ohio at Pittsburg. It will be 360 miles long and 60 feet wide, and will require a tunnel four miles in length to convey it through the mountains. It was begun in July, 1828, and has made some progress. Several of the states have also done much to improve their interior communications. New England set the first example; but Pennsylvania has now surpassed all the others, having, either executed or in progress, lines of canal that extend 728 miles. Virginia and the Carolinas, notwithstanding their wealth, have been left behind in this great national improvement; but they are beginning to move. The Dismal Swamp canal connects James's River with Albemarle Sound; and it is expected that a communication will ere long be formed between that river and the Ohio. The next object was to connect Lake Erie with the Ohio.

5712. *The roads* have been much improved since 1800, partly by government, but chiefly by companies associated for that purpose. Considerable difficulties occurred, as they were to be made, not only from the coast to the high tracts in the interior, but across the Alleghany Mountains to the Western states. The entire length of post roads, in 1830, amounted to 115,000 miles. The great advantages to be derived from railways have not escaped the notice of the Americans. In New England, New York, and especially in Pennsylvania, extensive communications of this nature have been formed within the last few years. Maryland has undertaken one far surpassing in magnitude every similar work. It is destined to connect Baltimore with Pittsburg, by a line of upwards of 300 miles, and by which it must cross the range of the Alleghany Mountains. A portion near Baltimore is already completed, and three spacious aqueduct bridges have been constructed.

Sect. VI. *Civil and Social State.*

5713. *The population of the United States,* according to the census of 1830, amounted to 12,856,165; a number not very great absolutely, and even small relatively to the extent of their territory; but astonishing when considered as existing in a region which, 200 years ago, was only a boundless wilderness, peopled by a few scattered bands of savages. But the most interesting circumstance is the rapid increase which has marked, and, according to every appearance, will continue to mark, their progress. Although there has been a constant tide of emigration from the closely peopled European countries, ever since the first settlement of those states, there is no doubt that the growth of this great mass is chiefly owing to the ordinary principle of population, to the means which the human race possesses of multiplying itself, when a check is not presented by the difficulty of subsistence. There are no early enumerations on which much reliance can be placed; but, in 1753, the number was estimated at 1,051,000. A regular decennial census, taken since 1790, gave, at that period, 3,921,000; in 1800, 5,319,000; in 1810, 7,239,000; in 1820, 9,638,000. It is most interesting to consider, as the immensity of unoccupied land leaves full scope for this power of multiplication, how vast the future numbers may be with which this region will be peopled, and which will render it much the greatest state that ever existed in ancient or modern times. It is calculated, upon good grounds, that in a century it will contain 160,000,000; and still, being only half as populous as Britain or France, leave ample scope for future increase. The Americans, should they continue united, would then become the greatest nation in the world; and the most powerful states of Europe would rank as secondary to them.

5714. *National character* is, perhaps, in no country less conspicuous than among the Americans; a people not indigenous, but collected from several of the nations of the old world, and retaining always much of the original stamp. It is modified, however, by national feeling, and by the sentiment which is ever in their thought and mouth, that "they are a nation of freemen." They have not exactly fulfilled the theory of those philosophers who maintained that a republican form was to be the remedy for every human evil, moral and physical. They have their good qualities. They are warmly attached to the glory and interest of their country, and at the same time liberal and hospitable to foreigners. The lower class are superior in intelligence, and even in manners, to those of the same rank in the old world; they all read newspapers, and are capable of discussing the political concerns of their country. There is an absence of the graces and courtesies of the higher European society. Servants, and even children, show scarcely any of that deference which is elsewhere paid to parents and masters. The ceremonious terms Mr. and Mrs. are not, indeed, withheld; but they are rendered cheap by being applied equally to the humblest individuals. Their sturdy independence makes them not scruple to intrude in various ways on a stranger, particularly to gratify that curiosity which, in the country districts, scarcely knows any bounds. It is so annoying, that Dr. Franklin once, on a journey, judged it wise to bear upon his person a label expressing his name, his business, whence he came, and whither he was going. The Americans are pugnacious to a considerable degree. Duelling, unknown to the ancient commonwealths, rages in this modern republic to an extent not now common in Europe. Among classes who do not aspire to this elegant form of contest, the mode of fighting generally practised is rather that of infuriate children or madmen. Gouging, or scooping out the eyes, kicking, and biting, have disgraced the pitched battles of the

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common people, at least in Virginia and the other southern states; though with advancing civilisation these practices appear happily going into disuse. Party disputes are carried on with greater violence and more unmeasured abuse than even in England; yet it is observed that, after the dispute is over, good-humour and social intercourse ensue between men of the most opposite parties. Upon the whole, travellers generally state that they have met throughout the union with somewhat uncommon kindness and hospitality; though, even at the inns, they were received rather as the obliged than the obligers, and treated rather as guests than as employers.

5715. *In religion*, the Americans have adopted the novel system of cutting off all connection between church and state. Individuals or classes of believers choose their own instructor, and provide entirely for his support. In the large towns, at least of the northern states, the clergy are sufficiently numerous, and well provided for; but in others, and especially in the remote country districts, there is a great deficiency. This general equality is found to abate religious animosity, without relaxing zeal. Yet there is observed on one side more of open irreligion, and, on the other, more violent excess of fanaticism, than in European states. The latter is particularly conspicuous in the camp meetings, where crowds of several thousands flock to listen to some flaming orator, whose address is accompanied by the congregation with shrieks, screams, and even violent convulsions. It appears, however, by the representations of late travellers, that the extravagances acted at these meetings have been exaggerated; and that, in remote quarters, destitute of regular means of instruction, they have been productive of good. Shakers, jumpers, and other fantastic sects, have sprung up in the remote country districts, and even in the cities.

5716. *Literature*, to be very flourishing, would require, perhaps, a more advanced stage of civilisation than America has yet attained; and even the access, which a common language affords, to all the masterpieces produced in Britain, must operate as a check upon the exercise of original talents. It was not till very recently that America produced any compositions that could take their place among the classic literature of the Old World; but the writings of Washington Irving, distinguished by a style peculiarly polished, with those of Lomond, Cooper, and several others, place her in a fair way of redeeming this reproach. The States show a laudable zeal for the diffusion of knowledge. There are twenty-five colleges, and seventy-four academies, under the patronage of the general legislature; and a national university has been planned. Learned societies have been instituted in the great cities, and have published a few volumes of Transactions. Popular English works, and even the Edinburgh and Quarterly Reviews, are immediately reprinted. They thus obtain a new sphere of distinction, and, soon after their publication, are read on the banks of the Ohio and the Mississippi. If newspapers may be accounted literature, this branch has been carried to an extent which Europe cannot rival. The number, which, in 1810, had been 364, rose in 1828 to 802; and is supposed now to exceed 1000, of which 50 are daily papers. The Americans have been eminent for mechanical inventions, of which the steam vessel, by them first applied, at least, to practical purposes, is a conspicuous example.

5717. *In the fine arts* the Americans have shown a very strong natural genius for painting, though their artists have been obliged to seek for patronage in the Old World. They have given us West and Copley, and, more recently, Leslie and Brockedon. Institutions for the encouragement of the art have been now formed at New York and Philadelphia. American music is not much spoken of. Some edifices at Washington, New York, and Philadelphia are splendid; but built, we believe, upon foreign designs.

5718. *The amusements* in America are in general analogous to those of Europe. The drama is pursued with considerable ardour; and, though no histrionic genius of the first rank has yet sprung up, the best English actors have found an excursion to America advantageous.

5719. *The houses in the large towns* are built of stone or brick, after the European model; but in the country, and generally in all the back settlements, the cheap and easy material of wood is preferred. It is put together often very rudely, of unhewn logs, though the better specimens are of framework, and sometimes on a more extensive scale than the owner can occupy.

Sect. VII. *Local Geography.*

5720. *The division of America is into states;* an appellation which corresponds rather with that of kingdoms and nations than of counties or provinces. Of these states several are equal in extent, and in all the capacities of future greatness, to some of the most important European countries. The number of states amounts at present to twenty-four; and the following table concentrates a view of the most interesting particulars respecting each, showing its extent (according to Darby's *View of the United States*), its population by the census of 1830, the name and population of the principal towns. The letter o, appended to any of these, marks that it is the seat of the state government; a distinction often very different from that of being the largest and most important place.

	Area in Square Miles.	Population.	Slaves.	Towns.			
New England.							
Massachusetts	7,335	610,014	0	Boston, a. Salem Lowell	61,392 13,836 6,474	Nantucket Cambridge	7,262 6,202
Connecticut	5,050	297,711	25	Newhaven	10,678	Hartford, 9,789 (a. divided)	
New Hampshire	8,700	269,538	0	Portsmouth	8,055	Concord, a.	3,727
Vermont	9,380	286,679	0	Burlington	3,526	Montpelier, a.	1,792
Maine	32,194	399,462	0	Portland	12,601	Augusta, a.	3,980
Rhode Island	1,200	97,210	14	Providence	16,832	Newport, a.	8,010
Middle States.							
New York	46,500	1,913,508	40	New York Troy Buffalo	207,020 11,605 6,321	Albany, a. Rochester	24,238 10,863
Pennsylvania	47,000	1,347,672	386	Philadelphia Harrisburg, a.	161,437 4,311	Pittsburg	12,542
New Jersey	7,870	220,779	2,940	Newark	10,953	Trenton, a.	3,925
Delaware	2,100	76,739	3,305	Wilmington	6,628	Dover, a. very small.	
Southern States.							
Maryland	10,000	446,913	102,878	Baltimore	80,625	Annapolis, a.	2,623
Virginia	66,000	1,211,272	409,724	Richmond, a. Wheeling	16,060 3,221	Norfolk	9,816
Columbia District	100	39,858	6,050	Washington, a.	18,833	Georgetown	8,441
North Carolina	50,000	738,470	246,482	Newbern	3,776	Raleigh, a.	1,700
South Carolina	33,000	581,458	315,605	Charleston	30,289	Columbia, a.	3,310
Georgia	61,000	516,567	217,470	Savannah Milledgeville, a.	7,303 1,599	Augusta	6,696
Florida Territory	54,000	34,723	15,510	St. Augustine Tallahassee, a. very small.	4,500	Pensacola	2,000
Alabama	51,770	308,997	117,294	Mobile	3,194	Tuscaloosa, a. very small.	
Western States.							
Kentucky	37,680	688,844	165,350	Louisville Frankfort, a.	10,352 1,680	Lexington	6,104
Tennessee	43,265	684,822	142,382	Nashville, a.	5,566		
Ohio	40,000	937,079	0	Cincinnati Columbus, a.	26,515 2,437	Zanesville	3,056
Indiana	34,000	341,582	0	New Albany	2,500	Indianapolis, a.	1,500
Illinois	58,900	157,575	740	Vandalia, a.	500		
Michigan	34,000	31,260	27	Detroit, a.	2,222		
Missouri	63,000	140,074	21,990	St. Louis	5,852	Jefferson, a.	
Arkansas	121,340	30,383	4,578	Little Rock.			
Mississippi	41,000	136,806	65,659	Natchez	2,790	Jackson, a. very small.	
Louisiana	48,220	215,575	109,031	New Orleans, a.	46,310		
		12,746,565					

Subsect. 1. *Northern or New England States.*

5721. *The first six states,* which are well known under the general name of New England, comprise the earliest and most respectably settled, the most improved and most intelligent portion of the Union. It was peopled about the beginning of the seventeenth century by the puritan dissenters, flying from prelatic persecution. Those emigrants entertained some extravagant and fantastic opinions, and did not extend to each other that toleration under the want of which they had suffered; but they were men of high principle, and of steady and regular conduct in common life. The New England states, therefore, rapidly advanced in wealth and population, and took the lead in asserting the independence of America. The cargo of tea thrown into the sea at Boston, and the battle of Lexington, formed the commencement of the great contest which finally severed the colonies from the mother country. The territory, at first designated under the general appellation of New England, has been gradually divided into several provinces, which now rank as states. Massachusetts was first founded on a very considerable scale in 1628; Connecticut, in 1637; and, in 1643, they were combined under the title of the United States of New England. In 1635, a body of antinomians, ejected from Salem, founded Rhode Island, for which they obtained a charter in 1643. Disputes which arose in 1680 caused the separation, from Massachusetts, of the extensive territory of New Hampshire. Vermont was a sort of back settlement, which, having gradually sprung up in the beginning of the eighteenth century, began to claim independence about 1760, and obtained its full recognition in 1790. Maine is a more northern frontier territory, and was long harassed by the incursions of the Indians, and by the wars between the French and English. In 1760, it did not contain above 13,000 inhabitants; but these having increased in 1810 to 228,000, Maine was enabled in 1820 to shake off its dependence on Massachusetts, and to become a separate state.

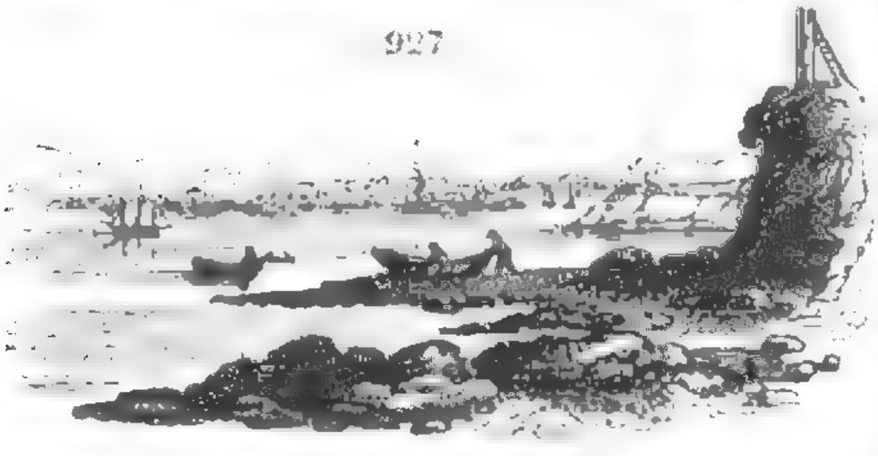
5722. *Massachusetts* is the oldest of these colonies, the most improved, and that to which the character of New England most decidedly applies. The greater part is level, and the soil composed in most places of fine fertile loam, though sandy along the sea-coast; but the extreme west touches on the great Apalachian border, where the mountains rise to 3500 or

4000 feet, and the domain is covered with extensive woods. Its centre is crossed by the Connecticut River, which, with its fine valley, traverses the whole of New England from north to south. This level tract is cultivated and peopled to a degree almost equal to that of European countries. Wheat, however, is not raised with advantage, being blighted by the severe cold of winter; nor is barley much cultivated. Maize, rye, oats, and beans are the prevailing descriptions of grain. The breed of cattle is good; and salted provisions, and the produce of the dairy, form objects of exportation. The farmers have extensive orchards, from which a great deal of cider is made. The state produces a considerable quantity of iron and some lead. Its progress in manufactures is remarkable, compared with that of most of the other states. Working in metals, wood, and cordage are the chief branches. Bar and wrought iron, anchors, and tools, were produced in 1810 to the value of 886,000 dollars; nails, 670,000 dollars; muskets, 229,000 dollars; cabinet and wood work, 525,000 dollars; spirits, 1,735,000 dollars; cables and cordage, 1,302,000 dollars; straw bonnets, 551,000 dollars; paper, 306,000 dollars; prepared hides and skins, 1,200,000 dollars; shoes and saddlery, 1,900,000 dollars. The entire value in 1810 was estimated at 18,500,000 dollars. Since that time they have greatly increased, and cotton cloth has been added, and has become even the leading branch. In commerce, shipping, and fishery, Massachusetts takes a decided lead of all the states. According to the assertion of Mr. Warden, to which a Briton will, perhaps, demur, her seamen excel those of all the world for boldness, enterprise, and skill. She builds 23,000 tons of shipping, valued at 656,000 dollars. In 1832, the exports amounted to 18,118,000 dollars, the imports to 16,650,000 dollars. The customs, in 1831, amounted to 5,227,000 dollars. Most of the remote foreign trade belonging to the Union is carried on from her ports; and the same may be said of the whale and cod fisheries. She has above 1000 vessels engaged in the cod and mackerel fisheries; and 160, averaging 350 tons each, in the whale-fishery. In 1829, there were brought into her ports 420,000 quintals of cod and other dried fish; 227,000 barrels of mackerel; 76,000 barrels of spermaceti oil; 47,000 barrels of whale oil; and 6000 barrels of cod oil. Peculiar attention is bestowed in Massachusetts on public instruction. Harvard College is the oldest and best institution of that description in the States.

5723. *Boston*, the capital of Massachusetts, of the state of New England, and, till lately, of the whole Union, is built on a peninsula, at the bottom of the Bay of Massachusetts. It is not an elegant town. East Boston, where all the business is carried on, consists of a number of narrow streets, lanes, and alleys, where stores, shops, warehouses, and wharfs are crowded together. They are, however, generally clean and well paved. West Boston contains the residence of the principal citizens, and has several spacious streets, with handsome houses built of red brick. Immediately above this part of the town rises Beacon Hill, commanding an extensive and peculiarly rich view into the interior of the country. Several of the public buildings are very elegant, especially the new state house; though it fails to produce the due effect, by being built of brick. A most superb hotel has lately been erected, on a scale seemingly beyond that of the city. It is seven stories high, and contains 200 apartments. Boston, till the late rapid progress of New York, was the centre of the commerce of the United States. In 1831, it owned 138,174 tons of shipping. The harbour is so spacious as to afford a good depth of water to upwards of 500 vessels; and the entrance being extremely narrow, renders it easily defensible. The wharfs are numerous, and more commodious than any other in America. The largest is 1750 feet long, 104 feet broad, and bordered throughout by a range of spacious warehouses. The market, 536 feet long, possesses the same pre-eminence. The inhabitants, according to Mr. Lambert, are distinguished for their domestic habits, regularity of living, integrity in their dealings, hospitality to strangers, strict piety and devotion, and respect for the moral and social virtues. The severity of manners which they brought from England has been considerably relaxed, and the theatre and other amusements have been introduced. At the same time, a devout attention to religious worship, and the strict observance of the Sabbath, are remarked to a greater degree than in Old England. Unitarian doctrines, however, have obtained a considerable prevalence, produced probably by a reaction from the high antinomian tenets which prevailed at the first settlement. Boston is also the head quarters of federalism as opposed to democracy, the former system being generally supported by the northern states, and the latter by the southern. It has also been, in a comparative sense, the Athens of the Union, though New York is now treading close on its footsteps. Franklin, the Adamses, Fisher Ames were its natives, and the *North American Review*, the best in the country, is conducted there. Harvard College, at Cambridge, three miles distant, is well endowed, has numerous professorships, and its library is second only to that of Philadelphia, containing many works of rarity and value. Boston is connected with the continent by particularly large and handsome bridges, one of which is nearly half a mile long.

5724. *Massachusetts has some other towns of consequence.* Salem, the name of which indicates the high religious feelings of its founders, is now a handsome pleasant town, which flourishes by the adventurous trade to the East Indies, in which it chiefly employs its 31,000 tons of shipping, and for the promotion of which it has founded an institution called the East India Marine Society. Plymouth (*fig.* 977.), the oldest town in New England, and even in the States, founded in 1621, by a colony of nonconformists, drives still a considerable trade. Nantucket, on an island of the same name, is the chief seat of the southern whale-fishery, which it prosecutes with almost unrivalled spirit, having thirty works for the extraction of spermaceti oil. Whales once abounded in its own neighbourhood, but they have now disappeared. Worcester is rather a thriving little inland town. Lowell and Taunton are rising rapidly into importance by the establishment of cotton manufactures. In the former are made from 12,600,000 to 14,000,000 yards; in the latter, nearly 8,000,000 yards.

927



PLYMOUTH, MASSACHUSETTS

5725. *Connecticut* is another state immediately to the south of Massachusetts, and bordering chiefly on that bay of the Atlantic called the Sound, formed by the opposite coast of Long Island. It is almost entirely agricultural, and the cultivation is carried to as high a pitch as in Massachusetts. The farmers are a plain, homely, hospitable race, bearing the English stamp almost unaltered. The morals are very pure; duelling, so common in the other states, is here held in disgrace, and there has scarcely been an instance of a citizen guilty of a capital crime. Public education is most amply provided for; there being no less than 250,000*l.* appropriated to the support of schools. There is scarcely an individual in the state who cannot read and write; and Yale College, in Newhaven, under popular patronage, has attained to considerable note. The rank of capital is disputed by Hartford and Newhaven, agreeable rural towns: the former inland, on the banks of the river Connecticut; the latter a sea-port, and a very early settlement, still carrying on most of the trade of the state. It is neatly and regularly built.

5726. *New Hampshire,* stretching south from Massachusetts, occupies a very great part of the surface of New England. Its territory is the most elevated of any in the states; it is broken into every diversity of surface, and rises in the interior into the high level of the White Mountains, the loftiest peak of which is Mount Washington. Its varied scenery, of mountain, lake, and river, causes it to be often called the Switzerland of America. Its industry is chiefly agricultural, and every product of the soil, suited to a temperate climate, is yielded in the utmost abundance. The chief wealth hitherto has been in its forests; but these are now considerably thinned. The inhabitants are peculiarly active, hardy, and athletic; and the advance of population has been remarkably rapid. Nothing is more common than to see a grandmother at forty, and the mother and daughter are often suckling children at the same time. This state is well watered by the upper part of the Connecticut; and almost the whole course of the Merrimack is through its territory. Although it cannot rival the intellectual character of Massachusetts, yet it has Dartmouth College, an institution on a limited scale, and the legislature has made large provision for diffusing the general elements of education. New Hampshire has a comparatively small extent of coast, on which, however, there is some ship-building, fishery, and trade. The towns are not considerable; but Portsmouth is a neat agreeable sea-port, with an excellent harbour, and 26,000 tons of shipping. The Washington, a seventy-four gun ship, was launched here in 1814.

5727. *Vermont* is a long territory, running north and south to the west of New Hampshire, and bounded on the other side by Lake Champlain. That piece of water, 160 miles in length, and 18 in its greatest breadth, is a main barrier of the States on the side of Canada, and its positions of Crown Point and Ticonderoga have been distinguished by some of the most remarkable events in its military history. The centre is traversed by the Green Mountains, from which the country takes its name, which form two parallel ranges, but nowhere rise higher than between 3000 and 4000 feet. They enclose many fertile valleys, and a fine plain is interposed between them and Lake Champlain. Under these advantages, its population between 1790 and 1830 increased from 85,500 to 286,000. The people from Vermont are active, hardy, florid, and robust: in peace, industrious and frugal; in war, peculiarly brave and intrepid. The legislature has not been behind that of the other states in its care for education; a portion of land in every new township being set aside for schools. A portion has also been allotted to the clergy, of whom there are 112; a college, endowed with 33,000 acres, has been established at Middleburg, and another at Burlington. The manufactures of Vermont are of little importance, and the exports consist chiefly of timber and the produce of land; a great proportion of which is sent by way of Lake Champlain to Canada. Montpelier, which ranks as the capital, is only a pleasant village, surpassed by Windsor, Middleburg, and Burlington.

5728. *The great maritime district of Maine,* long held politically attached to Massachusetts, has since 1820 formed an independent state. There are considerable tracts of mountain and swamp; and a great part of the interior has not yet been regularly settled; so that four fifths of its area do not contain more than 1500 families. The rest, however, has received most rapid accessions, having grown from 10,000 in 1750, to 399,000 in 1830. A small colony of Indians is peaceably settled on the Penobscot river, and is increasing. The dense original forest, which composed this territory, is broken only by a narrow plain along the sea-coast, and agriculture is yet in an imperfect state. The inhabitants, however, carry on a good deal of ship-building, trade, and fishery. The registered tonnage in 1827 amounted to 202,000; of which 6000 were employed in fishery, yielding a produce of 470,000 dollars. Portland, the capital, is a considerable, well-built sea-port, owning, in 1827, 49,000 tons of shipping.

5729. *The state of Rhode Island* occupies a little corner of New England, shooting out between Connecticut and Massachusetts. It was founded by about forty individuals, who, being expelled from Salem on account of antinomian tenets, bought a tract of land from an Indian chief for a pair of spectacles, and founded there a town, to which they gave the name of Providence, and to the whole district that of Rhode Island. Possessing considerable advantages of situation, this territory was soon well peopled. During the revolutionary war, it was long occupied by the English troops, and was somewhat recusant as to entering into the federal union, but at length gave its consent. The soil is rather too light for grain, but yields all the productions of the dairy in great perfection; has an excellent breed of sheep, good pacing horses, and valuable orchards. Unfortunately, it is less advanced in general information than the other parts of New England. The first settlers were deeply imbued with the opinion that a Gospel minister could derive no benefit from human knowledge, and this idea has never been eradicated from the minds of their successors. The law for establishing schools was once repealed, though it is lately re-enacted. The Baptists are now the ruling religious sect. Providence, the capital, is the third town in New England. It is situated at the head of Narraganset Bay, which admits vessels of 900 tons, and carries on a brisk trade, owning 14,000 tons of shipping. Newport, at the mouth of the bay, once the chief town, has, notwithstanding its fine harbour and beautiful situation, been in a great measure supplanted by New Providence.

Subsect. 2. *The Middle States.*

5730. *The Middle States* consist of *New York* and *Pennsylvania*, with the smaller ones of *New Jersey* and *Delaware*. These are on the whole the most flourishing of the whole Union. They contain the greatest extent of cultivated land, the largest and most prosperous cities; and if they do not at present equal the intellectual character and active energy of the New England States, they are, in these respects, making rapid progress.

5731. *New York* is one of the most extensive and decidedly the richest and best peopled member of the United States. It stretches far beyond the western boundary of New England, widening continually as it extends to the north and west. A branch of the Alleghany, approaching the sea, runs through its eastern district, but is not of such height as materially to obstruct cultivation. Almost all the rest is level, and composed of a fine loam or friable clay, yielding every kind of produce in perfection. It touches the sea at one point only, prolonged, however, by Long Island, and the fine and secure bay which it forms. But the benefits of inland navigation are conveyed far into the interior by the river Hudson, which admits ships to 120 miles; and vessels of eighty tons 160 miles from its mouth. On the north, where it borders on Canada, the state has another great chain of navigation formed by Lake Champlain, the river St. Lawrence, Lakes Ontario and Erie. These two lines being now joined by the great canal, and connected with the river system of the Mississippi, form an immense circuit of inland navigation, which has its focus, as it were, in the city of New York. The agriculture is now conducted with almost as much skill and care as that of New England; wheat is raised in abundance; that and maize being the principal products. The grasses are luxuriant; fruits are largely cultivated, particularly water melons, and peaches in such quantity that in some places hogs are fed with them. In 1812, the whole value of agricultural produce was computed at 4,500,000*l*. The entire value of lands and houses was reckoned, in 1814, at 60,000,000*l*. sterling. Manufactures are also in a flourishing and growing state, the branches being the same as in New England. The value in 1825 was estimated as follows: cotton goods, 3,000,000 dollars; woollen, 3,000,000, iron, 4,000,000; paper, 500,000; hats, 3,000,000; boots and shoes, 5,000,000; leather, 3,000,000; window glass, 500,000; domestic fabrics, 5,000,000. The salt springs at Onondago produce 700,000 bushels, and the mineral springs at Clifton, Saratoga, and New Lebanon enjoy a greater reputation than any others in the States. The commerce of this state is peculiarly extensive, both by its great port of New York, up the Hudson, and the canal which connects it with Lake Erie, and by Lake Champlain. The shipping in 1827 amounted to 360,500 tons, and the exports in 1828 were valued at 38,719,000 dollars, the imports at 23,834,000.

928

NEW YORK.

5732. *The city of New York* (*fig.* 928.), though not the seat of the principal government, may be considered in many respects as the capital of the American Union. It is the largest, the most wealthy, the most flourishing, and the gayest of all its cities. It is situated on the Island of Manhattan, at the mouth of the Hudson, looking towards two channels formed by Long Island, one with the coast of Connecticut, called the Sound, or East River, the other with the coast of New Jersey. In these channels, and in the harbour, which admits vessels of 90 guns, the united navies of the world might lie in safety. We have elsewhere shown the great value of the commerce which comes down the Hudson, and which was estimated, even before the completion of the canal to Lake Erie, at 50,000,000 dollars. New York is the greatest commercial emporium in America, and, next to London, the greatest in the world. In it centre almost all the shipping and trade above mentioned as belonging to the state. In 1830, there entered its port 1510 vessels, the tonnage of which was 450,000. The imports in 1827 were valued at 38,700,000 dollars, the exports at 23,800,000. New York is a handsome town. The old part, indeed, where the great stir and business is still carried on, appears confused, crowded, incommodious, and is by no means kept in a desirable state of cleanliness. But there are two streets, called the Broadway, and the Bowery Road, which are long, spacious, and filled with handsome houses and shops. The Broadway is continued for upwards of two miles through the centre and highest part of the city, and contains many handsome houses built of red brick. For a certain space, it consists of private mansions; after these appears a range of shops, which are said to vie in magnificence with those of London. Wood is now prohibited as a building material, on account of the destructive fires which it has occasioned; but many of the old houses still consist of it. New York has handsome public buildings. The city hall is considered to have scarcely a rival in the Union. It is 216 feet long, 105 broad, and 51 high, built mostly of white marble, and in many respects with some taste; yet it manifests in others a certain incongruity and ill-timed economy. While the body of the building is of white marble, the basement is of red freestone, and the dome of painted wood; the windows are too numerous, and the edifice is otherwise frittered into too many minute parts. The same observation applies to many other handsome edifices in this and other American cities. The benevolent institutions of New York are very numerous; and the state prison and penitentiary are constructed on a large scale, supplied with working implements, as conducive to the reform of the criminals. The society in New York is numerous and gay, being composed of a great number of wealthy individuals. The upper class consists of rich merchants, leading professional men, and public functionaries; the second class, of shopkeepers, clerks, and subordinate officers of government. The gentlemen dress in the fashion of London, and the ladies in that of Paris; and it is observed, that, while the manners of Boston are decidedly English, those of New York are considerably tinctured by French vivacity. There are two or three colleges and public libraries, though not on any great scale; but literary taste and the desire of information are rapidly spreading, even among the female sex. There are 4000 negroes, of whom 1700 are slaves. New York is not particularly healthy. It has repeatedly been ravaged by the yellow fever; consumption carries off annually a great number; and bad teeth are very prevalent. The extremes of heat and cold, and a luxurious mode of living, appear to be the chief causes of these last maladies.

5732. *The country towns are not numerous in this and the other states*, the population being either accumulated in the great maritime cities, or diffused into little agricultural villages and townships. The traveller, however, who ascends the Hudson will find several, to which the busy trade of that river has given birth. The principal is Albany, at first built by the Dutch, in their heavy style, with the gable ends of the houses turned towards the street; but of late it has been greatly extended and improved, and has even, in preference to New York, been made the seat of government. Here the river ceases to be navigable for vessels of any size, and the Erie canal begins, the formation of which has contributed in an extraordinary degree to the prosperity of Albany. Hudson, thirty miles below Albany, and Troy, six miles above it, are both recent towns, which flourish by the same trade. Utica on the Mohawk, where the great canal joins that river, Rochester on the Genessee, where it is connected with Lake Ontario, and Buffalo, where it joins Lake Erie, are rising rapidly into importance. The celebrated forts of Crown Point and Ticonderoga, on the western shore of Lake Champlain, have been allowed to go to ruin. The plain of Saratoga, which the surrender of Burgoyne rendered so proud a scene in American history, is now remarkable for the profusion of mineral springs with which it is covered, and which it is expected will one day render it a scene of crowded resort.

5733. *Pennsylvania* is another of the middle states, and one of the most extensive and important in the Union. It forms nearly a regular parallelogram, to the south and westward of New York. The territory is almost wholly inland, since only at its north-eastern extremity it touches the heads of the Chesapeake and Delaware, and at its north-western the shores of Lake Erie. The Alleghany Mountains, here bending eastward, cross it in an oblique direction. Though a part of their sides is rude and rocky, there are rich valleys interspersed. The coast also consists partly of light and sandy soil; but most of the interior plains are composed of a rich and highly productive loam; so that Pennsylvania ranks, on the whole, among the most fertile of the Eastern states. It was founded, as already noticed, by a colony of Quakers, under the enlightened and benevolent Penn. They have been followed by numerous emigrants of various nations, chiefly Irish and Germans, with some Swedes and Dutch. The Quakers are now greatly outnumbered, not having above 54 out of 330 congregations; but their original influence has stamped a sedate, mild, and philanthropic character on the population. Agriculture is in a flourishing state in the eastern and southern districts, and land of good quality, in the counties immediately round Philadelphia, sells at thirty, forty, and even fifty dollars an acre. But the extensive tracts to the west and north are still in process of clearing, and land may be had for four or five dollars, or even less. The pastures are very extensive, and there is an excellent breed of cattle of the true Old English description. Coal exists in remarkable abundance; and in the western part there are extensive salt springs. Manufactures are more flourishing than in any other state of the Union. Those in iron alone were estimated in 1810 at nearly 6,000,000 dollars. The most extensive establishments are those formed at Pittsburg, for the supply of the western territory. The shipping amounted in 1828 to 104,600 tons, the imports to 10,100,000 dollars, the exports to 4,089,000.

5734. *Philadelphia* (*fig.* 929.), the capital of this state, is one of the greatest and most interesting cities of the Union. It occupies an oblong space, enclosed by the confluence of the rivers Delaware and Schuylkill. It was originally laid out on a regular plan, the streets being straight and crossing each other at right angles; and they are well paved, and kept very clean; so that, though not so brilliant and gay, this is a neater and more commodious city than New York. The literary establishments of Philadelphia, which owed their origin to Dr. Franklin, are the most respectable of the new continent. The library founded by him now comprises from 22,000 to 24,000 volumes of very valuable works. There is a museum containing many interesting curiosities, particularly the entire skeleton of a mammoth. The seminary founded by Franklin as an "academy and charity school," is now called the University of Pennsylvania, and, in medical science especially, has no rival in any of the states. The Academy of Fine Arts possesses an extensive collection of casts, and of ancient and modern paintings, among which is West's celebrated picture of the Healing the Sick in the Temple, which was purchased for 3000 guineas. The American Philosophical Society has made some important contributions to science. Printing is carried on upon a greater scale and more elegantly than in any other transatlantic city. There were, in 1819, fifty-one offices, employing 153 presses, partly in newspapers and partly in reprinting popular British works. One of Sir Walter Scott's novels was, it is said, put in types in the course of a single day. With all these means and appliances, Philadelphia is scarcely so literary a city as either Boston or New York. It is celebrated, however, by its philanthropic exertions. The attempt to mitigate the severity of the penal laws by the penitentiary system has been more diligently attempted here than in Boston or New York. Here, as elsewhere, it has hitherto failed; but a new edifice has lately been constructed on so great a scale as to allow the principle of solitary confinement to be carried into full effect, and thus to give the system a fair trial. The best edifice in Philadelphia is the United States Bank, of white marble, in a style of pure Grecian architecture. The bank of Pennsylvania is also a handsome marble edifice.

929

PHILADELPHIA.

5735. *Lancaster and Harrisburg* are rather thriving country towns on the Susquehanna, supported by the trade of that river, and by the richness of the surrounding districts. The population of the former place is half German; and six newspapers are published there; three in English and three in German. Harrisburg, notwithstanding its comparative smallness, is the seat of the legislature. As for Pittsburg, and the adjoining regions belonging to the river system of the Ohio, they appear to us so decidedly connected with the Western territory, that they will be considered more advantageously in connection with it.

5736. *New Jersey* is a long narrow strip between the Delaware and the Atlantic, and rather an appendage to New York than a separate state, which it began to be only in 1680. It is in general very flat, and about a fourth part of it, consisting of loose sand and pebbles, is very unproductive. The hilly tracts, however, afford good pasturage; and even on a great part of the level surface, buck-wheat and other grain is raised with success. The original settlers were Dutch; but the population was successively augmented by emigrants from England and Scotland, Quakers from Philadelphia, and Presbyterians from

New England; so that they form altogether a somewhat motley community. They distinguished themselves by their ardour in the cause of independence: the Jersey militia rendered eminent service in the battles of Trenton and Princeton. New Jersey, on a scale nearly proportioned to its size, has the same manufactures as the great neighbouring states. The shad and oyster fisheries are considerable; but its commerce is carried on almost entirely through the medium of New York. There is nothing which can be called a city; the principal places, Trenton on the Delaware, Burlington and Elizabeth's towns, on or near the Atlantic, being only pleasant country towns. The falls on the little river Passaic (*fig.* 930.), are distinguished as among the most picturesque objects which the United States present. The effect is produced chiefly by the wild and varied scenery by which they are bordered.

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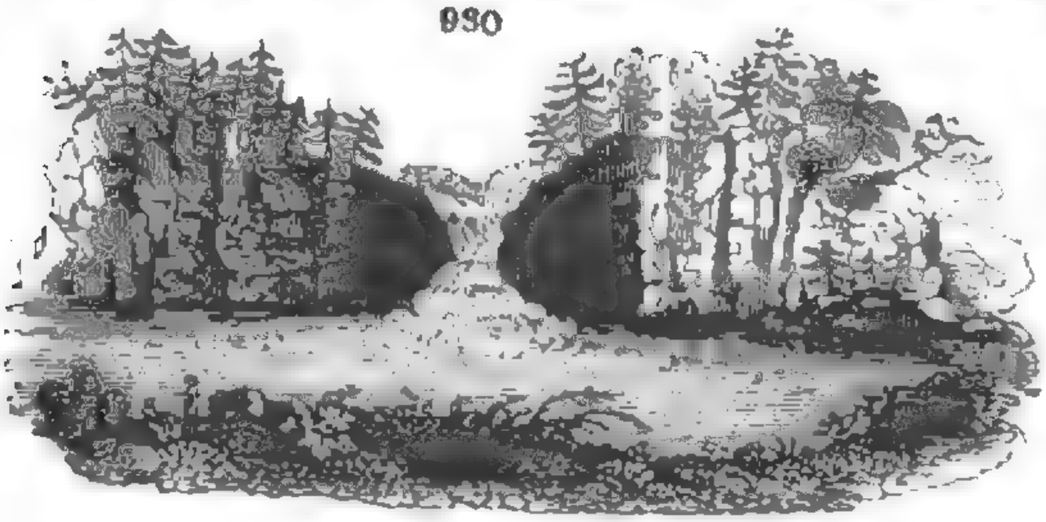

PASAIC FALLS.

5737. *Delaware* forms a still smaller strip, on the eastern coast of the bay of that name. It is a low territory, in some places sandy, in others marshy, the Cypress Swamp covering nearly 50,000 acres; but there is a great proportion of fine alluvial soil. It was originally settled by the Swedes, then occupied by the Dutch, then ceded to William Penn, when it became part of Pennsylvania, from which it was separated in 1755, under the title of the Three Counties of Delaware. It produces wheat of fine quality, and has some important manufactures similar to those of Pennsylvania. Dover and Wilmington are two rather flourishing sea-ports, from which a considerable quantity of flour is exported.

Subsect. 3. *The Southern States.*

5738. *The Southern States,* so denominated from their situation to the south of those now described, are Maryland, Virginia, the Carolinas, and Georgia. They enjoy several natural advantages over their northern neighbours; particularly a more genial climate, and a soil capable of yielding in abundance rich products, which cannot grow under the bleaker sky of the north. These circumstances have led to the formation of a people essentially distinct from those hitherto described, and almost at variance with them. The Northern American joins with his agricultural pursuits a good deal of manufacture, and a most active commerce; the Southern American is purely agricultural. The one is active and stirring, the other indolent and luxurious; the one cultivates the soil as a farmer, the other as a planter. While in the one slavery is happily almost extinct, the other devolves upon his negroes the greater part of the labour. "The southern planter," says Mr. Lambert, "acquires his wealth not by the sweat of his brow, like the New Englander, but by the labour of his negroes. He lolls at ease in the shady retreat, drinking, smoking, or sleeping, surrounded by his slaves and overseers, who furnish him with the luxuries of life, without the necessity of his leaving the piazza." The northern merchant, on the contrary, is strenuously exerting himself from morning till night, exercising his faculties, expanding his mind, and enlarging his ideas by continual intercourse with people of every nation, and by correspondence with every part of the globe. The slaves are held in the most degraded state; their evidence is not received in a court of justice, and a penalty is imposed on any one teaching them to read. The lash is habitually applied to them; and instances are given by many travellers, and especially by Mr. Stuart, of their being treated with the most shocking barbarity, even by their mistresses. Yet their general treatment must be in some respects tolerable, since, without importation, they double their numbers in thirty years. A barbarous prejudice, also, still excludes the negroes, even when free, from all the privileges and rights of freemen. It must be confessed that the Southern Americans, especially in the sea-ports, are doing a good deal to redeem their character both for activity and for intelligence.

5739. *Maryland,* the most northern of these states, is situated on both sides of the great bay of Chesapeake. It borders on Delaware and Pennsylvania, and, though not extensive, is fertile and agreeable. The sea-coast and a range of mountains in the interior temper, in most places, the extremity of the heat. Though marsh and sand prevail in some quarters, the soil is, on the whole, extremely fertile. The wheat, barley, and potatoes are excellent; and both here and in Virginia tobacco forms the characteristic object of culture. The annual produce is estimated at 19,000 hogsheads. It is stronger than that of Virginia, and more esteemed in the north of Europe. The iron-works are extensive and productive. Considerable exertions have been made to establish manufactures, and the Union Manufacturing Company has a capital of a million of dollars; yet Maryland has not become a manufacturing state.

The commerce consists chiefly in the exportation of its raw produce, being almost all the tobacco grown, a great quantity of wheat flour, and some iron. In 1828 it had 171,000 tons of shipping; the imports and exports amounted each to 4,800,000 dollars. Maryland was first settled by Lord Baltimore with a colony of Roman catholics, whose descendants are still numerous. They introduced a very unusually tolerant spirit, so that the state served as a refuge from the persecution of the puritans in New England; and thus it soon became prosperous. The inhabitants are said to present the most favourable specimen that exists of the Southern Americans. They are distinguished by their agreeable manners, kindness, and hospitality. The labour, however, is devolved entirely upon the negroes. We must also observe, that Maryland is now rivalling New England in zeal for diffusing instruction. Several colleges have been founded, and large sums voted for the support of schools.

5740. *Baltimore* (*fig.* 931.), on a bay near the western head of the Chesapeake, is the largest city of the south, and now yields only to New York and Boston as a commercial emporium. There is no place of which the growth has been more rapid. Mr. Palmer assures us that there are persons so old as to remember when there were only twenty houses in it, and not a vessel belonging to the port. It now contains upwards of 80,000 souls; and the shipping, in 1828, amounted to 106,300 tons. The merchants of Baltimore are active and enterprising, and carry on trade with all quarters of the globe. Their schooners are the best constructed of any in the world, and are no less fitted for trade than for privateering, in which capacity they made a great figure during the last war. The town is celebrated for the superior excellence of its flour, which seems owing both to the quality of the wheat and to a skilful mode of grinding. The citizens lay claim to peculiar distinction for hospitality, enterprise, and bravery. They recollect, with pride, the repulse given to the British army, and the death of General Ross in the attack of their city; they have erected a monument of brick cased with marble to the memory of Washington, and have reared several very fine churches, particularly the Roman catholic and the Unitarian chapel, the latter of which cost 20,000*l.* Although small vessels can come up to the place, the main harbour is at Fell's Point, about a mile distant, where a separate town has arisen. In 1805, a medical college was founded, and was extended, in 1812, to embrace other branches, under the title of the University of Maryland; but the plan has not hitherto been fully realised. Annapolis, the original and still the official capital, is agreeably situated on a peninsula farther down the Chesapeake; but it is now entirely eclipsed by Baltimore, compared to which it is a mere village.

931

BALTIMORE.

932

ROCK BRIDGE, VIRGINIA

5741. *Virginia* is the most extensive, the richest, and the most influential of all the Southern States; the centre of all the agricultural interest, the focus of democratic principles and of negro slavery. It extends far to the westward over the successive ranges of the Alleghany. These ranges, composed chiefly of limestone, are not above 2000 and 3000 feet high; but, being steep and wooded, with majestic rivers forcing their way through them, produce many striking and romantic sites. The most remarkable object is the natural rock bridge (*fig.* 932.), formed by some great convulsion of nature, which appears to have rent a mountain asunder from top to bottom. A fissure has thus been formed, about two miles long, and in some places 300 feet deep, the sides of which are joined at the top by a mass of rock, while they descend so perpendicularly that a plummet might be let fall from the edge of the rock to the bottom of the gulph. The stupendous arch thus formed is 213 feet in height, and spans at top 90 feet. From these mountains several fine rivers, the

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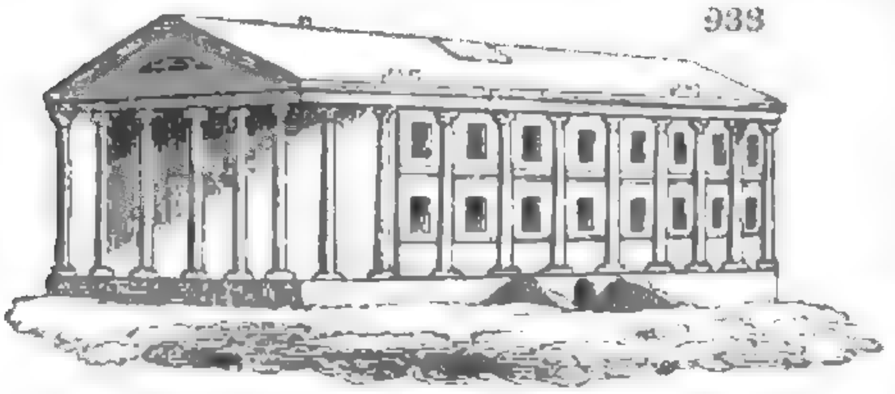
James, the Rappahannock, and the Potowmac, descend eastward into the Chesapeake The country for 100 miles inland is low and swampy, and becomes rugged in approaching the mountains; but though some districts suffer from these causes, Virginia in general is highly favoured as to soil; and her climate, being the most genial of the temperate zone, enables the finer kinds of grain and fruit to come to full maturity. The earliest settlement in all North America was made here by Sir Walter Raleigh, in 1587; and Virginia, named in honour of Elizabeth, was long the appellation by which the whole of this coast was known. The other states were gradually detached from it. Tobacco, wheat, and maize are the staples of Virginia, and afford a large surplus for exportation. Manufactures, notwithstanding some efforts to introduce them, never made any progress. The shipping amounts to 67,000 tons; its imports, in 1829, were valued at 3,783,000 dollars; its exports at 3,787,000. The greatest statesmen of America, Washington, Jefferson, Madison, have been natives of this state; yet much less has been done for the diffusion of knowledge than in almost any other. The legislature of Virginia, however, have of late gone far to redeem their character in this respect. In 1816, they voted 1,000,000 dollars for the support of popular schools; and several colleges, though not on a very large scale, have been recently erected.

5742. *The towns* in a district so decidedly agricultural could not acquire any great importance. Yet the commerce which necessarily results from so large an exportable produce has given rise to several flourishing and increasing ports on James River. Richmond, the capital, is situated considerably up that river, at a point, however, where it is still navigable. About 25,000 hogsheads of tobacco and 200,000 barrels of flour are said to be annually exported from it. Its improvement was effected chiefly by New England emigrants, who filled the houses as fast as they could be found. The Capitol at Richmond (*fig.* 933.) is in a commanding situation, and one of the best edifices in the United States; and the place is, in general, new and well built. At the mouth of James River, after it has spread into a little bay, is Norfolk, also thriving, neat, and very commercial. On another branch of the river, Petersburg enjoys a considerable degree of prosperity, manifested by the rapidity with which it was rebuilt, after half of it, in 1816, had been burnt to the ground. Wheeling derives importance from its situation on the route to the Western Territory.

933



CAPITOL, RICHMOND, VIRGINIA.

5743. *Columbia*, destined to contain the capital of America, is a small segment, ten miles square, cut off from Virginia and Maryland at their point of junction. It stands nearly in the centre of the Eastern or Atlantic states, their extent to the north and south of it being about equal. It derives importance also from commanding the navigation of the Potowmac, one of the greatest rivers of this region, descending from the heart of the Alleghany. Navigation, however, has been seriously obstructed by the succession of falls which interrupt the course of that river. The great falls (*fig.* 934.), fifty-nine miles above Washington, form one of the grandest scenes which the United States present. The perpendicular descent is seventy-six feet, but the rapids extend for several miles up the river. A stupendous projecting rock covered with cedar affords a spot from which the romantic scenery and the impetuous dashing of the waters may be contemplated. At the close of winter, vast masses of ice, rolling over the rocks with a hideous noise, present a scene truly sublime. Canals of several miles in length, and cut in several instances through the solid rock, enable vessels to evade these formidable obstructions, and to ascend the river to the height of 219 miles.

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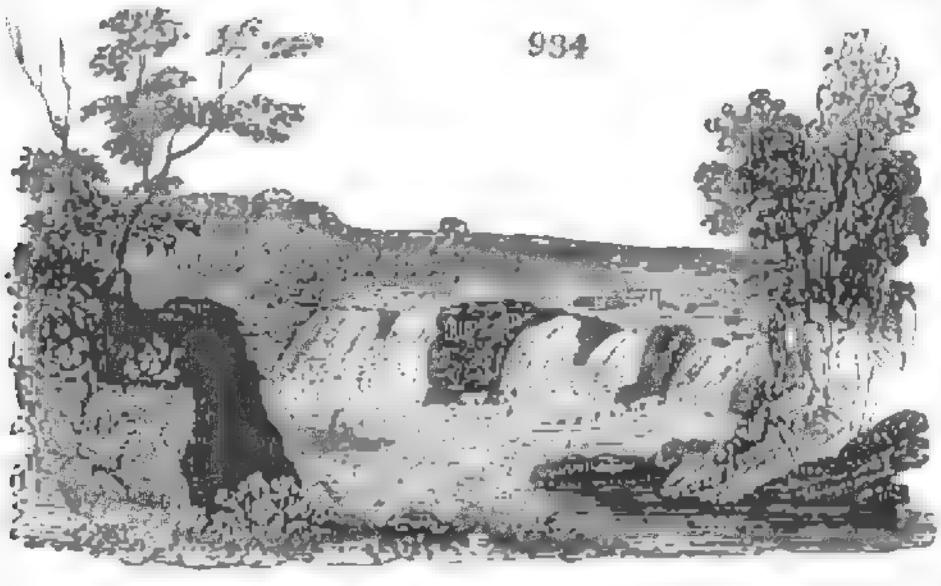
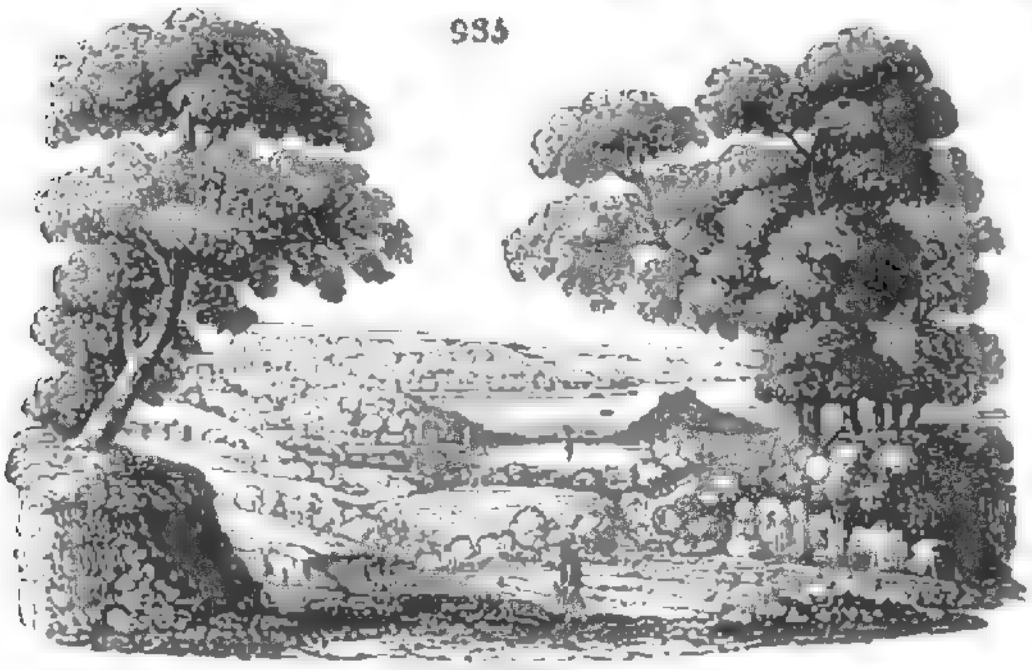


GREAT FALLS OF THE POTOWMAC.

5744. *The city of Washington* (*fig.* 935.) has been built by the American government as its own chief seat, and also in the expectation of its becoming the greatest and most splendid metropolis in the New World. The situation is fine, on a somewhat elevated ground, at the angle formed by the two branches of the Potowmac. The plan is represented as almost unrivalled for regularity and beauty, forming a parallelogram of four miles by two and a half. The greater number of streets meet at right angles; but the main avenues cross these diagonally, while the public buildings are placed in situations which it is expected will give them the happiest effect. Unfortunately all this is only prospective: the plan, instead of being carried regularly through, has been taken up at a number of detached points, six houses here and twelve there, so that no order is yet perceptible; and the city consists only of straggling clusters placed at an inconvenient distance from each other. The expectation of its deriving greatness from commerce has not yet been fulfilled. In the Capitol (*fig.* 936.), or house for the assembling of Congress, no cost has been spared to produce the utmost possible magnificence. Nine hundred marble columns have been imported, and the talents of four artists have been employed upon it. The British set fire to the edifice during their temporary occupation in the last war, a somewhat barbarous proceeding; to which they added another truly gothic, that of burning the national library. The official house of the president is also very splendid.

935



WASHINGTON.

5745. *North and South Carolina, and Georgia,* may be considered together, as partaking one general character. The extensive space which they occupy fills up the remainder of the old or eastern portion of the Union. The "endless" chain of the Alleghany continues still to form the western boundary; but, in its oblique course receding always farther from the coast, it leaves an interval of nearly 200 miles in breadth. Through the middle of it there runs a large tract, nearly forty miles broad, of sand hills, which are capable of bearing nothing but the pine tree, and are thence called pine barrens. Along the sea-coast there is a great extent of swamps and morasses, generally unfit for culture, and injurious to the salubrity of the climate. The banks of the rivers, however, and the ranges of the lower hills, where the ground is not absolutely swampy, contain a great extent of the finest soil. Here begins to prevail a class of productions differing from those of Virginia, and partaking more of a tropical character. Wheat is no longer grown with equal success, though maize continues to form the staple food of the lower orders. Rice and cotton are the chief products of all these three states. The former is singularly favoured by the superabundant moisture which prevails in all the low maritime tracts; and Europe derives from Carolina almost all that it consumes of this grain. The cotton, which loves a dry soil, finds in the sandy tracts on the sea-coast and neighbouring islands a most favourable situation. The cotton produced under the name of Sea Islands bears a higher price in the market than that of any other region of the globe. The rapidly increased and now immense market which Europe, and, above all, Britain, afford for this material of its most extensive manufacture, has greatly enriched these states, by whom cotton is found more profitable than any description of grain. There are some domestic manufactures, chiefly of cotton; but, on the whole, this branch of industry ranks lower than even in Virginia. The commerce consists in the exportation of rice and cotton, in exchange for manufactured goods, wines, and the produce of the East and West Indies. The gold mines of North Carolina, discovered only within the last twenty years, have acquired a very considerable importance. The annual produce is now estimated at about a million of dollars. The Carolinians are perceptibly inferior to their countrymen of the other states in respect to education; but colleges are now founded, one in North Carolina, two in South Carolina, and one in Georgia; and sums have been voted for the support of common schools. The Carolinians are courteous and rather polished in their manners; yet they have been accused of leading an idle and dissipated life, of being addicted to spirituous liquors, gambling, horse-racing, cock-fighting, duelling, boxing, and gouging; but Mr. Warden assures us that they are improving in all these particulars.

936

THE CAPITOL AT WASHINGTON.

5746. *Charleston,* the capital of the Carolinas, is agreeably situated at the head of a bay and at the confluence of two small rivers, the Ashley and Cooper. This situation forms an excellent harbour, which enables it to engross almost the whole trade of the country, though it is thirty or forty miles distant from the Santee, its largest river, which traverses nearly its whole extent. Charleston contains a number of good streets and handsome houses, which, at least those that are well situated, bear a very high rent; many being from 300*l.* to 700*l.* a year. They are spacious, furnished with balconies, verandas, and every appurtenance which can render them a cool and pleasant retreat from the scorching rays of the sun.

The place, however, wants some of those accommodations which exist in the industrious cities of the north. The streets are unpaved, unless with brick footpaths; and in windy weather, whirlwinds of dust and sand fill the houses and blind the eyes. Swamps and morasses, which surround the place, are allowed to become the receptacles of stagnant water; and the bodies of dead animals, instead of being buried or burnt, are thrown out to be devoured by birds. These disadvantages must injure the purity of the air, and render Charleston liable to those fevers which have repeatedly proved most destructive to it. All the indifferent and some of the good houses are constructed of wood; but the best are built of a dark-looking brick, and the streets are agreeably shaded by a spreading umbrageous tree, called the Pride of India. The great planters reside in Charleston for a part of the year, and spend their time in profuse jollity and hospitality. There are instances, it is said, of individuals among them possessing 20,000*l.* a year, and many have 4000*l.* or 5000*l.* They readily contract debt, and are slow and uncertain in paying; which renders the situation of men in business very precarious. Intellectual pursuits are comparatively little regarded; there is a library and museum, but both on a small scale.

5747. *Georgia* has for its chief town *Savannah*, built at the mouth of the great river of the same name, which has a long course on the line of the Carolina frontier. The town stands on a sandy cliff, about fifty feet above the river, and, though built much more of wood than of brick, is well laid out for a warm climate, with spacious streets and wide squares. It is, however, unpaved, and the passenger is annoyed by the deep sand into which his foot sinks, and which is blown about him by the wind. There is an agreeable walk or mall along the margin of the height, commanding an extensive view of the river and of the surrounding country, bounded by immense forests. The wharfs and warehouses extend along the river, and form a sort of lower town. The Georgian planters are less opulent than those of Carolina, and have not the same free and generous extravagance; on the contrary, their economy is alleged to be somewhat severe; and yet it is asserted that they manifest the same tardiness in the payment of their debts. They are equally fond of horse-racing and jockeying, and are represented to be on the whole ruder and more addicted to the violent and unfair modes of fighting which disgrace the southern states. Augusta is a pleasant town, 236 miles up the river, and not only collects the cotton of a very rich surrounding district, but carries on a trade with the Indians. Three newspapers are published there. Milledgeville, a still smaller place, has been made the seat of government. St. Mary's is a little town on the frontier of Florida.

5748. *Florida, East and West*, forms the southern boundary of the part of the continent which is occupied by the long line of the United States. East Florida is a peninsula of 400 miles in length, stretching southwards and forming the boundary of the Gulf of Mexico. West Florida is a long strip, extending along the northern interior of that gulf. Its surface greatly resembles that of the low tracts of Carolina and Georgia, sandy and swampy, covered in some parts with superb tropical forests, and in others capable of good cultivation, particularly of cotton. The European settlements are small, few, and scattered, and much harassed by the neighbouring Indians, who occupy the greatest proportion of the territory. The Floridas belonged to Spain till 1819, when they were ceded by treaty, and have since formed a territory of the Union, though not yet raised to the rank of a state. All the towns of Florida are small. Tallahassee, in the interior, has been made the seat of government, and invested with the name of a city, but has as yet nothing more. The largest place in East Florida is St. Augustine on the Atlantic, with a population of not quite 5000 inhabitants. Pensacola, in West Florida, is smaller, notwithstanding its excellent harbour.

5749. *Alabama* is a tract which runs up into the interior from West Florida, and having been severed from Georgia, was first formed into a territory, and in 1820 became a state. The surface and soil generally resemble those of Georgia, though the upland, being considerably elevated above the sea, is reckoned more healthy than most imperfectly cleared tracts under the same latitude. It is finely watered by the large rivers Alabama and Tombeckbee, which unite in the Mobile. The plantations are becoming tolerably extensive, especially in Madison county; but a great part of the region is still occupied by the different tribes of Creek Indians, of whom the Lower Creeks, or Muscogees, are the most numerous. Mobile is advantageously situated at the head of a deep bay of the same name, with an excellent harbour; and though it does not at present contain a population of more than 3000, it will, doubtless, one day attain an importance proportioned to the extensive inland navigation of which it has the command.

Subsect. 4. *The Western Territory.*

5750. *The Western Territory* is generally understood to comprehend that extensive region which lies between the Alleghany and the Rocky Mountains. Its extent, position, and general features have been already exhibited. It excites a deep interest, less by its actual condition than by its vast capacities, and by the prospect of the mighty nations with which, at no distant period, it will doubtless be covered. A close and continuous tide of immigration has for the last thirty years set in from the eastern to the western states. It consists partly of emigrants from Europe, but chiefly of the natives of the eastern states themselves. The Americans are enterprising travellers; they consider every part of the States' territory as their country; and are easily impelled, not by distress and necessity only, but by any feasible prospect of advantage, to migrate from one to another of its most distant quarters. "Old America," says Birkbeck, "seems to be breaking up, and moving to the westward. He who crosses the Alleghany is seldom out of view of family groupes, conveying in light waggons, drawn by two horses, their children, provisions, and the whole of their movables. Thirteen or fourteen of these passed daily through Pittsburg down the Ohio." The number of above 3,000,000, to which the western population now amounts, and which has been formed solely by this process, sufficiently attests its great extent. The object of the emigrant is to become a proprietor and cultivator of part of that immense unoccupied territory, which the States' government sells at the low rate of two dollars an acre. In the land offices a division is formed into townships of six miles square, and this is divided, by perpendicular lines crossing each other, into quarter sections of 160 acres, and each lot being numbered, there is no room for litigation or controversy. The emigrant chooses his lot, pays a quarter in advance, and the other instalments at the end of two, three, or four years. In case of failure, he forfeits the purchase; but considerable indulgence is shown in this particular.

5751. *The situation and prospects of the emigrant* have been variously estimated. His beginning is very hard. He must construct a house of logs, with difficulty rendered secure from wind and rain. He has to fell huge trees, drag them together, and burn them. He has then to penetrate with the plough the yet unbroken ground, and to wait a considerable time before any produce arises. All this he must do by the labour of his own hands and those of his family; for there are no servants to be hired, no one coming into the woods to officiate in that capacity. Even after the land is made to yield its produce, he has very little means of converting it into money, either to replace his advances, to procure foreign luxuries, or to enrich himself. Mr. Birkbeck, after five or six years' residence, had only as many dollars as he had pounds when he left England. The only mode of making money is by purchasing large lots of land, and selling them in retail; but even this has been found a losing concern, in consequence of the late depreciation of property in both continents. Many of the tracts are also unhealthy, and even fatal, in consequence of the swamps and the inundations to which many of the townships are exposed from an injudicious choice of site. In short, a late traveller, who seems candid, declares, that any one who had any prospect of making a decent livelihood in England would be a fool to remove to the Illinois. But for a class which belongs to that of the labourer, or is little removed above it, there is a certain prospect of procuring, in abundance, the necessaries of life, and securing them even to the largest family. There is the pride and independence of landed property to tempt the emigrant, and the prospect of a gradual and constant improvement of his condition.

5752. *Forest and prairie* are the two grand features which mark the surface of this western wilderness. Forests predominate in all that tract which is nearest to the eastern states, and immediately beneath the Alleghany. They consist of lofty primeval trees, which rise often to an amazing height. In the rich tracts, they sometimes exhibit a grand assemblage of gigantic objects, which carry the imagination back to other times, before the foot of a white man had touched the American shore. The white oaks are seen rearing their magnificent stems without a branch to the height of seventy or eighty feet, terminating in full luxuriant heads. The roads are formed by merely cutting down one tree after another, and thus opening so much space as will allow a horse or light waggon to pass. To travel through these mighty woods is at first grand and imposing; but it soon produces an impression of confinement and gloomy monotony. "To travel day after day, among trees of a hundred feet high, without a glimpse of the surrounding country, is absolutely oppressive. The effect must be the same on the solitary settler, whose visible horizon extends no farther than the tops of the trees which bound his plantation; perhaps 500 yards. Upwards he sees the sun, and sky, and stars; but around him an eternal forest, from which he can never hope to emerge." These trees, as already observed, present a most serious obstacle to cultivation. The prairies exhibit quite a different scene. They consist of endless meadows, without a tree or even a shrub, and in which the grass rises to the height of four, six, or even eight feet. It is in approaching the Mississippi, that they begin to appear. The grand prairie reaches from Lake Michigan, nearly to the Ohio, about 300 miles in length, and twenty-five to thirty in breadth. The region west of the Mississippi consists almost entirely of one boundless prairie, reaching even to Mexico. The Indians, and sometimes the Europeans, set fire to these prairies, when the flame spreads with tremendous rapidity, and is said to present one of the grandest and most terrible spectacles in nature. The flame rushes through the long grass with a noise like thunder; dense clouds of smoke arise; and the sky itself appears almost on fire. Travellers then crossing the prairie are in serious danger, which they can only escape by themselves setting fire to the grass round them, and taking shelter in the burnt part, where the approaching flame must expire for want of fuel. Nothing can be more melancholy than the aspect of a burnt prairie, presenting a uniform black surface, like a vast plain of charcoal. These conflagrations are said to be by no means injurious to the soil, unless in so far as they damage some of the bordering enclosures. A prejudice at one time prevailed against the prairies as not fit for cultivation; but this has been found erroneous; and they are the more in request, as it is a most important object to save the labour of clearing away the wood.

5753. *The character of the infant society* in this western region, as in the rest of the states, does not present the same marked features as one composed of simple and native elements. The people are an aggregate from the various nations of the New and Old Worlds, who bring their native habits, and some of whom come expressly to indulge peculiarities which are checked by the order of European society. However otherwise varying in external appearance, they are soon formed to one complexion, from which every tint of beautiful bloom disappears, giving place to a pale yellow. This, Mr. Birkbeck imputes to what he calls the incarceration of a thorough woodland life, where the dark and crowded air is deprived of some portion of its vital principle. Buried in the depth of a boundless forest, the breeze of health never reaches them; they are tall and pale, like vegetables that grow in a vault, pining for light. Thrown together into this vast solitude, they are cordial, friendly, and hospitable; and all the families within many miles are well known to each other. This good disposition is much impaired by a violently litigious spirit, fostered by a set of half-bred pettifogging attornies; and which often places one half of a village at open enmity with the other. Indolence is observed to be a prevailing fault; the settlers boast of it as a privilege of freedom, and it is fostered by abundance of the necessaries of life, and by the absence of any refined or intellectual tastes to rouse the mind from listless inaction.

5754. *The backwoodsmen, divided into the classes of squatters and hunters*, form a peculiar society, beyond the regular pale of settlement. The squatters are those who established themselves upon unoccupied lands, not only without any regular right, but for some time without specific pursuit or object. When, however, the states began to dispose of these lands in a regular manner, the squatters, who could produce no title-deeds, and were unwilling to purchase any, were warned to move farther to the westward, which they did not unwillingly, as the new settlers were ready to give them a good price for their buildings and stock. They form thus a sort of irregular pioneers, in advance of all the settlements. Beyond them are the hunters, who never cultivate, and refuse all occupation except the chase of the bear, the buffalo, and the raccoon, and the bringing down birds with their rifle; unless when they take excursions of 1000 miles to trade with the Indians. They live in rude cabins of unhewn logs, with large intervals between each, through which the smoke escapes; their only furniture is timber cut into a rude resemblance of beds, tables, and chairs; their only covering the skin of the bear and the buffalo. A bad name has been given to them as perilous neighbours; their habits are, in fact, half Indian; and some desperate outlaws, having found shelter in these outer confines of the civilised world, have committed depredations with impunity. But as a body, they have been found by recent travellers to be hearty, honest, and hospitable; in short, persons from whom no danger was to be apprehended.

5755. *Kentucky and Tennessee*, the first settled and most fully peopled of the western states, are prolongations westward of Virginia and North Carolina. They reach from the Alleghany to the Mississippi, and border southwards upon Georgia and Alabama. They are nobly watered by the Tennessee and the Cumberland, which fall into the Ohio, and by the Ohio itself, which forms the northern boundary of Kentucky. The soil almost throughout the whole extent is particularly rich; and Indian corn, rye, and oats grow there in greater abundance and excellence than in any part of the Eastern Union. Wheat of fine quality, hemp, and tobacco are the chief objects of culture in Kentucky; in Tennessee they are in a great measure supplanted by cotton. Cattle and hogs are bred in great numbers. The difficulty of importation has led to manufactures on a greater scale than might be expected; and Kentucky alone employs 24,000 looms. The deep stain of the slave trade has been transferred from Virginia; and in 1830, Kentucky contained 165,000 slaves, and Tennessee 142,000. This gives the people habits of indolence, and a disdain of homely occupations, very unsuitable to the circumstances of such a state. Yet the Kentuckians are on the whole well spoken of. They are said to be high-spirited, frank, and hospitable, full of patriotism and ardour in the cause of liberty. In point of intelligence, they approach nearer to the people of the northern than of the southern states. The taste for reading is general; there are four or five colleges, numerous academies, and a school almost in every township. The people live in rude plenty, eating meat three times a day; are fond of dancing, and rather too fond of gaming. Their commerce, which is limited, is carried on either over the rugged roads of the Alleghany, or down the Ohio and Mississippi; a line of 2500 miles, which even in a steam vessel it requires about twelve days to ascend, and nine to descend. Lexington, the ancient capital, is still the most genteel residence, and contains a college, increasing in reputation, though rather deficient in discipline. The seat of government is now transferred to Frankfort, a small neat town on th Kentucky. But the most flourishing place is Louisville, advantageously situated on th Ohio, immediately beneath the great rapids which interrupt the navigation of that river The navigation on the western rivers has been prodigiously improved by the introduction o steam vessels, of which, according to Mr. Stuart, there are now 300 or 400 constantly plying upon them. The voyage from New Orleans to Louisville, which once occupied ninety-five days, is now performed in eleven or twelve, and the passage money is only 8*l.*

5756. *The noble and rapidly advancing state of Ohio* is situated on the northward o Kentucky. The river from which it derives its name, though reckoned only a fourth rat in the Western World, is as large as the Danube, and it receives four great tributaries, all like itself, of safe and easy navigation. It flows in a clear and beautiful stream, and according to Mr. Stuart, has, with its tributaries, 5000 miles navigable for boats. The onl obstruction formed by the rapids above Louisville will be remedied by a canal now i progress. The soil is perhaps the most luxuriantly fertile on the face of the earth Instances have been known of 4500 bushels of grain having been reaped from eighty acres It produces in perfection wheat, rye, and particularly maize; in some parts tobacco an cotton; and the trials of silk and wine are promising. Here, as in Kentucky, there ar considerable iron and cotton manufactures. The commerce is obstructed by the sam causes as in Kentucky; but when the communication with Lake Erie is opened, there wil be a continuous navigation to the Hudson and the Atlantic.

5757. *Several large towns* have arisen in this fertile region. Pittsburg, as already observed should be considered as belonging to the territory for whose supply its manufactures ar carried on. Pittsburg has been called the Birmingham of America. This pompous term caused disappointment to Mr. Birkbeck, who saw in it little analogy to its European prototype; but, for a new country in the New World, its flourishing state is very creditable. Th situation, at the point where the Alleghany and Monongahela unite in forming the Ohio, i most favourable for the trade of the Western Territory. Iron-works, the material of which including coal, the neighbourhood amply affords; glass-houses, flour mills, render it a bus scene. Cincinnati is situated considerably farther down the Ohio, and is the real capital though at its south-western extremity. This city, sprung up in a few years amid so vast desert, presents already ranges of commodious well-finished brick houses, spacious and bus markets, substantial public buildings, thousands of prosperous well-dressed industriou inhabitants, houses and boats building, streets levelling and paving, crowds of countr people constantly coming and going. The place, though somewhat too close to the rive is well built, on a regular plan, only part of which, however, has yet been filled up. I carries on a most extensive trade up and down the Ohio, by the Mississippi, along the Ohi canal, which here joins the river, and also by the Miami canal. Columbus, pleasantl situated on the Scioto, though the seat of government, is as yet of small comparativ importance. Zanesville, Lancaster, and Chillicothe are advancing towns, in convenient bu unhealthy situations; for, according to Mr. Birkbeck, gain is the alpha and omega of th founders of American towns.

5758. *Indiana*, an outer region to Ohio, is the resort of those who wish to have choice o land at moderate rates. It is therefore the main receptacle for new settlers, of whom man are from Scotland. The indispensable labour of clearing, and the vicinity of the backwoodsmen, are the chief inconveniences. Yet it has advanced with astonishing rapidity, th population between 1810 and 1830 having increased from 24,000 to 341,000. Still it towns, Indianopolis, recently made the capital, Vincennes, early founded by the French Corydon, Madison, are all only rising villages. The most remarkable place is Harmony, o the Wabash, long occupied by a body of sectaries, under the sole spiritual guidance of on Rapp, who not only instructed them, but directed their industry and received all its proceed A strict rule of celibacy, seemingly very ill suited to this part of the world, was impose upon them. Some years ago, he removed to Economy in Pennsylvania, having sold hi establishment to Mr. Owen, who attempted to realise there his peculiar views of society, bu without success; and he has since abandoned the place.

5759. *Illinois* is still an outer tract to Indiana, separated from it by the Wabash, an extending to the Mississippi. The river from which its name is derived has a stea navigation of 400 miles, and receives the Kaskaskia, which has between 300 and 400. It whole boatable navigation is estimated at 4000 miles, and a canal is in contemplation t unite the Illinois with Lake Michigan. Mr. Stuart, who recently traversed this stat describes it as one of the finest countries in the world; two thirds of it being composed o beautiful and fertile prairies finely diversified with wood. The population has tripled withi the last ten years. It possesses lead mines of extraordinary richness, which, in 1830, yielde 8,323,000 lbs. Vandalia ranks as the capital, but Shawnee Town is rather a larger villag Albion and Princeton are rising into some importance.

5760. *Michigan* and the *North-west Territory* are yet in their infancy. They extend alon the lakes Huron, Ontario, and Michigan, which last forms the boundary. The climate i colder than in those last described, but the soil is in many places very fertile, and the vast command of lake and river navigation must one day raise it to great importance. At present, the only settlements in Michigan are in the vicinity of Detroit, a pretty considerable village, and once a strong military post. The north-west is yet almost wholly occupied by the various tribes of Indians, with a few settlements formed by the French when they were masters of Canada. The north-west extremity of this state is very elevated, and contains a chain of smaller lakes, from one of which issues the Mississippi, while from another the Red River flows northward to Lake Winnipeg.

5761. *The state of Mississippi*, on the lower part of that great river, remains still to be described, before we pass to the western side. It has obtained a bad reputation from the aspect of its coast, which is merely a tract of barren sand, bearing nothing but pines; while, higher up, the land is swampy and subject to inundation. But in the interior, between the Mississippi and the Yazoo, there is a tract which has been described as the garden of America. It is covered with large herds of cattle, which are not even housed; and maize and cotton are cultivated with advantage, but chiefly by slaves. Natchez, an unhealthy station, Jackson, the seat of government, and Washington, about 300 miles up the river, carry on all the trade of the state, which does not, however, render them very considerable.

5762. *Louisiana* is the only other state east of the Mississippi. It comprehends the delta of that river, about 200 miles in length, and 100 in breadth, the whole of which space is intersected by numberless branches of the Mississippi and of the Red River, which comes from the frontier of Mexico. These streams, between the months of March and June, are swelled by floods coming down from the Ohio and other northern waters, and are then liable to inundation. To avert this calamity, there has been formed a great work — a *levée*, or mound of earth, from four to six feet high, parallel to the margin of the stream, which is thus confined within salutary bounds. Sometimes, however, in high floods, the waters burst the *levée*, when they rush with indescribable velocity, like a cataract, foaming and carrying every thing before them. The country is laid desolate, and all hands must hasten to the spot to repair the breach. Indeed, whenever the river is high, all its borders are kept in a state of constant alarm. By a survey made in 1828, it appeared that 5,000,000 acres in this state are rendered unproductive by inundation. There is, however, a great extent of fertile alluvial lands, on which large herds of cattle are fed, and good crops raised of sugar, rice, and cotton. The capital invested in sugar plantations is stated at 45,000,000 dollars. Wheat and maize it has been found more advantageous to import from the higher country.

5763. *New Orleans* is situated on the main branch of the Mississippi, about 100 miles above its mouth. It has rapidly risen to be one of the principal ports of the United States, and its increase must be progressive, since it is the only outlet for the immense mass of commodities brought down from the Western Territory. The population has rapidly risen from 10,000 to 46,000, which it had attained in 1830. The imports amounted, in 1829, to 6,857,000 dollars, the exports to 12,386,000; but it has only 51,000 tons of shipping, the trade being chiefly carried on by vessels from other quarters. The town, which was only of wood, has been much improved, and built, in a great measure, of brick, yet it contains no very elegant public buildings: five newspapers have been set up, and a college founded. The Catholics, who originally composed the entire population, are now a minority: the new settlers are aggregated from various parts of the Union and of Europe, and are said to be somewhat irregular in their habits. The climate is extremely unhealthy, and many of the merchants make it a mere temporary residence, with the view of raising a fortune.

5764. *The Missouri territory* is the name given to all that immense range which extends from the Mississippi to the Rocky Mountains. The state of occupation is singular, almost the whole being as yet in the undisputed possession of the Indians, while the States rank it always as an integral part of their territories. They maintain their right against all European or civilised states; and they expect to purchase from the Indians the whole territory in proportion as it is wanted. A certain quantity of arms, provisions, and brandy has always been found sufficient to procure the peaceable cession of any desired tract. The Indians do not know very well what they are doing, when for such trifles they sell so mighty a birthright. At the same time, so incalculable are the benefits to the human race from the transference of this interior world to civilised possessors, that it would be great pedantry to criticise so peaceable a mode of effecting that salutary change.

5765. *The Missouri country* consists of a succession of great valleys formed by mighty rivers rising in the Rocky Mountains, flowing eastward to the Mississippi and the Missouri. Beginning from the south, the first in order is the Red River, which rises in Mexico, and, after a course of 1450 miles, falls into the Mississippi, about 240 miles above New Orleans; being navigable about 1000 miles, though with some obstructions in the dry season. This river brings down a vast mass of alluvial matter, from the colour produced by which it derives its name. Next, the Arkansas, by a parallel line of 2173 miles, falls in about 500 miles higher up; being navigable for boats 1981 miles. Twenty-two miles higher, the Mississippi receives the White River, after a course of 700 miles, 600 of which are navigable. The next grand feature is the junction of the Missouri, which thenceforth receives all the streams descending from the western boundary. First, the Grand Osage falls in after a winding course of upwards of 1000 miles through very fine country. Next, the Kansas, a still larger stream, said to be navigable for more than 300 leagues. Higher up, enters the La Platte (Spanish La Plata), after running 2000 miles. The Running Water, the White River, and the Chayenne, though each 600 or 700 miles in length, are scarcely worth mention; but even in approaching to its mountain origin, the Missouri receives an immense river, the Keheetsa, or Yellowstone, which flows nearly 2000 miles through the valleys and along the base of the Rocky Mountains, and has been navigated 837 miles up. On the other side, in the interval between these two mighty streams, the Grand River, the Sioux, and the Jaque River flow into the Missouri, the Des Moines and St. Peter's River into the Mississippi. We omit a host of smaller streams and tributaries.

5766. *The soil of this immense tract* is various, and not so uniformly fine as that of the country between the Mississippi and the Alleghany. The general character is prairie, and in many parts there is not wood sufficient to supply a settlement; but this defect, in due time, could be supplied by floating down timber from the forests which extend along the Rocky Mountains. On the Missouri, above the Osage, there is said to be 30,000 square miles, equal to Kentucky. Beyond the Osage is a vast space, which appeared to Mr. Brown the finest country he had ever seen, except that it is somewhat deficient in wood and water. The banks of the Arkansas are in many parts stony and barren; but those of the White River are very favourably mentioned. There are in this tract two extensive deserts. One lies between the American and Spanish territory, and is of great extent, reaching along the whole eastern bank of the Mexican river Del Norte, 200 to 500 miles in breadth, and from the Gulf of Mexico to the Missouri. It is extremely saline, and abounds with marine exuviæ. Two thirds of the springs are as salt as the sea; and in every direction through its small craggy mountains, large quantities of rock salt can be dug. The Red and Arkansas rivers, flowing through this plain, are extremely salt. The other desert is a feature unique in America, an extensive surface of moving sands, extending between the Platte and the Missouri, and resembling in character those of the African Sahara.

5767. This district, notwithstanding its remote situation, has been rapidly settled; and the *state of Missouri*, formed in 1820, is daily increasing. It extends along the banks of the river of that name, about 200 miles west from the Mississippi. The soil is fertile, and agriculture labours under no disadvantage except the want of timber and stone for fences. There is a large district peculiarly abounding in lead, from which, in 1831, about 6,500,000 lbs. were extracted. The command of the navigation of the Mississippi gives it high importance and some trade is also carried on with the Indian tribes.

5768. *The settlements on this territory* are as yet few and small, and formed rather with a view to trade with the Indians than to cultivation. St. Louis, founded by the French in 1764, in a very fertile territory below the junction of the Missouri with the Mississippi, i the chief place of outfit for the Indian traders. Immediately above the junction is St. Charles also considerable. Descending the river, we find the small villages of Carondelah, St. Ferdinand, and St. Andrew's; Herculaneum, where boats are built; St. Géneviève, a large village, where the inhabitants have a field of 700 acres, which they cultivate in common, and to which a considerable quantity of lead is brought from mines in the interior; New Bourbon; New Madrid. Jefferson, selected as the seat of government, is as yet in it infancy.

5769. *Arkansas* is a territory formed of the region extending along that river, and reaching to the Rocky Mountains, and even to the frontier of Mexico. This tract is ill explored and very thinly inhabited. Along the lower course of the river, the soil is swampy and the climate unhealthy; but in the upper and western tracts an improvement takes place, and great part of the surface is covered with luxuriant herbage. Cotton is the chief article o culture, with which are combined wheat and maize. Little Rock, the capital, is, as yet scarcely entitled to the appellation even of a village.

5770. *The Indians*, who as yet occupy the vast region to the west of the Missouri, retain still unaltered all the features of the savage character. They procure food almost solely by hunting; and to surprise a hostile tribe, to massacre them with every exercise of savag cruelty, and to carry off their scalps as trophies, is their highest ambition. Their domesti behaviour, however, is orderly and peaceable; and, whether from fear or friendship, they seldom kill or rob a white man, even when an opportunity offers. Yet, although th Americans boast of mild and equitable proceedings towards them, and they cannot resist th temptations offered to them to part with their territory, a deep jealousy appears to be felt since, during the last war, they almost unanimously took part with the English. Considerabl attempts have been made to train them to the habits of civilised society; and in some places where they are entirely locked in by European settlements, they have become fixed, and have even multiplied; but elsewhere, the moment that any impulse was given to war and hunting, they have instantly thrown up every other pursuit, and reverted to all thei original habits. The Sioux are the most powerful and unbroken of these tribes: thei numbers are estimated by Lewis and Clarke at 6000, of whom 2550 are warriors; but they are branded as the vilest miscreants of the savage race, and the pirates of the Missouri. Other powerful tribes are, the Black Feet Indians, 5000; Kite Indians, a most fierce and savage race, 3000; Crow Indians, 3560; Dog Indians, 1250; Pierced Nose Indians, 1400; Big-bellied Indians, 2000; three tribes of Osage Indians, 4000. The whole number enumerated by Lewis and Clarke, and Major Pike, is about 70,000; and supposing the actual number to be double, this is almost nothing compared to the immensity of the limits over which they wander.

Chap. IV.

NORTHERLY REGIONS OF AMERICA.

5771. The regions now described, occupied by Europeans, or the descendants of Europeans, comprehend scarcely a half of the surface of North America; there remains *a vast expanse held still, almost undisturbed, by its native tribes.* Three powers, indeed, Britain, Russia, and the United States, have by admitted claim or treaty partitioned the whole territory among them. It is, however, neither possessed by them nor even known, unless in the lines crossed by hunting or exploratory expeditions; and in one direction by a few stations, at vast distances, called *houses*, erected by the fur companies, and slightly fortified, so as to be impregnable by the scanty bands of savages who traverse this region. The demarcation is traced, therefore, not by the features of nature, which are unknown, but by mechanical lines, traced on a map, according to the degrees of latitude and longitude. This arrangement appears to be premature. It seems enough if civilised nations rank as their own the countries of which they have actual possession, not those of which they have only a remote and prospective occupation.

Sect. I. *General Outline and Aspect.*

5772. *This portion of America is of very irregular form*, and some of its limits are exceedingly vague. On the south it may be stated to be bounded by Lower and Upper Canada, and by the United States, particularly that district called the North-west Territory. To the west, a large portion of it, extending southwards, called by the Americans Columbia, or Oregon, is bounded on the east by the Rocky Mountains, and on the south by the Mexican territory. All the other boundaries are maritime, and are, on the east, the Atlantic, broken into numerous and deep bays; on the north, the Arctic Ocean, ranging in a varying line between the 70th and 74th degrees of latitude; on the west, the Pacific, forming a very winding line of coast diversified by numerous islands. This region may, therefore, range from 60° to 168° of west longitude; making, in this latitude, a length of about 4000 miles; while the general breadth may be considered as lying between 50° and 70° of latitude, and amounting to about 1600 miles.

5773. *The general features of this vast region* are so little varied, and also so imperfectly known, that they may be described in few words, and cannot afford room for the usual subdivisions. A very large proportion is bleak, and chilled beneath the influence of an arctic sky. Even extensive tracts, endowed with great natural fertility, are destitute of culture, and covered with pine forests. The only commodity fitted for trade consists in the skins and furs of the numerous animals by which it is tenanted; and these, being destined to defend against the rigour of an arctic climate, are exceedingly rich and valuable. To obtain them is the chief motive which has impelled Europeans to traverse the expanse of these boundless and dreary wilds. The native inhabitants are thinly scattered, and are all in the savage state, the rudest under which human society can exist. Some display all the ferocity incident to that character; while others are comparatively mild and peaceable. They are divided into two distinct races; those whom we call Indians (*fig.* 937.), and whose various tribes occupy the whole interior of the continent; and Esquimaux, who are found tenanting all the shores of the Arctic Ocean.

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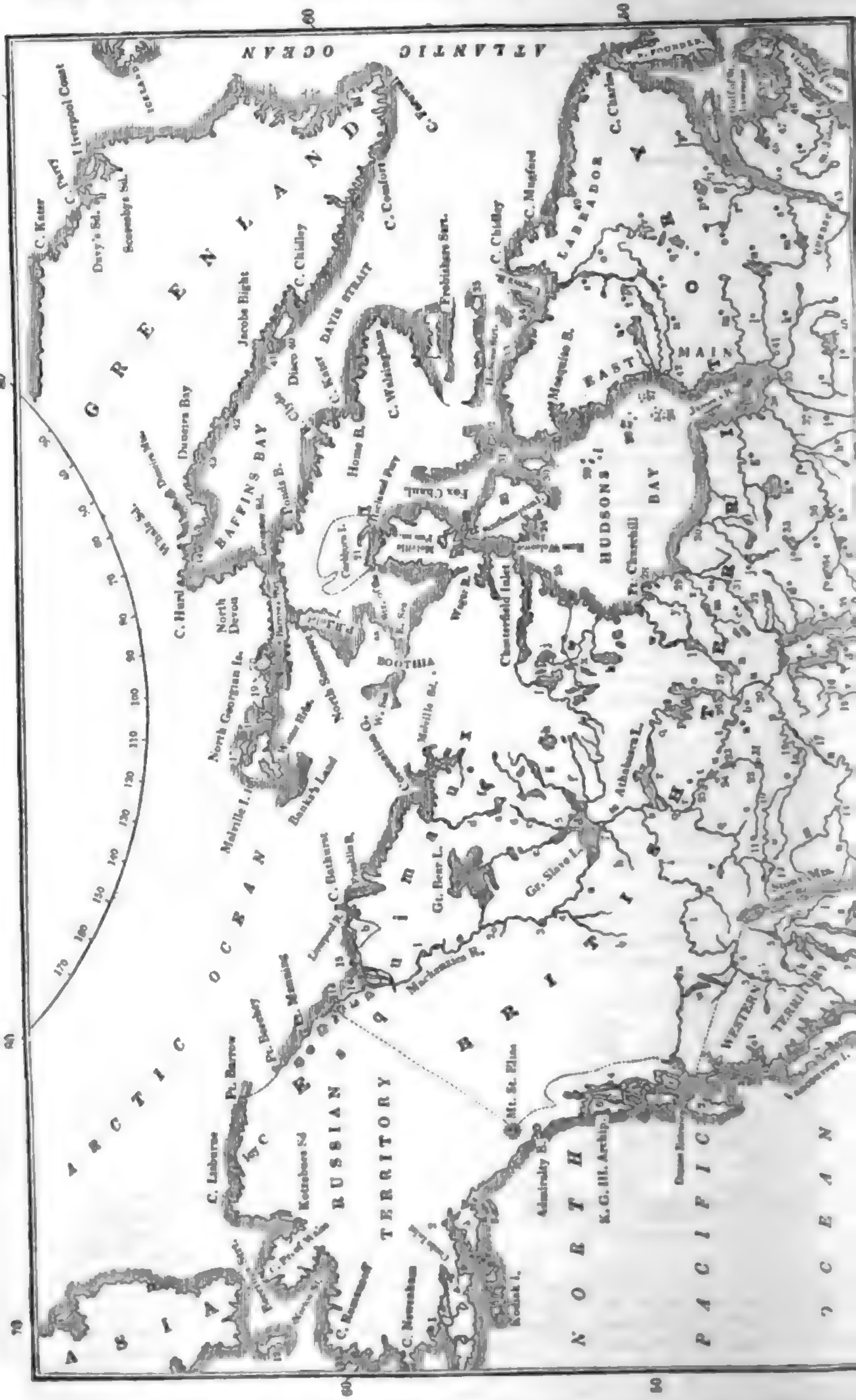
INDIAN AND HIS SQUAW.

5774. *The greatest mountains* in North America traverse the western part of this region. The continuous chain of the Rocky Mountains forms the eastern boundary of the district claimed by the United States. Branches from these, probably extending north-west from them, shoot up into the lofty peaks of Mount Elias and Fairweather, which overhang the

MAP OF THE NORTHERLY REGIONS OF AMERICA. *Fig.* 938



Pacific. But the principal chain, so far as our imperfect information goes, takes a north-easterly direction, and runs parallel, first to the Mackenzie River, and then to the Arctic Ocean, where our recent discoverers have given to different portions of it the names of Richardson, Buckland, Romanzoff, &c. The eastern part of the tract is almost entirely level, and forms a continuation of that great plain, which, including the basin of the Mississippi, reaches from the Gulf of Mexico to the Northern Ocean.

5775. *Rivers and other waters* abound in a region which, even in its most level tracts, is covered with extensive forests, and subject to little evaporation. The most southerly part of the great eastern plain includes the sources of the Mississippi, and of those numerous streams which form Lake Superior and ultimately the St. Lawrence. In another direction, the two Saskatchawans, flowing from the eastern side of the Rocky range, unite and fall into Lake Winnipeg. From the same quarter the Unigjah, or Peace River, united to the Athabasca, and passing through Slave Lake, forms the Mackenzie River, whose course from its remotest head cannot be estimated at less than 2000 miles. Farther to the east the Arctic Ocean receives the less ample stream of the Coppermine River. Hudson's Bay forms the receptacle of the considerable streams of the Missinippi or Churchill, the Nelson, and Hill rivers. In the west, the Columbia, descending from the Rocky Mountains, and receiving the tributary of the Sapho, or Lewis, falls into the Pacific, after a rugged and broken course of about 1100 miles.

5776. *Lakes* also are largely produced by the copious waters collected on the dead level of the great eastern plain. The spacious expanse of the Winnipeg borders immediately upon Upper Canada. Northwards along the line of Mackenzie River are the Athabasca or Athapescow, the Slave and the Great Bear lakes, all of large dimensions. Numerous smaller bodies of water are spread over this district, particularly in the newly discovered territory of *Boothia*. These lakes, however, in the heart of an arctic region, frozen for half the year, and almost always encumbered with floating ice, confer few benefits on the surrounding country, and present serious obstructions to the traveller.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

Of the *Geology* of these most northern regions of America, a general idea will be conveyed by the following details: —

5777. I. *The Rocky Mountains, and the Mackenzie River, from Great Bear Lake, in N. lat. 65° to the Northern Ocean.* — The Rocky Mountain range is principally composed of primitive rocks, which support an extensive deposit of secondary formation. The sea coasts, from them towards the Mackenzie, are shallow, and skirted with islands, sometimes bounded by a gravelly beach, at other times with high banks of sandstone or cliffs of limestone. Greenstone, sandstone, and limestone occur in pebbles on the shore. On the sea coast, *west of the Mackenzie River*, Captain Franklin collected greywacke, clay slate, limestone, Lydian stone, quartz, potstone, and rock crystal. *Brown coal*, clay ironstone, *pitch coal*, and limestone were seen on the shores opposite the Rocky Mountains; and westward, towards Icy Cape, were noticed greywacke slate traversed by veins of quartz and iron pyrites. On Flaxman's

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References to the Map of the Northerly Regions of America.

BRITISH TERRITORY.
1. Fort Good Hope
2. Fort Norman
3. Old Fort
4. Fort Simpson
5. Fort Providence
6. Fort Enterprise
7. Fort Resolution
8. Fort Chipewyans
9. Fort Fork
10. Fort George
11. Edmonton House
12. Nelson's House
13. Acton House
14. Chesterfield H.
15. Grant's House
16. Albany House
17. South Branch House
18. North-West House
19. Carlton House
20. Cumberland House
21. North-West House
22. Hudson's Bay House
23. La Crosse Lake House
24. North-West House
25. Hudson's Bay House
26. Deer Lake House
27. Nelson's House
28. Fort Churchill
29. York Factory
30. Severn House
31. Rock House
32. Oxford House
33. Cat Lake House
34. Red Lake House
35. Fort Alexander
36. Osnaburgh House
37. Brunswick House
38. Albany Fort
39. Moose Fort
40. Abbitibbe House
41. Rupert's House
42. Whale River House
43. Quebec
44. St. John's
45. Halifax
46. Liverpool
47. Newcastle
48. Dalhousie
49. Nain.

RUSSIAN TERRITORY.
1. Fort Alexandrovskaia
2. Russian Factory
3. Fort Palovskaia
4. Fort Snettisham.

WESTERN TERRITORY.
1. Village of Rascals
2. Attuas
3. Fort Alexander
4. Old Fort
5. Fort
6. Athabasca.

Rivers.
a Mackenzie's River
b South Branch, or River of the Mountains
c Yellow Knife River
d Coppermine River
e Hood's River
f Clowey
g Slave River
h Buffalo Creek
i Unigjah, or Peace River
j Jacootche Tesse
k Thompson's River
l Colombia
m Red Deer River
n South Branch of the Saskatchawan
o North Branch of the Saskatchawan
p Saskatchawan
q La Biche
r Clearwater
s Beaver River
t Missinippi
u Great River
v Red River
w Seal River
x Deer River
y Churchill River
z Nelson River
a* Hayes River
b* Hill River
c* Sea River
d* Beeren's River
e* Cat Lake River
f* Albany
g* Equan
h* Cacoonacaucumistic
i* Moose River
j* Abbitibbe
k* Harricanaw
l* Rupert's River
m* East Main
n* Great Whale R.
o* St. Lawrence.

Lakes.
a Great Bear Lake
b Esquimaux
c Marten
d Great Slave Lake
e Point
f Conge-ca-tha-whachaga
g Theye-noye-kyed
h Cheesadawd
i Doobaunt
j Yath Kied
k North-lined Lake
l Big Lake
m Split Lake
n Nelson Lake
o Deer Lake
p Wollaston Lake
q Black Lake
r Athabasca, or Lake of the Hills
s Methye
t Buffalo
u La Crosse
v Little Slave Lake
w Babine
x Bear Lake
y Otchenankane
z Flat Bow
a* Sandy Lake
b* Lake of the Woods
c* Little Winnipeg
d* Manitoulin
e* Winnipeg
f* Red Lake
g* Sal Lake
h* St. Joseph
i* Cat Lake
j* Frog Lake
k* Waymusket
l* Abbitibbe
m* St. John
n* Mistissinny
o* Piretibbi
p* Manicouagan
q* Nitcheguon
r* Caniapuscaw
s* Methy
t* Seal Lake
u* Clearwater

Islands.
1. Vancouver's
2. Queen Charlotte's
3. Princess Royal
4. Revilligagedo
5. Prince of Wales
6. King George the Third's Archipelago
7. Admiralty
8. Montague
9. Afognak
10. Kodiack
11. Nunivack
12. St. Lawrence, or Clerk's
13. Herschel
14. Whale
15. Richards
16. Melville
17. Sabine
18. Byam Martin's
19. Bathurst
20. Cornwallis
21. Cockburn
22. Vansittart
23. Southampton
24. Tom's
25. Marble
26. Belcher's
27. Committee
28. Brothers
29. West Sleepers
30. Mansfield
31. Nottingham
32. Salisbury
33. Long River
34. Alipatok
35. Resolution
36. Anticosti
37. Prince Edward
38. Cape Breton.
aa Victory Harbour.

Island, N. lat. 70° 11′, W. long. 145° 50′, were seen greenish clay slate, brought down by the rivulets and torrents from the Rocky Mountains. From the east end of Lake Superior, slightly converging towards the Rocky Mountains, to the east side of Great Bear Lake, there is a range of primitive rocks but little elevated above the surrounding country. For 700 miles, beginning in N. lat. 50°, between these two ranges, the space is occupied principally by horizontal strata of limestone as far as 60° north. The shores of *Great Bear Lake* are of primitive rocks, sometimes rising into hills of 800 or 1000 feet. Masses of rock and gravel, apparently derived from the hills, consisting of quartz rock, granite, and gneiss, are found on the surface and in the valleys. The north shore of Bear Lake is formed of boulders of limestone. *Fort Franklin* stands on a bay of the west coast, and the bottom of the bay and the beach are strewed with boulders of granite, syenite, porphyry, greenstone, amygdaloid, porphyritic pitchstone, dolomite, limestone with corallines, grey and red sandstone. The soil in the vicinity of Fort Franklin is sandy or gravelly, covering a bluish plastic clay, which is firmly frozen during the greater part of the year. Narrow ridges of limestone rise in the country west and north of Fort Franklin, which is otherwise level as far as the eye can reach.

5778. *Bear Lake River.* Grey sandstone forms the banks of the river. *Salt springs*, yielding excellent common salt, fall into the river a little below the rapid, at that point where the Rocky Mountains first appear in the distance. The strata on the sides of the rapid are sandstone. *Brown coal*, with impressions of fern, occur on the banks; also ammonites in a reddish iron-shot sandstone. The Bear Lake River flows into the Mackenzie through banks of a greyish black limestone, traversed by veins of white calcareous spar. The upper beds are calcareous conglomerate, associated with limestone impregnated with mineral oil, also bituminous shale. *Sulphurous springs* and streams of *mineral oil* are seen issuing from the lower limestone strata on the banks of the Mackenzie, when the waters are low.

5779. *Mackenzie River.* The banks of the river, at its junction with Bear Lake River, are composed of different *brown coal*, alternating with pipe clay, potters' clay, &c. The beds of coal take fire on being exposed to the atmosphere. The pipe clay is used by the natives for food when provisions are scarce. It is not unpleasant to the taste, and it is said "to have sustained life for a considerable time. The traders use it for whitening their houses. It is associated with a rock resembling bituminous shale on the shores of the Frozen Sea." Deposits of *brown coal* occur near the Rocky Mountains, along their eastern edge, in a narrow strip of marshy, boggy, uneven ground; and again on a branch of Peace River, and on the Saskatchawan in N. lat. 52°, and on Garry's Island, near the mouth of the Mackenzie. On the banks of the Mackenzie, below Bear Lake River, are steep cliffs, and in many places underneath are rocks of limestone. *Salt springs* are said to occur in connection with this formation. The Rocky Mountains appear at no great distance from the Mackenzie. At the rapids in that river, where limestone ridges traverse the country forty miles below the first rapid, the sides of the river rise into mural precipices of limestone, weathered into columns and castellated towers. At this remarkable rapid, called by the natives the Ramparts, the river is narrowed to 300 yards, with 50 fathoms depth of water, and the defile is three miles in length. The banks rise on each side of this vast chasm from 80 to 100 feet above the level of the river. The rocks of the Ramparts are of granular foliated limestone, coloured with mineral oil; and, accompanying the river through this rent, many varieties of limestone occur. Below the Ramparts the river expands to a breadth of two miles, and its banks slope away to a moderate height. In N. lat. 66°, mural cliffs of sandstone or quartz rock, 160 feet high, repose on horizontally stratified limestone, containing *chain coral*. Forty miles below the sandstone cliffs, marl slate occurs, forming the banks of the river, which again contracting, gives to this reach, for twenty miles, the name of the Narrows. On emerging from the Narrows, the Mackenzie forms a number of deltas, through which it falls into the sea. The Rocky Mountains form the western boundary of the lowlands of the deltas, and the Reindeer Hills a parallel boundary on the east side. Limestone occurs in conical hills, but a loose sandstone predominates. These hills gradually diminish in height, and the eastern branch of the river runs round this northern limit in N. lat. 69°. White spruce grows as far as 68°, where it disappears. The country thence becomes a frozen morass, onward, north of the hills, seldom thawing more than six or eight inches from the surface.

5780. *Alluvial Islands.* — The space occupied by the various reaches of the Mackenzie, between the Rocky Mountains and the Reindeer Hills, is ninety miles in length, and from forty to fifty in breadth. The river forms this tract into islands, by the numerous channels through which it winds its way to the sea. The islands are most of them flooded in spring, but annual accumulations of *drift-wood* and sand have raised some parts above the reach of the annual inundations, and as far north as lat. 68° the highest parts are clothed in summer with dwarf willows and white spruce. Sandy shoals skirt the coast, and the whole line from Cape Bathurst in W. long. 127°, as far west as the Sacred Islands in W. long. 137°, presents a similar outline and structure. The sea coast, east from the Mackenzie for many miles, are low, with occasionally gently swelling sand hills. The beaches and capes are covered with boulders of limestone, sandstone, and syenite. Some of the promontories consist of bluish slate clay, reddish slate clay, with interspersed crystals of selenite, and exhibits the aluminous mineral called *Rock Butter*.

5781. *Sea coast east of the Mackenzie.*—At Parry's Peninsula, still on the edge of the sea, limestone begins. The beaches are covered with limestone boulders, and on the steep banks it appears in weather-worn columns, while in other sections it appears in horizontal strata; and fragments of chert, dolomite, and *greenstone*, are scattered over its surface. Vegetation is very scanty, and over large tracts there is not even the vestige of a lichen.

5782. *Sea coast. Cape Lyon to the Coppermine River.* — Slate clay traversed by and covered with trap rocks form hills rising to a height of 700 or 800 feet above the sea, and appearing on the coast in the form of lofty precipices. Eastward the line of coast becomes lower, red quartzy sandstone occurs, and Gothic arches of limestone form striking objects. Naked barren ridges of iron-shot greenstone cross the country at Point De Witt Clinton, and the upper soil consists of magnesian limestone, gravel, and bluish clay. From this district to the mouth of the Coppermine River, limestone is the prevailing rock, accompanied by sandstone, greenstone, and porphyry, with various disseminated minerals. Vegetation ceases before reaching this line of coast, which is between 69° and 70° N. A patch of moss, or a clump of dwarf willows in crevices, or under the shelter of decaying drift-wood, occasionally appear; but with these very rare exceptions, no trace of verdure or herbage is seen.

5783. II. *From Slave Lake to the Arctic Ocean by the Coppermine River.* — Granite rocks occur east of the Slave River, where it joins Slave Lake, and the same rock forms the Reindeer Islands. The same formation continues to Carp Lake, producing on its hills and valleys spruce firs, Banksiana, and aspen. On Point Lake, in lat. 65° N., the prevailing rocks are greywacke, and clay slate, with magnetic greenstone. In the sheltered valleys spruce firs are seen, but farther east, where gneiss crosses the river, there is no wood. In lat. 66° N., high peaks of red granite and syenite, and large beds of greenstone, are said to pass through and overlay quartz rocks. In the beds of the torrents intersecting the plains are found fragments of red-coloured, granular foliated, limestone, red sandstone, quartz rock, and trap containing *prehnite*. The Copper Mountains consist chiefly of trap rocks, resting upon and traversing red sandstone and limestone. Small masses of native copper occur disseminated through the trap rocks. In the valleys are found native copper, green malachite, copper glance, and prehnite. North of the Copper Mountains trap hills occur. The intermediate country consists of a deep sandy soil, and some of the eminences are clothed with grass, but the ridges are destitute of vegetation. On the west banks of the river red granite extends from the Copper Mountains to the sea, where it forms mural precipices on the coast. The main shore, for sixty miles east of the Coppermine River, is a low shelving gravelly beach. Eastward of the beach trap rocks re-appear, and form an exceedingly sterile and rocky coast. The islands near this coast abound in cliffs of greenstone and claystone porphyry. The whole country is barren, one ridge of rocks rising above another, with stony valleys between, without a trace of vegetation. Granite occasionally rises up into acute and craggy peaks 1500 feet high, alternating with low naked ranges of gneiss. In one instance a vein of sulphuret of lead or *galena* was found enclosed in the gneiss, which is often intersected by veins of trap and porphyry. Continuing east, red sandstone, with bluish grey slate, appear. Amygdaloid, enclosing agates, occurs in Barry's Island. On the coast gneiss re-appears at short distances, with occasional lofty peaks of granite. According to Dr. Richardson, a red sandstone, which he conjectures may be the new red sandstone of authors, prevails on the Arctic sea-coast, from the mouth of the Coppermine River, in W. long. 116° eastward, to Cape Turnagain, which is in W. long. 109°, N. lat. 69°. The gneiss formation is next in extent, and runs parallel, within the red sandstone, extending from the sea to Fort Enterprise, in lat. 65° N., presenting the true "*Barren Ground.*" The general direction of the strata just mentioned is N.W. and S.E., and the mean angle of inclination 45°. Granite, syenite, gneiss, mica slate, clay slate, occurs throughout this, with their usual geognostical relations. Gneiss is the most extensively distributed, *always attended with a scanty vegetation, and generally the most desolate sterility.* The masses which occur on the summit of the hills on the Barren Grounds are generally of granite, derived from the subjacent rocks. Extensive alluvial deposits occurred on the line of the first journey performed by Franklin, such as lakes filled up by deposits from rivers, and the debris of mountains washed down by torrents, besides alluvial peninsulas formed by the action of the sea.

5784. III. *Melville Island, Port Bowen, and the coasts of Prince Regent's Inlet.*—Winter Harbour, in Melville Island, is the most western point ever navigated in the Polar Sea from the eastern entrance. It is in N. lat. 74° 26′, and W. long. 113° 46′. The length of Melville Island is 130 miles from E.N.E. to S.S.W., breadth forty or fifty miles. Sandstone of the coal formation, with casts and impressions of plants, resembling those found in the coalfields of Britain, form the principal mass of the island.

5785. *Port Bowen and the coasts of Prince Regent's Inlet.* — Secondary limestone, by some considered as identical with mountain limestone, forms both sides of Prince Regent's Inlet.

It is every where deposited in horizontal strata. It contains embedded masses of chert, and organic remains of various kinds. On the hills, and on the surface of a red coloured limestone, were found masses of *fibrous brown iron ore*, and also *brown coal*. On the west side of Prince Regent's Inlet thick beds of *gypsum* extend thirty miles through the country, associated with a limestone which, when near the gypsum, abounds in organic remains. All the gypsums are of a white colour, and of these the foliated, fibrous, and granular are met with, but not the compact.

5786. *Alluvial deposits.* — Alluvial marl deposits, from the snow waters passing through and over the limestone strata in the summer, occur on the shores and in the valleys, and fragments of limestone are scattered in different directions by the same agency; but the limestone hills in many parts, and the country generally, were more or less covered with boulders of primitive rocks. Some of these were upwards of fifty tons in weight. They abound near the sea-coast, gradually diminishing in size and number, and at the distance of fourteen or sixteen miles from the sea, they are comparatively small and seldom. The nearest known fixed primitive rocks were upwards of 100 miles distant from these remarkable boulders.

5787. IV. *Islands and countries bordering on Hudson's Bay.* — The lands bordering on Hudson's Bay, and the islands which it encloses, are generally hilly, and are usually disposed in ranges, but are not very lofty, the average being about 800 feet, and the highest summits not exceeding 1500 feet above the level of the sea. The valleys are narrow and rugged, and the cliffs often display mural fronts of more than 100 feet in height. Wherever the shores are low, flats and shoals extend far out, making a shallow sea; but where the coast is rocky and steep, the sea is proportionably deep. The country is covered with snow and ice the greater part of the year. The upper soil varies from two or three inches to one foot in depth, beneath which the ground is frozen like the most solid rock. In the summer, a few plants appear in the fissures of the rocks, in sheltered places. The general aspect of the country indicates the prevalence of primitive rocks, but no volcanic rocks have hitherto been met with. The islands and countries bordering on Hudson's Bay, between lat. 60° and 69° N., and long. 65° and 125° W., are composed of primitive, transition, secondary, and alluvial rocks.

5788. *Primitive rocks.* — These are, granite, gneiss, mica slate, clay slate, chlorite slate, eurite porphyry, hornblende rock, hornblende slate, primitive greenstone, serpentine, and primitive limestone. Several interesting minerals occur in these rocks, such as *garnet, zircon, rock crystal, beryl, coccolite, asbestus, graphite, magnetic iron ore, magnetic pyrites, chromate of iron*, &c.

5789. *Transition rocks.* — These are, quartz rocks in many various forms, greywacke, greywacke slate, transition clay slate, and flinty slate.

5790. *Secondary rocks.*—1. Limestone enclosing corals, trilobites, orthoceratites, and many fossil shells. 2. Bituminous shale, an indication of the coal formation. 3. Secondary greenstone, sometimes containing titanitic iron ore, sometimes iron-shot and porphyritic, and at others crossed by veins of calcareous spar.

5791. *Alluvial deposits.* — But few alluvial deposits are mentioned as occurring in those parts of the arctic regions that border on Hudson's Bay. The most striking objects are the boulders spread over some of the islands. Whole limestone islands are covered with blocks of granite, gneiss, and quartz, both in rounded masses and in angular forms.

Subsect. 2. *Botany.*

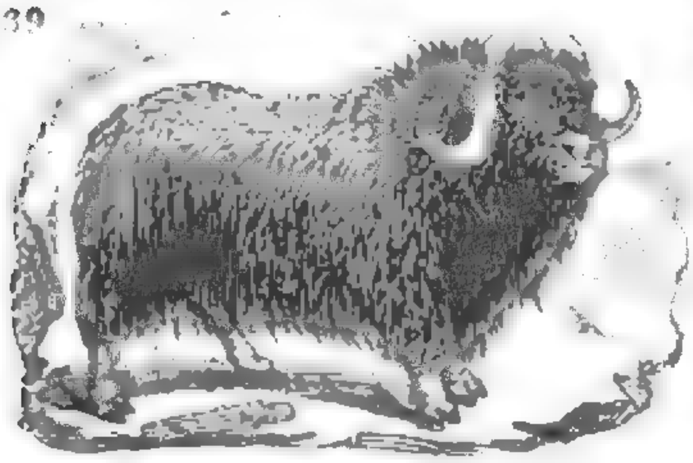
5792. The *Botany* of these regions has been already noticed, under the head of British America.

Subsect. 3. *Zoology.*

5793. *The Zoological features*, in regard to the ferine inhabitants of these wild and uncivilised tracts, have been sufficiently dwelt upon in our introductory remarks. We shall, therefore, merely notice, more in detail, a few of the most interesting quadrupeds already mentioned.

5794. ***The Polar or Sea Bear*** is precisely the same as that of Arctic Europe; but Dr. Richardson considers its size to have been much exaggerated by the older voyagers: it never exceeds nine feet in length and four and a half in height. Many interesting and even distressing anecdotes are upon record, attesting its amazing strength and dreadful ferocity. The principal residence of this formidable animal is on fields of ice, with which he is frequently driven to a great distance from land; but he not only swims with rapidity, but is capable of making long springs in the water. This species, being able to procure its food in the depth of even an arctic winter, has not the necessity to hibernate; its pace, at full speed, is a kind of shuffle, as quick as the sharp gallop of a horse.

939

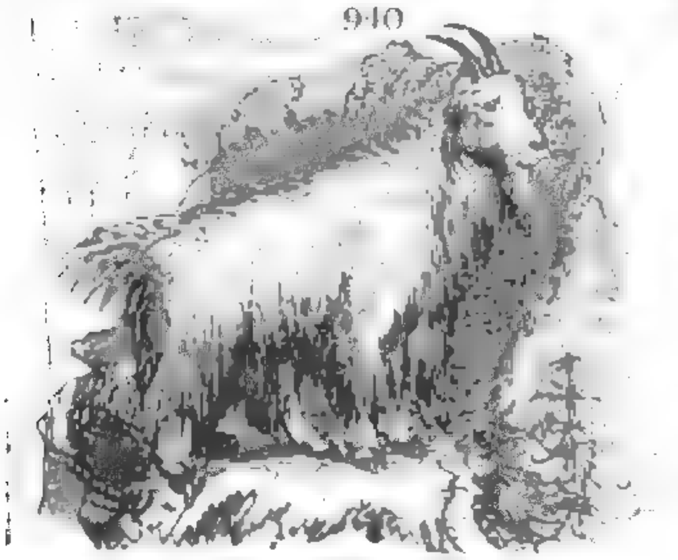


Musk Ox.

5795. ***The Musk Ox*** (*Bos moschatus*) (*fig.* 939.) derives its name from its flesh, when in a lean state, smelling strongly of that substance. It is truly an arctic animal, the districts which it inhabits being the proper lands of the Esquimaux. Grass at one season, and lichens at another, supply its only food. In size, the Musk Ox scarcely equals that of the small Highland cattle: the carcase, when cleaned, not weighing more than 3 cwt. Notwithstanding the shortness of its legs, it runs fast, climbing hills and rocks with great ease: they assemble in herds of from twenty to thirty, and flee at the sight of man; the bulls, however, are very irascible, and when wounded will attack the hunter, and endanger his life.

5796. *The Wild Goat and Sheep* of the Rocky Mountains deserve a brief notice; particularly as the two animals have been much confused in the accounts of travellers. The first (*Capra americana* Rich.) (*fig.* 940.) is as big as our domestic sheep: its fleece hanging down on the sides like that of the Merino breed; the hair is long and straight, coarser than that of the sheep, but finer than that of the common goat. It inhabits the most lofty peaks of the Rocky Mountains, and probably extends from 40° to 65° lat. The fine wool which it produces grows principally on the back and hips, and is intermixed with long coarse hair.

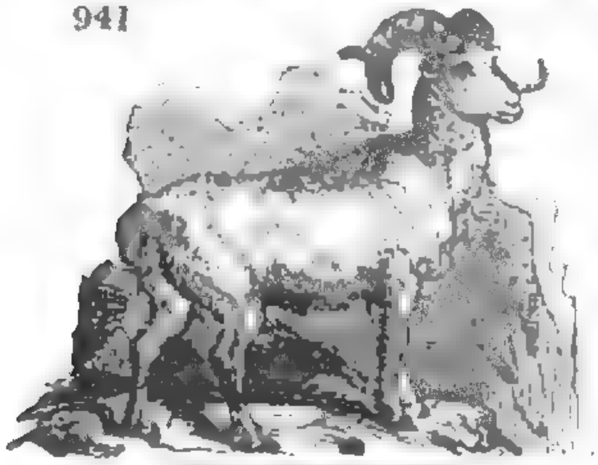
940



ROCKY MOUNTAIN GOAT.

5797. *The Rocky Mountain Sheep* (*Ovis montana* Rich.) (*fig.* 941.) was seen by the first Californian missionaries so far back as 1697; but its true nature or history was only known of late years. It is much larger than any domestic sheep: the horns of the ram are immense. The hair is like that of the rein-deer; at first short, fine, and flexible; but as winter advances, it becomes coarser dry, and brittle, though it feels soft; it is then so close as to become erect. The Rocky Mountain Sheep inhabit the lofty chain of mountains from which their name is derived, from its northern termination in lat. 68° to about lat. 40°. They collect in flocks from three to thirty, the young rams and the females herding together, while the old rams form separate flocks. Mr. Drummond mentions that the horns of the old rams attain a size so enormous, that they effectually prevent the animal from feeding upon level ground.

941



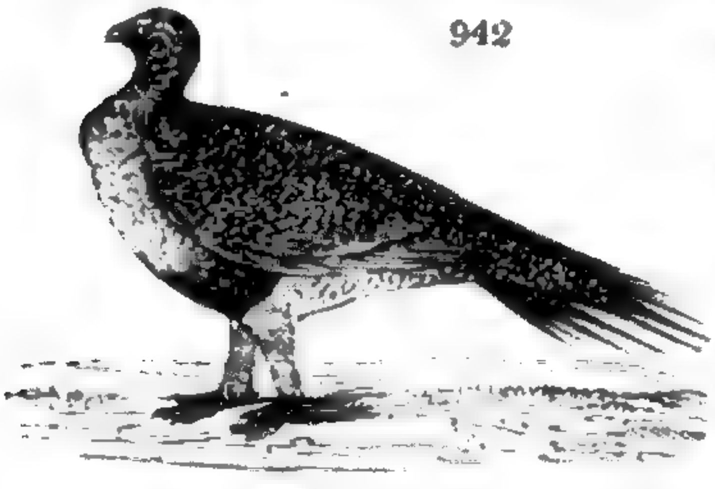
ROCKY MOUNTAIN SHEEP.

5798. *Among the other larger game* is the Bison, the Wapati the Moose, and seven other species or varieties of Deer, four different Hares, and several other smaller quadrupeds, which our confined limits will not permit us to notice.

5799. *The Ornithology* assimilates in many respects to that of Arctic Europe, as most of the aquatic birds found in one country are common also in the other. The land birds, however, are almost entirely different, while nearly all the grouse of the New World are exclusively confined to these northern latitudes. Having treated this subject more at large in another work (*North. Zool.* vol. ii.), we deem it right to record the fate of one of the most interesting collections of ornithology ever sent to this country. These collections, made by the late botanical travellers in California, and sent by them to the Horticultural Society, after having been suffered to remain studiously concealed from the eye of science, during the influence of a late officer of that society, are now no longer in existence: want of care in their preservation, with indolence, or inability to turn them to a useful purpose, has, unfortunately for science, furnished a practical illustration of an old fable. The moths were more industrious: for the boxes, upon being opened, on the return of the collectors, exhibited only dust and half-devoured feathers.

5800. *The Grouse of the northern regions* of America constitute the most peculiar feature in their ornithology; the species are more numerous than those of Europe, from which also they are totally distinct. The largest is the Centrocircus urophasianus *Sw.* or Cock of the plains (*fig.* 942.): a noble bird, fully equal to the T. urogallus, and distinguished by a long, cuneated tail, the feathers of which are narrow and pointed; the male is distinguished by two naked spaces nearly in front of the breast, which, when inflated can only be compared to the bust of a female figure. It inhabits the extensive plains near the sources of the Missouri. Another species, the Tetrao obscurus, or Richardson's Grouse, is of the same size, and bears some resemblance to the Black Cock of England.

942



COCK OF THE PLAINS.

5801. *The Water Birds comprise*, in all probability, nearly the whole of those European species which have been detected in America, with some *few* others hitherto undescribed. Among these may be named the following Ducks, as being contained in the collections of Dr. Richardson: —

Anas canadensis *L.* Canadian Goose.
Anas clypeata *L.* Shoveller Duck.
Boschas domestica *Sw.* Mallard Duck.
Dafila caudacuta *Leach.* Pintail Duck.
Marica americana *Steph.* Am. Widgeon.
Marica obscura *Steph.* Dusky Duck.
Boschas discors *Sw.* Blue-winged Teal.
Boschas Crecca *Sw.* Green-winged Teal.
Oidemia perspicillata *Sw.* Black, or Surf Duck.
Anas nigra. Scoter Duck.
Fuligula rubida *Bon.* Ruddy Duck.
Fuligula marila *Bon.* Scaup Duck.
Fuligula rufitorques *Bon.* Tufted Duck.
Clangula vulgaris *Leach.* Golden-eye Duck.
Clangula albeola *Leach.* Buffel-headed Duck.
Clangula histrionica *Leach.* Harlequin Duck.
Harelda glacialis *Leach.* Long-tailed Duck.
Fuligula ferina *Steph.* Red-headed Duck.

943

GREAT CALIFORNIAN VULTURE.

5802. *The most remarkable of the Land Birds* is the Great Californian Vulture (*Vultur californianus*) (*fig.* 943.), which seems confined, according to the observations of Mr. D. Douglas, to the woody districts of that country. They build in the most secret and impenetrable parts of the pine forests, invariably selecting the loftiest trees overhanging the deepest precipices. It measures from four feet to four feet and a half long, and the quills are so large as to be used by the hunters as tubes for tobacco pipes. Their food is carrion, or dead fish; for in no instance will they attack any living animal, unless it be wounded and unable to walk. In searching for prey, they soar to a great altitude, and on discovering a wounded deer, or other animal, they follow its track until it sinks. Although only one bird may be first in possession, it is soon surrounded by great numbers, who all fall upon the carcase and devour it to a skeleton within an hour, even though it be a horse or a stag: their voracity, in short, is almost insatiable.

Sect. III. *Local Geography.*

5803. Of a country so extensive and so imperfectly known it would, as already observed, be impossible to give *a detailed account*, arranged under the ordinary general heads. It will, therefore, be necessary to describe the several parts successively, as in the local sections. We shall describe it provisionally according to the nations by whom each territory is claimed, as this division coincides in some measure with that formed by nature. The British territory includes all the eastern part of the region, extending at one point as far as the opposite coast; while the Russians claim the north-west, and the Americans the south-west parts of the territory.

Subsect. 1. *Territory claimed by Britain.*

5804. *The most eastern part of this territory* is *Labrador*, a vast region extending about 700 miles in each direction, and included between the Atlantic and the spacious inland sea called Hudson's Bay. It has all the characteristics of an arctic territory; is filled with small frozen lakes, and covered with extensive forests of fir, birch, and pine. Numerous rivers, the early course of which is unknown, discharge themselves into the sea, forming excellent harbours, if there were any trade to conduct. The coast is diversified with almost innumerable islands, tenanted by numerous flights of waterfowl. The coast along Hudson's Bay is called the East Main, and the climate there is peculiarly severe. The inhabitants are of two classes: the Esquimaux, who occupy all the coasts, and share the industrious and peaceable character of their race; and the mountaineers, probably Indians, of a ruder and fiercer character: and between these two races bloody contests are waged. No settlements have been formed on these dreary shores with a view either to commerce or cultivation. It is only the ardent zeal of missionary teachers, particularly the Moravians, which has induced them to form several settlements; particularly at Nain, where they have assembled a few of the rude natives, teaching them at once the doctrines of Christianity and the first elements of social life.

5805. *Numerous islands*, single or in groups, diversify the interior of *Hudson's Bay*, and particularly the long strait which leads into it. These are chiefly Southampton and Mansfield Island in the northern part of the bay itself, the former very large; Mill, Salisbury, Nottingham, Charles, and the Savage Islands in the straits; Marble Island, off the western coast; Apomisco, North and South Bear, and many smaller islands at the southern extremity. These islands, like the adjacent shores, are inhabited by different tribes of Esquimaux, many of whom are described by navigators as fierce and rapacious.

5806. *The western coast of Hudson's Bay* chiefly deserves attention, since upon it nearly all the English settlements are situated. The principal of these is York Fort, a few miles up Hayes or Hill River, and in the close vicinity of which Nelson River also discharges itself into the gulf. York Fort is built on a spot so watery and swampy, that in summer when the snow has completely melted, the inhabitants have no walk unless upon a platform laid between their house and the pier. The place forms a large square, one part of which consists of the habitations, the other of the stores for merchandise. The Hudson's Bay Company have also to the north Fort Churchill, on the great river Churchill, or Missinippi and to the south, at the extremity of James's Bay, Albany Fort on the western, and East Main Fort on the eastern or Labrador side. The trade of these forts consists entirely in the collection of furs, in search of which their agents are sent in every direction, almost to the Arctic Ocean on one side, and the Pacific on the other. This ground has, indeed been disputed, with somewhat superior activity, by the North-west Company, from Montreal but by Captain Franklin's statement a junction appears to have been lately formed between these two rival bodies. The furs exported in 1832 amounted to 4328 skins of the beaver and otter; 3451 of the bear and buffalo; 6822 of the fox and fisher; 45,453 of the fur cat and marten; 7686 of the minx; 331,192 of the musk rat; 236 of the racoon; 1718 of the wolverine badger; 5938 of the wolf; value about 110,000*l.*

5807. *The country to the south-west from Hudson's Bay,* and bounded on the north by Canada, is commonly called New South Wales. It is a watery and swampy region, yet it contains many fertile spots, under a climate which by no means precludes luxuriant vegetation; so that, when Canada is fully colonised, it is very probable that the range of settlement may be extended to this district. It contains the large lakes of Deer and Wollaston, and the small ones of Methye, Buffalo, and Isle à la Crosse; on the last three of which there are stations, to which the traders ascend in canoes. On Albany River, also, there are Osnaburg House, Gloucester House, and Henley.

5808. *Lake Winnipeg, with the region to the west,* whose waters flow into it, forms an extensive division of native America. This lake, to which the old travellers gave the name of Assiniboins, is of a winding form, about 280 miles long, and from 80 to 15 broad. It receives numerous and large streams from almost every point of the compass, and enjoys thus a remarkable extent of canoe navigation. One shore exhibits variegated hills with wide and fertile prairies; the other, a grand but desolate scene of naked rock. From the north, it receives the Winnipeg river, whose falls, or rather cataracts, have a peculiarly wild and sublime character, from the rapidity and immense volume of the waters, the various forms of the cascades, and the dark granite and primitive rocks through which they dash. The upper part of this river expands into the Lake of the Woods, about 300 miles in circumference. The scenery is very wild and romantic, the shores being bordered by precipices crowned with dense foliage, and the surface studded with countless islands. The country is, however, so bleak and rugged as to afford no support, and only a solitary bear or moose deer, or a half-starved family of savages, is occasionally met with.

5809. *The country west and south-west of the Winnipeg* consists of an extensive plain, in many places fertile, yet still almost exclusively occupied by wild animals and savages. Large rivers flow through it, the two Saskatchawans, the Assiniboins, and the Red River, which rises nearly in the same quarter as the Mississippi. On these rivers the North-west Company have a considerable number of trading houses, of which the principal are Cumberland, Chesterfield, and Marlborough. In a fertile territory, with a fine climate, along the Red River, Lord Selkirk formed settlements, to which he gave the names of Pembina and Fort Douglas. He purchased from the Hudson's Bay Company a territory of 116,000 acres, and transported thither a colony of various nations, chiefly Dutch and German. The soil has been found very productive; but the great distance from a market, being 2800 miles from New Orleans, and 1900 from Buffalo, must long prevent it from rising to great importance. It has suffered severely from contests with the Indians, fomented by the jealousy of the North-west Company. Moreover, in consequence of the recent settlement of the boundary line with the United States, half of it has been included within their territory.

5810. *The regions extending to the north of those now described, and bounded by the Arctic Ocean,* are scarcely known, unless in the lines traced by the recent expeditions of discovery; yet from these we can form a tolerably correct idea of their general outline. The northern boundaries of Hudson's Bay were fully ascertained by the second expedition of Captain Parry. That expanse appears more properly a sea, having a communication not with the Atlantic only, but with the Arctic Ocean, by the Strait of the Fury and Hecla. The north-eastern extremity of America forms here what is called Melville Peninsula, the eastern coast of which is washed by the Fox Channel, the part of Hudson's Bay that extends north from Southampton Island. That island is separated from the continent by a long narrow channel called, since Middleton's time, the Frozen Strait, which is crowded and the navigation encumbered by a labyrinth of islets. The climate is exceedingly rigorous, beyond what might be expected in a latitude under 70°. The seas are covered with an unbroken sheet of ice, unless for three or four months of summer, during which time also icy fragments are tossing about, and the bays and straits are still encumbered with them. From the accumulation of these in the Strait of the Fury and Hecla, the attempt repeatedly made by Captain Parry to penetrate into the Arctic Ocean was completely baffled. When spring melts the snows, the country is traversed by impetuous streams and torrents. One considerable river, called the Barrow, descends in a most magnificent fall amid finely broken rocks, about ninety feet perpendicular. Yet the ground here and in other quarters is covered, during the short summer, with a rich vegetation. Almost the only land animals which endure the rigour of winter are the fox, the wolf, and the musk ox; the deer take their flight into milder climates. The shores, however, are crowded with that huge amphibious animal the walrus, in herds often of 200 or 300. Only a few scattered families of Esquimaux wander along the shores and islands, passing often over the ice from one to the other. They are on the whole peaceable and friendly, and display no small degree of industry, and even ingenuity, in providing for their wants, and fencing against the rigour of the climate. Their food consists entirely of wild animals whom they have snared or taken, and in these operations they display both art and courage. When they have thus laid in a stock of provisions, they indulge most enormously, bringing on themselves the distresses of repletion, soon followed by those of famine. The skins of captured animal particularly deer, skilfully fitted to the shape, afford rich and warm clothing sufficient defend them against the extreme cold. Their summer habitations are tents framed of tl skins of deer, with the bones of large animals serving as posts; but the winter houses a most singularly constructed without any other material except snow. This substanc when duly hardened by the first cold of winter, is cut into slabs, which are put togeth so skilfully as to form structures of a conical shape, that remain durable till melted by tl heat of the following summer. Each apartment is accommodated with a lamp fed wi the blubber of the walrus or seal; and which serves at once for light, heat, and cooker It preserves immediately around it a temperature of 38°; but on the bench round tl wall, where the inmates sit and sleep, it does not exceed 23°: and they are preserved fro the cold only by large quantities of clothing.

5811. *Captain Ross*, in his late gallant and adventurous voyage, has explored a larg extent of the northern coast of America, and found it distinguished by several remarkabl and important features. This coast, commencing at the south-western point of Melvill Peninsula, nearly opposite to the Frozen Strait, extends north-west to about lat. 68° N. an long. 93° W. Here it narrows into an isthmus, not more than fifteen miles broad, tw thirds of which space is occupied by a chain of freshwater lakes. The land then extenc on each side, enclosing two spacious gulfs, called the East and West Seas. It then continu to stretch northward, till it forms a very extensive peninsula, reaching not less than 30 miles in each direction. The eastern coast, partly discovered by Captain Parry in hi third voyage, has been completely surveyed by Captain Ross. It is much broken b deep inlets and rocky islands, encumbered with ice, and of dangerous navigation; but i south-eastern coast contains three secure harbours, Felix, Victory, and Sheriff's. Th northern coast was seen by Captain Parry in his first voyage, without his landing upon it and about 80 miles of the north-western coast were explored by Commander Ross: bu the north-western boundaries are yet unknown. The country, as far north as 72°, is ir habited, and Captain Ross had communication with a very interesting tribe of natives, wh had never before seen any European. This peninsula, with the isthmus and the territo along the newly-explored coast, were named by the discoverer *Boothia*, after the individu who had chiefly enabled him to equip the expedition. Commander Ross also sailed wes ward along the American coast to lon. 99° W., lat. 70° N., where he was only 150 mil from the nearest known point of Cape Turnagain.

5812. *Another line of discovery was traced by Hearne*, under a commission by the Huc son's Bay Company, from Fort Churchill to the mouth of the Coppermine River. It cor sisted of an extensive plain diversified by a chain of comparatively small lakes, to which h gave the names of Cossed, Snowbird, Pike, Peshew, and Cogead. The natives are of Ir dian race, much ruder than the Esquimaux, with whom they wage a most cruel warfar They subsist solely by hunting, and proceed on the usual system of savages, devouring a enormous quantity of food when it is abundant, and thus exposing themselves to interva of cruel famine. The severest labour, and especially that of carrying heavy burdens o their long journeys, is devolved on the wives, who are supplied also with very scanty far As they are thus a source of wealth, the husband anxiously increases the number, and th he attains by exertions of bodily strength, for whoever can overcome another in wrestlin may at once seize on his wife; and stout wrestlers thus sometimes accumulate five or si At the end of the long northern plain is a ridge of stony mountains of difficult ascent, be yond which is the considerable stream of the Coppermine River flowing into the Norther Ocean. The mine, however, from which it takes its name having probably been exhauste affords now only a very scanty supply of the metal.

5813. *Captain Franklin* afterwards, by another route, descended the Coppermine River, an explored *above six degrees of the coast to the eastward.* His career terminated at Cape Tur again, about 150 miles westward of the farthest point explored by Commander Ross. Th nearest the river is well covered with vegetation; but all the rest exhibits the most drea and inhospitable aspect, being composed only of a series of trap rocks which cover with the debris the intervening valleys. It is broken into deep gulfs, to the principal of which we given the names of Coronation, Bathurst, and Melville. Along the coast, with a narro channel intervening, extend a range of rocky and barren islands, the principal of which, afte eminent British characters, were named Berens, Moore, Lawford, Home, Jameson, Gou burn, Elliot, and Cockburn. The whole country, for a considerable distance inland, as wa fatally experienced by Captain Franklin, is of the most dreary character, affording suppo only to a few arctic animals, and nothing which can serve as human food, except a speci of lichen called *tripe de roche*, which yields only a scanty and miserable nutriment.

5814. *Farther to the west, a chain of large lakes*, receiving numerous rivers, reaches in an oblique line fro the Winnipeg to the Northern Ocean. The first is the Athabasca, Athapescow, or Lake of the Hills; elongated body of water, reaching from west to east, 200 miles in length by 16 or 18 in breadth. Its northe shores consist of lofty primitive rock, while the opposite bank is mostly either alluvial or sandy. The count between Lakes Winnipeg and Chepewyan is occupied by the Cree or Knistineaux Indians, a tribe now duced to about 500, who wander over a region of about 20,000 square miles. The influence of the Engli has put an end to internal war; but it has introduced a habit, perhaps more baneful, the inordinate use of spirits. For this they exchange all the furs which they are able to collect; and whenever they have thus obtained a quantity of rum, a scene of continued intoxication ensues, till it is consumed. The purchaser, however, still manifests the thoughtless generosity of the savage character, by sharing it liberally with his companions, only assuming, while he deals it out, an air of superiority, and indulging in extravagant boasts: this people continue also, unless under strong temptation, tolerably honest. The females are by no means so hardly treated as among the more easterly tribes: though not admitted to eat with their lords, they are only subjected to the ordinary labours of their sex. Their conduct, however, is not always blameless, and their frailties are only punished by a hearty beating; while the numerous race of half breeds prove an extensive irregular connection with Europeans. They have a singularly complex mythology, and are much imposed upon by an artful race of conjurers. The Stone Indians, who inhabit towards the southern shore of the Athabasca, are a taller and a handsomer race, of a bolder and fiercer character. They maintain the original creed, that all animals, being created for the use of man, ought to be equally shared among all; and this creed they take every opportunity of enforcing. The European traders, whose views are very different, are thus often brought into serious collision with their rude neighbours. It is remarkable that on this level plain the people are subject to goitres, the scourge of alpine regions; a circumstance which favours the belief that this cruel malady is caused by calcareous impregnations, which abound in many of the rivulets. On the south-eastern extremity of this lake the Hudson's Bay Company have erected Fort Chepewyan, so named from the Indians who inhabit the neighbouring country. It serves as a receptacle for the furs which are collected in considerable quantity from this race, who are not supposed to exceed 240 in number. Their appearance is singular, with broad faces and projecting cheek-bones; they are persevering incorrigible beggars, yet tolerably honest, and so deeply imbued with national pride, that, while they give to other nations their proper names, they call themselves, by way of eminence, "the people." *Great Slave Lake* and *Great Bear Lake* form the termination of this vast northern chain. The former being 250 miles long by an average breadth of 50, is the largest of all the northern lakes, and only surpassed in America by Lakes Superior and Huron. Its northern shore is skirted by well-wooded hills, rising gently from the margin of the water; and above which some rocky peaks appear. Fort Resolution has been erected on its southern, and Fort Providence on a deep bay of its northern shore. The Unigjah or Peace River, having received the Athabasca soon after it issues from the lake of that name, flows into Slave Lake. Thence it emerges under the name of Mackenzie River, and pursues a broad and majestic course to the Arctic Ocean, which it reaches in about 69° north lat. Great Bear Lake is not upon but to the east of it, and connected by the channel of Great Bear Lake River. Bear Lake may be about 200 miles in each direction, but it is of so irregular a form, and so deeply indented by large peninsulas, that it does not cover nearly the same surface as Slave Lake. Lying between 65° and 67°, it has an entirely changed aspect and climate; and displays all the rigours of an arctic region. The ground is clothed only with stunted firs, and traversed by numerous herds of rein-deer. The Copper, the Hare, and the Dog-ribbed Indians are the tribes by whom this quarter is frequented. On the whole, they much resemble the Chepewyans, but are of a more amiable and friendly disposition. Their humanity and faithful attachment were experienced by the recent travellers on occasions of extreme distress. Fort Franklin on Great Bear Lake, and Fort Enterprise on Point Lake, which lies to the eastward, have acquired celebrity as places of preparation and of refuge before and after the perilous voyages performed along the shores of the Polar Sea.

5815. *The coast of the Arctic Ocean* which bounds America, after being unknown for so many ages, has been recently explored for the space of 35 degree of longitude westward from the mouth of the Coppermine River. The first portion, surveyed by Dr. Richardson, extends between that and the Mackenzie River, and comprises 20 degrees. This coast stretches in a comparatively uniform line from east to west, broken only by two deep bays, to which were given the names of Liverpool and Franklin; while towards its eastern extremity there extends, parallel to the coast, a long line of insular territory, which was called Wollaston Land. The shore for a great extent is bordered by bold and rugged, though not lofty cliffs, one of which is singularly perforated, while elsewhere a range appeared constantly on fire. This last phenomenon is produced by the structure of the rocks, consisting of bituminous alum shale, the sulphur contained in which has a chemical action producing a constant ignition, whence arises the formation of the chemical salt called alum, of which this may be considered as a great natural manufactory. Along the coast are Esquimaux villages in considerable numbers; and they are, on the whole, better constructed, and show a greater progress in the arts of life, than is usual among this people. When the surprise occasioned by the appearance of strangers was over, they began to traffic with eagerness; but they generally showed a disposition to obtain goods if possible by theft rather than by purchase. Captain Franklin, indeed, at the mouth of the Mackenzie was attacked by a numerous party with such fury, that his whole equipment had very nearly fallen into their hands.

5816. *The coast westward of the Mackenzie River* extends also in an almost direct line, declining gradually to the northwards. It is broken only by two not very deep bays, called Beaufort and Camden, and diversified by a number of small islands. Navigation, however, is rendered gloomy and difficult by the masses of ice, either floating or fixed, which, even in the depth of summer, encumber every part of the coast. The effect is increased by the deep and dense fogs in which the atmosphere is very generally involved. They are supposed to arise from the copious vapours exhaled by the heat of the sun, and prevented from dispersing by the mountain range which closely borders the coast. This range consists of the termination of the Rocky Mountains, which, after so long a course across the continent from south to north, take now a westerly direction, and fall into the Arctic Ocean. The explorers gave to successive parts of it the names of the Buckland Chain, the British Chain, and to one which occurred after passing the Russian frontier the name of Count Romanzoff, as an eminent patron of discovery. They do not, however, rise into those steep and lofty cliffs which form the western boundary of the United States. Mount Conybeare, a conspicuous peak, was found to be only 800 feet high; and though the British Chain was more elevated, there seems no room to think that it much exceeds 2000 feet. The small bands of Esquimaux met here by Captain Franklin required to be cautiously dealt with, though they showed a peculiar ignorance in regard to every thing European. Taking hold of the English coats, they asked of what animal these were the skins; they fastened fish-hooks and awls as ornaments to the nose, and stuck needles, with the same view, into various parts of their persons. Farther west, however, the natives were found to be possessed of beads and knives, not of British manufacture; which had, it was stated, been brought by Esquimaux from the westward, and received by them from *kabloonas*, or white men; these are, with great probability, conjectured to be the Russians. In fact, the expedition had come within the limits of that territory which had, by treaty, been assigned as Russian.

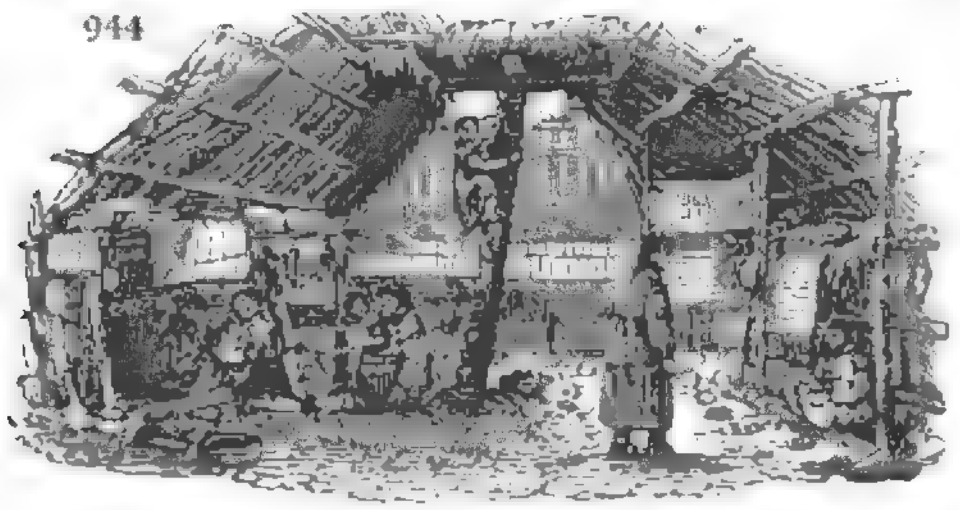
Subsect. 2. *Territories claimed by Russia.*

5817. *By a convention* concluded in 1825, the 146th degree of longitude was fixed as the limit between British and *Russian America*. This line passed through regions then equally unknown to both nations; and the partial exploration of the Russian portion has since been made not by Russia but by Britain. The expedition of Captain Franklin passed this limit by about nine degrees; in consideration of which, he assigned the name of Count Romanzoff to a part of the Rocky chain. Thence an unknown interval of nine degrees occurs, terminating at Point Barrow; and the discovery from thence to the western limit of America at Behring's Strait has been made almost exclusively, first by Cook, and more recently by Beechey. The boat sent by this last navigator reached Point Barrow, in 71°, the most northerly point of America yet discovered or believed to exist. The cold was here so intense, that the boat was frozen in before the end of August, and it was necessary to cut through a quarter of a mile of ice, in order to liberate her. The tribe of Esquimaux here are peaceable and friendly; but at Cape Smyth, to the westward, they are daring and thievish. The point which Captain Cook had named Icy Cape, and where his progress had been arrested, was found by Captain Beechey quite free from ice; it was low and filled with large lakes, so near the sea that a boat could easily be dragged over into them. The coast, in proceeding south-westward, forms Cape Lisburn, composed of low hills of rounded sandstone, and Cape Beaufort, presenting cliffs of rugged limestone and flint. The natives here were good-humoured and friendly. About Point Hope and Cape Thomson, the coast is occupied by a tribe of Esquimaux, diminutive and extremely poor, yet merry and hospitable. The rocks composing Cape Mulgrave were found not to face the sea, as Cook had supposed, in viewing them at a distance, but to be somewhat inland, and the interval filled, as in other parts of the coast, by numerous small lakes. The natives are taller than the other Esquimaux, but appeared never before the arrival of Captain Beechey to have seen Europeans: this was evident from the alarm which they showed on seeing a gun discharged and a bird fall. They were extremely courteous, presenting to the English, as dainties, the entrails of a seal and coagulated blood, which they were much disappointed to find not at all relished. Kotzebue's Sound, so named from the Russian navigator who discovered it, is a spacious expanse, which excited at first much interest, from the hope of its affording a passage eastward across the continent; but careful examination soon proved it to be an enclosed gulf. The natives on being approached raised at first loud cries of alarm and distrust; yet were not long of meeting the friendly advances of the Russians. They showed themselves initiated into the mysteries of smoking, which they had learned from the Tchutchi, but had never seen a pair of scissors, which were passed with wonder from hand to hand, and applied successively to the head of each of the party. The Esquimaux, in short, were found here, as in most other places, an ugly, broad-faced, dirty, but merry and good-humoured race, not devoid of curiosity and intelligence.

5818. *The shore continues low*, flat, and well peopled, till its westerly direction terminates at *Cape Prince of Wales*, a lofty peaked hill, forming *the western limit of America*, and which is separated by Behring's Strait, fifty-two miles broad, from the Eastern Cape of Asia, a bold mountainous promontory, covered with snow in the midst of summer. The navigator who sails through the middle of the strait can distinctly view at once these grand boundaries of the two continents. Beyond Cape Prince of Wales, the American coast stretches south by east in an almost continued line, broken only by the deep inlets of Norton Sound and Bristol Bay. It then shoots out into the long narrow promontory of Alaska, which reaches westward almost as far as Cape Prince of Wales, beyond which the coast bends very rapidly to the eastward. This region, which has been very imperfectly explored, is diversified by hills of moderate elevation, interspersed by valleys, which in summer display a rich verdure. It is occupied by the Tchutchi and by tribes called the Kitegnes and the Konaigues. The Russians have a small fort, called Alexandrovskaia, in the interior of Bristol Bay. The peninsula of Alashka is traversed by two lofty mountains, one of which is volcanic. Near the American coast, and considered till lately as forming part of it, is Nunivak, a considerable island; while westward from Norton Sound, and belonging rather to Asia, is the larger one called St. Lawrence, or Clerke. Both are inhabited, but only by native tribes. In the Sea of Behring are three smaller islands, St. Paul, St. George, and Sea Otter, on the first two of which the Russians have formed fishing establishments. Even in the centre of the strait are found three islets, called, by Beechey, Ratmanoff, Krusenstern, and Fairway, the last on account of the safe passage afforded between it and the American coast.

5819. *The Aleutian Islands* form a long and numerous group, extending from the peninsula westward to Kamtschatka. They appear to be a continuation of the lofty volcanic ranges which traverse these opposite regions of the two continents. From almost every island, steep and lofty peaks arise; and from many, volcanic fire is discharged. In 1795, an island was thrown up by an eruption from beneath the sea, which continued to increase, till in 1807 it measured twenty miles in circuit. The rugged surface of these islands is ill fitted for culture, yet the interior valleys display considerable richness of vegetation. But the subsistence of the inhabitants and the importance of the settlements depend entirely on the vast shoals of fish and of amphibious animals with which the surrounding seas are replenished. The flesh of the seal affords the chief supply of food; while the skins of the sea otter form the most valuable articles of commerce. These islands are inhabited by a remarkable race, sharing, in some degree, the features and aspect of the Mongols and Esquimaux. Considered as savages, they are mild in their manners and deportment, and display a considerable degree of industry and ingenuity. They dwell in large subterraneous mansions (*fig.* 944.) or rather villages, partitioned into numerous apartments, and containing from 50 to 100, or even 150, inhabitants. These abodes, covered with turf, are almost on a level with the surrounding country, from which they are scarcely to be distinguished; so that when two of Captain Meares's officers were walking over a field, the ground suddenly sank beneath them, and they found themselves, to the surprise and alarm of both parties, in the midst of a numerous family busied in various domestic occupations. The Russians, who have completely established themselves in these islands, are charged by Krusenstern with much cruelty and oppression. They divide these islands into four groups: — 1. The Aleutians properly so called, of which the largest and most populous is Attou; but Behring, though uninhabited, is the most extensive, and is noted for the death of the celebrated navigator of that name, who was obliged to winter there. Copper Island contains a supply of that metal, from which little or no benefit has yet been derived. 2. The Andreanousky Islands, Tanaga, Kanaga, Atchy, &c., remarkable for the many volcanoes which they contain. 3. Rat's Islands, a small group, of which Kiska is the principal. 4. The Fox Islands, the most populous and important of the groups. The chief are Oonalashka and Oonimak, in which last the Russians have a small garrison and a naval depôt.

944



SUBTERRANEOUS MANSION.

5820. *From the peninsula of Alashka, the wide range of coast claimed by Russia* stretches west by south about 30° of longitude and 10° of latitude, till it touches on that which has been assigned to America. This extended shore bears in general a bold and awful aspect; bordered with mountainous steeps covered with dense primeval forests, and wholly uncultivated. Mounts St. Elias and Fairweather are respectively 17,000 and 15,000 feet high, and form the most elevated peaks in the northern part of America. Yet, though the spade or the hoe is nowhere employed upon this savage soil, it yields spontaneously a profusion of delicate berries, and the neighbouring seas swarm with huge fish, whose coarse oleaginous substance is suited to the palates of the rude inhabitants, while their skins supply at once warm and beautiful clothing. It is by no means, therefore, a desert coast, but is bordered by populous villages, the inhabitants of which have made a certain progress, if not in civilisation, at least in the arts.

5821. This coast is broken in a remarkable degree by *bays, deep sounds, and long islands* connected, by narrow channels, with the continent and with each other. At the north-west extremity is the Island of Kodiak, about sixty miles long, which with the smaller one of Atognak is separated from the continent by the Straits of Cheligoff. The natives are robust, active, and well skilled in all the arts connected with fishery. Their boats, almost entirely covered with leather, display great ingenuity in their construction. The Russians long made the port of St. Paul in this island the chief seat of their trade with north-western America; and, finding the natives extremely serviceable, have removed great numbers of them to the settlements formed along the coast.

5822. To the west of Kodiak is *a long inlet, which receives the name of Cook,* by whom it was explored, and a little beyond is Prince William's Sound, the head of which, almost touching that of the inlet, encloses a large peninsula. The inhabitants of this and the neighbouring districts are a peculiar race (*figs.* 945, 946.), square, stout, with large heads, broad flat faces, and hooked noses. They are clothed in long frocks or robes of the skins of sea and land animals, usually with the hair outwards; and they have their noses and upper lips perforated, and uncouth ornaments stuck into them. The sound is described by Vancouver as containing numerous harbours, but all rendered more or less unsafe by concealed rocks or shoals. The Russians have Roda, a small factory on the western side of Cook's Inlet, and Fort Alexander, a larger one at its head, within the peninsula.

945

MAN OF PRINCE WILLIAM'S SOUND.

946

WOMAN OF PRINCE WILLIAM'S SOUND.

5823. *The coast from Prince William's Sound* extends in an almost continued line south-east, with only the small opening of Admiralty Bay. It is, however, very bold and lofty, distinguished by the colossal peaks of Elias and Fairweather. The Russians have here a considerable factory, called Yakouat.

5824. At the termination of this territory commences *a numerous archipelago of large islands* extending in front of the coast. To the principal ones have been given the names of George III., Prince of Wales, Duke of York, and Admiralty. Each of these islands has smaller ones near it, sometimes considered as forming with it a separate group or archipelago. Through the labyrinth of winding channels formed by these numerous islands, Vancouver made a most laborious search, in hopes of finding among them the long sought-for passage into Hudson's Bay or the Atlantic; but he finally ascertained that it was not to be looked for in this quarter of America. The Russians, on George III.'s Isle, which they call Baranoff, have erected New Archangel, which they make the capital of all their settlements in America. It is only, however, a large village of about 1000 inhabitants; and not only the private houses, but the fortifications and public buildings, are constructed entirely of wood, though neat and well kept. The management of the trade at this and the other posts has been injudiciously vested by the Russian government in an exclusive company resident at Irkutsk. The grand object of their trade is to collect the skins of the sea otter for the market of Canton, where they are in very extensive demand. Previous to 1780, a single skin was known to bring from 50 to 100 piastres. The activity, however, with which the trade was soon after prosecuted, brought so large a supply, that in 1790, the price had fallen to 15 piastres, and it has since been constantly on the decline. Chabelski, a Russian traveller, quoted by M. Balbi, estimates the annual value of the furs drawn by Russia from her North American possessions at 40,000*l.* It may be observed, that only the coast here is held as belonging to Russia; the interior territory, under the titles of New Norfolk and New Cornwall, has been adjudged to Britain, by whom, however, it is scarcely at all known or occupied.

5825. In connection with the other Russian settlements, we may mention *Bodega*, on the coast of New California, some miles north of San Francisco. Though this coast belongs indisputably to Mexico, yet that government seems not to have obstructed Russia in placing this station upon its unoccupied boundary; and though it be small, and destitute of a good harbour, it affords the means of carrying on a considerable trade with California.

SUBSECT. 3. *Territory claimed by the United States.*

5826. *The region extending westward from the Rocky Mountains to the Pacific,* and lying between 42° and 49° of north latitude, has by discovery and treaty been assigned to the United States. Besides the great eastern boundary, an intermediate range crosses it from south to north, supposed by Mr. Darby to be a prolongation of the Californian mountains. Its surface is thus very rugged; to compensate for which, the climate, as often happens on the western coasts of continents, is about 7° milder than the eastern states under the same latitude. The leading geographical feature in this territory is the river Columbia. It rises amid the most rugged steeps of the Rocky Mountains, in about latitude 54°, and after a north-north-west course of above 1000 miles, falls into the Northern Pacific in about lat. 46°. In this progress it receives from the right bank, first, Clarke's River, after a course of 500 miles; then Lewis River, which, having flowed already 800 miles, has a claim to be considered as the principal stream; lastly, from the south, the Multnoomah, the extent of whose course is yet undetermined. In crossing the secondary mountain chain, this stream forms several violent cataracts, and passes through long narrows, in which the current rolls with furious agitation.

5827. *The tribes inhabiting the coast near the mouth of the Columbia,* of which the principal are the Clatsops, the Chinnooks, and the Chillamuks, exist in a very rude state of society. They do not cultivate the ground, but derive their subsistence solely from hunting and from fishing, which they practise with considerable dexterity in boats: these, though composed only of a single tree, will contain thirty or even fifty persons. The skins and furs which they collect are exchanged with European vessels for bad guns, copper kettles, knives, tobacco, and, above all, white and blue beads, which form their most valued ornaments. These articles afford materials for a trade with the upper nations, whom they meet once a year at the falls of the Columbia. These tribes, however rude, studiously seek to embellish their persons, but in a most fantastic and preposterous manner, by keeping the forehead compressed in infancy with an instrument which, if successful, causes a straight line to run from the crown of the head to the top of the nose. With this form, and with a thick coating of grease and filth, the Clatsop young female becomes one of the most hideous objects in existence. Yet when adorned with bears' claws, copper bracelets, white and blue beads, she is regarded as an object of attraction; and it is painful to add, that the men carry on the most unblushing traffic with their wives and daughters, whom they offer as the medium of trade, the return for presents and services. This dishonourable practice prevails generally to the west of the Rocky Mountains, as well as the flattening of the forehead, from which the other tribes give them the name of Flatheads.

5828. *The coast northward from the Columbia*, like that still farther north, is faced by *numerous islands*, the principal of which, called by the joint names of Quadra and Vancouver, is about 150 miles long. This coast, like that of the continent, is lofty, crowned with immense woods, and the rocky shores are beaten by the waves of the Pacific with a fury through which whole forests are torn up by the roots, and extended along the shore. The ground is wholly uncultivated; but it yields spontaneously an abundance of the most delicious berries, onions, and other roots. The chief supplies, however, are derived from the ocean, which abounds in an extraordinary degree with fish of every size and species. The smaller kinds serving for food are taken in abundance by merely passing through the water a long rake with pointed teeth: this work is left to the lower ranks; while the chiefs undertake the nobler task of combating the whale, the sea lion, and the otter, whose skins supply them with rich and beautiful robes. Each tribe inhabits a particular cove, or island, and is ruled by a chief, who maintains a very considerable degree of savage pomp. Wicananish was found by Meares occupying a house or palace, consisting of a huge square apartment, in which his whole household, of 800 persons, sat, ate, and slept. The door-posts and the rafters were supported by gigantic wooden images rudely carved and painted, and the whole apartment was studiously adorned with festoons of human skulls. The royal family occupied a raised platform at one end, on which were placed the chests of treasure and other valuable effects. Their repasts consisted of enormous quantities of blubber, fish oil, and fish soup. The people (*figs*. 947. and 948.) have the usual American features, with complexions tolerably fair; but these they studiously disfigure by stripes of red ochre and streams of fish oil, mingled sometimes with a species of glittering black sand. Some of the tribes display extreme ferocity, and on the whole they are suspected of cannibalism, human heads and hands being both displayed as trophies and offered for sale. Yet, when a friendly intercourse was once established, their manners were found peculiarly mild, courteous, and engaging. The subjects of one chief were estimated at 13,000; of another, at 10,000: so that the population of the whole coast must be very considerable.

947

MAN OF NOOTKA SOUND.

948

WOMAN OF NOOTKA SOUND.

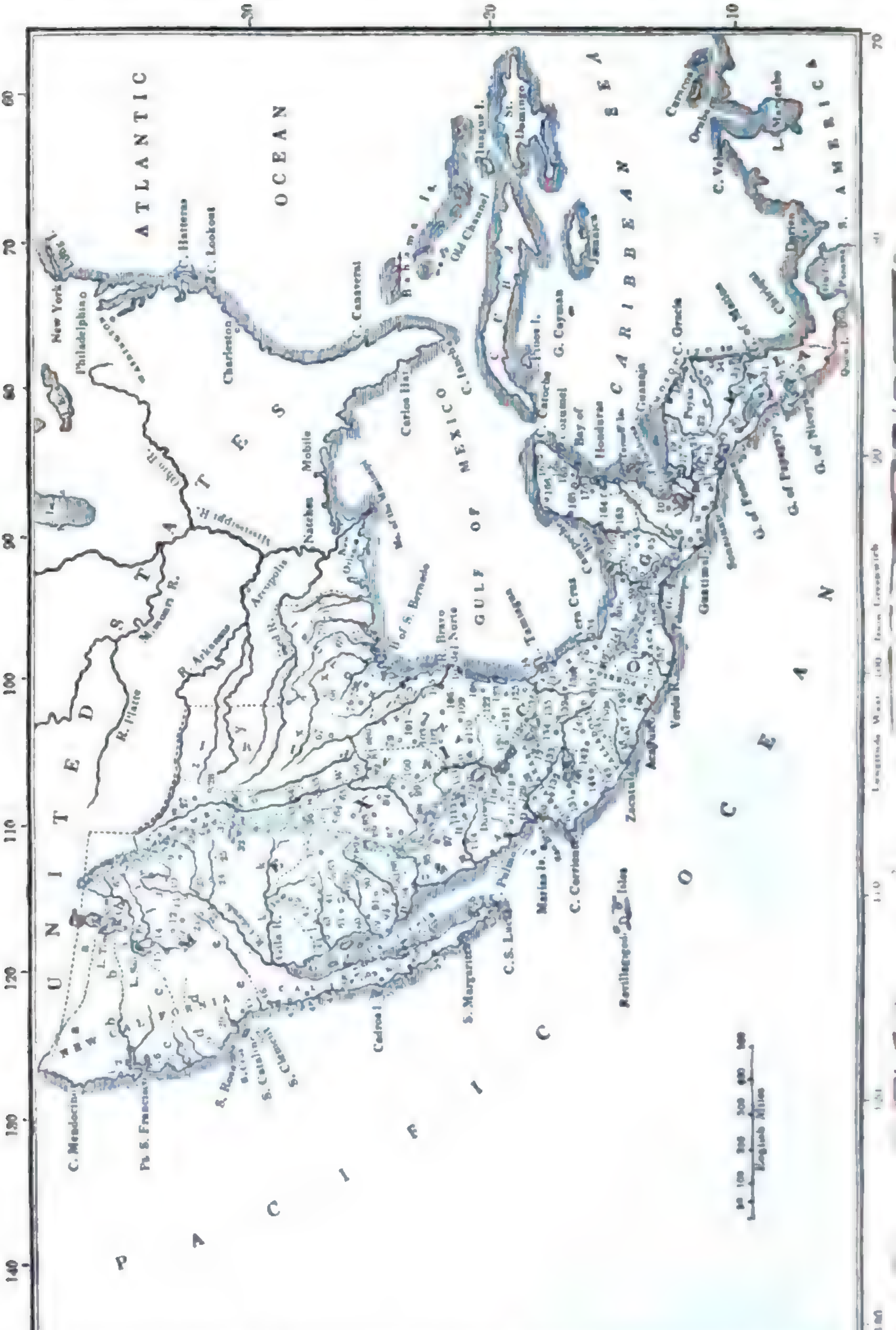
Chap. V.

MEXICO.

5829. *Mexico* is an extensive and noble territory, forming the greater part of that vast tract of land which connects together Northern and Southern America. Originally a native empire, afterwards the principal of the Spanish viceroyalties, it is now a great independent republic. It has sometimes been considered as extending to the Isthmus of Panama, which was, in some degree, under the jurisdiction of the viceroy of Mexico; but as Guatemala, to the southward of Mexico Proper, was always a separate intendency, and has now erected itself into an independent republic, it seems fairly to claim a short separate notice.

Sect. I. *General Outline and Aspect.*

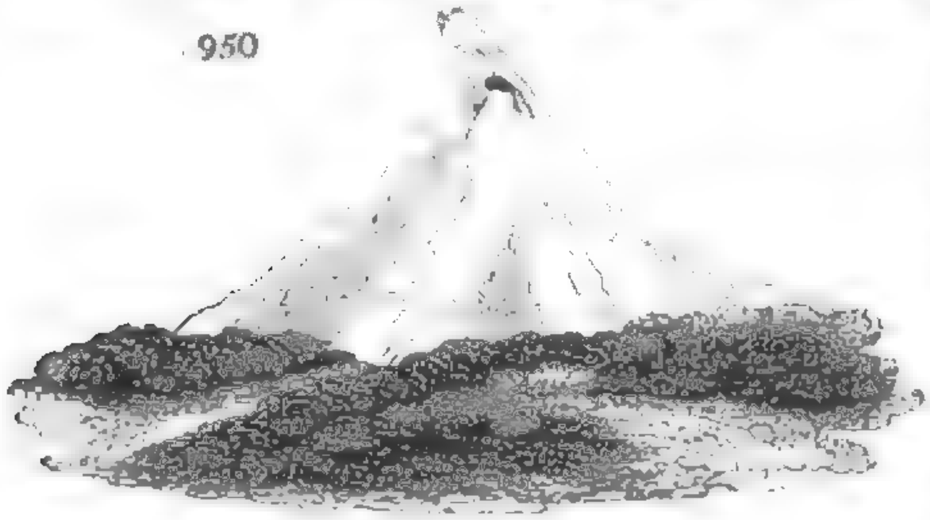
5830. *The outline of Mexico* is so vague and irregular that its general dimensions of length and breadth are not easily determined. The southern extremity is at the head of the bay of Tehuantepec, where the two coasts approximate to within about 125 miles of


ATLANTIC
OCEAN
UNITED STATES
GULF OF MEXICO
CARIBBEAN SEA
PACIFIC OCEAN
S. AMERICA
New York
Philadelphia
C. Hatteras
C. Lookout
Charleston
C. Canaveral
Bahama Is.
Old Channel
CUBA
St. Domingo
Jamaica
G. Cayman
Mobile
Natchez
Ohio R.
Mississippi R.
Missouri R.
R. Arkansas
R. Platte
Bay of Honduras
C. Gracias a Dios
C. Vela
L. Maracaybo
Darien
Panama
G. of Nicoya
G. of Papagayo
Guatemala
Acapulco
Zacatula
Revillagigedo Isles
C. Corrientes
Marias Is.
C. S. Lucas
S. Margarita
Cedros I.
S. Rosa
S. Catalina
S. Clemente
C. Mendocino
Pt. S. Francisco
English Miles
Longitude West from Greenwich
10
20
30
60
70
80
90
100
110
120
130
140

each other, and then, diverging, form the large peninsula of Yucatan. Thence the coast continues in a long oblique line from south-west to north-east, till it reaches Cape St. Francisco in 38° N. latitude, where is the farthest settlement that has been formed by the Spaniards, though their claim extends to Cape Mendocino, in lat. 42°. The length, even if measured in a line due north, would give 22°, or 1540 miles; but in the oblique direction it would be much greater, probably 2200 or 2300 miles. The breadth varies exceedingly. At the main centre of the empire, from Acapulco to Vera Cruz, Humboldt, after careful measurements, reckons it at 4° 16′ 7″, or very nearly 300 miles. In the rude regions to the north, it is more than triple, at least if we adhere to the old boundary of the Rio Salinas, prolonged, we suppose, by the upper course of the Red River. The United States, however, contend that the Rio del Norte, winding in conformity with the line of the Rocky Mountains, would present a much neater and more precise boundary; but the Mexicans have not yet opened their eyes to the beauty of an arrangement which would deprive them of 23,000 square miles of territory. Humboldt computes the whole surface of Mexico at 948,000 square miles, of which under the temperate zone are 688,000, and under the torrid zone 260,000. This last division includes all the ancient empire of Montezuma, with all that part of Mexico that has hitherto been valuable or productive; indeed, all that is considered as strictly Mexico.

5831. *The surface of Mexico* is elevated, composing part of that vast ridge which runs along the whole continent of America parallel to the Pacific, and which in the south is called the Andes or Cordilleras, and in the north the Rocky Mountains. In the middle part the chain presents a broad table-land, from 6000 to 8000 feet in height, thus equalling Mont St. Bernard, and others of the most remarkable summits of the old continent. This table-land is not, as in Quito and other parts of South America, an interval between opposite ridges, but is the very highest part of the ridge itself. In the course of it, indeed, detached mountains occur, of which the summits rise into the regions of perpetual snow, on a level almost with the mightiest of the Andes. Such are the volcanic peak of Orizaba (*fig.* 950.), Popocatepetl, (*fig.* 951.), and Toluca. But these are merely insulated heights or chains, running in a different direction from the general ridge, and presenting few interruptions to that continuous level, as smooth almost as the ocean, which extends, for upwards of 1500 miles, from one extremity of Mexico to the other.

950



ORIZABA.

5832. *The fertility of this vast table plain* varies with its elevation. The summit is absolutely devoid of vegetation, not from the severity of the

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References to the Map of Mexico and Guatemala.

MEXICO.
1. Ruins of Kodiak
2. S. Rafael
3. Val Salado
4. S. Andres
5. S. Cruz
6. Baranco
7. S. Serafina
8. S. Luis
9. S. Cayetano
10. Asuncion
11. S. Fernando
12. Peban
13. S. Rustico
14. Arroyo Tecedon
15. Brigida
16. S. Francisco
17. Monterey
18. La Soledad
19. S. Barbara
20. S. Gabriel
21. Ogolino
22. Puerto Bucarelli
23. Restrilla
24. Taquestreis
25. Onoli
26. Nieves
27. Taos
28. Santa Fé
29. Albuquerque
30. Coquinas
31. Zunni
32. Casita
33. Jacome
34. Passo del Norte
35. Al Ojito
36. Caropeiada
37. S. Bernardino
38. Pras de Tubeo
39. S. Xavier del Bac
40. S. Ignatio
41. Imarta
42. Tubutamo
43. Oquitoa
44. Hisaniz
45. S. J. de Campistano
46. S. Diego
47. S. Miguel
48. S. Thomas
49. Rosario
50. S. Francisco Borja
51. Gertrudis
52. S. Ignacio
53. S. Maria
54. S. José de Comodu
55. Santiago
56. La Paz
57. Loretto
58. S. Rosalia
59. Guaymas
60. Higan
61. Crisanco
62. Sonora
63. Arispe
64. Volarde
65. Los Boquillas
66. Alamo
67. Port del Altar
68. S. Saba
69. Guardia Barca
70. La Trinità
71. Nacodoches
72. Galveston
73. Fort Matagorda
74. N. S. del Rosario
75. S. Antonia
76. Espada
77. S. J. Baptista
78. Loredo
79. Madadores
80. Cruses
81. Tabal
82. Pt. de Consolacion
83. Huazequilla
84. Cohahuila
85. S. Rosa le Cosig
86. Bachiniba
87. S. Pedro de Batopilas
88. Uruachi
89. Naratabori
90. Concepcion
91. S. Francisco
92. Buenavista
93. Onabas
94. Los Alamos
95. V. del Fuerte
96. Sinaloa
97. Narotal
98. Narogame
99. S. José del Parral
100. Canva
101. Monclava
102. Castannela
103. S. Car. de Yallecilla
104. Revilla
105. Camargo
106. Monterey
107. Borbon
108. New Santander
109. Parras
110. Sombrerete
111. S. Juan del Rio
112. Durango
113. Bianori
114. Culiacan
115. Mazatlan
116. Chamala
117. Acaponeta
118. Teresa
119. Valparaiso
120. Zacatecas
121. Real de Ramos
122. Malehuala
123. Llera
124. Tampico
125. Altamira
126. Luis Potosi
127. Aguas Calientes
128. Tepic
129. Santiago
130. Piedra Blanca
131. Tecototlan
132. Tequila
133. Guadalaxara
134. Salamanca
135. Queretaro
136. Panuco
137. Tuspan
138. Jalasingo
139. Caderclia
140. Valladolid
141. Uruapo
142. Pascuaro
143. Zacualco
144. Colima
143. Xala
145. Zacatula
147. Petatlan
148. Acapulco
149. Chilpanagga
150. Tasco
151. Mexico
152. La Puebla
153. Xalapa
154. Vera Cruz
155. Guatusco
156. Oaxaca
157. Mistepec
158. Tehuantepec
159. Chiapa
160. Tustla
161. V. Hermosa
162. Tabasco
163. Samasinta
164. Sabancul
165. Campeche
166. Merida
167. Lugartos
168. Valladolid
169. Muall
170. Salamanca de Bacalar.

GUATEMALA.
1. Maquilapa
2. Gueguetlan
3. Copanabastlan
4. Los Dolores
5. Gueguetenango
6. Zobaya
7. Old Guatemala
8. Guatemala
9. Sonsonate
10. Coban
11. S. Cruz
12. Gualan
13. S. Salvador
14. S. Miguel
15. Tegucigalpol
16. Comayagua
17. Morales
18. Omoa
19. S. Barbara
20. Truxillo
21. S. J. de Orlancho
22. Dantia
23. New Segovia
24. Realejo
25. Leon
26. Granada
27. Nicaragua
28. Nicoya
29. Cartago
30. Landecho
31. Fort S. Carlos
32. La Taen
33. Blewfields
34. Jalover
35. Mosquitos
36. Crata.

Rivers and Lakes.
a Los Monges, R.
b S. Sacramento, R.
c S. Buenaventura, R.
d Las Truches, R.
e Los Martires, R.
f Teguayo, L.
g Timpanogos, L.
h S. Buenaventura, R.
i Salado, R.
j Colorado, R.
k Gila, R.
l Ascension, R.
m Hiaqui, or Sonora, R.
n Culiacan, R.
o Nasas, R.
p Grande de Santiago, R.
q Chapala, L.
r Zacatula, R.
s Nicaragua, L.
t Yare, R.
u Izaval, L.
v Moctesuema, R.
w Rio del Norte, R.
x Colorado, R.
y Canadien, R.
z Rajio, R.

climate, which belongs only to the temperate zone, but from the absence of moisture, occasioned, as Humboldt conceives, by the force with which the rays of the sun strike on this open plain, the absence of trees, and the porous nature of the rocks, which causes the water to filtrate down to the lower regions. On this high arid plain, muriate of soda and other saline substances exist in extraordinary abundance, and give to it a resemblance to Thibet and the saline steppes of central Asia. Yet a great part of New Spain must rank with the most fertile regions of the earth. As soon as it begins to slope down towards the sea, it becomes exposed to humid winds and frequent fogs; and a vegetation of uncommon strength and beauty is nourished by these aqueous vapours. The descent, suddenly becoming rapid, terminates in the narrow plain along the sea-coast, a tract in which the richest tropical productions spring up with a luxuriance scarcely to be paralleled. Yet while the climate is thus prolific of vegetation in the finest and most gigantic forms, it is almost fatal to animal life; two consequences which, according to Humboldt, are in this climate almost inseparable. The Spaniards, terrified by the pestilential air, have made this plain only a passage to the higher districts, where even the native Indians chose rather to support themselves by laborious cultivation, than to descend into the plains, where every luxury of life is poured forth in ample and spontaneous profusion. The slope by which the table-land descends to the Mexican coast is so steep that, till the road very recently constructed, no species of carriage was able to ascend. Between the western coast and the table-land intervene four long and steep ridges, which are difficult to traverse. Hence the conveyance of goods to the city of Mexico, and from one ocean to the other, had been effected solely on the backs of mules. Another great commercial disadvantage of Mexico is, that its eastern coast, against which the trade-winds are continually driving an accumulation of sand, are destitute of a single harbour; for this name, according to Humboldt, cannot be given to that most dangerous of all anchorages, which is found at Vera Cruz. The western coast, indeed, has, in Acapulco and San Blas, two of the most magnificent ports in the world; but the coast, exposed to the entire breadth of the Pacific, is, for several months of the year, rendered unapproachable by tempests.

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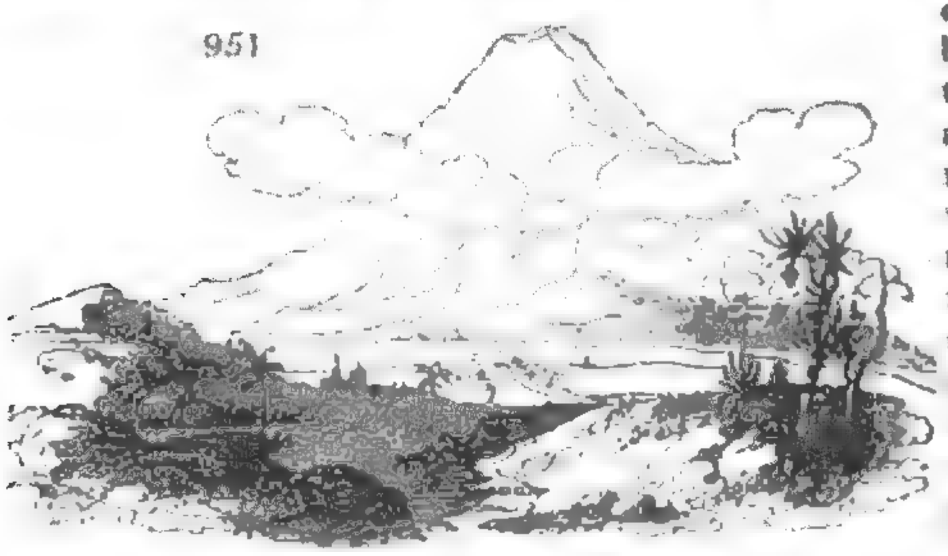

POPOCATEPETL.

5833. *The rivers of New Spain* are not important. The Rio del Norte, indeed, may have a course of 1400 miles, and that of the Rio Colorado, on the west, may be about half that length; but these streams, flowing along the foot of rugged mountains, and through desert and savage tracts, are at present of no commercial value. The rivers of tropical Mexico are mere torrents, which rush down from its table-land, and, from the structure of the country, reach the sea after a short course. They pour down remarkable waterfalls, among which that of Regla (*fig.* 952.), broken by volcanic rocks, and fringed with noble trees, forms one of the most picturesque spots in the world.

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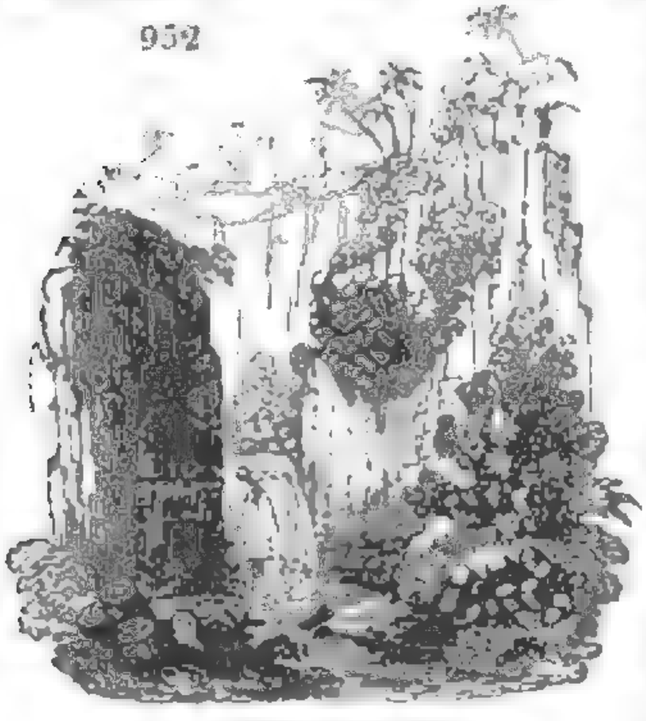

CASCADE OF REGLA.

5834. *The lakes of Mexico* are very numerous, and appear to be the remains of others, of vast extent, which formerly covered a much larger proportion of this lofty plain. The valley of Mexico is covered with small lakes, which occupy nearly a fourth of its surface; but the only one on a very great scale is that of Chapala, in New Galicia, which Humboldt estimates to contain an area of about 1300 square miles.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5835. *In the Old World,* granite, gneiss, mica slate, and clay slate often form the central ridges of the mountain chains; but in the Cordilleras of America these rocks seldom appear at the surface, being covered by masses of porphyry, greenstone, amygdaloid, basalt, obsidian, and other rocks of the same class. The coast of Acapulco is composed of granite;

and as we ascend towards the table-land of Mexico, we see it rise through the porphyry for the last time between Zumpango and Sopilote. Farther to the east, in the province of Oaxaca, granite and gneiss occur in the extensive elevated plains, traversed by veins of quartz containing gold. The geognostical relations of the secondary sandstone, limestone, and gypsum, met with in Mexico, are very imperfectly understood.

5836. *Mexican Volcanoes.* — In Mexico appears to commence the great chain of volcanic mountains, which extends with little interruption from lat. 24° N. to lat. 2° S. The most northern volcanic rocks in this country occur near the town of Durango, in lat. 24°, long. 104°; but no active volcanoes are met with until we reach the parallel of the city of Mexico; and here, nearly in the same line, five occur, so placed that they appear derived from a fissure traversing Mexico from W. to E., in a direction at right angles to that of the great mountain chain, which, extending from N. W. to S. E., forms the great table-land of Mexico. The most eastern of these, that of Tuxtla, is situated a few miles west of Vera Cruz. It had a considerable eruption in 1793, the ashes of which were carried as far as Perote, a distance of 57 leagues. In the same province, but farther to the west, occur the volcano Orizaba, the height of which is 17,000 feet, and the peak of Popocatepetl, 880 feet higher, the loftiest mountain in New Spain. The latter is continually burning, though for several centuries it has ejected from its crater only smoke and ashes. On the western side of the city of Mexico are the volcanoes of Jorullo and Colima. The height of the latter is estimated at about 9000 feet. It frequently throws up smoke and ashes, but has not been known to eject lava. The volcano of Jorullo, situated between Colima and the city of Mexico, is much more recent than the others; for it is known to have made its appearance so late as the year 1759. In the month of June, of that year, according to Humboldt, a subterraneous noise was heard in the district of Jorullo. Hollow sounds of the most frightful nature were accompanied by frequent earthquakes, which succeeded each other for from fifty to sixty days, to the great consternation of the inhabitants of the district. From the beginning of September every thing seemed to announce the complete re-establishment of tranquillity, when, in the night of the 28th and 29th, the horrible subterraneous noise recommenced. The affrighted Indians fled to the mountains. *A tract of ground, from three to four square miles in extent, rose up in the shape of a bladder.* The boundaries of this convulsion are still distinguishable from the fractured strata. The *malpays* or volcanic ground near its edges is only thirty-nine feet above the old level of the plain, called *Las Playas de Jorullo;* but the convexity of the ground thus thrown up increases progressively towards the centre to a height of 524 feet. Those who witnessed this great event from the mountains assert, that flames were seen to issue forth for an extent of more than half a league, that fragments of burning rocks were thrown vast heights, and that through a dense cloud of ashes lighted up by volcanic fire, the softened surface of the earth was seen to swell like an agitated sea. The rivers Cuitimba and San Pedro precipitated themselves into the burning chasms. Eruptions of mud, and especially strata of clay, enveloping balls of decomposed basalt in concentrical layers, appear to indicate that subterraneous water had no small share in producing this striking phenomenon. Thousands of small cones, from six to ten feet in height, called by the natives *hornitos* (furnaces) issued forth from the *malpays*, having still a temperature of 212° Fahr. Each small cone is a *fumarole,* from which a thick vapour ascends to the height of from twenty to thirty feet. In many of them a subterraneous noise is heard, which appears to announce the proximity of a fluid in ebullition. In the midst of the furnaces, six large masses, elevated, from 300 to 1600 feet each, above the former level of the plain, sprang up from a chasm, which ranges from N. N. E. to S. S. W. The most elevated of these enormous masses is the great volcano of Jorullo. It is continually burning, and has thrown up from its north side an immense quantity of scorified and basaltic lavas, containing fragments of primitive rocks. These great eruptions of the central volcano continued till the month of February, 1760; since which period they have become less frequent.

5837. *The five active volcanoes* just noticed appear to be connected by a chain of intermediate ones running in a parallel direction, and exhibiting evident indications of a similar origin. Thus, Orizaba is connected with Popocatepetl by the Cofre de Perote, and with Jorullo by the extinct volcano of Mexico, called Iztaccihuatl; and the geognostical structure of them and all those high mountains that rise above the table-land of Mexico on the same parallel appears to be the same, being composed of trachyte, from apertures in which the existing volcanoes act.

5838. *The same law* prevails in the provinces of Guatemala and Nicaragua, which lie between Mexico and the Isthmus of Darien; but the volcanoes here, instead of being placed nearly at right angles to the chain of the Cordilleras, run parallel to it. In these provinces no less than twenty-one active volcanoes are enumerated, all of them contained between 10° and 15° N. lat. Those which have been most lately in a state of eruption are Los Fuegos of Guatemala, Isalco, Momotombo, Talica, and Bombacho.

5839. *Ores, &c.* — Tin ore, which occurs so abundantly in some districts in the Old World, appears but sparingly in Mexico. The mines of Comanja, which are situated in syenite, afford veins of silver ore; and the most copious mines in America, those of Guanaxuato, are situated in a vein of silver, which intersects a primitive clay slate, passing into talc slate. Many of the Mexican porphyries are rich in gold and silver. These rocks are characterised by the general presence of hornblende and the absence of quartz; and of the felspars, the ryakolite, or glassy felspar, is the most frequent. The rich gold mine of Villalpando, near Guanaxuato, traverses a porphyry, the basis of which is allied to phonolite, and in which hornblende is very rare. The veins of Zuriapan traverse porphyries, having a basis of greenstone, which rock, as is frequently the case, contains many interesting minerals, such as mesotype, stilbite, tremolite, asbestus, green garnet, fluor spar, chrysoprase, fire opal, sulphur, carbonate and chromate of lead, and orpiment. The rich silver mines of Real del Monte, Pachuca, and Moran are situated in porphyry.

5840. *The transition rocks* of Mexico which most abound in ores are limestone and greywacke; the transition limestone affords ores of silver at Real del Cardonal, Xacala, and Lomo del Toro, to the north of Zuriapan; and rich silver mines are situated in the rocks of the greywacke group.

5841. *The secondary deposits* most prolific in ores are those of the limestone series: thus we are told that the silver mines of the Real de Catorce, as well as those of El Doctor and Xaschi, near Zuriapan, traverse what Humboldt describes under the name of alpine limestone. In that and the formation named by the same author Jura limestone are situated the famous silver mines of Tasco and Tehuilotepec, in the intendency of Mexico.

5842. *The mean produce* of the mines of New Spain, including the northern part of New Biscay and those of Oaxaca, is estimated at about 1,541,015 troy pounds of silver, — a quantity equal to two thirds of what is annually raised from the whole globe, and ten times as much as is furnished by all the mines in Europe. On the other hand, Humboldt remarks, the produce of the Mexican mines in gold is not much greater than those of Hungary and Transylvania; amounting, in ordinary years, only to 4315 troy pounds.

5843. *The silver* obtained from the Mexican mines is extracted from different ores. Most of it is obtained from silver glance, or sulphuret of silver, arsenical grey silver ore, horn ore or muriate of silver, black silver ore, and red silver ore. Native silver is useless in the northern districts. In Mexico there are about 500 towns or principal places, which afford silver. These 500 places comprehend together about 3000 mines, and there are between 4000 and 5000 veins and other repositories of silver.

5844. *Copper, iron, lead, and mercury* are also procured in Mexico, but in small quantities, although there appears to be no deficiency of the ores of any of these metals.

SUBSECT. 2. *Botany.*

5845. *Mexico naturally connects the vegetation* of North and of South America, though it has a greater similarity with the latter in its climate and productions; but the mountains are not so lofty, the great chain of the Cordilleras being twice interrupted within its limits. The northern Cordillera at Nicaragua exhibits the first indication of depression, but again rears itself for a time in the province of Veragua, and is there crowned with a very fine plain, called the Table. In the eastern part of the province, it breaks into detached mountains of considerable height, and of the most abrupt and rugged formation; thence, proceeding still to the eastward, innumerable sugar-loaf hills appear, not above 300 or 400 feet high, with their bases surrounded by plains and savannahs; and, finally, about Chagres on the one hand, and Chorrera on the other, these also disappear for a few miles, and the country becomes almost uninterruptedly low and flat. Presently, however, the sugar-loaf mountains again thicken, and, becoming connected, form a small cordillera, running from about opposite Porto Bello to the Bay of Mandingo; where is the second break. The land then continues low through the province of Darien and Choco, and is most abundant in rivers; those on the north side tending to the Gulf of Uraba or Darien, and those on the south to that of St. Miguel: beyond which point the cordillera again raises itself on an extended scale and enters South America. The vegetation of the isthmus is very luxuriant, the fruits and vegetables like those of other similar intertropical countries. The grain cultivated is Rice and Indian Corn. The Sugar Cane is grown, but not extensively. Coffee and Cocoa are raised for domestic consumption. The Caoutchouc tree, Milk tree (*Palo de Vaca*), and Vanilla plant abound in the woods. The charcoal made from many of the trees is considered excellent for smelting; and, as such, is exported to Peru, and is in much request there. Some of them yield very rich and brilliant dyes, used by the Indians, but not yet in commerce. The barks of others are medicinal, or abound in tannin. Ink is made both from gall-nuts and a bush called Alsifax, resembling the Caper. Many valuable resins are extracted from different trees; particularly one, distilled from the bark of a tree called the Palo Santo, or holy tree, which is highly fragrant, and used both as a remedy for disorders and to burn as incense. The Styrax officinalis of Linnæus is very abundant, the gum extracted from it selling at two dollars the pound. With the gum flowing from the Caoutchouc tree, while yet liquid, the inhabitants manufacture a sort of water-proof cloth, on the same principle as in this country; but which, thus prepared, is more uniform, and never cracks. In the vigour and varieties of its woods, the isthmus challenges competition with any part of the world, according to Mr. Lloyd; who, in the *Transactions of the Geographical Society of London*, enumerates no less than ninety-seven kinds, of which he has communicated specimens to that institution.

5846. *The Mexican empire*, or New Spain, which extends from lat. 16° to lat. 37°, presents, by reason of its geographical position, all the modifications of climate which we should find in passing from the Senegal river to Spain, or from the coasts of Malabar to Bucharia. This variation of climate is increased by the geological structure of the country, and by the mass and extraordinary form of the mountains of Mexico. Upon the summit and slope of the Cordillera the temperature differs according to the elevation; and it is not the solitary peaks alone, whose summits, near the limit of perpetual snow, are covered with firs and oaks; whole provinces produce spontaneously alpine plants; and the agriculturist, dwelling in the torrid zone, loses all his hopes of harvest from the effect of frost or the abundance of snow. From this order of things, it may easily be imagined that, in so mountainous and extensive a country as Mexico, there is an immense variety of indigenous productions, and scarcely a plant exists on the globe which cannot be cultivated in some part of New Spain.*

5847. No better idea, perhaps, of the general aspect of the vegetation in a much frequented portion of the empire can be conveyed than by the journal of a German botanist, Schiede, very recently published in the *Linnæa*, to which we must beg to refer our readers for a description of the country between Jalapa and Mexico.

5848. *In New Spain* the people not only obtain an agreeable drink from the saccharine substance of Maize, Manioc, Banana, and the pulp of some Mimosas; but they also cultivate a species of the Pine Apple family (*Agave americana*) in order to convert its juice into a spirituous fluid. Wide tracts of country present nothing but fields of Maguey, whose long, sharp, and thorny leaves contrast strangely with the glossy and tender texture of the foliage of Bananas. It is not till after eight years that this plant shows signs of flowering, and affords the "honey" (as it is called) which is used for making Pulque. The interior is cut out, and the hollow continues for two or three months to afford daily a large quantity of sap, amounting, sometimes, to the enormous quantity of 15 quartillos, or 375 cubic inches, daily, for four or five months. This is the more astonishing, as the Agave plantations are always situated in the most arid spots, where hardly any soil covers the rocks. The culture of the Agave possesses many advantages over Maize, Wheat, or Potatoes, as the plant is not affected by the drought, frost, or hail which so often prevail on the high parts of the Mexican Cordillera. The stalk perishes after flowering, and an immense number of suckers spring up in its place. The man who plants 30,000 or 40,000 stems of Maguey is sure of leaving his family rich, though it requires patience and courage to persevere in a culture which will not be profitable in less than fifteen years. In good soil, the Agave sends up its flowering stem in five years; in a poor soil, not sooner than in twenty. The "honey" or juice of the Agave is a very pleasant subacid; and ferments readily, owing to the saccharine and mucilaginous properties that it contains. The smell, however, of the liquor that is obtained, is most putrid and disgusting, but those Europeans who have overcome their dislike to it, prefer Pulque to every other drink. The Indians consider it to be stomachic, strengthening, and nutritious, and speak in rapture of the excellence of that which is made at Tlocotitlan, where the peculiar soil gives a remarkable flavour to the beverage, and where there are plantations of Agave that annually yield more than 40,000 livres of rental. The Maguey was not only the Vine but the Papyrus and the Hemp of the ancient Mexicans, who painted their hieroglyphics on paper made of the fibres of its leaves. A thread called *pita*, which has the advantage of never *twisting*, is still used that is prepared from it, and its thorns serve, like those of the Cactus, for pins and nails. A highly intoxicating spirit is also extracted from the Maguey. Vanilla, of which we have already made mention, abounds in Mexico; though the natives take no pains to cultivate so valuable a plant.

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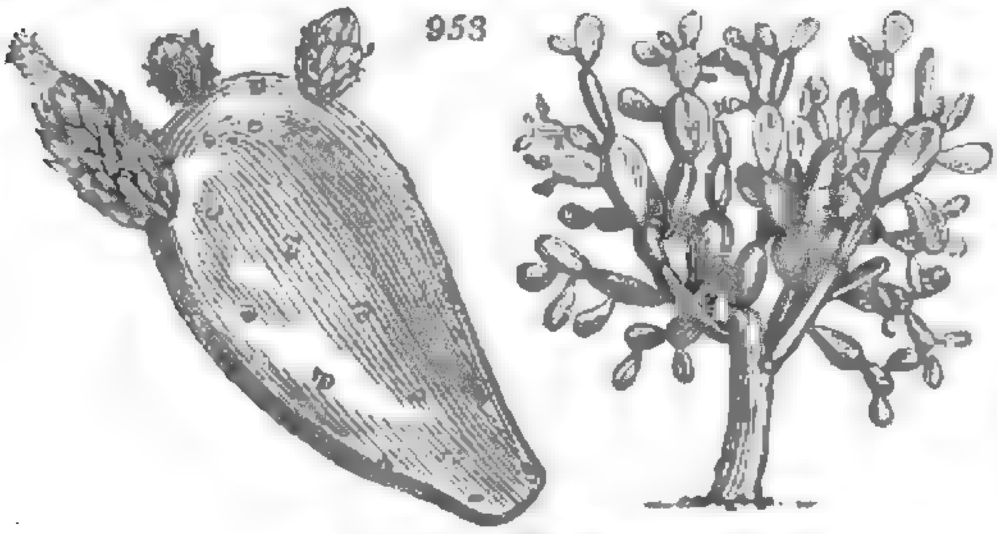

CACTUS COCCINELLIFER.

5849. *The Cactus coccinellifer* (*fig.* 953.), which nourishes the valuable Cochineal Insect, is a native of Mexico, and was cultivated for the sake of the precious dye which the insect affords, long before the conquest of that country, the plantations being called Nopaleros. From the district of Oaxaca alone the amount exported has been estimated at above

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* Humboldt's *Hist. de la Nouvelle Espagne.*

500,000*l.* sterling, and the annual consumption of cochineal in Great Britain only is about 750 bags, or 150,000 lbs., worth 275,000*l.*; "a vast amount," as the authors of the *Introduction to Entomology* well observe, "for so small a creature, and well calculated to show us the absurdity of despising any animals on account of their minuteness." The plant bears much resemblance to the Cactus Opuntia, or Prickly Pear, and is easily cultivated in dry rocky spots: the Cochineal Insect is, in general appearance, not very dissimilar to the Meal Bug of our gardens, and equally covered with a white powdery substance. The male insects, which are comparatively few in number, are winged: when the females are with young, they are placed on different Cactus plants, which is called sowing them. Here they increase rapidly in size and numbers, and, four months after, the harvest commences; when the insects are brushed off with a squirrel's or deer's tail, by the women, who sit for hours under one Nopal plant, and kill them, sometimes by immersion in boiling water, sometimes by exposure to the sun, or in the vapour baths of the Mexicans. By the latter method, the powdery substance is preserved, which increases the value of the insects in commerce.

5850. *Atlixco,* in Mexico, is justly celebrated for the abundance and excellence of the chirimoya (*Anona cherimolia*) which it produces. This is cultivated in many of the hotter parts of South America, and justly ranks as one of the best fruits of the country.

5851. *The Cheirostemon,* or Hand Plant (*fig.* 954.), was discovered by Humboldt, in 1801, forming immense forests in the province of Guatemala, in New Spain. From time immemorial, a single individual of this tree had been cultivated in the gardens of Tztapalapan, where it was said to have been planted by Montezuma before the conquest of Peru; and the Indians attached a religious veneration to it, believing that not another specimen existed or would exist in the world. This taste for horticulture still prevails among the Mexicans, who delight in dressing with garlands the stands where they vend vegetables or pulque, and arrange nosegays of freshly gathered flowers among the Peaches, Pine Apples, and Sapotillas which they display.[*]

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HAND PLANT.

5852. *The true Jalap* (*Purga de Xalapa*), that well known and potent medicine, is the root, not, as is sometimes supposed, of Mirabilis Jalapa, but of the Convolvulus Jalapa, a climbing plant which grows, at a height of 1300 or 1400 mètres, in many parts of Mexico, delighting in cool shady situations, among woods and on the slope of the mountains. It is singular that it is likewise found in the hot province of Vera Cruz, in sandy arid spots, near the level of the sea, and that M. Michaux should also have met with it in Florida. The annual consumption of Jalap in Europe has been stated at 7500 quintals, an amount which Humboldt thinks must be considerably over-stated. Its price at Xalapa, when the largest quantity is obtained, is from 120 to 130 francs the quintal of about 100 lbs.

5853. *The Dahlias,* those universal favourites, whose many-coloured blossoms give such splendour to our parterres at a season when the approach of winter renders them doubly valuable, as well as many other semi-hardy plants, are natives of the cool and hilly parts of Mexico.

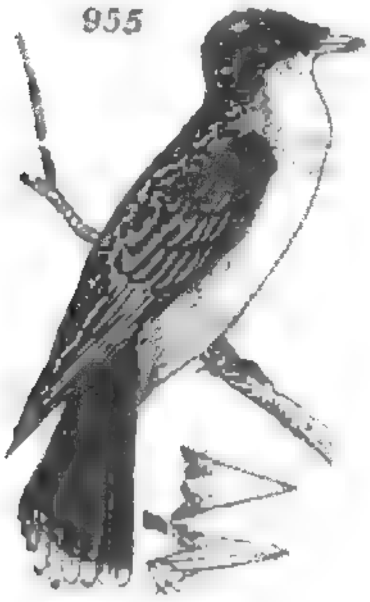
Subsect. 8. *Zoology.*

5854. *The Zoology of these interesting regions* has only of late been partially made known to modern science; for, notwithstanding the munificent liberality of the court of Spain in sending Hernandez for the express purpose of investigating the animal productions of the New World, the result of his mission was unattended either by commercial or scientific advantages. Vague and trivial notices, accompanied only by barbarous Indian names, rendered the works of Hernandez nearly unintelligible even to the European naturalists of that age, and the author and his book have long since passed into oblivion. The political events of the last few years have now opened the natural riches of Mexico to the researches and the enterprise of Europeans. And although the zoological gleanings hitherto made on the table-land have been very local, and comparatively scanty, they are sufficient to give some general idea of the probable nature of the whole, at least so far as concerns the geographic distribution of the ornithology; the only department in which we possess, as yet, any collections. To this, consequently, we must from necessity restrict our notice; since the others, slightly mentioned in the narratives of the old travellers, cannot be recognised or named by the moderns. There is, as we have already observed, sufficient reason to believe that the union of the southern and northern American Fauna takes place on that high table isthmus which geographically divides the two most prominent divisions of the New World; and this idea will receive some confirmation by the following details.

[*] Humboldt and Bonpland, *Voyage et Essai sur la Nouvelle Espagne,* vol. i. p. iii. page 98.

5855. *The following Birds* are common both to Mexico and the United States: —

Buteo borealis. Northern Buzzard.
Circus americanus. American Harrier.
Accipiter pennsylvanicus *Sw.* Pennsylvanian Hawk.
Strix virginiana *L.* Virginian Horned Owl.



955

KING-BIRD.

Tyrannus intrepidus *Vieil.* King-bird. (*fig.* 955.)
Tyrannula Saya *Sw.* Say's Tyrant.
Merula migratoria *Sw.* Red-breasted Thrush.
Orpheus polyglottus *Sw.* Mocking Thrush.
Sialia Wilsoni *Sw.* Wilson's Bluebird.
Seiurus aurocapillus *Sw.* Golden-crowned Tit.
Seiurus aquaticus *Sw.* Water Tit.
Trichas personatus *Sw.* Maryland Yellow-throat.
Sylvicola americana *Sw.* Blue-backed Warbler.
Sylvicola Blackburnia *Sw.* Blackburnian Warbler.
Sylvicola æstiva *Sw.* Yellow Warbler.
Sylvicola flavicollis *Sw.* Yellow-throated Warbler.
Sylvicola coronata *Sw.* Yellow-crowned Warbler.
Vermivora solitaria *Sw.* Worm-eating Warbler.

Setophaga ruticilla *Sw.* Redstart Warbler.
Alauda cornuta *Wilson.* Shore Lark.
Fringilla socialis *Wils.* Social Sparrow.
Pyrrhula frontalis *Bon.* Bullfinch Linnet.
Dolichonyx oryzivorus *Sw.* Rice Bird.
Vireo olivacea ? *Bon.* Red-eyed Warbler.
Agelaius phœniceus *Sw.* Red-winged Starling.
Molothrus pecoris *Sw.* Cowbird.
Sturnella ludoviciana *Sw.* Crescent Starling.
Xanthornus baltimore *G.* Baltimore Hangnest.
Dendrocopus varius *Sw.* Varied Woodpecker.
Guirac ludoviciana *Sw.* Rose-breasted Grosbeak.
Guiraca cærulea *Sw.* Blue Grosbeak.
Mniotilta varia *Vieil.* Black and White Creeper.
Sitta carolinensis *L.* Carolina Nuthatch.
Alcedo americana *L.* Great American Kingfisher.

5856. *The above species are mostly migratory*, visiting the United States to breed, and returning southward. It does not appear, however, that they pass beyond the Mexican Gulf; since not one, out of the whole thirty-five, has yet been discovered on the Terra Firma.

5857. *The next list* comprises those birds which we were the first to describe as new species, peculiar to Mexico. (*Phil. Mag., June*, 1827.) They are unknown in the United States, nor have they yet been detected on the main land of South America: —

Hirundo thalassinus *Sw.* Sea-green Swallow.
Tyrannula affinis *Sw.* Mexican Pewee Tyrant.
Tyrannula obscura *Sw.* Obscure Tyrant.
Tyrannula barbirostris *Sw.* Bearded Tyrant.
Tyrannula nigricans *Sw.* Blackish Tyrant.
Tyrannula musica *Sw.* Musical Tyrant.
Tyrannula ornata *Sw. sp. nov.* Crested Tyrant.
Setophaga miniata *Sw.* Red-bodied Flycatcher.
Setophaga picta *Sw.* Painted Flycatcher.
Setophaga rubra *Sw.* Red Flycatcher.
Setophaga rufifrons *Sw. sp. nov.* Yellow-throated Flycatcher.
Tyrannus crassirostris *Sw.* Thick-billed Tyrant.
Tyrannus vociferans *Sw.* Calling Tyrant.
Ptiliogonys cinereus *Sw. Zool. Ill.* pl. 62. 120. Cinereous Berry-eater.
Ptiliogonys nitens *sp. nov.* Black Berry-eater.
Cinclus americanus *Sw.* American Water-ouzel.
Merula flavirostris *Sw.* Yellow-billed Thrush.
Merula tristis *Sw.* Sad-coloured Thrush.
Merula silens *Sw.* Silent Thrush.
Orpheus curvirostris *Sw.* Long-billed Mocking-bird.
Orpheus cærulescens *Sw.* Blue Mocking-bird.
Sialia mexicana *Sw.* Mexican Robin.
Sylvicola inornata *Sw.* Plain Warbler.
Pipilo maculata *Sw.* Spotted Chickfinch.

Pipilo macronyx *Sw.* Long-clawed Chickfinch.
Pipilo fusca *Sw.* Brown Chickfinch.
Pipilo rufescens *Sw.* Chestnut Chickfinch.
Chondestes strigatus *Sw.* Striped Finch.
Fringilla cinerea *Sw.* Ash-coloured Finch.
Carduelis mexicanus *Sw.* Mexican Goldfinch.
Cassicus coronatus *Sw.* Crowned Hangnest.
Agelaius longipes *Sw.* Long-legged Maize-bird.
Xanthornus Bullockii *Sw.* Bullock's Hangnest.
Icterus melanocephalus *Sw.* Black-headed Hangnest.
Icterus crassirostris *Sw.* Thick-billed Hangnest.
Icterus cucullatus *Sw.* Hooded Hangnest.
Icterus mexicanus *Leach.* Mexican Hangnest.
Quiscalus palustris *Sw.* Marsh Boat-tail.
Cyanurus coronatus *Sw.* Coronated Jay.
Cyanurus formosus *Sw.* Famous Jay.
Tanagra erythrocephala *Sw.* Red-headed Tanager.
Pyranga livida *Sw.* Livid Redbird.
Pyranga hepatica *Sw.* Mexican Redbird.
Pyranga bidentata *Sw.* Doubled-toothed Redbird.
Tiaris pusillus *Sw.* Little Grosbeak.
Guiraca melanocephala *Sw.* Black-headed Grosbeak.
Psittacus leucorhynchus *Sw.* White-billed Parrot.

Macrocercus mexicanus *Sw.* Mexican Mackaw.
Ramphastos carinatus *Sw.* Carinated Toucan.
Melanerpes formicivorus *Sw.* Ant-eating Woodpecker.
Melanerpes elegans *Sw.* Elegant Woodpecker.
Melanerpes albifrons *Sw.* White-fronted Woodpecker.
Colaptes Mexicanus *Sw.* Crimson-shafted Woodpecker.
Xiphorhynchus leucogaster *Sw.* White-throated Tree-climber.
Xiphorhynchus flavigaster *Sw.* Yellow-throated Tree-climber.
Coccyzus Mexicanus *Sw.* Mexican Coucal.
Crotophaga sulcirostris *Sw.* Groove-billed Ani.
Trogon Mexicanus *Sw. Zool. Ill.* pl. 82. 107. Mexican Trogon.
Trogon Morganii *Sw.* Morgan's Trogon.
Trochilus fulgens *Sw.* Refulgent Humming-bird.
Trochilus thalassinus *Sw.* Sea-green Humming-bird.
Trochilus platycercus *Sw.* Broad-tailed Humming-bird.
Cynanthus latirostris *Sw.* Broad-billed Humming-bird.
Cynanthus bifurcatus *Sw.* Double-fork-tailed Humming-bird.
Cynanthus minimus *Sw.* Little Fork-tailed Humming-bird.
Cynanthus Lucifer *Sw.* Mexican Star Humming-bird.
Lampornis amethystinus *Sw.* Amethystine Humming-bird.
Prionites Mexicanus *Sw. Zool. Ill.* pl. 81. Mexican Motmot.

5858. *The third list* exhibits such few species as have been likewise observed on the Terra Firma, but are unknown to inhabit the north of America: —

Aquila destructor *Daud.* Destroying Eagle.
Polyborus brasilianus *Vieil.* Brazilian Caracara.
Buteo pterocles *Sw.* Long-winged Buzzard.
Circus rutilans *Sw.* Chestnut Harrier.

Tyrannula coronata *Sw.* Round-crested Flycatcher.
Tyrannula cayenensis *Sw.* Cayenne Flycatcher.
Tyrannus griseus *Vieil.* Grey Tyrant.
Saurophagus sulphuratus *Sw.* Bentivi Tyrant.

Icterus dominicensis *Daud.* Domingo Hangnest.
Macrocercus militaris *Sw.* Military Mackaw.
Trochilus melanotis *Sw.* Black-eared Humming-bird.

5859. *It results from this enumeration*, that of 113 species of land birds, hitherto ascertained, by us, to be natives of Mexico, 68 appear altogether peculiar to that country, 11 are also natives of South America, and 34 of North America. These facts, so important in illustrating the great principles of animal distribution, are in themselves so valuable, that we could not withhold them from the scientific reader. It will, however, be unnecessary to enter on similar details regarding the water birds; as of twelve species of the Duck family, sent from the lakes of Real del Monte, not one possessed any novelty, the whole belonging to those species distributed over North America.

5860. *Among the Wading Birds* are two most beautiful species of Tiger Bitterns, hitherto unknown to naturalists, and which, in fact, we have not yet regularly described. One, the *Tigrisoma lineata*, or Lineated Bittern (*fig.* 956.), is entirely waved with fine fulvous lines; the other, *T. mexicana*, has these lines enlarged into broader bands, while the chin, and part of the throat, is naked (*fig.* 957.). The American Bittern, which here represents that of Europe, is also a common bird, and, from its smaller size, it is called *Butor minor* (*fig.* 958.).

956

LINEATED BITTERN.

957

MEXICAN BITTERN.

958

AMERICAN BITTERN.

5861. *The Quadrupeds, Insects, &c.* are too little known, to permit any satisfactory account being given of them. The only quadrupeds brought home by Mr. Bullock were a new Lynx, the Canadian Porcupine, two small Monkeys, and a small Tiger Cat. Deer and Antelopes, of some unknown species, are found on the table-land, while the Bison, according to Mr. Ward's admirable account of Mexico, is stated to visit Texas in great herds.

Sect. III. *Historical Geography.*

5862. *Before the arrival of the Spaniards,* Mexico formed the most powerful and populous, and, with one doubtful exception, the most civilised empire of any in the western world. Estalla and some other writers have argued, that Mexico contains at present a greater number of people than at any former period; but the numerous ruined cities traced by Humboldt convinced that traveller of the contrary, at least as to the space comprised under the empire of Montezuma. The plan, too, of ancient Mexico, recently found by Mr. Bullock, shows it to have been greater than the modern city. This empire also had attained in several respects to no inconsiderable height of civilisation. The Mexicans had a calendar, of which a representation is here given (*fig.* 959.), more accurate than that of the Greeks and Romans: they built large cities, lofty and regular pyramids; they smelted metals, and cut the hardest stone; and they recorded events by paintings of a peculiar character, which were little inferior to the hieroglyphics of Egypt. Two specimens of these ancient paintings are here exhibited (*fig.* 960.). There existed a regular gradation of ranks in the empire, and the exorbitant power and pride of the nobles was contrasted with the almost enslaved state of the body of the people. The independent republics of Tlascala and Cholula afforded indications of a certain advance in political science, alloyed, however, by the most fierce and dreadful barbarism. Human sacrifices offered in vast numbers, and with the most ferocious rites, assimilate their character to that of savages in their rudest state. A recent examination of the hieroglyphical tables of the Mexicans has exhibited a view of the revolutions of the empire, and has shown them to be caused by the successive inroads of migratory nations from the North. The first was that of the Toultecs, in 648, and the last of the Aztecs, in 1196. Enquiry has in vain been made after any northern people who could have brought into Mexico any tincture of civilisation; and we have ourselves no doubt that whatever civilisation there was, originated within the empire itself, though the rude conquerors might, as is usual in such

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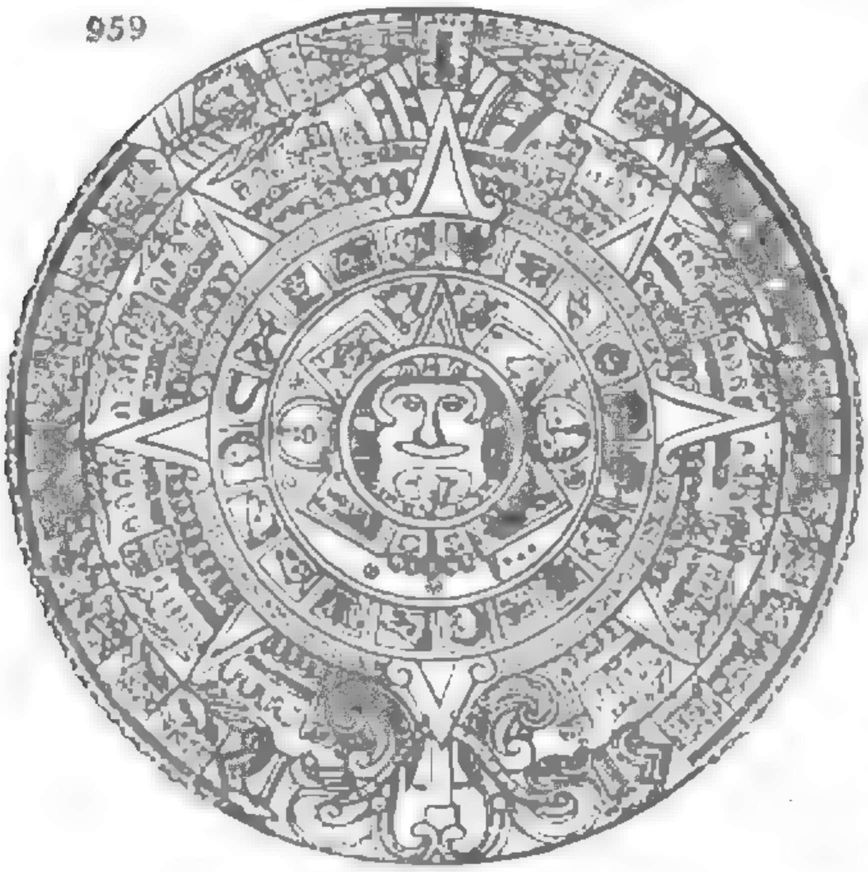
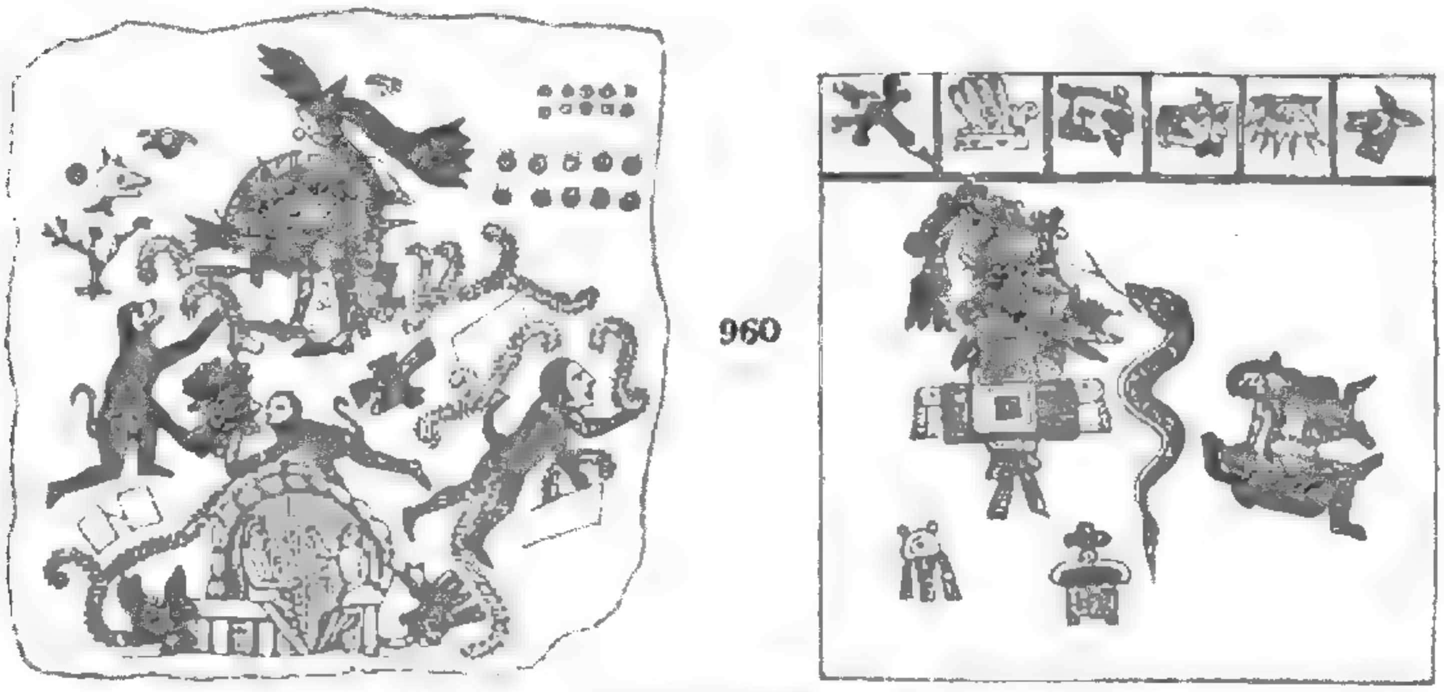


MEXICAN CALENDAR.

cases, adopt the arts and institutions of the conquered people, still retaining deep traces of their own original barbarism.

5863. *The dominion of the Spaniards over Mexico* was acquired by Cortez at the head of a band of daring adventurers, whom the possession of fire-arms and the terror produced by them rendered invincible. After a resistance not without some glory, the Aztec empire was overthrown, and Mexico, with Peru, became the brightest gems in the Spanish crown. There appears no doubt that a great part of the nation, including most of the nobility and priesthood, perished at the time of the conquest; but considerable numbers still survived, and continued to live in separate villages, with a local jurisdiction. Although the country was in all respects ill governed, yet the hopes of immense wealth attracted a number of Spanish emigrants, who gradually multiplied in a country abounding with the necessaries of life. Even the Indians, whom the Spaniards at last sought to protect, increased their numbers in the course of the last century, and from the intercourse between the two races a very numerous mixed tribe originated.



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MEXICAN HIEROGLYPHICS.

5864. *The spirit of revolution and independence*, which was gradually diffused in the mildly governed English colonies, did not, for some time, reach those under the Spanish sway. The habits of implicit submission, and the ignorance which accompanied it, prevented all but a few daring spirits from forming even the idea of emancipation. Yet a root of discontent was deeply lodged. The Creoles, or Spaniards born in America, were now the most numerous race, and were always increasingly preponderant. But the Spanish government, from a short-sighted policy, placed all its confidence, and vested all political power, in a small body of Spaniards sent out from Europe. The discontents of the proscribed Creoles, however, might long have fermented without explosion, had not their ties with Europe been broken by Napoleon's invasion of Spain. The principle of loyalty itself led them indignantly to repel this usurpation, and to frame a provisional government for themselves; and having once tasted the sweets of independence, they were unwilling to recognise either the local authorities established in Spain, or the supremacy of the king himself. The contest was long, bloody, and desperate; for most of the intelligence, and all the military skill and discipline, were at first on the side of the native Spaniards; but, after many vicissitudes and many dangers, both internal and external, the Mexicans succeeded in forming a constitution, nearly on the model of that of the United States. Some disturbances, however, still continue to agitate it.

Sect. IV. *Political Geography.*

5865. The Mexicans, on effecting their emancipation from the yoke of Spain, formed themselves into a *federal republic*, divided into nineteen states, each of which has its local government, while the general congress provides for the foreign relations and general interests of the confederacy. These states are Mexico, Queretaro, Guanaxuato, Mechoacan, Xalisco, Zacatecas, Sonora and Cinaloa, Chihuahaa, Durango, Cohahuila and Texas, New Leon, Tamaulipas, San Luis Potosi, Vera Cruz, Puebla, Oaxaca, Chiapa, Tabasco, Yucatan, Old and New California, New Mexico, Tlascala, and Colima. The members of the house of representatives are elected for two years, and there is one for every 80,000 inhabitants. The member must possess landed property of the value of 8000 dollars, or derive from some trade or profession an income of 1000 dollars a year. The senate and president are chosen by the state legislatures. This constitution has, unfortunately, not been sufficient to prevent civil dissensions, and even an appeal to the sword.

5866. *The army,* according to Mr. Ward, amounted, in 1827, to 58,955; of whom 32,161 were under arms. They were divided into twelve regiments of infantry, twelve of cavalry, and three brigades of artillery. The navy consisted of one ship of the line, two frigates, four brigs, and some smaller vessels. The army cost 9,069,000 dollars, and the navy, 1,309,000; amounts which the finances of the country were ill able to defray.

5867. *The revenue,* which, in 1808, was estimated at 20,000,000 dollars, had in 1825, through the civil wars, and the abolition of unpopular taxes without the substitution of others, fallen to 9,375,000, being all that was to meet an expenditure of 18,000,000, and the interest of the debt. The state, amid its distresses, had obtained loans from British capitalists, but with little benefit to either party. In 1823, there was procured from the house of Goldschmidt a loan of 3,200,000*l.*, but this being at a discount of fifty per cent. and a large sum being charged for agency, the amount paid into the Mexican coffers was only 1,180,000*l.* A loan of the same extent obtained next year from the house of Barclay was reduced by the same causes to 1,370,000*l.*, of which the lenders were able to make good only 1,078,000*l.*

Sect. V. *Productive Industry.*

5868. *As an agricultural country,* Mexico has been celebrated for the vast variety of productions which can be raised, according to the different degrees of elevation of its great tabular mass of territory. It is divided into warm lands, temperate lands, and cold lands. The warm lands, however, though capable of yielding in profusion all the productions of the torrid zone, are subject to so deadly a pestilence, that even the natives preferred to inhabit a poorer soil on the higher grounds; and Europeans, except the few fixed by commercial avidity, pass through it in trembling haste, as if death pursued them. The cold lands, again, are nearly devoid of vegetation, exhibiting on a few scattered spots the plants of the north. It is only on the "temperate lands," that the real and effective vegetation exists; and there the finest plants of the most genial temperate climates are produced in higher perfection than in most other parts of the known world. The Mexican wheat excels that of all other countries, both in quality and abundance, provided that by nature or art it have been supplied during growth with sufficient moisture. Such is the aridity of the soil, that artificial irrigation is usually necessary. Maize, or Indian corn, the proper grain of America, is still more generally cultivated, and forms the standing food of the people. Its harvests are equally profuse. Barley and rye (seldom oats), grow on the colder grounds, the first forming the chief food of horses. Farther down grows the banana, which, though the proper food of the torrid zone, grows so high, that Humboldt calculates 50,000 square miles may be fit for it. Of all vegetables it yields the greatest proportion of aliment with the least culture. It bears fruit in ten months after planting, and then requires only to have the stalks cut, that new shoots may spring from them, and to be dug and dressed round the roots. The amount of nutritive substance yielded by it, is to that of wheat, as 133 to 1, and to that of potatoes, as 44 to 1. The manioc root, under the same climate, can be made to produce abundance of palatable and wholesome farina. The Mexicans set much value also on the maguey, which is extensively cultivated, and yields annually about 150 quarts of a sweet juice, easily convertible into *pulque,* the favourite fermented liquor of the people. The most remarkable failure is that of the potato, which, though growing both in North and South America, had not reached Mexico at the time of the conquest, and is still rare and of inferior quality. Sugar, coffee, and cotton are all produced of excellent quality, but only for internal use; and cocoa, though an universal beverage, is procured by importation. Cochineal is almost the only article collected extensively for export. The culture is laborious, and has diminished of late, but the price has not increased, substitutes being employed. There is also indigo, but it is inferior to that of Guatemala. Vanilla, the flavouring material of the chocolate, is obtained in the forests of Oaxaca and Vera Cruz, and exported to the amount of 8000*l.* or 10,000*l.* value annually.

5869. *The mines,* however, are the grand objects which have connected the idea of unbounded wealth and romantic splendour with the name of Mexico. Gold and silver, by a natural illusion, have always shone in the eyes of mankind with a lustre beyond that of any other metal. Peru, indeed, offers gold in greater abundance; but Mexico, since the first discovery, has produced more silver than all the rest of the world united. The silver ore of Mexico is far from rich; it seldom yields more than three or four ounces to the quintal of earth, while that of Saxony yields ten or even fifteen ounces. It is situated also very deep in the ground. The quantity, however, is in many cases immense, obtained with comparatively little difficulty; for, instead of being, as usual, placed in the heart of dreary and almost inaccessible deserts, the mines occupy the very best situations of the great table plain, are surrounded with brilliant vegetation, and with all the means of comfortable subsistence. There are 3000 mines in Mexico; most of them, however, are now unproductive, and even ruinous: but adventurers have been encouraged to begin, and to persevere while a particle of their capital remained, by the enormous profits which have, in a few instances, been realised. The most remarkable was that of the Valenciana mine, undertaken by Obregon, a poor man, who, by begging and borrowing, contrived to carry on a fruitless excavation during eleven years, till he came at length upon the great vein, which for more than thirty years yielded above 500,000*l.* annually. The mine of Pavellon, in the district of Sombrerete, yielded 800,000*l.* in six months; but its product has been by no means so steady. The purification of the metal is effected either by smelting or by amalgamation with mercury. The latter mode is considered the most eligible, especially since the forests have been thinned by the quantity already consumed in the smelting process. 16,000 quintals of mercury are required for the mines of Mexico; a quantity difficult to procure, especially while the Spanish government monopolised and retailed it at an enormous price. The produce of the mines continued increasing till the commencement of the late revolution. From 1750 to 1759, the average appeared to be 16,566,000 piastres; from 1771 to 1803, it was 19,688,000; but in the first years of the present century, the duties levied implied an amount of 22,000,000; and, allowing for contraband, the total might probably be 25,000,000, or 5,500,000*l.* sterling. During the dreadful convulsions of the late revolution, the amount was greatly reduced, the water having in many instances been allowed to rush in, the machinery destroyed, and the workmen dispersed. The silver coined in the mint of Mexico, which, in 1810, amounted to the value of 17,950,000 dollars, had fallen in 1825 to 3,651,000. The mine of Guanaxuato yielded, in 1810, 511,000 marks of silver; in 1825, only 100,000. Extraordinary efforts have lately been made by British capitalists to restore and extend the produce of these mines. During the period of excited speculation in 1825, numerous companies were undertaken for this purpose; and their shares sold for some time at advancing premiums. The following is a statement of the six now in active operation, with an estimate of the funds which they have invested in this undertaking: — Real del Monte, 500,000*l.*; United Mexican, 1,200,00*l.*; Anglo-Mexican, 1,000,000*l.*; Bolanos, 150,000*l.*; Halpuyahua, 180,000*l.*; Catorce, 60,000*l.* There were also two American and one German, but on a smaller scale. The English companies began their operations with the greatest spirit; it was soon found, however, that an enormous expense must be incurred before the smallest return could be hoped for. Every thing was to be erected anew — horse whims, magazines, stamps, crushing mills, and washing vats; hundreds of horses and mules were to be purchased; roads to be made; establishments to be formed for the process of amalgamation. These expenses have absorbed the subscribed capital of the companies, and the produce has not yet answered expectation, though the vein of Vela Grande in Zacatecas has yielded 3,000,000 dollars to the Bolanos Company. The value of the Mexican gold does not exceed 7000 marks, or about 200,000*l.* sterling annually. The mint of Mexico is a prodigious establishment, in which all the processes are carried on with the greatest activity, though not, as Mr. Bullock conceives, with that elegance of design which might be desired. It is capable of stamping 100,000 dollars within the hour. So rapid an operation is seldom required; yet there have passed through it probably upwards of 3,000,000,000 dollars.

5870. *Manufactures in Mexico are,* and must long continue, in a very rude state. A strong prejudice exists among the natives against manual labour: in consequence of which, it is chiefly confined to criminals, or persons compelled by debt to engage in it. These workmen are immured as in a prison: and high walls, double doors, barred windows, togegether with the severe corporal punishments often inflicted on the inmates, make these places resemble an ill-conducted gaol. There are, however, considerable fabrics of coarse red earthenware, which is used in all the operations of cookery; also manufactures of coarse woollens and cottons. The amount of these, in good times, was reckoned at 1,500,000; but declined during the troubles. Working in gold and silver has, as might be expected, been a favourite occupation. Services of plate, worth 6000*l.* or 8000*l.*, have been manufactured at Mexico, which, for elegance and fine workmanship, may rival the best of the kind in Europe. Glass has also made great progress. The coaches of Mexico have long been celebrated both for good construction and beauty, it being the particular ambition of all who possibly can, to have their coach.

5871. *The commerce of Mexico does not correspond with its great fame for wealth.* The exports of the precious metals form the principal article; next to this is cochineal; to which may be added, sugar, flour, indigo, provisions, vanilla, sarsaparilla, jalap, logwood, and pimento. The exports at Vera Cruz in 1824, amounted to 12,082,000 dollars, of which 7,437,000 were for European and other foreign ports; 4,360,000 for American ports; and 284,000 for other Mexican ports. The imports, consisting chiefly of manufactured goods, wine, brandy, and metals, were from Europe 1,468,000; America, 3,022,000, other Mexican ports, 202,000. Under the Spanish regime, Vera Cruz and Acapulco had a monopoly of the trade; but since the revolution, a considerable amount has centered in other ports, of which the chief are, in the northern part of the Gulf, Tampico, and Soto la Marina; Campeachy and Tabasco in the south; San Blas and Mazatlan on the western coast; and Guaymas in the Gulf of California. The value of exports from Britain to Mexico in 1829 was 302,000*l.*

5872. *The roads of Mexico are tolerable,* so far as they extend along the level surface of the high table-land. But the steep declivities from thence to the maritime plain along both seas, were long impassable for a carriage of any description. Before the late revolution, however, the merchants of Mexico had undertaken a most magnificent highway, so judiciously adapted to the declivities, that loaded waggons could ascend from Vera Cruz upwards to Mexico, and thence down to Acapulco. This public work was interrupted by the late revolution, and was found by recent travellers in an unfinished and neglected state; but it can scarcely be doubted that the new government will soon avail themselves of the means they now possess, to complete so important an undertaking.

Sect. VI. *Civil and Social State.*

5873. *The population of Mexico*, which had previously been estimated on the most vague conjecture, has been computed by Humboldt with extraordinary care. He copied from the archives of the viceroy a statement containing the results of an enumeration made in 1793, by which the number was rated at 4,483,529. This census was taken, however, in opposition to those popular apprehensions and prejudices with which such an enumeration is always viewed; and the real amount might be at least a sixth more, or 5,200,000. After carefully comparing the numbers of births and deaths, and observing the progress of agriculture, the increased amount of duties on consumption, and the many new houses every where building, he considers that the population of 1808 might be safely estimated at 6,500,000. It has since been rated at 10,000,000, but seemingly too high, considering that, by the war, not only a multitude of the inhabitants has perished, but that many of the sources of industry have ceased to be productive. The best authorities seem to reckon the present population at about 8,000,000.

5874. *The classes of society* are singularly varied, and are characterised by distinctions more striking than those observable in other countries. They are four, more distinct and almost more alien to each other than if they were separate people, actuated by the strongest sentiments of national rivalry. Those classes are, native Spaniards; Spaniards born in America; the mixed castes; and the Indians.

5875. *The native Spaniards*, called *Chapetones*, did not exceed 70,000 or 80,000, and the greater number of these have now been expelled; but, prior to the late revolution, the court of Madrid, either through jealousy of the Americans, or through personal interest, bestowed exclusively upon them every office in its colonies. They deported themselves as beings of a decidedly superior order to the Creole Spaniards, who, they openly asserted, were an effeminate and ignorant race, incapable of any elevated and liberal occupation. They are now fallen from their high estate. They are stripped of all their honours and dignities; many of them reduced to extreme poverty, and allowed only to exist under strict surveillance by a government to whom they are objects of perpetual jealousy. Captain Hall considers them, notwithstanding the deadly error which caused their ruin, as not undeserving of sympathy. They are better informed, more industrious, and more highly bred than the natives, and in all respects, except on the national question, more liberal. As merchants they were active, enterprising, and honourable; and towards strangers courteous and obliging. It could never, certainly, be expected, that they should not resist to the utmost a revolution which deprived them of their station in society, and reduced them to a depressed and subordinate condition.

5876. *The Creoles*, or Americans, as they prefer to call themselves, even when they were depressed beneath the preponderance of the Europeans, formed a privileged class in comparison with other natives. They are fond of splendour, and delight to ride on horses richly caparisoned (*fig.* 961.). Many of them, descended from the first conquerors, or enriched by speculation in the mines, enjoy fortunes almost more than princely. Forty or fifty thousand pounds a year is not an uncommon income, even for families who do not possess mines. The Conde de la Valenciana has repeatedly drawn from his mine 250,000*l.* in one year. The Conde de la Regla, from the profits of another, presented to the king two ships of the line constructed of cedar. These immense fortunes, however, are often dissipated in ulterior mining speculations, to which the owners are tempted by one successful adventure, and in which they often squander all that they have gained. An ostentatious mode of living, a rage for gaming, and an ill-arranged domestic economy, are also causes which involve the richest families in embarrassment, and prevent any accumulation of capital. The entire number of those denominated whites in Mexico, is about 1,200,000, of whom all except the small number of Europeans above mentioned are Creoles. The charge of ignorance is generally advanced against this class; and, notwithstanding some decided exceptions, and a peculiar aptitude, which most of them are said to display in learning the principles of science, cannot be wholly denied. The causes, however, which have produced this mental

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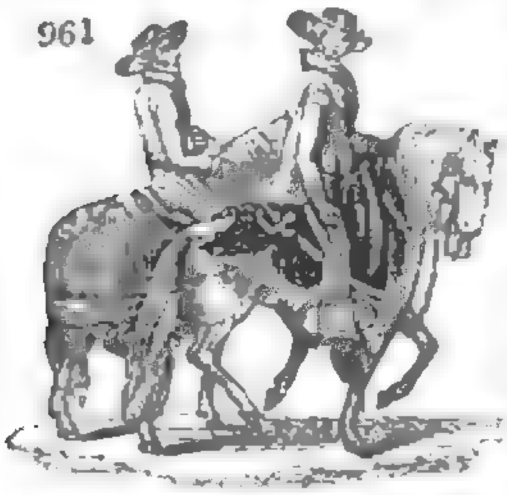

MEXICAN GENTLEMEN.

degradation, are now at an end; and though beneficial changes are not to be effected by magic, there can be no doubt that the permanent advantage of a free government will enable the Mexicans to take the station for which nature has destined them.

962

MEXICAN INDIANS.

963

MEXICAN INDIANS.

5877. *The Indians* (*figs.* 962. and 963.), descendants of the original possessors of Mexico, still survive, to the supposed amount of 2,500,000, and are, consequently, twice as numerous as the white race. They bear the general features of those aborigines who have been found in all parts of North and South America. They have the same swarthy or copper colour, the flat and smooth hair, small beard, squat body, long eye, with the corner curving up towards the temples, prominent cheek-bones, thick lips, and an expression of gentleness in the mouth, strongly contrasted with a gloomy and severe look. Their hair is coarse, but smooth, and so glossy as to appear in a constant state of humidity. They share with the rest of their countrymen, and with most races of very swarthy complexion, an exemption from almost every species of deformity. Humboldt never saw a hunch-backed Indian, and squinting and lameness are very rare. They escape the goitre, even in districts where it is prevalent. None of the causes which have been assigned for this exemption in nomadic nations can apply to a laborious agricultural race like the Mexican Indians; and therefore this immunity must depend on something peculiar in their structure. It has been supposed that few attain an advanced age; but this is owing to the circumstance that, whatever age a Mexican may attain, he never becomes gray-haired. He leads a very different life, and is exposed to none of the casualties incident to a hunter and a warrior on the banks of the Mississippi. A peaceable cultivator, subsisting constantly on vegetable food, attains often a hundred years of age, and is still green and vigorous. The only circumstance which tends to abridge life is an extravagant use of the inebriating liquor called pulque, especially on occasion of coming to market. The police of Mexico sends round tumbrils to collect the drunkards, like so many dead bodies, after which they are punished by being obliged to work chained in the streets for several days. The Spanish government adopted a singular policy in regard to the Indians, confining them in villages of their own, into which no white was allowed to enter; nor were they admitted into any place inhabited by whites. Although the Aztec nobles mostly perished in the ruin of their country, yet some still remain, who lay claim to the highest rank among that body, and to whom their countrymen pay profound respect, clearly denoting the importance of their ancestry. They are usually invested with the government of the villages, and are accused of exercising their power in an oppressive manner, with little regard to the ties which unite them to their countrymen. The Indians pay a tribute, or capitation tax, varying at different times and places from one pound to four shillings and two-pence; an impost which, from its nature, must be degrading, though we cannot think, with the worthy bishop of Mechoacan, that it would be any improvement to substitute the alcavala. A few of them have amassed considerable wealth, amounting even to 30,000*l.* or 40,000*l.*; but in general they labour under severe poverty. They appear to be gifted with a clear apprehension, a natural logic, and a capacity of cool and even subtle reasoning, but to be destitute of any warmth of imagination or glow of sentiment. Yet the love of flowers, for which they have been remarkable since the time of Cortes, seems to indicate a taste for the beautiful. In the public market of the capital, the Mexican surrounds himself with an entrenchment of verdure, and the ground around him is embellished with festoons of flowers, which are daily renewed. They evince also a great attachment to the arts of painting and carving, and imitate with great facility any models which are presented to them. A peculiar apathy marks the deportment of the Mexican Indian. He is grave, gloomy, and silent; he loves to throw a mysterious air over the most indifferent actions, but is often seen to pass at once from a state of seemingly profound repose, to one of violent and unrestrained agitation. Their want of present instruction is ascribed to the extinction of the Aztec priesthood and all their monuments, for which nothing was substituted by the Spanish ecclesiastics.

5878. *The mixed castes* form a very numerous part of the population of Mexico, being estimated even by Humboldt at 2,400,000. They are either mulattoes, descended from mixture of the white with the negro; or mestizoes, from mixture with the Indian. The latter, in consequence of the happily small number of negroes introduced into Mexico, compose seven eighths of its mixed population. To be white is in Mexico a badge of rank, and almost a title of nobility. When a Mexican considers himself slighted by another, he asks, "Am I not as white as yourself?" From a refinement of vanity, the inhabitants of the colonies have enriched their language with terms for the finest shades, which result from the degeneration of the primitive colour. The union of a mestizo, or mulatto, with a white, produces what is called a quarteron; and the union of a quarteron with a white produces a quinteron; after which, the next generation is accounted white. It is said that the Indians can distinguish, even in the dark, the different races, by the odour peculiar to their cutaneous transpiration. Indians often come before courts of law to clear themselves from the charge of impure mixtures; and, when possessed of influence, obtain verdicts which are not always conformable to the evidence of the senses. When the case is very palpable, however, the law contents itself with declaring, "that they shall be held as white;" a concession to which considerable value seems to be attached.

5879. *The Catholic religion* was introduced into Mexico at the time of the conquest, with a body of clergy, both secular and regular, who do not possess the exorbitant wealth which has been ascribed to them. The archbishop of Mexico, and the eight bishops under him, have not among them more than 120,000*l.* a year. Neither is the number of clergy greater than corresponds to the extent and population of the country. They do not exceed 10,000; or, including every person connected with the church, 13,000 or 14,000. A number of the lower clergy, especially in the Indian villages, are excessively poor, their income not exceeding 25*l.* a year. The influence and revenue of the church also have considerably diminished during the revolution. In 1827, according to Mr. Ward, seven bishoprics and seventy-nine cathedral benefices were vacant; in 156 colleges and convents of Mexico, only 280 individuals had taken the vows during five years; and only 92 were serving in noviciate. The alms collected in all the convents of Mexico amounted, in 1826, to only 204,000 dollars. The churches, however, in Mexico, Puebla, and other large cities, are of surpassing splendour; and the blaze of gold, silver, and ornaments, surpasses what is displayed in the richest shrines of Europe. Bigotry, among the body of the people, prevails nearly to the same extent as in Spain; and the new legislators have not attempted to grant toleration to any other religion than the Roman Catholic; yet many of the best informed are supposed to be secretly tinctured even with the sceptical opinions of the modern French school. The Indians have been what the Spaniards call converted to the Christian faith; but the change has evidently been not a change of creed, but a commutation of one ceremony for another, and in some cases their ancient ceremonies are retained. Humboldt seems to suppose that they merely considered the Spanish gods to have vanquished their gods, and thence to have become entitled to their homage. They even persuaded themselves, and, it is said, were assured by the Spaniards, that the emblem of the third person of the Trinity was identical with the sacred Mexican eagle. Be this as it may, the Mexicans display an extraordinary ardour in adorning the churches with pictures and statues, and in collecting and grouping flowers, fruits, and every thing which can increase the splendour of religious festivals. But their favourite form of worship is dancing round the altar, and with astonishment it is perceived, that these dances are the same with which their ancestors celebrated the immolation of human victims to the dreadful god of war. The warrior departs, attired in the full costume of the days of Montezuma; he meets another; fights, vanquishes, and drags him by the hair before the emperor. The spectator almost expects to see the blood begin to flow. When Mr. Bullock was modelling the great Mexican idol, the natives gazed intently, and some of them were heard to observe, that, after the cordial manner in which they had adopted the Spanish gods, they might have been allowed to retain a few of their own.

5880. *The sciences* have not yet shone very bright in this part of the western hemisphere. Few governments, however, have expended more in the promotion of physical science than that of Spain in America. It sent three botanical expeditions into Mexico and other parts of its transatlantic territory, which cost upwards of 80,000*l.* Geometry and astronomy have made considerable progress in Mexico. Humboldt names three individuals, Velasquez, Gama, and Alzate, who might have held a respectable rank in Europe. A botanical garden and collections of minerals were formed in Mexico on a great scale. The school of mines produced great advantages to the country, and the pupils were initiated even in the highest branches of mathematics. These lights, according to the most recent accounts, had suffered a temporary eclipse, in consequence of the long revolution; but the new government is endeavouring to revive them by measures which can scarcely fail of ultimate success.

5881. *The fine arts* were also promoted with great zeal by the old government, which, at an expense of 8000*l.*, transported to Mexico, across the rocky passes of the Cordilleras, a collection of casts of the finest antique statues. The Academy of the Fine Arts possessed an income of 5000*l.* a year, chiefly supplied by government, and the benefit of its exertions was seen in the beauty of the public edifices which adorned the capital.

5882. *The amusements* are chiefly those of Old Spain; bull-fights, and religious processions. The theatre is still far inferior to that of the mother country. The dress of the ladies is usually black; but on holidays they wear very showy and brilliant stuffs, without much regard to the richness of the material. The *attire* of the gentlemen, especially on horseback, is exceedingly splendid; embroidered breeches of coloured leather, adorned with silver buttons and silver lace; over their short calico jacket is thrown a rich velvet cloak, often embroidered with gold. The *houses* of the wealthy exhibit similar splendour. They are usually three stories high, and the fronts painted white, crimson, or light green; sometimes covered with glazed porcelain. The finest apartments are lofty and spacious, situated on the first floor, which is ascended by a magnificent staircase. The house is built round an interior court, filled with trees and flowers. The roof is flat, and is made strong, to resist rain; it is adorned with plants and flowers, which in fine weather make it an agreeable resort.

Sect. VII. *Local Geography.*

5883. *Mexico*, in 1776, was divided by the Spanish government into twelve intendencies. This division, made with a view to its interior administration, has been abolished; but as it coincides with the natural features of the country, it may serve for our present purpose to exhibit the details of the Mexican territory. The following table is drawn up from the data of Humboldt. The population here stated, being founded upon the census of 1793, is below the present amount; but it will show the relative proportion between the different parts of the territory.

Provinces.	Square Miles.	Population in 1793.	Provinces.	Square Miles.	Population in 1793.
Mexico - -	5,927	1,511,800	Vera Cruz - -	4,141	156,000
Puebla - -	2,696	813,300	San Luis Potosi -	27,821	334,900
Guanaxuato - -	911	517,300	Durango - -	16,873	159,700
Valladolid - -	3,446	376,400	Sonora - -	19,143	121,400
Guadalaxara - -	9,612	630,500	New Mexico -	5,709	40,200
Zacatecas - -	2,225	153,300	Old California -	7,295	9,000
Oaxaca - -	4,447	534,800	New California -	2,125	15,600
Merida - -	5,977	465,800			

5884. *There is another and more ancient division*, which is still regarded by the inhabitants. This is into — 1. The kingdom of Mexico, comprising the first seven intendencies, and all the most rich and valuable portions of the state. 2. The kingdom of New Galicia, comprehending the intendencies of Guadalaxara and Zacatecas; a somewhat ruder tract, but containing some important cities and havens. The outer and ruder regions were arranged under the respective heads of Leon, New Santander, Texas, Cohahuila, New Biscay, Sonora, New Mexico, the two Californias.

5885. *The intendency of Mexico* consists of what is called the Valley of Mexico, a fine and splendid region, variegated by extensive lakes, and surrounded by some of the loftiest volcanic peaks of the new world. Its circumference is about 200 miles, and it forms the very centre of the great table-land of Anahuac, elevated from 6000 to 8000 feet above the level of the sea. In the centre of this valley stands the city of Mexico (*fig.* 964.); the ancient Mexico, or Tenochtitlan, having been built in the middle of a lake, and connected with the continent by extensive causeways or dikes. The new Mexico is three miles from the Lake of Tezcuco, and nearly six from that of Chalco; yet Humboldt considers it certain, from the remains of the ancient *teocalli*, or temples, that it occupies the identical position of the former city, and that a great part of the waters of the valley have been dried up. Mexico was long considered the largest city of America; but it is now surpassed by New York, perhaps even by Rio Janeiro. Some estimates have raised its population to 200,000; but it may, on good grounds, be fixed at from 120,000 to 140,000. It is beyond dispute the most splendid. " Mexico is undoubtedly one of the finest cities built by Europeans in either hemisphere, with the exception of St. Petersburg, Berlin, and Philadelphia, and some

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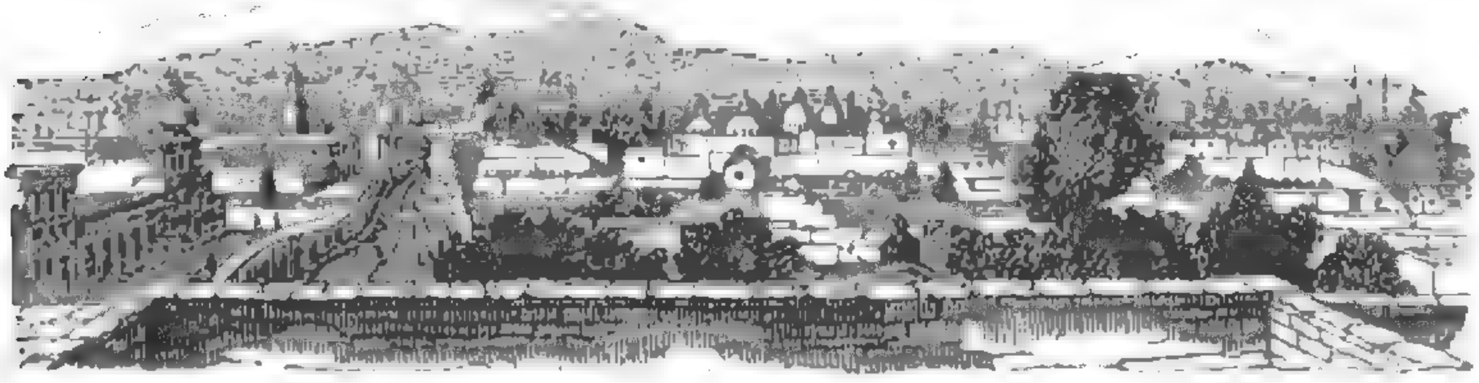

MEXICO.

quarters of Westminster: there does not exist a city of the same extent which can be compared to the capital of New Spain, for the uniform level of the ground on which it stands, for the regularity and breadth of the streets, and the extent of the squares and public places. The architecture is generally of a very pure style, and there are even edifices of a very beautiful structure." The palace of the late viceroys, the cathedral, built in what is termed the Gothic style, several of the convents, and some private palaces, reared upon plans furnished by the pupils of the Academy of the Fine Arts, are of great extent and magnificence; yet, upon the whole, it is rather the arrangement, regularity, and general effect of the city, which render it so striking. Nothing, in particular, can be more enchanting than the view of the city and valley from the surrounding heights. The eye sweeps over a vast extent of cultivated fields, to the very base of the colossal mountains, covered with perpetual snow. The city appears as if washed by the waters of the Lake of Tezcuco, which, surrounded by villages and hamlets, resembles the most beautiful of the Swiss lakes, and the rich cultivation of the vicinity forms a striking contrast with the naked mountains. Among these rise the famous volcano Popocatepetl and the mountain of Iztaccihuatl, of which the first, an enormous cone, burns occasionally, throwing up smoke and ashes, in the midst of eternal snows. The police of the city is excellent; most of the streets are handsomely paved, lighted, and cleansed. The annual consumption in Mexico has been computed at 16,300 beeves; 279,000 sheep; 50,000 hogs; 1,600,000 fowls, including ducks and turkeys; 205,000 pigeons and partridges. The markets are remarkably well supplied with animal and vegetable productions, brought by crowds of canoes along the Lake of Chalco, and the canal leading to it. These canoes are often guided by females, who at the same time are weaving cotton in their simple portable looms, or plucking fowls, and throwing the feathers into the water. Most of the flowers and roots have been raised in *chinampas*, or floating gardens, an invention peculiar to the new world. They consist of rafts formed of reeds, roots, and bushes, and covered with black saline mould, which, being irrigated by the water of the lake, becomes exceedingly fertile. It is a great disadvantage to Mexico, however, that it stands nearly on a level with the surrounding lake; which, in seasons of heavy rains, overwhelm it with destructive inundations. The construction of a *desague*, or canal, to carry off the waters of the Lake of Zumpango, and of the principal river by which it is fed, has, since 1629, prevented any very desolating flood. The *desague*, though not conducted with skill and judgment, cost 1,040,000*l.*, and is one of the most stupendous hydraulic works ever executed. Were it filled with water, the largest vessels of war might pass by it through the range of mountains which bound the plain of Mexico. The alarms, however, have been frequent, and cannot well cease, while the level of that lake is twenty feet above that of the great square of Mexico.

5886. *Acapulco*, on the east coast, has been celebrated in an extraordinary degree as almost the centre of the wealth of America; the port whence the rich Spanish galleons took their departure to spread the wealth of the western over the eastern hemisphere. It is one of the most magnificent harbours in the world, seeming as if it were excavated by art out of a vast circuit of granite rocks, which shut out all view of the sea. To Captain Hall and his companions, it appeared the very beau ideal of a sea-port. Yet while Vera Cruz, with its wretched anchorage amid sand-banks, annually received from 400 to 500 vessels, that of Acapulco scarcely received ten, even in the time of the Manilla galleon, the discontinuance of which reduced it to a state of insignificance. It is said, however, of late to have considerably revived, and its customs, after falling so low as 10,000 dollars, had risen, in 1826, to 400,000.

5887. *Other places of great interest* exist in the intendency and valley of Mexico. Queretaro is a considerable and fine city, containing many handsome edifices, both public and private, with somewhat flourishing cotton manufactures. Of 35,000 inhabitants, 11,600 are Indian. The surrounding valley is particularly fertile and beautiful. Tezcuco is now only a mass of ruins, but these are peculiarly grand. The foundations and remains of temples, fortresses, palaces, and other extensive buildings, attest a period when it must have been one of the greatest cities of America, capital of the kingdom of Acolhuacan; still later it was the seat of literature and art, the Athens of America. The palace of the former tributary king could not be viewed without forming an elevated idea of the ancient Mexican architecture. It must have covered several acres, is raised on several sloping terraces, and of materials at once durable and beautiful. All round Tezcuco are seen raised mounds of brick, mixed with aqueducts, ruins of buildings of enormous strength, and many large square structures nearly entire. Here the blind zeal of the first bishop collected and committed to the flames all the monuments of Aztec history and literature. Near Otumba, once large and flourishing, but now little more than a village, are the pyramids of Teotihuacan, the two principal of which appear to be temples dedicated to the sun and moon: the highest of them has been recently estimated by Mr. Glennie at 221 feet. A flight of steps leads to the top, where an altar appears anciently to have been placed. It is surrounded by numerous pyramids, about thirty feet high, arranged in broad and regular streets, all terminating in the great pyramid (*fig.* 965.).

5888. *The intendency of Puebla* stretches nearly across the continent, and over the high table-land. It has few mines, but contains an extensive table plain, 6000 feet high, eminently fertile in wheat, maize, and fruit. This was the seat of republican Mexico. Tlascala and Cholula, the two cities which bade defiance to the power of Montezuma, are usually included within its limits. It contains also Popocatepetl, the loftiest mountain in Mexico, exceeding by 2000 feet the highest in Europe. The volcano has for several centuries thrown up only smoke and ashes.

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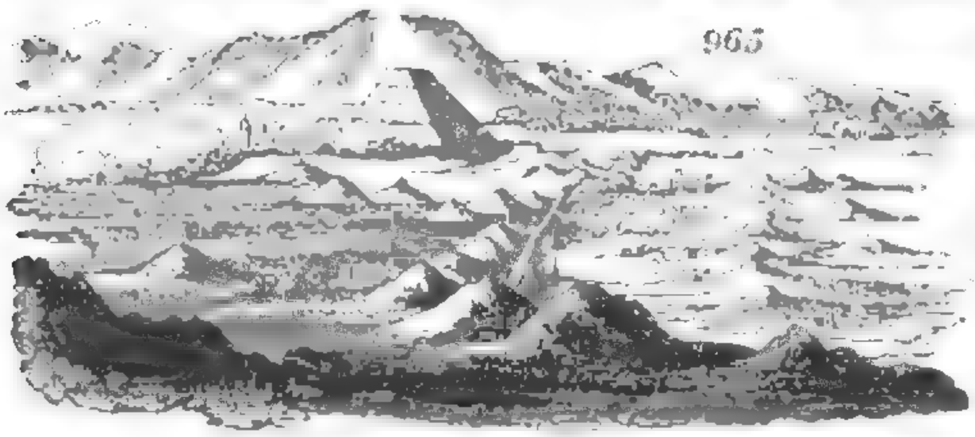

PYRAMIDS OF TEOTIHUACAN.

5889. *Puebla de los Angeles* (*fig.* 966.) is a handsome and large city. It is entirely Spanish, having been founded since the conquest. The streets are straight, broad, and cross each other at right angles, dividing the whole into spacious squares. They are well paved, and have broad footpaths. The houses are large and lofty, the walls often covered with paintings, while the roof is ornamented with glazed tiles. In the splendour of the churches and the richness of their endowments, Puebla, according to Mr. Bullock, must take the first rank in the Christian world. The cathedral is a vast pile, with little external ornament: but the interior is rich beyond description. The high altar, finely designed by an Italian artist, is composed of the most beautiful marble and precious stones that could be found in New Spain: its numerous and lofty columns, with plinths and capitals of burnished gold, the crowd of statues and other ornaments, have an unequalled effect. In manufactures it takes the lead of other Mexican cities: those of woollen have declined, but those of earthenware and glass are still flourishing. Humboldt reckons the population at 67,800; Bullock, thirty years later, at 90,000.

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PUEBLA DE LOS ANGELES.

5890. *Cholula*, the ancient capital of a great independent republic, has declined into a town, containing, according to Humboldt, 16,000, according to Bullock, 6000, souls. The pyramid of Cholula (*fig.* 967.) is the work of art which, next to the pyramids of Egypt, approaches nearest in magnitude and vastness to those of nature. It is not nearly so high as the Great Pyramid, being only 172 feet; but the length is nearly double; 1335 feet, instead of 728. It is four times as long as the third pyramid, or that of Mycerinus, and somewhat higher. A section having been made through it to form the road to Mexico, it was found to be composed of brick, and displayed an interior chamber, built of stone, and containing two skeletons, some idols of basalt, and a number of vases curiously varnished and painted. On the platform at the top has been erected a chapel, where mass is daily celebrated, and whence a noble view is obtained over the fine plain of Mexico and its boundary mountains. Tlascala, once the powerful rival of Mexico, is now no more than a large village; its ancient monuments, if any exist, remain unexplored.

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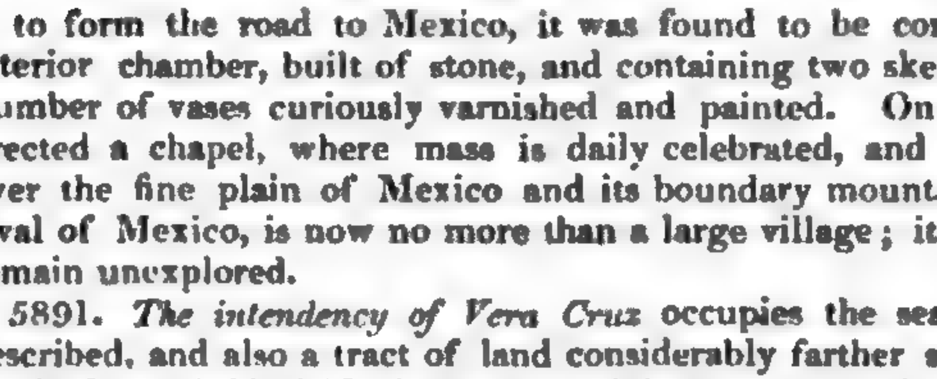

PYRAMID OF CHOLULA.

5891. *The intendency of Vera Cruz* occupies the sea-coast belonging to the two now described, and also a tract of land considerably farther south. It extends inland from the level of the Gulf of Mexico to that of the great central table-land. In a day's journey the inhabitants may ascend from regions of the most suffocating heat to those of eternal snow; and, according to Humboldt, naturalists in this wonderful country may traverse, even in a few hours, the whole range of the vegetable kingdom. The aspect of the oak first relieves the traveller, by showing him that he is beyond the dreaded dominion of the yellow fever; and soon after he is cheered by the view of fields of wheat. Pines then begin to mingle with the oaks, and at a little higher elevation, these and other resinous plants alone cover the rocks, whose summits penetrate into the regions of eternal snow. This intendency is capable of yielding in abundance the most precious productions; and within a recent period, sugar, tobacco, and cotton, all of excellent quality, have been raised to a much greater extent: but the horror with which the climate is viewed both by Europeans and Indians is such, that the greater part of it remains a complete desert, where often, for many leagues, there are only to be seen two or three huts, with herds of cattle, half wild, straying round them.

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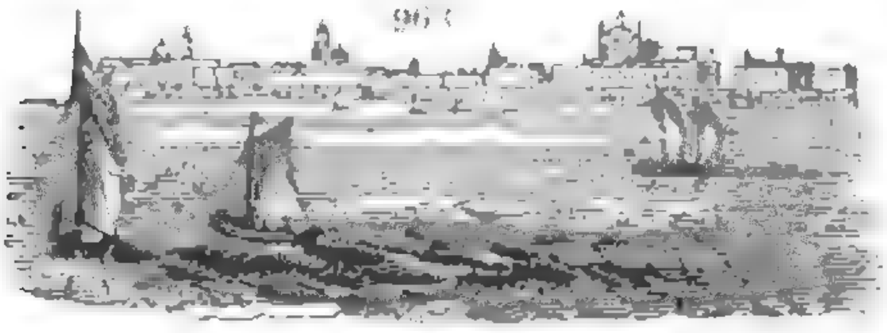

VERA CRUZ.

5892. *Vera Cruz* (*fig.* 968.), *in which centres almost all the trade of Mexico*, is well and handsomely built of the submarine material called madrepore, which is also made into lime; and its red and white cupolas, towers, and battlements have a splendid effect when seen from the water. The streets also are kept extremely neat and clean; yet Mr. Bullock considers it the most disagreeable of all places of residence. This arises not merely from the pestilence which taints the air; the surrounding country is covered with sand blown into hillocks, which, reflecting the rays of the sun, render the heat more oppressive. There is not a garden or a mill now within many miles of it; and the only water which can be drunk is that which falls from the clouds. The markets are bad for every article except fish, of which many beautiful species are here caught. The place appears to have sensibly declined since the dissolution of the ties which connected Mexico with the mother country. Humboldt reckons a population of 16,000; but Bullock, though he admits it might hold even more, does not estimate the actual number at more than 7000. The castle of San Juan de Ulloa, the last hold of Spain in the New World, and which commands the entrance of the port, is of immense strength, though it seems impossible to believe that 8,000,000*l.* sterling could have been expended upon the structure.

5893. *The only other important place is Xalapa*, a very handsome town, commodiously situated, being 4000 feet above the sea. The neighbouring country is finely wooded, and particularly remarkable for the medical article jalap, which received its name from the city. This intendency contains also two stupendous mountains, Orizaba, the second in Mexico as to height, and that called the Cofre de Perote, which is still more than 1000 feet higher than the Peak of Teneriffe.

5894. *Valladolid* is an extensive intendency, situated to the north and west of that of Mexico, on the summit and western declivity of the table-land. It includes the ancient kingdom of Mechoacan, as it is still called in the country, which was independent of Montezuma, and of which the capital, Tzintzoutzlan, still exists, though reduced to little more than a village. Mechoacan, unless in the unhealthy tract along the coast, enjoys a fine and temperate climate, is intersected with hills and charming valleys, and presents the appearance, unusual in the torrid zone, of extensive and well-watered meadows. This territory has been marked by some phenomena of the most striking nature. On the 29th of September, 1759, from the centre of a thousand small burning cones, was thrown up the volcano of Jorullo (*fig.* 969.), a mountain of scoriæ and ashes, 1700 feet high. In an extensive plain, covered with the most beautiful vegetation, deep subterraneous noises, accompanied by frequent earthquakes, continued for the space of fifty or sixty days. On the night of the 28th of September, the sounds recommenced with such fury, that all the inhabitants fled from the district. A large tract of ground was seen to rise up and swell like an inflated bladder, and spectators reported that, throughout this space, flames were seen to issue forth, and fragments of burning rocks were thrown up to prodigious heights; and that, through a thick cloud of ashes illumined by the volcanic fire, the softened surface of the earth appeared to heave like an agitated sea. The plain is still covered with numerous small cones, sending forth from their crevices a vapour, the heat of which often rises to 95°. From among these rise six large hills, of which the highest is Jorullo, still burning, and throwing up immense quantities of scorified and basaltic lava. The only large town in the intendency is Valladolid, delightfully situated, 6300 feet above the sea, where snow sometimes falls. There are several mines, but none of first-rate magnitude.

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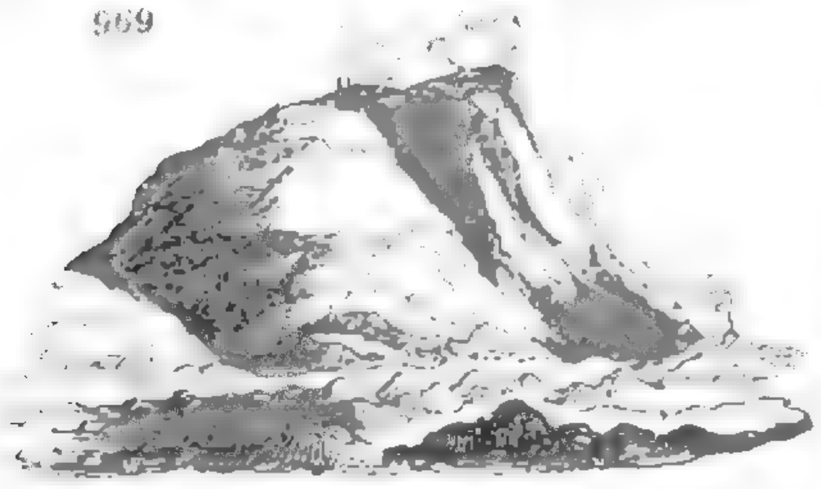

VOLCANO AT JORULLO.

5895. *Guanaxuato*, also part of the ancient Mechoacan, is the smallest but most populous of all the intendencies. It owes its fame to the great mine of Valenciana, discovered late in the last century, round which rose one of the most splendid cities in the New World. Between 1766 and 1803, this mine yielded silver to the amount of 165,000,000 piastres. Since that time it has suffered a severe deterioration from the effects of the revolutionary contest, and has declined also in consequence of the greater depth of the workings, and the increased difficulty of clearing off the water. The population, which, by Humboldt, was estimated at 41,000 within the city, and 29,600 in the surrounding mines, was not found, in 1822, to exceed in all 35,000. Zelaya is another considerable and well-built town in this district.

5896. *Guadalaxara* is an extensive intendency, which has the important advantage of being traversed throughout its extent by the river of Santiago, the largest in Mexico. It appears that within the last thirty years very important advantage has been taken of this circumstance; that industry has made rapid progress, and an active commercial spirit prevails. The capital, which, in 1798, Humboldt estimated to contain 19,500, had risen in 1809, according to Mr. Jacob's report, in the *Encyclopædia Britannica*, to 40,000; and at present Poinsett assigns to it 70,000. Tepic, which Humboldt calls a small place, was found by Captain Hall to be considerable and flourishing. San Blas, its sea-port town, is perched on the top of a cliff, near the mouth of the river, and has a very fine harbour; but during a certain season of the year, it is extremely unhealthy, though not in so deadly a degree as Vera Cruz; and at that time the rain falls in such torrents that no roof can exclude it, and it is impossible without danger to go out into the streets. At the commencement of this season, therefore, a general migration takes place; and the population is reduced in a few days from 3000 to 150, at which it remains stationary until the return of the dry season. The mountain of Colima, in this intendency, 9000 feet high, throws out ashes and smoke, and forms the western extremity of the volcanic chain which traverses Mexico.

5897. *Zacalecas*, north and east of Guadalaxara, in the inland centre of Mexico, is an arid rocky plain, strongly impregnated with carbonate of soda, and suffering under the inclemency of the climate. It derives its wealth and distinction solely from mines, of which the most important in Mexico, next to that of Guanaxuato, are here situated. The mine of Pavellon, in Sombrerete, has already been mentioned as having yielded in a given time a greater produce than any other mine known to exist. Zacatecas, the capital, is reckoned by Humboldt to contain 33,000 inhabitants.

5898. *Oaxaca*, for we must return southwards, in order to complete the picture of the central provinces of Mexico, is a fine intendency, situated near the borders of Guatemala. The beauty and salubrity of the climate, the fertility of the soil, and the richness and variety of its productions, render it one of the most delightful countries in the world. These advantages were appreciated at an early period, when it became the seat of an advanced civilisation; and two ancient kingdoms, Misteca and Tzapoteca, were established. Their ancient greatness is attested by monuments, not of such astonishing magnitude as those of the Aztec empire, but superior in elegance and skill. The palace, or rather the royal tombs, of Mitla (*fig.* 970.), are decorated with ornaments similar to those which are admired in the Etruscan vases. Paintings also, representing warlike trophies and sacrifices, have been found in the ruins. Oaxaca has no mines of any importance, and has, therefore, attracted less attention than the more northern parts of the table-land, though in every other respect inferior to it. Oaxaca the capital, called Antequera at the time of the conquest, is a flourishing place; in 1792 it had 24,000 inhabitants, but it suffered severely during the revolution. Tehuantepec, its only port, is not a good one; but it is of considerable value as a channel by which the indigo of Guatemala is conveyed to Europe.

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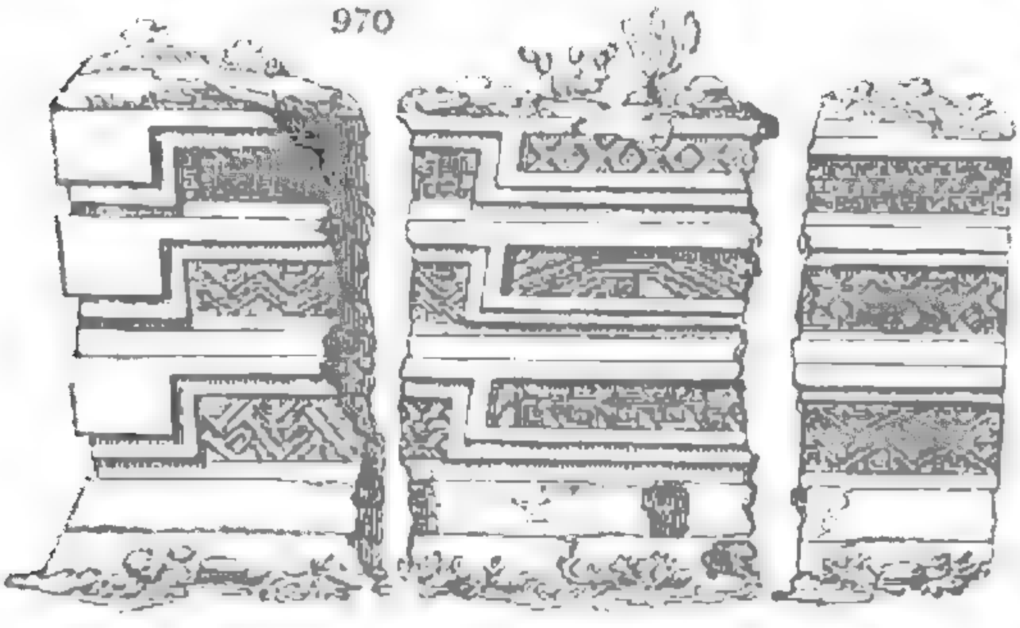


THE ROYAL TOMBS OF MITLA.

5899. *The intendency of Merida* is much better known under the appellation of the peninsula of Yucatan, of which it consists, and which with Oaxaca forms the southern and eastern extremity of Mexico. It is a vast plain, only intersected by a chain of mountains, which do not rise above 4000 feet. It is thus excessively hot; yet, from its extreme dryness, it is by no means so unhealthy as most of the low lands under this burning zone. The heat is too great for the ripening of European grain, and the only articles which it yields for subsistence are maize and roots. This was the first part of Mexico in which the

Spaniards landed, and, though it be less improved than the interior, they found, to their surprise, indications that civilisation was in a more advanced state here than in the islands: stone houses, pyramidal temples, enclosed fields, and a clothed and civilised people. Having no mines, however, it owes its commercial importance solely to its valuable product, logwood, which the English, excluded from almost every other part of Spanish America, were allowed, by treaty, to cut in the bays of Campeachy and Honduras.

5900. *Chiapa*, under which we may include Vera Paz, formed the most northerly district of Guatemala; but the greater part of it, on a late occasion, separated itself from Guatemala, and united with Mexico. The soil is fertile, and capable of yielding in profusion tropical fruits and grain. Though low, yet it is free from damp, and not unhealthy. It seems difficult, therefore, to understand how this country, which the Spaniards found populous and flourishing, should have since been converted almost into a desert. Although the cocoa of Soconusco and its neighbouring district of Suchiltepec be accounted the best in the world, that favourite Spanish beverage is not raised in quantity sufficient to become of commercial importance. Chiapa of the Spaniards, called also Ciudad Real, though ranking as the capital, is now only a small place of 4000 inhabitants. Chiapa of the Indians is larger, and carries on a considerable trade. There are several other large villages, chiefly Indian. Near Palenque, the most northern of these, Don Antonio del Rio lately traced the remains of a great ancient city. Fourteen large buildings, called by the natives the Stone Houses, remain nearly entire; and for three or four leagues either way the fragments of the other fallen buildings are seen extending along the mountain. They are of a rude and massive construction, well calculated for durability; and the principal apartments are adorned with numerous figures in relief, representing human beings of strange form, and variously habited and adorned.

5901. *The northern intendencies* of Durango and Sonora form, as it were, the transition from the fertile and cultivated tracts to the rude outer districts of Mexico. The great tableland slopes gradually downward, the capital of Durango being not more than 4000 feet above the sea. These two intendencies, the first of which is better known under the name of New Biscay, are as extensive as Great Britain and France put together; yet their population does not exceed 280,000. There are some valuable mines in the southern border; but in general the Spaniards exist only in scattered settlements over a vast extent of country. They have to contend with a tribe of ferocious Indians, called the Cumanikes, who have tamed the wild horses of the country, and ride them with the utmost agility; while, like the Kamtschadales, they employ dogs as beasts of burden. They scour the country, destroy the villages, kill all the adult prisoners, and preserve the children for slaves. The spirit of vengeance and inveterate hatred generated during this long struggle has placed nearly an insurmountable barrier between the Indians and the whites, which almost totally precludes the hope of improving these savage hordes. Meantime the people of New Biscay, procuring their subsistence by hard labour, and constantly on the alert to defend themselves against these formidable inroads, have exhibited an extraordinary developement both of physical and intellectual energy; and it has even been remarked that they are the best scholars. The towns are larger than might be expected, owing to the necessity of union for mutual defence. There are a considerable number, whose population varies from 5000 to 12,000.

5902. *San Luis de Potosi* is an extensive intendency, stretching north and east along the Gulf of Mexico, and better known by the names of its provinces, Leon, New Santander, Cohahuila, and Texas. In the districts adjoining to Zacatecas are the rich mines of Catorce and several others. But the greater part of the region is uncultivated, marshy, indented by deep lagoons, in which, however, no good harbour has yet been discovered. We have already mentioned the scheme formed by the United States to adopt the boundary of the Rio del Norte, which would sever from Mexico the greater part of this intendency. At present, however, the nearest settlements on each side are separated by 200 miles of marsh and desert; and before the time comes when a public coach shall run between Washington and Mexico, some amicable adjustment will doubtless be effected.

5903. *New Mexico*, which has been dignified with the title of empire, is only an infant settlement, formed on the Rio del Norte, in a fertile territory, but having a climate remarkably cold, considering the latitude. It is separated from New Biscay by a vast, arid, and perilous desert. The settlers have a still harder conflict to maintain with the Indians, a few of whom, however, have attained a certain degree of civilisation. A great number of sheep are reared, of which about 30,000 are sent to the southward; and there are some mines of valuable copper. Santa Fé, the capital, is supposed by Humboldt to contain 3500 inhabitants.

5904. *California* is a long peninsula in the Pacific, parallel to the continent, from which it is separated by its deep gulf. The Spaniards long viewed it as an El Dorado, or country of wealth, their hopes being fed by some pearls found on its shores; but a close examination has dispelled those visions. California enjoys the most beautiful sky in the world; constantly serene, blue, and cloudless; or if any clouds for a moment appear, they display the most brilliant tints. But the soil is sandy and arid like the shores of Provence, and only a few favoured spots present a trace of vegetation. Nowhere can be found a finer abode for the astronomer, or a worse for the cultivator. There are about 7000 or 8000 Spaniards and converted Indians, and 4000 savages; and it is not supposed that the population can ever be very much greater.

5905. *New California* is the name given by the Spaniards to a range of settlements formed by them on the western coast, extending northward from Old California. It is one of the most favoured spots on the globe as to soil and climate. All the varieties of grain and fruit peculiar to the best European regions grow in the highest perfection; the vine and the olive have been more successfully reared than in any other part of the New World. The establishments are chiefly formed by missionaries, who have succeeded in inducing a great number of the Indians to quit their wandering life, and apply themselves to cultivation. According to Captain Beechey, there are twenty-one establishments, containing about 7000 converts. They are kindly treated, well clothed and fed; but they are prevented from leaving the settlement, and the surplus of their labour belongs to the missionaries. The produce consists of hides and tallow, which are purchased by the merchants of the small port of Monterey.

Chap. VI.

GUATEMALA.

5906. *Guatemala*, or *Guatimala*, notwithstanding its small comparative extent, has been recognised as one of the new states into which the western world is to be divided. It has even, in virtue of its position, assumed the pompous title of *Central America;* but this the world does not seem to have yet conceded.

Sect. I. *General Outline and Aspect.*

5907. *Guatemala* is bounded on the south-east by the province of Veragua, now belonging to the republic of Colombia, on the north and north-east by the provinces of Chiapa, Tabasco, Yucatan, and the Atlantic, or the Sea of the Antilles, and on the south and south west by the Pacific Ocean. It forms a sort of extended isthmus, reaching from north-west to south-east, between 8° and 17° N. lat., and 8° and 96° W. long. Measured by an oblique line from one extremity to the other, it may be 1050 miles in length; but the breadth, from sea to sea, nowhere exceeds 500, and in some places is only 100 miles. The surface has been estimated at 200,500 square miles, which, though it appears small when compared with the immensity of other American states, is nearly double the whole extent of the British Islands.

5908. *The surface of Guatemala* does not display that lofty and rugged character which generally marks the American continent. The chain of the Andes, which raises such a tremendous snowy barrier through the greater part of the continent, sinks in the isthmus of Panamá into a mere rocky dike, connecting North and South America. Near Nicaragua, it seems to become little more than an insensible ridge, sloping down to the shores of the opposite oceans. Proceeding north-west, it soon rises and presents to the Pacific a lofty range, in which Humboldt and Arago have counted twenty-one volcanoes, partly burning and partly extinct. The loftiest, called the volcano of Guatemala, being covered with snow for several months in the year, cannot be much less than 10,000 feet high. Hence Guatemala, though it does not present a continuous table-land, like Mexico, has high mountain valleys, enjoying a cool and agreeable air, and producing the grain and the fruits of the temperate zone. The eastern part, swelling somewhat into the form of a peninsula, and known by the name of Poyais, and the Mosquito shore, consists of a vast and savage forest, beat by the burning rays of the sun, and occupied by rude and unsubdued Indians.

5909. *The waters which descend from the Andes* of Guatemala fall into one or other of the opposite oceans, and do not swell into rivers of any importance; but there is one grand aqueous feature, the Lake of Nicaragua, 150 miles in length, and 60 in breadth, and having almost throughout a depth of ten fathoms. Numerous streams, flowing from different quarters, form this great body of water, which has only one outlet in the river San Juan, which flows from it into the Atlantic. The surface of the lake is diversified and adorned with small islands, in one of which is a volcanic mountain. It communicates by a navigable channel, of 26 miles, with a smaller lake, called the Lake of Leon, which may almost be considered as a branch of it, and is 80 miles long, by 30 broad.

Sect. II. *Natural Geography.*

5910. *There is nothing* known, under this head, by which Guatemala can be distinguished from the bordering countries of Mexico and Colombia.

Sect. III. *Historical and Political Geography.*

5911. *The history of Guatemala*, and the country itself, were less known than any other part of America, till recent events brought them into notice. Yet its records appear, in many respects, worthy of enquiry. The ancient Guatemalans evidently possessed a civilisation derived from and rivalling that of Mexico. The palace of Quiche is said to be comparable in magnificence to that of Mitla. In the depth of forests have been found ancient cities, containing monuments similar in grandeur and ornament to the *teocallis* of Mexico, and on whose walls are found figures and other representations well executed in bas-relief. The Toltecs, who preceded the Aztecs, as rulers who civilised Mexico, appear to have been driven southwards, and to have settled in Guatemala. The resistance to Alvarado, sent in 1523 by Cortez to conquer this country, was vigorous, and even such as to render the issue somewhat doubtful. After the conquest, Guatemala was erected into an audiencia, with only a slight dependence on the viceroy of Mexico; but as it did not, permanently at least, yield gold and silver, and its produce was chiefly sent by the way of Vera Cruz, it was very little heard of in Europe, till the general crash of the Spanish power. Guatemala then suddenly erected herself into an independent state; and Mexico, which at first made great efforts to retain her as a province, finding her determination immutable, very wisely, and with a tolerably good grace, yielded the point.

Sect. IV. *Productive Industry.*

5912. *The productive qualities of Guatemala* are, if possible, superior even to those of other countries in the fruitful climates of America. Like Mexico, it yields in different regions, and at small distances from each other, all the varieties of fruit and grain peculiar to the tropical and temperate zones. Of fruits, several of the most valuable are produced in the highest perfection. The indigo, which forms so large a part of the commerce of Mexico, is almost entirely Guatemalan. The cocoa of Soconusco is said to be the very finest in the world, though it is cultivated on too small a scale to enter much into the market of Europe. Vanilla, however, the other ingredient of chocolate, is procured to a great extent from this quarter. There are manufactures of cotton and porcelain, some of them fine, but only for internal consumption; and the fabrics in wrought gold and silver are said to possess great merit. As to commerce, Guatemala labours under the disadvantage of not having on either ocean a port capable of receiving large ships; and its commodities have to bear a heavy land-carriage, and a coasting voyage, before they arrive at Vera Cruz.

5913. Guatemala abounds in *mines*, particularly of silver; some of which have been undertaken by an English company, in the expectation of their proving productive; but the result is yet uncertain. In Quesaltenango is found very fine sulphur, of which the Spaniards availed themselves to renew their supplies of gunpowder at the time of the conquest.

5914. *Canals* are naturally an undertaking beyond the infant resources of Guatemala; but one is in contemplation which, if executed, will be the greatest and most important work of this kind on the globe. This is a canal to connect the Atlantic and Pacific, so as to enable European vessels to reach China and parts of India by an easier and more direct course. The isthmuses of Panamá and Darien, from their very small breadth, naturally claim the first attention; but they have never been surveyed with any care: it is certain that a considerable ridge traverses them, and the supply of water is doubtful. The isthmus of Tehuantepec, and the interval between the rivers Atrato and San Juan, in Chocó, appear to be level; but the distance is too great to admit of more than a canal of small navigation, which would, doubtless, have its use. But the grand oceanic canal, which would cause a revolution in the commercial world, will, probably, be undertaken from the Lake of Nicaragua, navigable for the largest vessels, which communicates with the Atlantic by the broad channel of the San Juan, and is separated from the Pacific by an interval of from sixteen to twenty miles in breadth, through which it seems certain that a good level could be found. To execute, therefore, a canal of the dimensions of the Caledonian, is, even at present, completely within the reach of human skill and resources. It is an undertaking, indeed, which does not belong to the government within whose limits it is placed; and, though the capitalists of Europe would find no difficulty in providing the funds, the political atmosphere of the West is scarcely yet so settled, that they might look forward with full confidence to compensation for the large advances which would be necessary.

Sect. V. *Civil and Social State.*

5915. *The population* cannot be considered as well ascertained. An official census, in 1778, gave 797,000; but this has been shown by Juarros to have been very incomplete. Humboldt, during his stay in Mexico, saw official documents which carried it to 1,200,000; and Torrente and other writers well acquainted with the country are of opinion that it does not fall short of 2,000,000. Humboldt considers at present that he may safely adopt 1,600,000 as nearly the real amount.

5916. *The character of the Guatemalans* does not probably differ materially from that of the other Spanish Americans, though it is praised by Juarros as presenting a favourable specimen; and, perhaps, their obscurity may have shielded them from much of the degrading oppression felt in other quarters. He represents them as docile, humane, courteous, liberal, affable to strangers, and only liable to the charges of pusillanimity and indolence. A considerable patriotic spirit was shown by the institution, in 1795, of a society of Friends of the Kingdom, with the view of promoting agriculture and the arts; but, after having carried on operations with great spirit for five years, they were suppressed in 1800 by an arbitrary mandate of the government. An university was established in 1788, whose pretensions were at first confined to scholastic learning; but mathematics and experimental philosophy have since been introduced. Sculpture is said to be carried to greater excellence in Guatemala than in any other part of the New World.

Sect. VI. *Local Geography.*

5917. *The Spaniards divided Guatemala* first into thirty-two and then into fifteen sections, which they named variously, intendencies, alcaldias, and corregimientos. Torrente enumerates the following provinces: Sonsonate, Soconusco, San Salvador, Solota, Costa Rica, Vera Paz, Honduras, San Leon de Nicaragua, and Quesaltenango. Humboldt's distribution into bishoprics seems, however, sufficiently minute for the interest yet attached to the local details of this territory. These are, Guatemala, Nicaragua, and Honduras.

5918. *Guatemala Proper* is the central province, comprising the great chain of volcanic mountains, and the slope downwards from them to the sea. It is here that the great variety of climate and productions appears, and that the latter are in the highest perfection. What is strictly called the valley of Guatemala consists properly of nine valleys, of varying elevation, enclosed within the great circuit of volcanic mountains. In the centre of this range of valleys, at an elevation not precisely known, stands the old city of Santiago de Guatemala. It was erected first in 1527, at the foot of an enormous mountain, called the Volcano of Water, and which too soon justified that title; for, a few years afterwards, an aqueous eruption burst forth, of the most formidable character, which overwhelmed the whole city, and buried in its ruins a great part of the inhabitants. Appalled by this disaster, the Spaniards removed the city to another situation in a beautiful and finely watered valley, which yielded in profusion all the necessaries and luxuries of life. A very magnificent city, also called Santiago de Guatemala, was here erected, with 38 ecclesiastical structures, of which the cathedral was a sumptuous edifice, richly decorated, and more than 300 feet long. Of the nunneries, that of La Concepcion is said to have been inhabited by 1000 persons. But the site, with all its felicities, had terrible defects. It was liable to dreadful shocks of earthquake and volcanic eruptions, which rendered the existence of its inhabitants constantly insecure and their fate often tragical. Juarros has devoted a portion of his work expressly to a record of the miseries of old Guatemala. In the above succession of calamities severe attacks of pestilence were interspersed. At length, in 1775, the series was consummated by a truly appalling earthquake, the shocks of which, continuing at intervals from June to December, reduced the city nearly to a heap of ruins. The Spanish government, on being advertised of this disaster, sent out instructions to remove to another site; but this, perhaps well-meant, order, being executed in an abrupt and despotic manner, only aggravated at first the miseries of the unfortunate city. New Guatemala was built in the valley of Mixco, in a situation not so fertile and beautiful, but extremely healthy, and exempt from the dreadful calamities of which the old city had been the victim. It was reared in the usual regular manner and with numerous squares; the houses are neat, though low, to mitigate the danger of earthquake; the churches and other public edifices on a smaller scale, but of very elegant design. The citizens, supposed to amount to 30,000, ply, with very considerable diligence, the trades of weaving, pottery, working in silver, and embroidery, its chief articles of trade are indigo and cocoa. Old Guatemala likewise has risen from its ashes, and a great proportion of its exiles have gradually found their way back to their former abode. Having attained a population of 8000, it was reinvested, not with the privileges of a city, but those of a town.

5919. *Other fine tracts and important cities* are also found in the valleys of Guatemala. Santa Cruz del Quiche represents the once great Ulatlan, capital of the Indian kingdom subverted by Alvarado. Its palace, in magnitude and splendour, appears to have been little inferior to those of Cuzco and Mexico. It contained accommodation not only for the king himself, but for all the princes of the blood-royal and a numerous body guard. As it appears to be in better preservation than any other of the imperial seats of native America, a diligent examination would probably lead to important discoveries. San Salvador, to the south, is the capital of an intendency which contains above 200,000 people, and forms a very rich tract, yielding most of the indigo which is the staple of the kingdom. The capital, in a fine valley, contained, in 1778, a population of 12,000, chiefly employed in the indigo trade. A variety of volcanic movements desolate this province, while they present curious phenomena to the view of the observer. Farther to the south, and still in this central region, are other fertile districts, provided the reader can pronounce their names: Quesaltenango, Totonicapan, and Gueguetenango. These districts are chiefly inhabited by Indians, who are civilised, and carry on several curious and ingenious manufactures.

5920. *Nicaragua* forms the most southern of the three bishoprics. The mighty range of volcanic Andes, which have given so decided a character to central Guatemala, here terminates, and the whole chain is in a manner suspended. The territory is low and moist, rich in all the tropical fruits, but in none which belong to the temperate climes. It has, however, vast savannahs covered with numerous herds of cattle, which are sent even to the market of the capital. But the most prominent object in this province is the lake, and the chief interest excited by it is the projected oceanic canal; both of which have been already mentioned. San Leon de Nicaragua is a place of 7000 or 8000 inhabitants, of whom about 1000 are Spaniards, with a college, which in 1812 was allowed by the Cortes to be converted into an university. The town itself, which, like the lake, is called Grande, is not very large, but occupies an advantageous position on the north western shore. Mazaya, a village of 6000 inhabitants, almost entirely Indian, is said to be the most trading place in the province, though inconveniently situated at the bottom of a deep rocky dell, almost destitute of water.

5921. *Costa Rica*, a district or province attached to Nicaragua, seems named ironically, being in a state of extreme and deplorable poverty. It has, however, mines of gold and silver, which Alçedo pretends to have been once as productive as those of Potosi; but such a state of things, which seems at any time fabulous, has now, at all events, wholly ceased. Yet the "rich coast" is very capable of yielding the common tropical products; but the inroads of the Buccaneers caused a desertion, from which it has never recovered. Cartago, however, in the heart of the province, has a population of 8000 persons, of whom 600 are, or were, Spaniards; while San José, at a little distance, has a number nearly equal, with a greater proportion of Spaniards.

5922. *The eastern part of the state* consists of the province of Comayagua, better known under the name of Honduras, from the peninsula which separates it from Yucatan. The whole coast is flat, marshy, hot, and extremely unhealthy, though some parts of the interior rise into hilly and temperate tracts. This region is covered with thick forests containing the valuable trees of mahogany and logwood, in regard to which the English have carefully stipulated for a right to settle on the Honduras coast. They are established on the river Balize, navigable for boats 200 miles up the country. The settlement consists of 250 whites; 2266 free coloured; and 2127 slaves. The official value of the imports into Britain, in 1829, was 190,795*l.* The mahogany trees are very thinly scattered, and are cut down by gangs of negroes, preceded by what is called the finder, who mounts the tops of the highest trees, and spies out where a mahogany tree is to be found. The chief expense is in the conveyance to the coast. Turtle is found in abundance along this shore. Gold and silver mines are said to exist here, but none have ever been worked, or even found. The coast of Poyais, into which a body of our countrymen were so fatally seduced, partakes of the general character, but seems still more dreary and uninviting. Comayagua, called also Valladolid, is agreeably situated in the interior; but, though the nominal capital, it has never attained any great importance. Truxillo, and Cape Gracias, on the coast, are more conspicuous places, but now also much decayed.

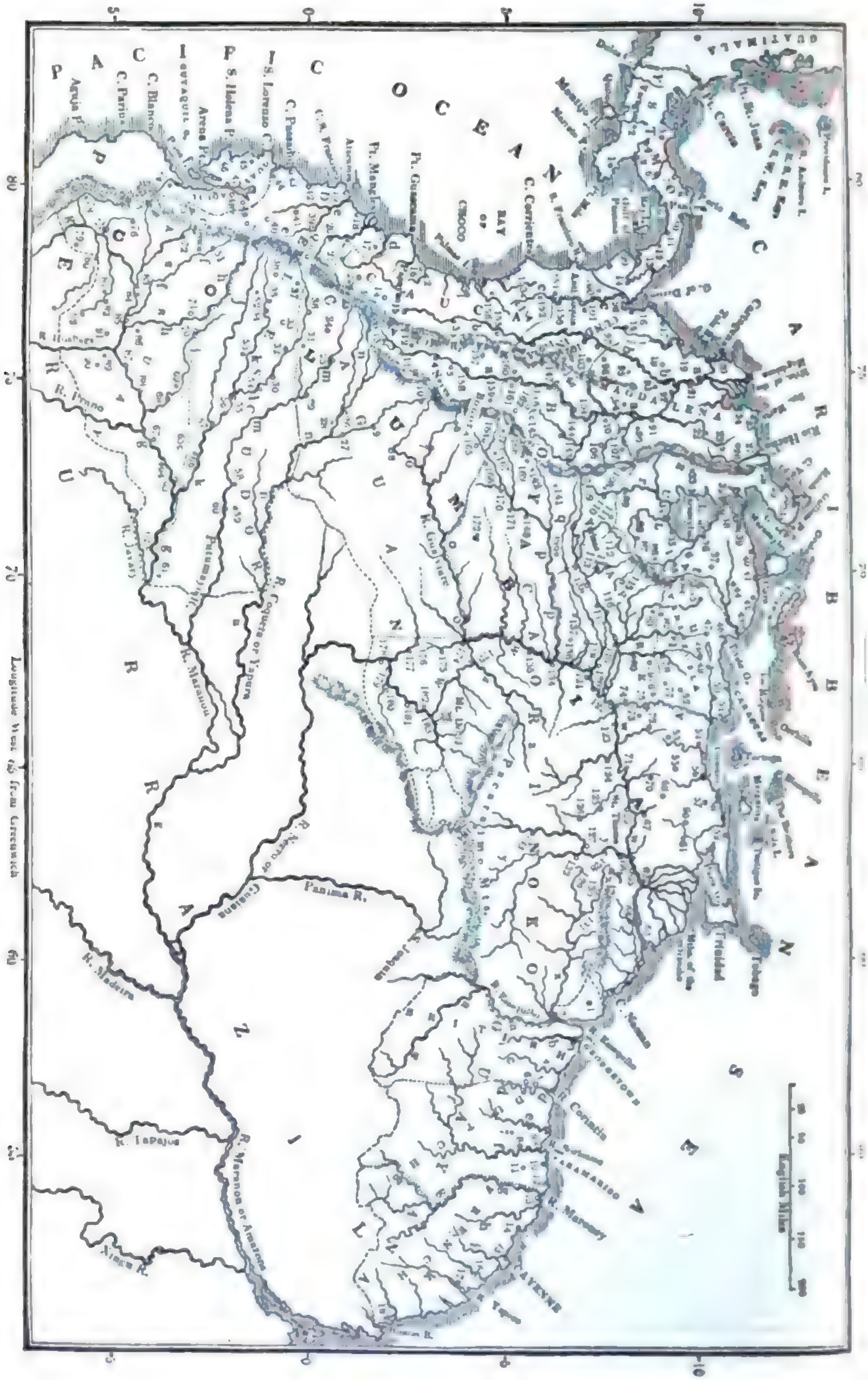
Chap. VII.

COLOMBIA.

5923. *Colombia* is the name now given to the extensive territory of an independent state or states, which took the lead among the newly formed republics in what was formerly Spanish America. Recent changes are understood to have subdivided it into three portions, which have assumed the appellations of New Granada, Venezuela, and the Equator; but the bearings of this division are too ill ascertained, and even its permanency too uncertain, to admit of its superseding the general appellation of Colombia.

Sect. I. *General Outline and Aspect.*

5924. *Colombia, in its general outline,* occupies nearly the whole north and north-western part of South America, and comprehends the two governments included by the Spaniards under the names of the viceroyalty of New Granada, and the captaincy-general of the Caraccas. It is bounded on the north by the great gulf of the Atlantic, which is enclosed between its shore and the long chain of the West India islands, commonly called the Caribbean Sea. On this side also a narrow land boundary connects it with Guatemala. On the west it stretches along the boundless expanse of the Pacific. Southward it borders on Peru, separated from it by the Guayaquil and the river of the Amazons. Its interior limits are difficult to fix, being formed by vague lines drawn through immense deserts. For a considerable space, its claims at least extend to the Amazons; yet we know not if Colombia has formed any actual settlement on that mighty stream, which can only be approached by rugged and entangled tracks, such as the most daring traveller alone ventures to tread. Proceeding westward, it encounters the territory which, under the appellation of *Guiana*, or *Guyana*, is claimed by the Portuguese, the French, the English, and the Dutch. These

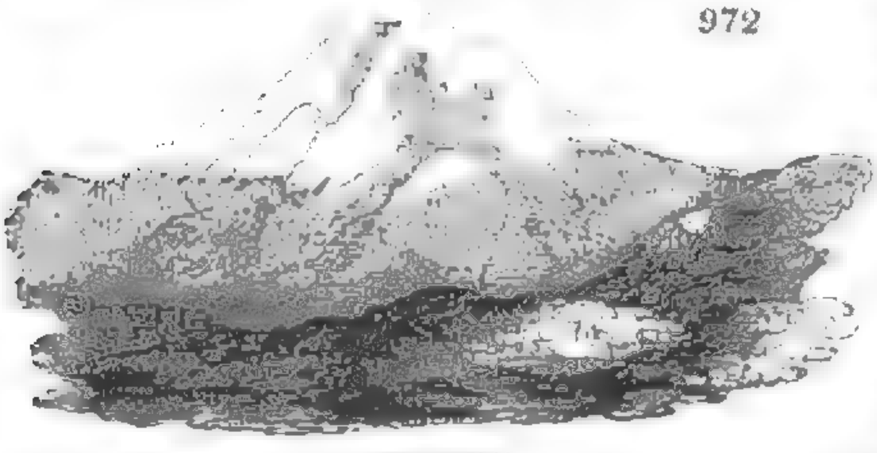

PACIFIC OCEAN
CARIBBEAN SEA
BAY OF CHOCO
C. Corrientes
S. Helena P.
C. Blanco
C. Parina
R. Madeira
R. Tapajos
Xingu R.
R. Marannon or Amazons
Panima R.
R. Negro or Guainia
R. Coqueta or Yapura
R. Putumayo
R. Javary
R. Maranon
R. Purus
R. Guaviare
Trinidad
Tobago
Mouths of the Orinoco
C. Nassau
R. Maroni
English Miles
Longitude West 65 from Greenwich

nations, in fact, have formed settlements on the coast; and ideal lines have been drawn through the interior, to separate their portions from each other and from that of Colombia. For this last, the extreme boundary of solid and practical settlement appears formed by the Orinoco in its course from west to east. All the rest, under the name of Guiana, is merely an indefinite expanse of river and forest, of which the native Caribs remain in almost undisturbed possession.

5925. *This huge mass of territory* forms a species of broad irregular oval, reaching from 12° 25′ N. lat. to 6° 15′ S. lat., being 18° east and west; from 58° to 81° 30′ W. long., making 23½°. This will give dimensions in length of 1620 and in breadth of 1260 English miles. The entire content is calculated by Humboldt at 30,000 square leagues, or about 240,000 square miles.

5926. *The surface of Colombia*, its mountains and plains, are of the most varied character, and on the most majestic scale, presenting forms and phenomena the most grand and awful that are to be found on the globe. The summits of the Andes have ceased, indeed, to rank as the very loftiest on earth. The Himalayah, the mountain boundary of Hindostan, is not only higher, but presents, perhaps, a grander continuity of unbroken and gigantic steeps. But, ascending from the low country by a series of tabular plains and broad valleys, it presents at no single point any very astonishing elevation. It has nothing to resemble those solitary gigantic cones, which, in the Colombian cordillera, shoot up towards the sky, and even under the burning influence of the equator remain buried to a great depth in perpetual snow. Chimborazo (*fig.* 972.), the giant of the west, stands yet unscaled by mortal foot. Humboldt and his companions made extraordinary exertions to reach its summit, and arrived at about 2000 feet from that point, believed to be the greatest elevation ever attained by man. Here they planted their

972



CHIMBORAZO.

References to the Map of Colombia and Guiana.

NORTH PART.
1. Menabe
2. Veragua
3. Nata
4. S. Francis
5. La Concepcion
6. Pononome
7. Chagres
8. Porto Bello
9. Panamá
10. Mandingo Fort
11. Centinela
12. Chiman
13. New Edinburgh
14 Pargana
15. Guaragua
16. Caiman
17. Tortuga
18. Tecazoltuma
19. Tolu
20. Carthagena
21. Teneriffe
22. Los Reyes
23. Pulgar
24. Sienga
25. Santa Marta
26. Rincon
27. Rio Hacha
28. Calaboza
29. Tuncuraca
30. Honda
31. S. Anna
32. Maracaybo
33. Perija
34. S. Maria
35. Gibraltar
36. Porto Carera
37. Carora
38. Los Puertos
39. Casigua
40. Secarula
41. Coro
42. Bara
43. Tocuyo
44. Santa Lucia
45. Barquisimeto
46. Puerto Cabello
47. Valencia
48. Cura
49. Victoria
50. Caraccas
51. Yares
52. Chaguaramas
53. Del Negro
54. Purucy
55. Aragua
56. N. Barcelona
57. Cumanacoa
58. Cumana
59. Carupano
60. Amana
61. Maturin
62. Fort S. Rafael
63. Zacupana
64. Imataca
65. Old Guiana
66. Carony
67. S. Vincent
68. S. Joaquim
69. S. Thomé, or Angostura
70. Concepcion del Pao
71. S. Cruz
72. S. Fernando
73. Yguana
74. S. Salvador
75. S. Clara
76. Belen
77. Paraguay
78. Calaboza
79. S. Catalina
80. Banegas
81. S. Juan del Pao
82. S. Rafael
83. Araure
84. Tocayo
85. Truxillo
86. Belijos
87. Merida
88. Chiguara
89. S. Faustino
90. Porto de Ocana
91. Tamalameque
92. Mompox
93. Pigalcio
94. Limitio
95. Saragossa
96. Remedios
97. Espiritu Santo
98. S. Francisco
99. Garachine
100. Vigia de S. Josef
101. Muri
102. S. André
103. Cancan
104. S. Bartolomé
105. Yaridi
106. Giron
107. Ocana
108. El Rosario
109. Pampelana
110. S. Antonio
111. La Grita
112. Pedraza
113. Quintero
114. Varinas
115. Guanare
116. S. Antonio
117. Nurias
118. S. Francisco
119. S. Fernando
120. S. Rafael
121. La Concepcion
122. Cayacara
123. Alta Gracia
124. S. Francisco
125. Carolina
126. Tapia
127. Barcelonetta
128. Guri
129. Guayor
130. Taruara
131. Curi
132. S. Pedro
133. S. José
134. S. Borja
135. Atures
136. Mirabel
137. Corocoro
138. S. Vincent
139. Arauca
140. S. Rosalia
141. Lipa
142. Chire
143. Capitanejo
144. Socorro
145. Tunja
146. Muzo
147. Nare
148. Rio Negro
149. Arma
150. Antioquia
151. Bete Betel
152. Citera
153. Pato
154. Tambo Citera
155. Cartago
156. Nuanamo
157. Ibague
158. Purification
159. Bogotá
160. Mariquita
161. Honda
162. Tocas
163. Chimgaza
164. Xiramena
165. Marayal
166. S. Miguel
167. S. Barbara
168. Morocote
169. Pore
170. Buenavista
171. Guacasta
172. Huts of the Sigidaqueros
173. S. Barbara
174. S. Fernando
175. Balthasar
176. Maroa
177. Davipe
178. S. Carlos de Rio Negro
179. Solano
180. Mandavaca
181. Vasiva
182. Vasiva Nueva
183. Esmeralda
184. Guirior.

SOUTH PART.
1. Buenaventura
2. Zaragoza
3. Buga
4. Neyva
5. Mercadillo
6. S. Juan de los Llanos
7. El Rayo
8. Aramo
9. Caguancito
10. Caguan
11. Gigante
12. La Plata
13. Timana
14. Almaguer
15. Popayan
16. Trapiche
17. Barbacoas
18. Tola
19. Atacames
20. Mara
21. Ipicales
22. Pasto
23. Santiago
24. Socombios
25. Mamos
26. Setano
27. Aumea
28. S. Maria
29. La Concepcion
30. S. Luis de Gonzaga
31. Mira
32. S. Teresa
33. Ytaya
34. S. Rosa de Oas (ruins)
35. Napotoa
36. Aguarico
37. Mote
38. Archidona
39. Quito
40. Hambato
41. Machachi
42. Palmar
43. Canoa
44. Porto Viego
45. Xipijaba
46. S. Helena
47. Guayaquil
48. Iaquache
49. Nausa
50. Riobamba
51. Macas
52. Oas
53. S. Juan Nepomuce
54. Stanislao
55. S. Miguel
56. La Soledad
57. S. Xavier
58. Miranhas
59. S. Romano
60. Asuncion
61. Loreto
62. Camuxeiro
63. S. Fernando
64. Iquitos
65. S. Barbara
66. Oravia
67. S. Joaquim de Omaguas
68. Yameos
69. Urarinas
70. Chambia
71. Purches
72. Logrono (ruins)
73. Cuenca
74. Tumbes
75. Loxa
76. Valladolid
77. Jaen
78. S. Felipe
79. Quispi
80. Luyu
81. Yapa
82. Chirla
83. Santiago
84. S. Borja
85. La Baranca
86. Santander
87. Urarinas
88. S. Luis
89. La Laguna
90. Chimicuros
91. Xeberos
92. Alleros.

Rivers.
a Magdalena
b Cauca
c Atrato
d Patia
e Esmeraldas
f Maranna
g Maranon, or Amazons
h Pastaca
i Tigre, or Piguena
j Cururay
k Napo
l Ahuaricu
m Putumayo
n Coqueta, or Yapura
o Guaviare
p Meta
q Arauca
r Zulia
s Motatan
t Tocayo
u S. Juan
v Manapure
w Orinoco
x Cuyuni
y Carony
z Ventuari.

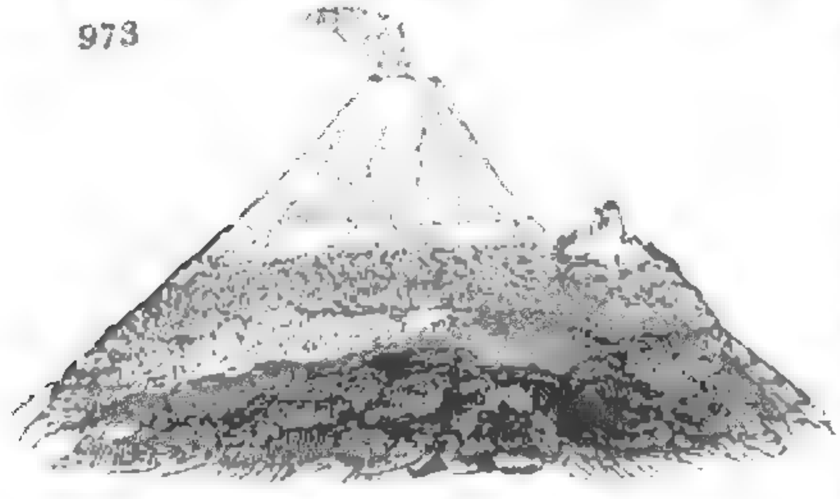
GUIANA.
1. New Mittelburg
2. Essequibo
3. Georgetown
4. Soburg del Oeste
5. Guarda
6. Mora
7. Guarda
8. Roma
9. Paramaribo
10. Capilla
11. Orania
12. Paragoios
13. Guarda Franceza
14. Tracuba
15. Cayenne
16. Mission Approque
17. S. Louis, or Oyapock
18. Macary.

Rivers.
a Essequibo
b Demerara
c Berbice
d Corentin
e Cupanama
f Surinam
g Marony
h Mana
i Gauyoa
j Approbeque
k Yapoco.

instruments on a narrow ledge of porphyritic rock, which projected from the vast field of unfathomed snow. A broad impassable chasm prevented their farther advance; besides which, they felt in the extreme all the usual inconveniences of such high situations. They were enveloped in thick fogs, and in an atmosphere of the most piercing cold; they breathed with difficulty, and blood burst from the eyes and lips. The form of the mountain, which is that of a truncated cone, appears every where sublime, but peculiarly so from the coast of the Pacific at nearly 200 miles distance, whence it resembles an enormous semitransparent dome defined by the deep azure of the sky; dim, yet too decided in outline to be mistaken for a cloud. The height was ascertained by Humboldt to be 21,440 feet. Antisana, though only 19,000 feet, is remarkable for having a village on its side at the height of 13,500 feet, once believed the highest inhabited spot on the globe. The French academicians, when they established themselves on the top of Pinchincha, at the height of 15,000 feet, experienced all the rigours of an arctic winter, which sometimes threw them, after the exertion of mounting, into a state of vertigo or insensibility. They were involved in almost constant fogs, and when these cleared, they beheld the clouds spreading a wide and smooth surface beneath them like that of the ocean, and heard the dreadful roarings of the tempest in the valley of Quito.

5927. *The most tremendous volcanoes in the world* are those which burst from this mountain range. Cotopaxi (*fig.* 973.) is the most formidable in the Andes, and, indeed, on the globe. This mountain is 18,898 feet high, consequently more elevated than Vesuvius would be if placed on the top of Teneriffe. It is the most beautiful of all these colossal summits, presenting the form of a regular and smooth cone, wrapped in a covering of the purest white, which shines in the rays of the sun with dazzling splendour, and detaches itself in the most picturesque manner from the azure vault of heaven. It is seldom that this volcano is wholly silent, and that at night smoke and flame are not seen rising from its summit, like a beacon flame in the regions above. In the course of the last century, it had five great eruptions, and one in 1803. As the inflamed matter ascends, the perpetual snows, which have covered the summit to an almost unfathomable depth, are melted, and rush down in destructive torrents, when its naked and embrowned head is displayed to the astonished inhabitants of the plain. Then, amid appalling sounds, louder than the loudest roar of artillery, the burning entrails of the earth rush up into the sky, rising often half a mile above the mountain head before they stream down upon the surrounding districts; mountain above mountain is then raised of pumice and lava. It has been averred that Cotopaxi was heard at the distance of 600 miles. Humboldt certainly states, that on the coast of the Pacific, at 140 miles distance, it sounded like thunder, or like the discharge of a continuous battery of cannon. From this and the other South American craters are ejected not only the usual volcanic substances, but torrents of boiling water and mud, often containing great quantities of dead fishes. Sometimes, after successive eruptions, the undermined walls of the mountain fall in, and become a mass of tremendous ruin. Such was the fate of El Attaï, which once reared its head above Chimborazo, and of another very lofty volcano, which, in 1698, fell with a similar crash.

973



COTOPAXI.

5928. *The general range of the Andes*, as it passes through Colombia, is divided in the north into *three parallel chains*, of which the eastern has between it and the middle chain the plain of Santa Fè de Bogotà, and some others, which constitute the most valuable part of New Granada. Farther south, these chains unite into two, of which the most elevated, comprising all the highest volcanic summits, is on the western side, facing the expanse of the Pacific. Between it and the parallel chain is interposed the table plain of Quito, about twenty miles in breadth, and of the most surpassing richness and beauty. To the east also the Andes throw out a chain, called by Humboldt the shore chain of Venezuela, which runs parallel to the sea along the coast of Caraccas, as far as Cumanà, leaving along the shore a plain rich in the most valuable tropical productions. The surface of all these mountain districts presents a very different aspect from that of the huge broad mass of the table-land of Mexico. Their elevated steep ridges are separated by deep narrow burning valleys, which descend almost to the level of the sea, and the only temperate lands consist of small plains, which hang as it were on their sides. There is thus a more rapid, and as it were precipitous descent from an arctic to a temperate, and then to an equatorial climate. A traveller may quit in the morning the frozen tracts near the mountain summits, and, passing through the pine forests, may successively traverse fields of oats, barley, and wheat, and may walk in the evening amid plantations of sugar-cane and banana. Yet the lower grounds along the rivers are close, swampy, and filled with myriads of tormenting insects; and it is not until he has ascended to almost a mountain height, and feels the breezes blowing from the regions of perpetual snow, that he finds an air which he can breathe, or even ground on which he can tread with safety.

5929. *The Llanos* form another extensive portion of the Colombian territory, commencing where the mountain ranges terminate, and reaching east and south to the Orinoco. They consist of immense flats, covered with magnificent forests and vast savannahs, in which the grass often grows above the human height, covering from view both man and horse. A great extent is inundated by the Orinoco and its large tributaries. The soil is fertile in the extreme; but the unhealthiness of the climate deters settlers who are not urged by extreme necessity.

5930. *Two other groups*, not belonging to the Andes, have been traced by Humboldt. These are, the Sierra de Santa Martha, 18,000 feet high, which mariners, seeing on that coast covered with perpetual snow, never hesitated to rank as part of the Cordillera; but it is now ascertained to be a single mighty group, entirely surrounded by plain. The other is the Sierra Parimé, to the east and south of the Orinoco, a widely extended heap of mountains, but not very lofty. Both by its elevation and its position on the continent, it assimilates rather to the system of the Alleghany and the mountains of Brazil than to that of the Cordilleras.

5931. *Among its rivers*, Colombia may rank several, the greatest both of the Old and the New World. She sets one foot, as it were, on the Marañon: but that river, being scarcely accessible, and the country near it occupied only by a few scattered missions from Peru, cannot be considered in any practical sense as Colombian. The same observation may almost apply to its great tributaries, the Napo, the Ica, and the Japura, which descend to it from the Andes of Quito. The secondary but still immense stream of the Orinoco rises in the southern part of the mountains of Parimé, and, winding round them, flows first west, then north, till it takes its final course eastward to the Atlantic. It enters that ocean by a delta of about fifty channels, and after a course of 1380 miles. In an early part of that course it forms a remarkable communication, by the Cassiquiare, with the Rio Negro, and through it with the Amazons, of which the Rio Negro is the largest northern tributary. From the boundless expanse of the Llanos, the Orinoco receives several mighty rivers that have had their sources in the Andes, — the Guaviare, the Meta, and the Apuré; the last of which, flowing through the plains of Venezuela, and drawing its waters from the coast chain, is alone very important in a commercial view. These shores may in future ages become the magnificent seats of empire, but at present they are overgrown with forests and thickets, peopled only by wandering Caribs, and presenting but a few scattered missions and settlements. The really useful streams are those of smaller dimensions, which, running like long canals between the mountain chains, bring down the products of those high valleys, at present the only cultivated part of Colombia. The Magdalena, the largest and most commodious of these streams, has a course of more than 500 miles between the eastern and middle chain of the Cordilleras, affording to the plain of Santa Fé a communication with the sea. The Cauca runs between the middle and western chain; and, after a course of nearly equal length, joins the Magdalena before it falls into the sea near Carthagena. The Atrato is a smaller stream, between the western chain and the Atlantic. The Magdalena is throughout navigable, though the voyage is rendered painful by the heat and the myriads of insects. The navigation of the Cauca is by no means so good. To the south, the still smaller rivers of Esmeraldas and of Guayaquil afford to the province of Quito an important means of communicating with the Pacific Ocean.

5932. *There are scarcely any lakes* of importance. We must except, however, that of Maracaybo, which, though it communicates with the sea, yet, unless in strong winds blowing from thence, preserves its waters fresh and unmixed. There are also dispersed throughout the territory various little collections of water on the declivities of hills, and others formed by the expansions of rivers.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5933. We have not met with any description illustrative of the *geognostical structure* and composition of this country: but it is well known that Colombia affords considerable quantities of gold, silver, platina, and other metals.

Subsect. 2. *Botany.*

5934. *Perhaps nothing* is so well calculated to convey a faithful general representation of an American intratropical vegetation as the following sketch, by the celebrated Humboldt, in his "*Tableau Physique des Régions Equinoxiales*, illustrated by a plate of the physical phenomena presented by those regions from the level of the sea to the highest summit of the Andes." We shall here consider the botanical part of it alone; and let us, with that eminent philosopher, suppose ourselves transported into the region where nature has delighted in combining the most majestic forms, grouped in the most striking manner; that country of the Palms and the scitamineous plants, which stretches from the level of the ocean to a height of 513 toises; the land of the Banana (*Musa*), the Heliconia, the Alpinia, and the most odoriferous liliaceous productions. In this burning climate grow the Theophrasta, the Plumiera, Mussænda, Cæsalpinia, Cecropia peltata, the Hymenæa, the Balsam Tree of Tolu, and the Cusparia or Quinine Tree of Carony. On the barren sea shore, beneath the shade of Cocoas, Laurus Persea, and Mimosa Inga, are found the Allionia, the Conocarpus, the Mangrove (*Rhizophora Mangle*), Convolvulus littoralis and brasiliensis, the Talinum Avicennia, Cactus Pereskia, and Sesuvium Portulacastrum.

5935. Some of the plants of this region possess striking peculiarities and remarkable exceptions to the general laws of vegetation. The South American Palms, like those of the Old World, are unable to endure the cold of the high mountains, and disappear at an elevation of 513 toises. One single Palm, from the Andes (*Ceroxylon andicola*) (*fig.* 974.), presents the extraordinary phenomena of growing equally at a height of from 954 to 1472 toises; its trunk, coated with a waxy substance, attains to a height of 54 mètres (about 160 feet). It has been stated that a Palm grows in the ravines of the Straits of Magellan, lat. 50° S. This is the more striking, as it is impossible to confound a palm tree with any other vegetable, except it be the arborescent Ferns, whose existence there would be equally remarkable. In Europe the Palmetto and Date are not found farther north than 43° 40′. The Scitamineæ, especially the species of Heliconia, cease at a height of 410 toises. Near the summit of the Silla de Caraccas (1103 toises) grew a scitamineous plant, from nine to twelve feet high in such abundance as to render a passage through it difficult: it appeared to Humboldt to be a new and hardier kind of Heliconia. Sesuvium Portulacastrum vegetates alike on the shores of Cumana and to the east of the city of Mexico, on a plain 1200 toises high, where the soil is impregnated with carbonate and muriate of soda. Indeed, the plants of salt marshes generally seem little affected by difference of temperature.

974

CEROXYLON ANDICOLA.

5936. *Above the region* of Palms and Scitamineæ is that of the Tree Ferns (*fig.* 975.) and Cinchonas. The latter possess a much wider range than the ferns, which prefer a temperate climate, and an elevation between 200 and 800 toises, while the Quinine Trees rise to 1487 toises above the level of the sea. The hardiest species are Cinchona lancifolia and C. cordifolia, the tenderest C. oblongifolia and longiflora. The famous Quinine Tree of Loxa, which is quite different from the orange Quinine of Santa Fé, grows from 975 to 1280 toises; it differs essentially from C. glandulifera, to which it bears most analogy, and has only been hitherto seen near Loxa, and in a small district of Peru. To distinguish it from all other species, and to do away the incorrect appellation of Cinchona officinalis, it has been called C. Condaminea. Caoutchouc is the product of several plants, that possess few analogous characters, of Ficus, a Hevea, a Lobelia, a Castilloa, and several Euphorbias. Camphor also exists in vegetables of different genera, being extracted in Asia from a Laurel, and in Peru from a didynamous shrub found by M. Haenke. The fruit of a Myrica and the trunk of a Palm equally yield wax: thus substances, possessing similar chemical properties are derived from highly dissimilar vegetables; and it is the same with the febrifuge principle of Cinchona, which resides in plants belonging to totally different genera.

975

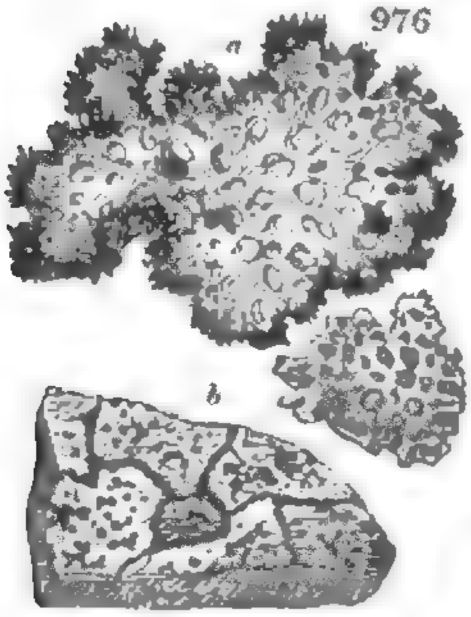
TREE FERN.

5937. The Cusparia of Carony, near Upatu, a magnificent tree, which yields the Angostura Bark, is not a Cinchona, though it be difficult even for a chemist to distinguish between the infusion of Cuspa and that of the orange Quinine from Santa Fé. Upon the sea coast west of Popayan grows a tree possessing the qualities both of Cinchona and Wintera, but differing from either of these genera. The Cusparia of Guiana, the Cuspa of New Andalusia, and the Cascarilla of Atacames, all vegetate at the level of the sea; and their juices contain a principle analogous to that afforded by the true Cinchonas at an elevation of 1436 toises.

5938. In the temperate region of the Cinchonas grow some Liliaceæ, as Sisyrinchium; the large blue-flowered Melastomæ, the arborescent Passion Flowers, as tall as our European Oaks; Bocconia frutescens, Fuchsias, and most beautiful Alstrœmerias. The Macrocnemum and Lysianthus grow majestically there, and the ground is clothed with Kölreuteria, and Weissia, and Dicranum, and other evergreen mosses, while the ravines shelter Gunneras, Oxalides, Dorstenias, and a multitude of unknown Arums. Porliera hygrometrica with Hypericum baccatum and cayanense grow higher up. Beyond 1120 toises, the sensitive Mimosas disappear under the influence of the increased cold; at 1330 to 1340 toises, Acæna, Dichondra, Nierembergia, Hydrocotyle, and Alchemilla form a thick turf. This is the region of the Weinmannias and Oaks, of Spermacoce and Vallea stipularis. The Mutisia climbs over the loftiest trees. The Oaks (*Quercus granatensis*) only commence in Equatorial Regions at an elevation of 872 toises; while in Mexico they are found as low as 410 toises. These are the plants which sometimes recall the idea of spring in these regions; they lose all their foliage, and the young verdure of the new leaves mingles most agreeably with the Epidendrums that grow upon their branches. The Cheirostemon, a new genus of Malvaceæ, with a most singularly shaped flower, grows also on the Andes of Peru. For a long time a single individual only was known, near the city of Toluca in Mexico; it seems to be wild in Guatemala; and this famous Hand Plant of Toluca has probably been equally planted by some Rointztequas, whose taste for cultivation, and whose admiration of the beauties of vegetation, are attested by the ruined gardens of Iztapalapan.

5939. *Near the Equator*, the larger trees are not found beyond 1385 toises; and above the level of the city of Quito they become small and of comparatively stunted growth. At 1796 toises, almost all arborescent vegetation ceases, though shrubs become more abundant: this is the region of the Berberries, the Durantas, and Barnardesias, whose presence marks the vegetation of Pasto and Quito, as that of Santa Fé is indicated by the Polymnia and Tree Thorn-apples. Castillejas, Embothrium, and Clusias are common in this region, with Calceolarias, whose golden yellow blossoms contrast agreeably with the verdure of the grass through which they sprout. Nature has assigned a zone to these plants, which commences at a northern degree of latitude. Higher up, towards the summit of the Cordillera, from 1436 to 1690 toises, is the region of Wintera and Escallonia. The cold and damp climate causes the trunks to become short and to divide into numerous branches, covered with coriaceous and glossy foliage. Some trees of the Orange Quinine and Embothrium are found thus high. The Alstonia, whose dried leaves form a wholesome tea, with a Wintera and Escallonia, form scattered groups, and at their feet grow small Lobelias, Basellas, and Swertia quadricornia. Still higher, at 1796 toises, the arborescent plants disappear; in a narrow valley on the volcano of Pichincha alone is there a group of arborescent Syngenesiæ, with stems 20 to 24 feet high. From 1026 to 2103 toises extends the range of alpine plants; Stæhelinas, Gentians, and the Espeletia fruticosa, whose downy leaves often shelter the poor Indians who are overtaken by night in these desolate spots. The open plain is adorned with Lobelia nana, Sida pichinchensis, Ranunculus Gusmanni, Ribes frigidum, Gentiana quitensis, and many similar plants. The Molinas are the under-shrubs that grow at the greatest elevation on the volcanoes of Purace and Antisana. At an elevation of 2103 toises, the alpine plants give place to the Gramineæ, of which the region extends to 2360 toises. There, Jurava, Stipa, and many new species of Agrostis, Panicum, Avena, and Dactylis cover the soil, which, at a distance, wears the appearance of a golden carpet, called by the inhabitants Pajonal. Snow falls, from time to time, on the region of the Gramineæ. At a height of 2360 toises there are no more flowering plants under the equator. From this limit to that of perpetual snow, Lichens alone clothe the rocks. Some of these indeed appear to vegetate under the snow, for at 2850 toises, near the summit of Chimborazo, the Umbilicaria pustulata (*fig.* 976. *a*) and Verrucaria geographica (*fig.* 976. *b*), are seen growing on a shelf of rock, and these were the last organised substances adhering to the soil at so great a height which Humboldt and his companions were able to detect.

976



a, UMBILICARIA PUSTULATA.
b, VERRUCARIA GEOGRAPHICA.

Subsect. 3. *Zoology*.

5940. *The Zoology of Colombia* offers a vast and almost an unexplored field to the modern naturalist. We know not how it has happened, that, while Brazil has been traversed by learned men, sent from nearly all the European nations, the other regions of South America, in regard to their zoological productions, are as little known at this period as they were when guarded by Spanish jealousy; for Humboldt, in Zoology, did little or nothing. We shall not attempt, therefore, to hide this deficiency by quotations from obsolete works; rather wishing that a confession of unavoidable ignorance may induce those who have the power and the inclination, to direct their attention to this subject. There is one bird, however, of surpassing beauty which we can notice, as having been recently sent from Colombia and Guatemala: this is the Calurus pavoninus *Sw.*, or Peacock Trogon (*fig.* 977.), so named from the splendid green plumage of the back and the long feathers towards the tail: it is said to be very rare; living only in the deepest and most unfrequented forests; and is much sought for by the natives on account of its superb feathers.

977

PEACOCK TROGON.

Sect. III. *Historical Geography.*

5941. ***The former condition*** of all the Colombian states was that of a people much less advanced in civilisation than those of Mexico and Peru. The whole of the vast plains watered by the Orinoco and its tributaries were occupied by the Caribs, a savage and warlike race, whom the Spaniards, probably in too sweeping a manner, branded as ferocious cannibals. In the upper plain of Bogotá, however, amid the heights of the Cordilleras, was found the kingdom of Cundinamarca, which could not indeed rival the arts and splendours of Cuzco and Tenochtitlan, yet had made considerable progress in civilisation. It had temples, altars, and priests; the people cultivated the ground, were decently clothed, and enjoyed security of person and property.

5942. ***The Spanish conquest*** was effected with more difficulty in this than in other quarters. The first attacks directed against the inhabitants of the plains were repulsed with severe loss. From Peru, however, two daring adventurers, Quesada and Benalcazar, scaled the loftiest Andes, and subdued with little difficulty Quito and Cundinamarca, which, with the whole region of the Cordilleras, were afterwards formed into the viceroyalty of New Granada. The Llaneros, or people of the plains, meanwhile desperately maintained their independence; and the Spaniards soon grew weary of shedding their blood, when no gold was to be the reward. By transporting bands of Germans, and even arming the negroes of the islands, they succeeded in compelling the natives to take refuge among the forests of the interior. This coast was then formed into a government, known at first by the name of Terra Firme, but to which the Spaniards afterwards gave the name of Caraccas, and subjected it to the jurisdiction of a captain-general. New Granada never attained the golden fame of Mexico and Peru; but its fine upper valleys and table-lands became the seat of a considerable agriculture; and a tolerably industrious and numerous population was gradually formed.

5943. *The spirit of independence*, which had been long secretly forming throughout Spanish America, broke out earlier, and with greater force, in Colombia than in any other of its vast regions. Even in 1781, the introduction of the oppressive tax of the *alcavala* gave rise to a revolt, which had for some time a threatening aspect, as the spirit of liberty had been roused by the successful example of the United States of North America. The French revolution excited a considerable ferment, and the "Rights of Man" were even printed at Santa Fé, though soon suppressed. Yet the attempt to which Miranda was instigated by these symptoms proved to be premature. In 1808, the impulse given by the seizure of Ferdinand VII. and the invasion of Spain, acted instantaneously through this part of the continent. Ferdinand was proclaimed indeed, but all the rulers appointed by the mother country were displaced, and a congress, with officers elected by the people, was substituted. The native Spaniards, being fewer in numbers than in Mexico, and having little military force, made at first scarcely any resistance; but the government of the mother country, considering this as the head quarters of insurrection, directed hither their main efforts. They sent successive expeditions under the command of Morillo, one of their ablest generals. Caraccas and Santa Fé were at first recovered, and the Independents were driven to hide themselves amid the rocks of the Andes and the marshes of the Orinoco. They were headed, however, by Bolivar, destined to take his place with Washington among the deliverers of the New World. British troops and officers, after the pacification of Europe, were easily attracted to their standard. After repeated overthrows, and many and dire vicissitudes, the independent cause completely triumphed. In 1821, Morillo consented to an armistice, and returned to Spain. The war was afterwards renewed; but the Spaniards were soon defeated, shut up in Puerto Cabello, and finally compelled to evacuate the whole territory of Colombia, which they never again made any attempt to subjugate.

Sect. IV. *Political Geography.*

5944. ***The constitution of Colombia*** was formed in a congress assembled at Cúcuta, on the 18th July, 1821. Another had been framed, two years before, at Santo Tomé, but only for the province of Venezuela, which, after some resistance, was obliged to yield its claim to the superior power and population of New Granada. The basis judiciously taken was that of the United States of North America, and the alterations are even such as to give it somewhat less of a democratic character. The legislative power was vested in a congress, consisting of two bodies, the senate and the house of representatives. Every four years the body of the people were appointed to assemble, and choose electors of the canton, who formed a provisional assembly, meeting on the 1st of October. This provisional assembly was to elect both the representatives and the senators, the one for four, and the other for eight years; but one half of the senators were to go out by lot at the end of the fourth year. The right of suffrage was not made universal, as in most of the North American states. The original voter was required to possess the sum of 100 piastres, and after the year 1840 to be able to read and write. The cantonal electors were to possess land to the value of 500 piastres, or an income of 300. The senator or representative must, by this constitution, possess an income of 500 dollars, or be of a learned profession. Besides the power of making laws and decreeing taxes, these houses exercise jointly that of declaring war or making peace. The executive is vested in a president and vice-president, the former of whom must have the qualifications of a senator: he is elected for four, and cannot continue in office for a consecutive period of more than eight years. He has only a very partial negative on the laws passed by the two bodies. He may return a law for re-consideration; but if it again passes by a majority of two thirds of the members, he cannot refuse his consent. Neither he nor any of the ministers are members of the congress. His salary was fixed at 30,000 dollars, and that of the vice-president at 16,000 dollars per annum. The judges are elected by the congress, from lists given by the president; but their duration is appointed, rather too vaguely, to be "as long as their conduct gives satisfaction."

5945. *The finances of Colombia* have not yet been brought into a flourishing state. The nation in general seems to show rather a peculiar aversion to the payment of taxes, and the vast extent of the territory, the difficulty of following defaulters into the woods and among the mountains, contribute, with the inadequate salaries allowed to the collecting officers, to give occasion to a vast contraband. In 1824, a new system was adopted; the alcavala was very wisely abolished, unless to the extent of levying 2½ per cent. on sales of imported goods and landed property, and a direct income tax was imposed, as one which could be least easily evaded. The post-office merely pays its expense, but stamps have been found a productive branch of revenue. Colombia is burdened with a debt of 40,000,000 dollars, chiefly borrowed in Britain, and of which she has yet paid no principal and scarcely any interest. In 1826, the finances were in a very unfavourable state, the expenditure being 15,487,719 dollars, and the revenue only 6,196,725, leaving a deficit of 9,290,994 dollars. In 1827, the estimates of expenditure were 8,500,000 dollars; of which 4,300,000 were for the army, 912,000 for the navy, 2,100,000 for interest, and the rest for the internal administration.

5946. *The army of Colombia*, in 1824, consisted of 25,750 infantry, 4800 cavalry, and 2520 artillery. They are ill disciplined and accoutred; have scarcely any thing like a uniform; and their arms are both scanty and imperfect; but they are exceedingly brave, hardened by long warfare, and have vanquished even superior numbers of regular troops. The artillery and engineer departments are the most defective.

5947. *The Colombian navy* is yet in its infancy, and, in 1824, consisted only of six corvettes, seven brigs, and six schooners, manned chiefly by English and French sailors. Even this small force rendered great service in the blockade of Maracaybo, and at one period made itself formidable as a privateering force, extending its ravages even to the coast of European Spain.

5948. *A schism* has recently taken place in the Colombian state, which has been divided into the three separate republics of New Granada, comprising the ancient viceroyalty of that name; the Equator, composed of Quito and the adjoining territories; Venezuela, comprehending the great plain to the east of the Andes, and bordering on the sea. These states have of late made an amicable agreement to separate, dividing among themselves the general debt of Colombia. The interior constitution, we believe, remains the same as that of the united republic.

Sect. V. *Productive Industry.*

5949. *The territory of Colombia* is chiefly distinguished by its vast capacities for improvement, which are developed only in a very imperfect degree. The soil is as various as the states that compose the territory. New Granada, though a mountainous country, is fertile in all kinds of grain and fruit: the woods consist chiefly of cedars, walnut trees, ebony, Muzo and Guiana wood, taray, Brazil, sassafras, cocoa tree, vanilla, tamarind, medlar, sapotas, guavas, palms, cassia; manchineel, whose juice, fruit, and even branches, emit a subtle poison, which causes general inflammation and tumour, only to be cured by olive oil; and another tree, called the *habella de Cartagena*, whose bean is the best antidote known against the bite of vipers and snakes. In the province of Venezuela also are found many precious woods, as the variegated granadillo, resembling tortoiseshell, cedars whose trunks serve as hives for bees, vanillas of superior fragrance, cardamoms, sarsaparilla, indigo, cassia, tamarinds, cinchona; tacamajaco, a noted specific for headach; balsams and oils for the cure of wounds. The province of Guayaquil produces a variety of ship timber, including oak, the strong wood called guachapeli, cedars, also ebony, with a variety of cabinet woods. The provinces of Loxa and Quito are noted for their excellent cinchona. In short, such are the natural resources of this part of South America, that, if its inhabitants were active and industrious, it might become one of the richest and most important countries in the world.

5950. *Agriculture* in this country, beyond any other in Spanish America, or perhaps in the world, is capable of supplying in the utmost variety the richest productions of the vegetable kingdom. That which chiefly distinguishes it is the cocoa, a fruit at once palatable and nutritious, which in the country yields an article of food, and in Europe forms the basis of the chocolate. The cocoa of Caraccas is generally reckoned the best in the world; and next to it that of Guayaquil, so much celebrated by Ulloa. The produce is reckoned by Humboldt at 193,000 fanegas, and the export at 145,000, the value of which exceeds 1,000,000*l.* sterling. The tobacco of Caraccas is much superior to that of Virginia, yielding only to that of Cuba and the Rio Negro. The injudicious system, however, of still making it a government monopoly, checked its growth; but this was to be abolished on the 1st of January, 1834. Quinquina, or Jesuit's bark, one of the most valuable articles in the materia medica, is now the produce almost exclusively of Colombia, being brought either from Loxa by way of Guayaquil, or from the hills of the Upper Magdalena. Coffee, cotton, and sugar find all most favourable soils: coffee, in the table-lands, 1500 to 2000 feet high, of Caraccas and Cumaná; cotton, in the plains of Maracaybo; and sugar in all the warm, low, and moist valleys. Coffee only, however, much exceeds the internal consumption. Indigo was once a very important article, being exported from Caraccas, in the most prosperous times, to the value of 250,000*l.*; but it has much declined, and is produced now only in the plain of Varinas. Wheat and other European grain find favourable situations, especially on the table-lands of Bogotá; but as these have not the extent of those of Mexico, the wheat is neither so good nor so abundant; and Colombia cannot dispense with a large import of American flour. The banana grows in the same spontaneous abundance as in Mexico, and M. Mollien draws from it the most sinister auguries that the Colombians will never submit to any settled or laborious habits; but neither they nor any other people of the New World have yet accepted this fruit as a full substitute for bread. The agriculture of the state appears to be still conducted in that indolent and slovenly manner usual where land is cheap and a market distant. The government has lately sought to promote the clearing of waste lands, by disposing of them at a very low rate, and by setting aside two millions of fanegas for foreigners who may be disposed to settle and bring them under cultivation.

5951. *The mines of New Granada* have been a subject of brilliant and perhaps romantic expectations. Humboldt observes that nothing can be more fallacious than the external appearance of rocks and veins, and that, till regular shafts and galleries have been formed, no certainty can be attained. The only important product as yet is gold, obtained by washing the earth and sand in the provinces of Chocó, Popayan, and Antioquia. Humboldt estimates the product during the last years of tranquillity at 18,000 marks. There are indications of various minerals in different quarters. The silver mines of Marquetores, and those called the mountain mines, and the higher and lower mines in the province of Pamplona, are said by Torrente to be so rich that they generally yield two marks of silver per quintal: there are also mines of copper and lead, others of emeralds, which have given name to the province of Muzo, and the valley of Tunja, noted also for its sapphires and other precious stones, and yielding in some places cinnabar and mercury. In the mountains of Antioquia and Guamoro there are diamonds, though of small size, hyacinths, fine garnets in great abundance, excellent pearls in the Rio Hacha, amethysts in Timasco, turquoises in the districts of Pamplona, Suza, and Anserma. There are also rich mines in the district of Chocó; but some of these were neglected in the more general search for platina. From the year 1800 to 1810 were coined in New Granada 27,350,000 dollars, and from 1810 to 1820, 20,000,000, or 2,000,000 annually; but if the mines were ably managed, the result might be much greater; and it is thought that Chocó alone would yield 2,000,000 dollars a year.

5952. *In Santa Martha* there are mines of gold, silver, and precious stones, and some rich salt-works. The province of Quito yields gold, silver, copper, quicksilver, topazes, amethysts, emeralds, rock crystal, and very fine marble; in Venezuela is found tin, and also rock crystal, with lapis lazuli, not much inferior to the celebrated ultramarine. The copper mines yielded in one year 1500 quintals of excellent quality. Time only can discover whether the rest will pay the expense of working. The salt mine of Zichaquira, glittering like an immense rock of crystal, yields a revenue of 30,000*l.* a year. It is not the only one; and the mineral finds a ready market in the country. The pearls of Panama and the Rio Hacha, notwithstanding their great name, do not yield more than 20,000*l.* a year.

5953. *Manufacturing industry* can scarcely be said to exist. The leather of Carora, the hammocks of Marquesita Island, and the blankets of Tocuyo, are objects of little importance, even in respect to internal consumption.

5954. *Commerce*, in consequence of the very circumstance last mentioned, has a peculiar activity. From the total want of manufactures, almost the whole population must be clothed in foreign fabrics. In 1831, the exports from Caraccas consisted of 6,968,640 lbs. coffee, 1,791,814 lbs. cocoa, 192,055 lbs. indigo, with hides, sarsaparilla, and sugar. The entire value amounted to 887,029 dollars. The imports amounted to 975,019 dollars; of which cottons, linens, and woollens made up 561,025 dollars; the rest consisted principally of silks, laces, salt beef, and fish. The tariff of duties is moderate. In 1831, there cleared out from La Guayra 90 vessels; burthen, 9470 tons; of these 9 vessels and 909 tons were for England; 28 vessels and 3882 tons for the United States. Trade is understood to be on the whole in a prosperous state. The internal traffic will one day probably be immense, upon the Orinoco, the Apure, the Meta, and by the Cassiquiare, with the Rio Negro and the Amazons; but all the regions watered by these mighty rivers are as yet little better than deserts. The cataracts also of Atures and Maypures prevent navigation from being carried much above the lowest bend of the Orinoco.

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PASSAGE IN THE CORDILLERAS.

5955. ***Roads*** can scarcely be said as yet to have any existence. There are only tracks formed by the tread of successive travellers. In many places they lead through the beds of torrents, or through crevices or fissures caused by earthquakes. Sometimes the declivity (*fig.* 978.) is so abrupt that it can be crossed only by a zigzag path cut into steps, which form a staircase as steep as that of one of our steeples. Men, baggage, and merchandise are alike conveyed on the backs of mules, which find their way over these frightful steeps with surprising dexterity; sometimes dropping on their knees, and sliding down the most precipitous hills. A traveller, however, who wishes to escape some of these hardships, may be conveyed in a species of chair placed on the backs of persons, called *silleros*, hired for the purpose, who carry him with surprising comfort and safety. Even in what were called the royal roads, all that has been done is to cut down the trees. War, which usually makes some little compensation for its evils by the formation of fine military roads, has not yet introduced any improvement into those of Colombia. Scattered bodies of partisans without baggage, and with only a few light artillery, could scramble through such openings as the country afforded, and even set a value on the impossibility of transporting through them a regular and equipped army. The exclusive use of mules, without carriages of any description, remarkably increases the expense of conveying goods; yet habit causes it to be followed even on the plains of Venezuela, where there might be room for waggons as large as those which are driven over the Pampas of Buenos Ayres.

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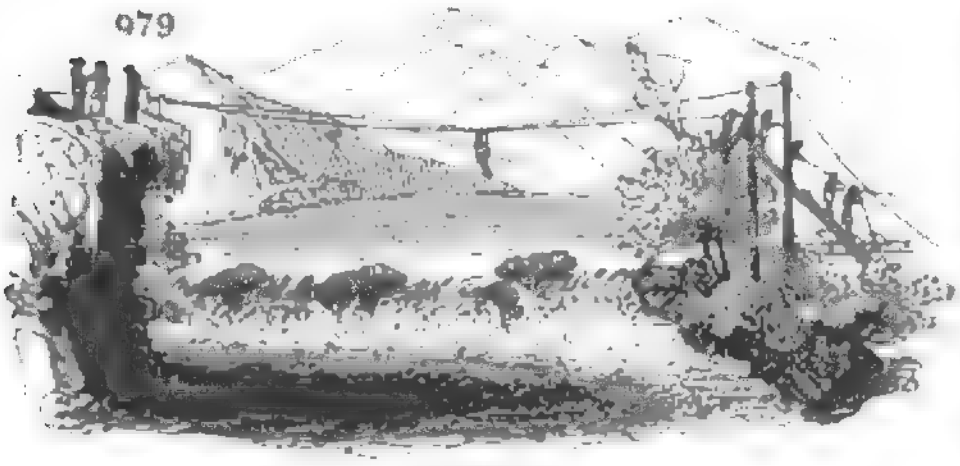


ROPE BRIDGE.

5956. *The bridges*, which are thrown over the torrents of the Andes, and from steep to steep, are of the most fragile and hazardous description. In a few rare instances only stone is employed. In general a few rough planks are laid across, and covered with earth and branches; no fence and no breadth greater than four feet being ever thought necessary. Where the space to be traversed is too great for this contrivance, a bridge of strong cable is constructed, over which the Colombian passes secure, though it rocks beneath him at every step. Sometimes, between distant points, a single rope is stretched across (*fig.* 979.), and a hammock or basket made to run from one end to the other.

Sect. VI. *Civil and Social State.*

5957. *The population of Colombia* cannot be computed with any precision from existing data. The most positive is that formed in 1822, upon the reports made by the deputies of each province to settle the law of elections, according to which the amount was 2,643,000. Humboldt, however, who seems to have directed every possible attention to this subject, does not think there can be fewer than 2,785,000, and is even inclined to believe they may exceed 2,900,000. The estimate of 3,500,000, made by the president in 1820, seems manifestly exaggerated.

5958. *The character of the Colombians* is, probably, much influenced by the sudden transition from a depressing despotism to an extreme degree of liberty. They retain much of the gravity, temperance, and sobriety of the Spaniards, with a share of their pride, suspicious temper, and neglect of cleanliness. A courtesy somewhat stately and studied prevails in their demeanour. It is not easy to gain their confidence; but when that is once obtained, they are extremely friendly and cordial. They are hospitable to foreigners, whom, from national pride, however, they regard with secret jealousy. Though they have shown themselves in many instances capable of the most vigorous exertions, their general procedure is slow and sluggish; and to urge a Colombian to stirring activity is like rousing a man out of a dream. The Colombian unwillingly engages in any speculative occupation, or mercantile transactions on a great scale; he prefers quietly accumulating money by retail trade. It certainly redounds much to his honour that, after a war so long and desultory, the country is not infested by robbers or bandits to any extent; and there is no necessity for having houses secured by bolts or bars. An inordinate propensity to gaming prevails among the men, who spend almost all their leisure in this diversion, and often hazard enormous sums. Between the two sexes in Colombia, as in the mother country, prevails a dull mechanical gallantry, the admirer keeping in close and constant attendance upon his mistress, to whom no one else must speak or almost look; yet this is, perhaps, less frequently accompanied with any thing criminal than a foreigner would be led to suppose.

5959. *The religion* is as yet exclusively the Roman catholic, and its ceremonies are observed with the strictest punctuality. The shrines of Bogotá appear to surpass in magnificence even those of Mexico. The cathedral contains an image of the Virgin, adorned with 1358 diamonds, 1295 emeralds, besides many other precious stones. The other twenty-six churches are all resplendent with gold and jewels. The convents are also numerous, but are happily diminishing. The parish priests rule in the villages with almost absolute sway; but their influence, uniting together the different classes and sexes, is considered on the whole advantageous. Many of the young men who have had more enlarged means of information, have begun to see the absurdities of the Catholic creed; but a general scepticism, rather than any rational system of religion, seems to have taken the place of their ancient superstition.

5960. *The races* are as numerous and as variously crossed as in Mexico; but they are more happily blended and balanced than either there or in the United States. The negro maintains his place in the scale of humanity; and the mulattoes Paez and Padilla have ranked among the foremost of the heroes who achieved the national independence. Humboldt calculates, contrary to the idea of Depons, that there are not many more than 60,000 slaves in the state; and, by the legislative arrangements, the whole number will be free by the year 1840.

5961. *Of the native Indian tribes* within this territory, the Caribbees are the ruling people. No nation in the world is stamped with a deeper brand of ferocity, the very name, converted into *cannibals*, being applied to signify devourers of human flesh. The charge appears to have been greatly exaggerated by the Spaniards, who certainly met with a most fierce resistance, and sought by this allegation to justify the system of enslaving and exterminating the savage tribes. Oppressed by a long series of unequal war, they were considered as nearly extinct, till Humboldt, in his voyages along the Orinoco and its tributaries, ascertained that there must be still about 40,000 of pure and unmixed blood. They are a fine tall race, whose figures, of a reddish copper colour, with their picturesque drapery, resemble antique statues of bronze. They shave great part of the forehead, which gives them somewhat the appearance of monks; they wear only a tuft on the crown. They have dark intelligent eyes, a gravity in their manners, and in their features an expression of severity, and even of sadness. They still retain the pride of a conquering people, who, before the arrival of the Spaniards, had driven before them all the native tribes in this part of the continent. A great proportion of them, however, have now been civilised in a surprising degree by the missionaries, who exercise over them an almost absolute sway. Each holiday they present themselves loaded with offerings of every kind which can be acceptable to the priest; and after divine service, those of both sexes who have been guilty of any offence receive in his presence a sound whipping, which they bear with exemplary patience. Humboldt, though scandalised by this scene in the view of ecclesiastical dignity, conceives that such strict discipline may be necessary to keep these savage natures in check. They cruelly torment their children by imprinting on them the barbarous ornament produced by raising the flesh in long stripes along the legs and thighs. They are free, however, from the equally barbarous practice of flattening the head by compression, which is general among the other tribes of the Orinoco, the specimens of whose crania, shown in Europe as destitute of forehead, are merely skulls shaped between planks. In this country occur the caste of *albinos*, with white hair, of weakly and delicate constitution, low stature, and very effeminate character: they have large eyes, and are so weak-sighted, that they cannot endure the rays of the sun, though they can see clearly by moonlight.

5962. *The intellectual state of Colombia* is yet very rude. Study, either as an occupation or amusement, is little known among the middle and higher ranks. In all the great cities, indeed, there are universities and colleges, which are even richly endowed; but they are usually attached to monasteries, taught by monks, and have reference only to Catholic theology and obsolete systems of philosophy. In that of Caraccas there were two professors, whose sole function was to prove the immaculate conception of the Virgin. There are, however, men of superior mind, who are making endeavours, which doubtless will ultimately succeed, to elevate in this respect the character of their countrymen. Under their auspices, a museum, a library containing already 7000 volumes, and several Lancasterian schools, have been formed at Bogotá.

5963. *The amusements* of Colombia are chiefly borrowed from the mother country. Dancing is passionately followed in the several forms of the fandango, the bolero, and the Spanish country-dance. Bull and cock fighting are equally favourite sports, and tend to keep alive that ferocity which is the main blemish in the moral character of the Spaniards. Here, as over all South America, they practise what is called the *lasso*, or catching the bull by a noose formed at the end of a long leathern cord, and thrown over him. Under the head of amusement may fairly be ranked the religious ceremonies, and especially processions, in which they certainly outstrip the mother country, both as to splendour and absurdity. Persons representing the leading scripture characters are paraded through the streets, arrayed in the most magnificent robes, and covered with pearls, diamonds, emeralds, and rubies. In the grand procession at Quito, justly characterised by Mr. Stevenson as an ecclesiastical puppet-show, the Holy Virgin appears in the uniform of a general officer, with a gold-laced hat and a red cockade. These festivals are, in fact, accompanied by games and shows, and usually terminate in balls and masquerades.

5964. *The Colombians, especially the females, affect a singular plainness of dress.* They almost universally walk the streets in a large Spanish mantle, a wide cloak of black or light blue, which envelopes the person in such a manner as often to leave nothing visible except the eyes. Their festival and ball dresses, on the other hand, are too gaudy, being covered all over with jewels or tinsel.

5965. *Food* is supplied to the Colombians plentifully and cheaply, especially animal food from the table plains or the Llanos. It is eaten in very great quantity, there being half as many cattle slaughtered in Caraccas as in Paris, though the population is not a twentieth. Fruits are various and delicate. Their festive dinners are rare, but magnificent; the table groans under numberless dishes; yet, though the wines are various, they do not sit long at table, but usually conclude with a ball.

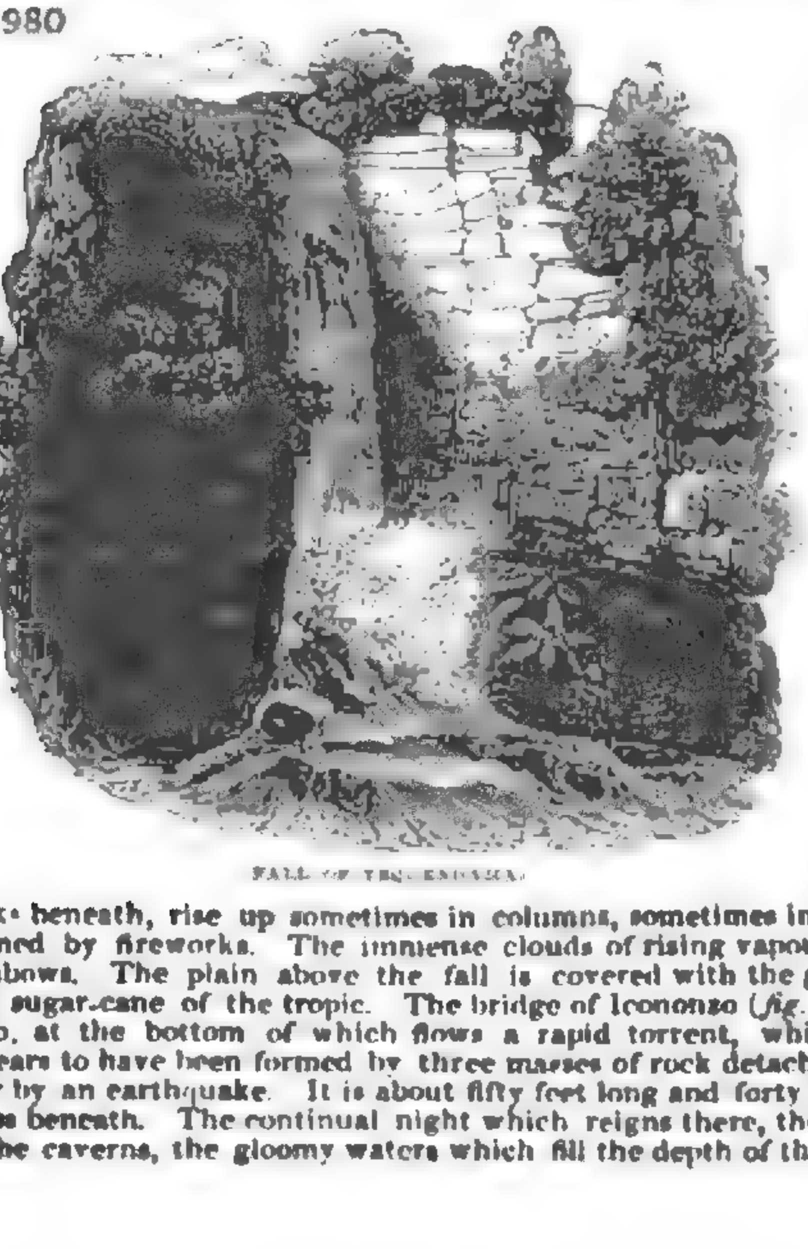
Sect. VII. *Local Geography.*

5966. *A division* has been formed of Colombia, by the new government, into departments and provinces, which, as it seems sufficiently to correspond both to its natural and civil features, may probably be durable.

5967. *Cundinamarca*, the original name of the Indian kingdom established in this part of America, forms the chief and central department. It corresponds with the viceroyalty of New Granada, recently formed into a separate republic. It consists of ranges of vast mountains sloping down to the banks of the Upper Magdalena, and partly also of the Cauca. It presents in the extreme that abrupt transition between the most opposite soils and climates remarked as peculiar to this part of America; but the most valuable tracts consist of the fine though not very extensive table-lands dispersed along the declivity.

5968. *Santa Fé de Bogotá*, the capital of New Granada, is situated on a table plain 50 miles by 25, and 8000 feet above the level of the sea. This plain, though under the line, has the climate of Britain, and even of Scotland, though without the change of seasons, the perpetual temperature being that of spring or autumn, and the thermometer seldom falling below 47° or rising above 70°. The only alternation is formed by the wet seasons, which are two: the first comprehending March, April, and May; the second September, October, and November; and these, being colder than the others, make two winters and two summers. The surrounding plain is excessively fertile, fine, and fruitful, yielding two crops in the year of the best European grain. It is hemmed in by lofty mountains, rugged precipices, roaring torrents, and frightful abysses. The city of Santa Fè itself is enclosed in a grand mountain circuit, cliffs of 1000 feet high rising immediately above it. This city was founded in 1538, by Quesada, and rapidly increased: it is now supposed to contain 30,000 inhabitants. Its streets and squares are open and spacious, but the houses are generally heavy and old-fashioned; and even the late palace of the viceroy displays little magnificence. The beauty of the city rests wholly on its ecclesiastical edifices, which consist of twenty-six churches and twelve convents. Many of the former are not only splendid, but built with some taste; and their numerous spires, amid the grandeur of the surrounding scenery, give it a very fine appearance. It contains an university and archiepiscopal see, and carries on a considerable trade in cotton goods, hides, and grain.

980



FALL OF TEQUENDAMA.

5969. *The scenery of the plain of Bogotá* is marked by many striking and picturesque features. Among these are particularly conspicuous the Fall of Tequendama (*fig.* 980), and the natural bridges of Icononzo. The first is formed by the river Bogotá, as it descends precipitously from its native plain to mingle with the Magdalena. Its mass of waters, previously spread to a considerable breadth, are contracted to forty feet, and dashed down a precipice 650 feet high, into an almost fathomless abyss. The waters, as they beat against the rocks beneath, rise up sometimes in columns, sometimes in myriads of fleecy and fantastic shapes, like those formed by fireworks. The immense clouds of rising vapour, when illuminated by the sun, form beautiful rainbows. The plain above the fall is covered with the grain of Europe, while at its foot grow the palms and sugar-cane of the tropic. The bridge of Icononzo (*fig.* 981.) is a natural arch across a chasm 300 feet deep, at the bottom of which flows a rapid torrent, which would have been otherwise impassable. It appears to have been formed by three masses of rock detached from their original position, and thrown together by an earthquake. It is about fifty feet long and forty broad. At one spot, a view is obtained into the abyss beneath. The continual night which reigns there, the birds of darkness whose mournful cries re-echo in the caverns, the gloomy waters which fill the depth of the precipice, the thick foliage of the trees which partly conceal this scene of mystery, and the darkness which shrouds all these horrors, convey no feeble idea of the empire of death.

5970. *Neyva* is situated above Bogotá, in the highest part of the course of the Magdalena, yet on a plain so much lower as to make it excessively hot; while the waters of the Magdalona, fed from the snowy regions above, are excessively cold. Cocoa is the chief product, which is exported to the extent of 2000 loads, costing thirty piastres each. The Andaquis, a nation of savage Indians, occupy the upper tracts whence the Magdalena rises, and which are accessible only to foot passengers.

981

BRIDGE OF ICONONZO.

5971. *Mariquita* is a province situated below Bogotá, on the western bank of the river, and on the middle range of the Andes, as they slope downward to it. Its table-lands are not extensive, and the city of Mariquita, which stands at a considerable height, has been chiefly supported by mines, which are now abandoned. Honda, immediately on the river, is a town of some importance, being the highest point to which boats can ascend. Here, therefore, the goods are disembarked, and conveyed into the interior, either by slight rafts, or on the backs of mules.

5972. *Antioquia* is a more important province, reaching from the Lower Magdalena to the Cauca, on which it is principally situated. It lies between the middle and western range of the Cordilleras. The first, called here the Quindiu (*fig.* 982.), separates the valleys of the Magdalena and Cauca. It is very lofty and steep, its highest peak of Tolima being ascertained by Humboldt to be 17,190 feet high, and consequently the most elevated in the northern Andes. It is an uniform ridge, opposing very great obstacles to a passage; but it does not throw up those magnificent cones, which strike the view in the equatorial Andes. The province of Antioquia is nearly in a state of nature. Of the 2200 square leagues which compose it, only 60 are cultivated, 250 are in pasturage, and the rest is covered with thick and entangled forests. Amid its profusion of foliage, indeed, are found the cinchona, the wax tree, and some valuable dyeing and ornamental woods; but the chief wealth of Antioquia is derived from the auriferous character of its mountains, particularly the Quindiu. Restrepo reckons the annual value of the gold at 1,200,000 piastres; the products of agriculture at only 358,000 piastres.

982

MOUNTAIN OF QUINDIU.

5973. *The department of Boyaca*, divided into the provinces of Tunja, Socorro, Pamplona, and Casanare, occupies the slopes of the eastern Andes, as they stretch northwards towards the lake and plains of Maracaybo. It presents the same aspect as the regions now described; rugged passes, bleak paramos, sultry valleys, interspersed with cool and fertile table-lands. The province of Tunja is generally bleak and elevated, and its agricultural produce small; but in return it is the most industrious in the whole state, and manufactures a great quantity of coarse cottons, with which it supplies the other provinces. The city of Tunja was the Indian capital of Cundinamarca, and continued, even under the Spaniards, to be a rich place, till it was superseded by Santa Fé. Socorro is a more fertile and cultivated region. The town is rudely built, but contains 12,000 inhabitants, busily employed in coarse cotton fabrics. Pamplona is a considerable and pleasant town in a lofty situation. Casanare, on the river of the same name, forms the medium by which the provinces on the Magdalena communicate with the Llanos and the coast of Caraccas; under the old régime the influence of the merchants of Carthagena caused it to be shut up, in order to secure their own monopoly of the Santa Fé trade; but as such absurd restrictions will now be abolished, the Casanare may become an important channel of commerce.

5974. *The department of the Cauca* occupies the upper part of the course of that river, with the plain extending to the Pacific. The mountainous part forms the province of Popayan; the plain that of Chocó.

5975. *Popayan* is one of the richest and finest provinces of America. Its plain is more extended and productive than that of Santa Fé, and maintains a superior breed of horses and cattle. Cultivation, however, is indolently carried on, being abandoned chiefly to slaves. The inhabitants look to a more brilliant source of wealth in the gold of which their soil, every where tinged with red and yellow, indicates the presence. In the numerous mines, it is found in earth, from which it is extracted by agitation in water, as in Western Africa. Popayan is a handsome city, built more regularly and elegantly than Santa Fé, and inhabited by many opulent merchants, who have suffered severely by the revolution. Its site, on the river Cauca, is picturesque; the climate delicious, notwithstanding the frequent rains and tempests. It enjoys a considerable trade in European merchandise, which it receives from Carthagena, and distributes to Quito and other neighbouring districts, together with the products of its fertile soil. Above it rises the volcano of Gurose, continually emitting flames, unless when obstructed by the substances thrown out by itself, in which case Indians are employed to clear it, lest the subterraneous flame should produce earthquake. From its summit a river descends to Popayan, so impregnated with acid substances, that the Spaniards call it Vinagre. On its banks are the most picturesque, perhaps, of all the falls (*fig.* 983.) in America, with which Humboldt has made us acquainted. Caly is a clean and well-built town, in a delightful situation; and the inhabitants have attained considerable prosperity by exporting tobacco and other produce of the interior. Lower down the river is Cartago, in a situation which the cold blasts from the snowy mountains would render inclement, were it not sheltered by a ridge of lower hills. The surrounding country contains many valuable mines, and would be most rich in cocoa, coffee, sugar, and all tropical productions, if cultivators and a market could be found.

5976. *The district of Chocó* occupies the plain between the most eastern range of the Cordillera and the Pacific. It is excessively humid and unhealthy. The streams pouring down from the Andes, and the congregated clouds borne in from the great ocean, produce numerous and rapid rivers, and would afford great accommodations to commerce. Unluckily the ground is so wet, that all Chocó may be considered as a vast morass covered with impenetrable forests. It is, likewise, so soft, that the houses can be built only upon stakes; and even culinary vegetables cannot be grown, unless upon wooden boards artificially elevated. The ground, however, in the few places that are cleared, produces most abundantly, maize, sugar-cane, and banana. But Chocó derives its wealth, as yet, wholly from its mineral treasures. Between the height of 250 and 2000 feet, the earth can scarcely be dug, at any point, without presenting gold, combined with platina, in greater or less quantities. The platina is usually found in the proportion of two pounds to six of gold. The former metal sells for eight or ten dollars a pound; the latter at 200 dollars, bringing in Jamaica 250. The Congress, very injudiciously, continue the old prohibition against its export. The mines have declined greatly during the war, which drew away all the best negroes, and they do not now yield more than twenty quintals of gold, and ten of platina. Captain Cochrane apprehends that the approaching emancipation of the slaves will put an end to the working altogether, and that it will be impossible to bribe free negroes to dig, in a climate which, though not oppressively hot, is damp and extremely unwholesome. Chocó has only large trading villages: Citera, which carries on the commerce of the Atrato, a fine navigable stream flowing northwards into the Gulf of Darien; Novita, that of the San Juan; and Buenaventura, that of the Dagua, both which flow into the Pacific. Buenaventura, with its district, comprising the southern part of Chocó, has lately been formed into a separate province.

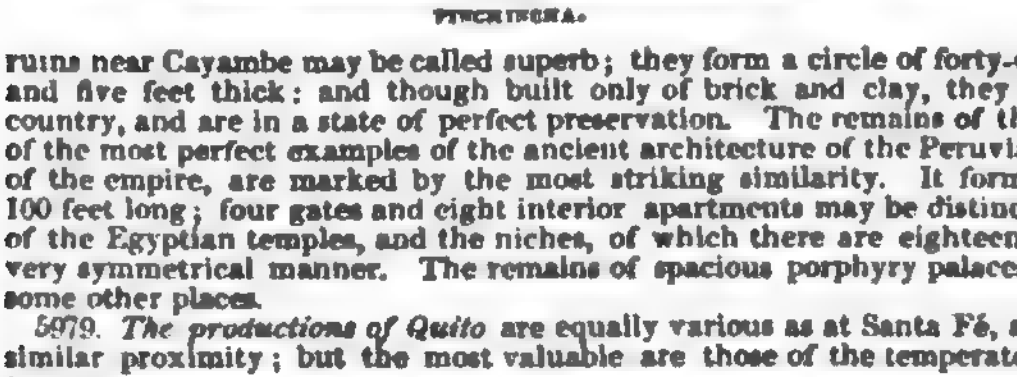
983

CASCADE OF VINAGRE.

5977. *Pasto*, the most southern province of Popayan, bordering to the south on that of Ibarra, abounds in excellent pastures, to which, probably, it owes its name. The triple chain of the Magdalena cordilleras, and the double chain of those of Quito, here unite into one mass, which is called by Humboldt the knot of the mountains of Los Pastos. The inhabited land is here 10,000 feet above the level of the ocean. It is the Thibet of equinoctial America. In the woods of Pasto grows the tree which yields a resin, called in that country *mopa-mopa*, from which the natives make a very beautiful varnish, of so durable a quality as not to be softened by boiling water or dissolved by acids. In its most northern part rises the volcano of Pasto, the last eruption of which took place in 1727. The district is rich in cattle, and produces also the grain of the temperate climates. Pasto is a considerable town, and the inhabitants manufacture a peculiar species of cabinet-work of considerable elegance. The sea-coast of Pasto consists of the district of Barbacoas, on the river of the same name, and precisely similar to that of Chocó. Provisions cannot be raised on account of the excessive moisture, and must all be brought from the table-land of Pasto on men's shoulders, there being no road by which even a mule can travel; but Barbacoas derives considerable wealth from its *lavaderos* of gold and platina.

5978. *Quito*, whose territory the Congress dignified with the name of the department of "the Equator," and which has now assumed the character of a state bearing that title, forms the finest table plain in all America. It has an average breadth of about thirty miles, enclosed between two parallel ranges of the loftiest Andes. In soil and climate, it possesses a felicity almost approaching to that which fable has ascribed to the golden age. The climate is that of a perpetual spring, at once benign and equal, and even during the four months of rain, the mornings and evenings are clear and beautiful. Vegetation never ceases; the country is called the evergreen Quito; the trees and meadows are crowned with perpetual verdure. The European sees with astonishment the plough and the sickle at once in equal activity; herbs of the same species here fading through age, there beginning to bud; one flower drooping, and its sister unfolding its beauties to the sun. Standing on an eminence, the spectator views the tints of spring, summer, and autumn, all blended. But the feature which renders the view from Quito the most enchanting, perhaps, that the eye ever beheld, is that above this beautiful valley, and resting, as it were, on its verdant hills, there rise all the loftiest volcanic cones of the Andes. From one point of view, eleven may be discovered, clad in perpetual snow. These mountains, particularly Pinchincha (*fig.* 984.), having been chosen by the French academicians for the operations by which they determined the figure of the earth, are considered by Humboldt as the classic land of modern astronomy. They have been made the principle of the division of the department into provinces; the southern being called Chimborazo, the middle Pinchincha, which immediately towers above the city of Quito, and the northern Trubaburu. In this happy vale are found many monuments of the sway of the Incas, who, though they had their main seat of empire at Cuzco, ranked Quito as one of their most valued provinces. The ruins near Cayambe may be called superb; they form a circle of forty-eight feet in diameter, fifteen feet high, and five feet thick: and though built only of brick and clay, they have resisted the violent rains of the country, and are in a state of perfect preservation. The remains of the palace of Callo (*fig.* 985.) present one of the most perfect examples of the ancient architecture of the Peruvians, which, throughout the vast extent of the empire, are marked by the most striking similarity. It forms a square, each side of which is about 100 feet long; four gates and eight interior apartments may be distinctly traced. The gates resemble those of the Egyptian temples, and the niches, of which there are eighteen in each division, are distributed in a very symmetrical manner. The remains of spacious porphyry palaces are found also at Autun, Canar, and some other places.

984



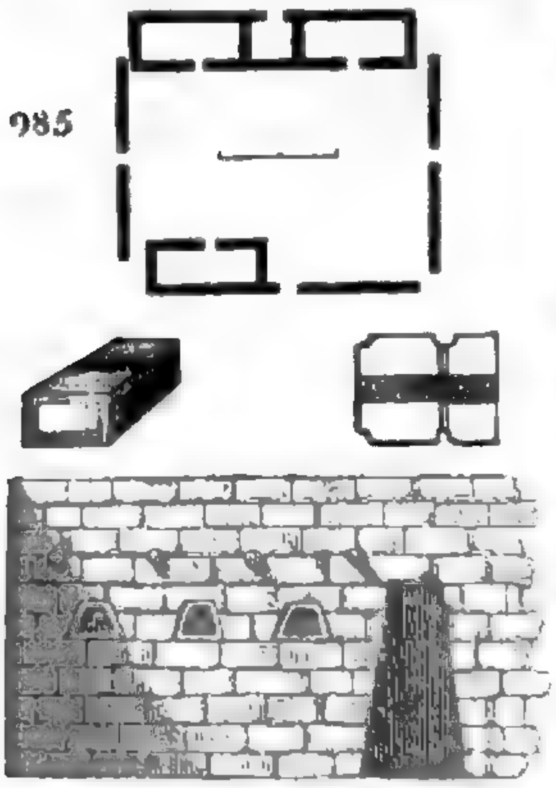
PINCHINCHA.

5979. *The productions of Quito* are equally various as at Santa Fé, all gradations of climate occurring in a similar proximity; but the most valuable are those of the temperate climates; grain, fruits, and rich pasturage.

5980. *Quito* leaning, as it were, on the side of Pinchincha, more than 9000 feet above the sea, is one of the finest and largest cities in the New World. It has four streets, broad, handsome, and well paved, and three spacious squares, in which the principal convents and dwelling-houses are situated; but the rest, extending up the sides of Pinchincha, are crooked and irregular. The churches and convents are built with great magnificence and even some taste. The most elegant is the college formerly belonging to the Jesuits, finely adorned with Corinthian pillars, and wreaths of flowers executed in stone. The convent of San Francisco is of vast extent and has a massive yet neat façade of the Tuscan order. Quito has two universities, which are numerously attended and carefully conducted; and it is considered comparatively as a sort of American

Athens. The inhabitants are gay, volatile, hospitable, and courteous. Quito is noted for its viands, particularly ices, confectionery, maize, and potato cakes. Vast quantities of cheese are consumed, mixed with pumpkins, gourds, pulse, and other vegetables.

985



HOUSE OF THE INCA AT CALLO.

5981. *The districts of Esmeraldas and Tacames* lie between the mountainous part of Quito and the ocean. They are very fertile, yielding cocoa of the very best quality, sugar-cane in abundance, vegetables, fruits, and palms, all excellent, and great variety of timber. The maize is not good, but four crops may be raised in the year. The inhabitants are a mixed race of Negroes and Indians, and call themselves Christians without even observing the ceremonies of the church. Their industry is quite in an infant state. Esmeraldas and Atacames are merely villages.

5982. *The department of Asuay* derives its name from a knot or mass of lofty mountains on the southern frontier of Quito. It is divided into four provinces; Cuenca, Loxa, Jaen, and Maynas. The first two are situated on table-lands of the Cordillera, which are considered by Humboldt as mere prolongations of that of Quito. Like it they are agreeable and fertile, without being either so extremely beautiful, or bordered by such grand and lofty elevations. Loxa affords the finest cinchona, and was long supposed to be the only spot which produced that precious medicament in any perfection. The provinces of Jaen and Maynas are situated on the eastern slope [illegible] the Cordillera, and the great *Llanos*, or plains, which extend to and beyond the Amazon. These tracts are rugged, marshy, covered with thick and impenetrable forests. Many parts might yield cocoa, cotton, and tobacco in abundance; but the culture is very partial. There are some missions along the Amazons, the communication with which is maintained only by the Indians on foot, carrying a long knife to cut their way through the underwood.

5983. *Guayaquil* forms one of the most important departments of Colombia, which was for some time held alternately by that state and Peru. It is now divided into two districts, Guayaquil and Manabic. The country is very fertile, particularly in cocoa, inferior indeed in quality to that of Caraccas; but there has always been a demand to the extent of the quantity produced, which Mr. Stevenson estimates at 600,000 fanegas of three bushels each, and selling sometimes at seven dollars the fanega. There are also large plantations of tobacco; a great amount of timber and salt is exported; and large droves of horned cattle, mules, and horses are driven from the savannahs into the interior. Guayaquil, the capital, on the bay of the same name, founded by Pizarro in 1533, contains 20,000 inhabitants, and is one of the most flourishing commercial cities in South America. Its dockyard is particularly extensive. It produced one ship of 700 tons: very commonly vessels of 300 or 400 tons are built there; but it [illegible] chiefly noted for schooners of 150 to 200 tons. The houses stand in fine picturesque confusion, along the sides and the top of a hill: they are handsome and commodious; but none of the public edifices are very splendid. The animal food is not of very good quality, but nowhere does there exist a finer fruit market; the plantain is supposed to be more esteemed and eaten than in any other place. Guayaquil, like Egypt, has its plagues. The air swarms with mosquitoes and other flies still more tormenting; the ground teems with snakes, centipedes, and other reptiles, whose bite causes fever and inflammation. There is a cameleon whose scratch is believed to be mortal, a belief which seems quite chimerical, but which greatly harasses the citizens. The ants cannot be prevented from filling even the dishes; and sometimes, when a tart is cut up, they are seen running off in all directions, leaving the interior a void. Lastly, the shores are crowded with caymans and alligators, whose number cannot, by the utmost exertion, be kept within any tolerable limits. The beauty of the ladies of Guayaquil is celebrated throughout all America: they have complexions as fair as any European, with blue eyes and light hair. They have also an agreeable gaiety, joined to a propriety of conduct, which renders the society of this place particularly engaging.

5984. *Venezuela,* the last of the three grand divisions of Colombia, presents itself now under the character of an independent republic. It bears a completely opposite aspect to the two former divisions. While they consist of the declivities and valleys of the loftiest Andes, Venezuela forms a plain of immense extent, reaching westward to and beyond the Orinoco. This region is divided into three parts, distinguished by the most marked contrasts both natural and social. The first consists of the forest territory beyond the Orinoco. It exists in an entirely unsubdued and savage state, peopled by the Caribs and other tribes, who roam from place to place, and wage almost continual war with each other. A few only have been formed by the missionaries into *reductions,* and inured to the habits of civilised life. The second part consists of the *Llanos;* boundless plains, where the eye, in the compass of a wide horizon, often does not discover an eminence of six feet high. Like the Pampas of La Plata, they are covered with the most luxuriant pastures, on which, according to Depons, 1,200,000 oxen, 180,000 horses, and 90,000 mules are fed. Some of the great proprietors possess 14,000 head of cattle. The export of the hides of these animals forms one of the principal branches of the commerce of Venezuela. The third division, consisting of a coast about 600 miles long, and the territory immediately adjoining to it, includes all that exhibits any degree of culture or civilisation. Here the West India products, and particularly cocoa of superior quality, are cultivated to a considerable extent; and a trade is carried on, which, though interrupted by the revolutionary war and other calamities, is likely, in periods of tranquillity, to be revived and extended.

5985. *Caraccas,* situated considerably to the eastward along this coast, has always been the capital of Venezuela, and previous to 1812 was a very large city, containing above 40,000 inhabitants. On the 26th of March it was overthrown by one of the most dreadful earthquakes recorded in either hemisphere. After four in the evening, two successive shocks were felt, during which the ground was in continual undulation, and heaved like a fluid in a state of ebullition. The danger was then thought to be over, when a subterranean noise was heard, like the rolling of loud thunder; it was followed by two shocks, one perpendicular and one undulatory, so tremendous, that in a few seconds the whole city was in ruins. Several of the loftiest churches fell, burying 3000 or 4000 of the inhabitants, and they were so completely destroyed, that none of the fragments were more than five or six feet above the ground. Nearly 10,000 persons perished on the spot, besides many more who died afterwards, in consequence of wounds and privations. The agitation of the revolutionary contest obstructed the revival of Caraccas, and in 1830 it did not contain above 23,000 inhabitants. The city is finely situated, in a valley between the sea and the lofty mountain of the Silla, whose two peaks rise to the height of nearly 9000 feet. The cathedral is spacious, but massive and heavy. Alta Gracia, its most elegant church, was overthrown by the earthquake. There is an university on a very large scale, though the objects of instruction are somewhat obsolete.

5986. *La Guayra*, about twelve miles from Caraccas, of which it is the port, notwithstanding its unhealthy climate and bad harbour, is the seat of a very considerable trade. Similar disasters have reduced it from a population of 13,000 to scarcely 5000; but it is now reviving. The Colombian Agricultural Association, formed in Britain during the speculative era of 1825, sent out to this place a colony of about 200 Scottish highlanders; but they had been ill selected: a number died, partly through their own misconduct; the rest were conveyed in British vessels to the United States.

5987. *Some considerable cities* occur on the coast to the east of Caraccas. *Cumana* is situated on an extensive and fertile plain on the Lower Orinoco, bounded by a curtain of rude mountains, covered by luxuriant forests. Numerous herds run wild on its savannahs, and in the plain on the coast very fine tobacco is cultivated. It has a very spacious and noble harbour, and the whole gulf of Cariaco, on which it is situated, affords good anchorage. Mules, cattle, and provisions are exported to the West Indies; but there is no longer room for the very large contraband which prevailed when the Spanish Main was generally closed against Britain. The inhabitants, reckoned by Humboldt at 18,000, do not probably now much exceed 10,000. Cumana has suffered dreadfully by earthquakes: that of 1766 laid it completely in ruins; hence it contains no lofty or important edifice. *New Barcelona*, to the westward, on an extensive plain over-run by wild cattle, carries on a similar trade, which supports a population of about 5000. The isle of Cabagua, on this coast, once famous for a pearl-fishery, is now deserted.

5988. *Still larger cities* occur on the long line of coast which extends *westward* from Caraccas. *Valencia* flourishes in consequence of the fine interior territory, the trade of which is conducted through it, whence it is supposed to maintain a population of about 15,000. Its port, about ten leagues distant, called *Puerto Cabello*, has an admirable harbour, but is extremely unhealthy. *Coro*, once the capital of Venezuela, having lost that distinction and a great part of its trade, is now much decayed. *Maracaybo*, happily situated at the junction between a bay and a large lake reaching far into the interior, early became a great city. It contains many descendants of the early conquerors, who live in proud indolence: the rest of the inhabitants gain wealth by traffic; and the whole are supposed to be nearly 20,000. *Trusillo*, in a fine country near the head of the lake, early became one of the most flourishing cities in America; but being, in 1678, plundered and reduced to ashes by Gramont the buccaneer, it has recovered only in so far as to be a tolerable country town, though presenting monuments of its former importance. It is almost rivalled by Merida, a neat town to the west of it. Returning to the coast, and proceeding westward, we find *Hacha*, only distinguished by the neighbouring pearl-fishery, to which an English company, during the last ten years, sent an annual ship, but, it is said, with little of the expected profit. Farther west is *Santa Marta*, situated in a country pervaded by a detached range of very lofty mountains. It is fortified, and carries on a little trade.

5989. *The department of Carthagena*, on the west of the Magdalena, is chiefly distinguished by its capital of the same name. This city, long considered by the Spaniards as the bulwark of their possessions in America, equally noted for the successful attacks of Drake and the buccaneers, and for the disastrous failure of Vernon in 1741, has lost much of its former importance. The fortifications are considerably decayed, yet it is still the chief arsenal of the state. The packet-boats, which maintain the intercourse with Europe and the United States, sail to and from Carthagena; and it absorbs most of the commerce of the Magdalena and its tributaries: hence it is still supposed to have a population of about 18,000. The buildings have on the whole a gloomy aspect, though there are some handsome churches and convents. Mompox, at the junction of the Magdalena and Cauca, derives some importance from this situation. Tolu, in a rich vegetable district, is noted for the balsam bearing its name. The vicinity of Turbaco is distinguished by the curious phenomenon of the *Volcancitos*, about twenty cones, eighteen to twenty-five feet high, whence issue constant eruptions of gas, sometimes accompanied with water and mud.

5990. *Panama and Porto Bello*, on the opposite sides of the Isthmus of Darien, bore a great name in America, when they were the exclusive channel by which the wealth of Peru was conveyed to the mother country. Now, when both that wealth is diminished, and a great part of it is transported round Cape Horn, their consequence has much declined. Yet Panama, on the coast of the Pacific, is still a fortified place, and, though with only a bad roadstead, continues to carry on some trade, and maintains a population of about 10,000. Porto Bello, on the opposite coast, whose pestilential climate caused it to share with Carthagena the reputation of being the grave of Europeans, has, in this respect, been lately much improved by the cutting down of some neighbouring forests. Yet, notwithstanding a noble harbour, it is only a large village, unless during the annual fair, which is extremely crowded. Chagres has some employment, from its situation midway between these two ports. The project of a canal between Panama and Porto Bello is for the present given up, but a railway is projected. Near Cape Blas is a fishery of pearls and turtle; the former carried on by an English company with little advantage, the latter affording a profitable employment to about 120 individuals. Santiago, or Veragua, capital of the former province of that name, is a place of some consequence.

5991. *The great plains in the interior of Venezuela* and on the Orinoco, possessing neither manufactures nor commerce, cannot contain cities of any magnitude. Yet Varinas was reckoned a neat and handsome place, and, notwithstanding severe losses during the revolutionary war, has still 3000 inhabitants. Manteral derives some importance from the commerce of the Apure, on which it is situated. St. Thomé d'Angostura, the only city yet founded on the Orinoco, notwithstanding recent losses, is still about equal to Varinas, and is the seat of a bishop and a college.

Chap. VIII.

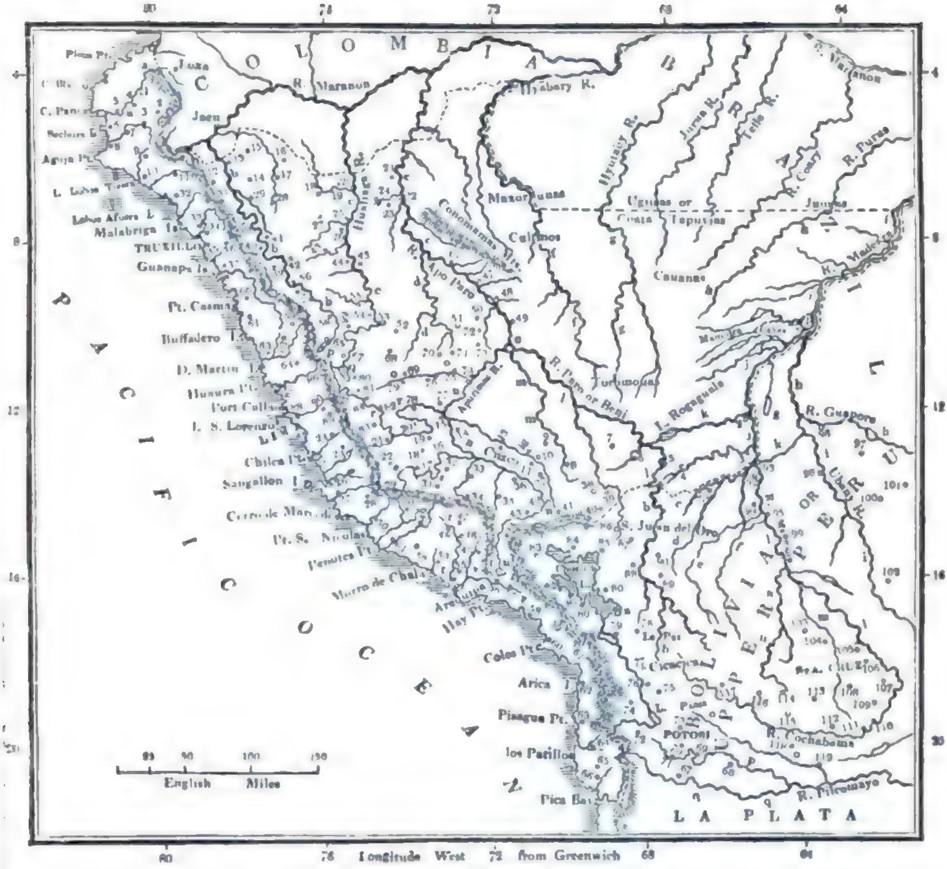
PERU.

5992. *Peru*, of all the regions south of the Gulf of Mexico, is the most celebrated for wealth and ancient civilisation. Its very name is proverbially used to denote profuse abundance of the most precious metals. Yet the Spaniards, towards the close of the last

Google

Fig 986

MAP OF PERU.



References to the Map of Peru.

NORTH PART.
1. Quiroz
2. Guatiaquillo
3. Tapetera
4. Pelingara
5. Amotape
6. Payta
7. Piura
8. Sechura
9. Olmos
10. Illimos
11. Callache
12. Micuipampa
13. Balzas
14. Uchuncha
15. Guispi
16. Chachapoyas
17. Levanto
18. Moyobamba
19. Lamas
20. Caimbasa
21. Panos
22. S. Barbara
23. S. Domingo
24. S. Francisco
25. Pachiza
26. Buenaventura
27. Pajaten
28. Leimebamba
29. Panan
30. Huamachuco
31. Caxamarca
32. Sanna
33. Ascopa
34. Chicama
35. Truxillo
36. Santiago
37. Guamanzamo
38. Huara
39. Piscobamba
40. Quiches
41. Caxamarquilla
42. Huaras
43. Mizisle
44. Pampahemote
45. Uchiza
46. S. Miguel
47. Amalmacas
48. Camariniguas
49. Pichobos
50. Camarasqui
51. Capolequi
52. Poruzo
53. Muna
54. Cuchero
55. Monzon
56. Huarachuco
57. Piscobamba
58. Panos
59. Caxabamba
60. Pampas
61. Cotaparazzo
62. Ocros
63. Canchas
64. Churim
65. Lauricocha
66. Huanuco
67. Pasco
68. Huancabamba
69. Quimiri
70. Sabirnaqui
71. Tampianique
72. Tiguanaqui
73. Aporeguiaqui
74. Jesus Maria
75. Autes
76. Pichano
77. Parva
78. Sanabamba
79. Callao
80. Reyes
81. Tarma
82. Ocopa
83. Chongos
84. Jauja
85. Tarcha
86. Centa
87. Chancay
88. Lima
89. Guarochiri
90. S. Pedro.

SOUTH PART.
1. S. Jesa
2. La Exaltacion de la Cruz
3. S. Anna
4. S. Pablo
5. Pablo de los Reyes
6. Tumupasa
7. S. José
8. Pancartambo
9. Lares
10. Zamora
11. Cuzco
12. Urubamba
13. Vilcabamba
14. Intatee
15. Mayapo
16. Anco
17. Cangallo
18. Huamanga
19. Guama
20. Coris
21. Guancavelica
22. Lirius
23. S. Cruz
24. S. Domas
25. Cannete
26. Pisco
27. S. Geromodeica
28. Laramate .
29. Sancamarca
30. S. Juan
31. Payco
32. Andaguaylas
33. Abancay
34. Chalhuanca
35. Mamara
36. Tambobamba
37. Urcos
38. Ayapota
39. Aporoma
40. Sandia
41. Sicuani
42. Tinta
43. Coparaque
44. Pedro de Calomo
45. Alta
46. Chaucalla
47. Para
48. Pausa
49. Para y Sanchos
50. Ingenio
51. Jaqui
52. Maturani
53. Caravelli
54. Cumana
55. Aplac
56. Arequipa
57. Pocsi
58. Chule
59. Moquehua
60. Ilo
61. Tacna
62. Arica
63. Tana
64. Tarapaca
65. Iquique
66. Pica.

Rivers and Lakes.
a Chira, R.
b Lauricocha, R.
c Huallaga, R.
d Pachitea, R.
e Apo Paro, R.
f Yabary, R.
g Hyutahy, R.
h Purus, R.
i Madeira, R.
k Exaltacion, R.
l Paro, or Beni, R.
m Yambari, R.
n Apurimac, R.
o Perene, R.
p Lauricocha Lake
q Chinchaycocha, L.
r Mantaro, R.
s Pampas, R.
t Oconna, R.
u Villano Lake
v Quilca Lake.

BOLIVIA, or
UPPER PERU.
67. Pancocha
68. Turuchipa
69. Cayza
70. Mana
71. Yura
72. Curahuara de Carangas
73. Potosi
74. Calapa
75. Oruro
76. Pandure
77. Chicasica
78. La Paz
79. Machaca
80. Pomata
81. Chucuito
82. Concepcion de Puno
83. Nicasio
84. Asangaro
85. Huancane
86. S. Juan del Oro
87. Apolobamba, ó la Concepcion
88. Zarata
89. Challana
90. S. Francisco
91. S. Borja
92. S. Pedro Nuevo
93. S. Pedro
94. S. Ignacio
95. S. Trinidad de Pampas
96. S. Rosa
97. S. Miguel
98. S. Magdalena
99. Loreto
100. S. Joachim
101. S. Martin
102. S. Xavier
103. S. José de Chiquitos
104. Puerto Gores
105. Colacu
106. Santa Cruz
107. Panrito
108. Samaipata]
109. Pira
110. Cabesa
111. Abapo
112. Jesus de los Montes Claros
113. Chilon
114. Totora
115. Tomina
116. Aguille
117. Oropesa
118. Pomabamba
119. Prezidio.

Rivers and Lakes.
a Chucuito Lake
b Paro, or Beni, R.
c Maniqui, R.
d Cobitu, R.
e Apure, R.
f Mamore Chico, R.
g Imatucara, R.
h Guapore, R.
i Ubany, R.
k S. Salvador, R.
l Mamore, R.
m Flores, R.
n Matavones, R.
o Cachimayo, R.
p Pilcomayo, R.
q Colaguyata, R.

century, severed from Peru all the ultra-Andean regions, called Upper Peru, comprising the richest mines and the greatest mass of the native population, and annexed them to the viceroyalty of Buenos Ayres. We cannot but regret, with Humboldt, this attempt "to efface the historical remembrances of nations. The associations," he observes, "of the Indians who inhabit these countries are oftener directed towards Cuzco, the centre of the ancient grandeur of the empire of the Incas, than towards the plains of Buenos Ayres." Besides, we must say, that, in our estimation, the idea of "rich Potosi's mines" was so strictly associated with that of Peru, that we could not willingly see them separated. In fact, the artificial ties formed by the court of Spain were finally dissolved by recent events. Upper Peru, having been liberated by a force from Colombia under Bolivar, has been erected into an independent republic, under the name of *Bolivia*. Buenos Ayres, having in vain endeavoured to effect an union even with the nearer territories of Cordova and Tucumán, will still more vainly seek to comprehend within its limits the domain of Potosí. Under these views, we have determined to consider Upper Peru as Peru, and restore to that country the districts which seem thus naturally to belong to it.

SECT. I. *General Outline and Aspect.*

5993. *The boundaries of Peru* are on the west the Pacific, forming a long line of coast between 4° and 24° of S. lat., which, by its windings and its oblique direction from north-west to south-east, probably exceeds 2000 miles in extent. On the north, the general boundary is the river of the Amazons in its easterly course, which is prolonged to the sea by a line somewhat winding, indented by the Colombian province of Jaen. On the east, Peru is separated from Brazil by lines very vaguely drawn through barbarous regions, which cannot very properly be said to belong either to one or the other. It is carried, generally speaking, parallel to the coast, sloping like it to the south-east, ranging from 68° to 60° long., and extending from 4° to 25° 40′ S. lat. At first, the Tavari, for some space above its junction with the Amazons; afterwards, the upper part of the Madera; lastly, a portion of the upper La Plata; form grand natural limits. To the north, according to our principle of including Upper Peru, the general boundary will be formed by the Pilcomayo, continued to the ocean, by a line drawn from its source across the Andes. Peru will thus be about 1500 miles in length and 700 in breadth. The contents, according to the careful estimate made by Humboldt, will be in square leagues 41,500 for Lower Peru, and 37,020 for Upper Peru; in all, 78,520 leagues, or 936,240 square English miles.

5994. *The surface of this extensive territory* is of the boldest and most varied description. It is crossed, and in a great measure covered, by the Andes, in their greatest extent and loftiest height. Humboldt, who has traced with such care the line of these mountains, finds them separating, about 19° or 20° S. lat., into two parallel chains, which enclose an extended and lofty table-land, including Bolivia, or Upper Peru, and partly filled with the immense lake of Titicaca. Between 14° and 15° these chains unite, and near their junction is situated the ancient capital of Cuzco. It is remarkable that the Andes, which in their course from Cape Horn have hitherto proceeded almost due north, here suddenly change their direction to north-west, and for a short time almost due west; while the coast, as along all this side of South America, follows every winding of the mountain chain, to which it continues always strictly parallel. Around Cuzco is accumulated a vast knot or mass of mountains, about three times the extent of Switzerland. The Cordillera then again separates, and another table-land appears only about half the extent of the former, but extremely elevated, being in some places 10,000 feet high. It then unites in another knot or mass, which contains the rich mines of Pasco, those of Potosi being placed at the opposite extremity of the first table-land. It then opens into three parallel chains, of which the most eastern is only a small lateral branch, bordering on the vast plains called the Pampas del Sacramento. Very high summits occur in the western chain facing the Pacific, and are seen in lofty succession from the cities of the coast. The last is in 8° S. lat., after which there does not occur one for 350 miles. But the mightiest part of the range is that already mentioned as extending over Bolivia, or Upper Peru. It is both the most spacious and the highest of all the branches of the Andes. It contains the stupendous peaks of Sorata and Illimani, the highest in the New World; and which rise, the former to the height of 25,400 and the latter of 24,350 above the level of the sea. It encloses an extensive table-land, scarcely any where less than 12,000 feet high, and peculiarly distinguished for the great altitude at which full cultivation, large towns, and even cities, are situated. In this lofty district also are found the rich mines of Potosi. Between the Andes and the sea extends the plain of Peru, where the chief Spanish settlements have been formed. It is from 50 to 100 miles in breadth, partly covered with branches from the Andes, but towards the sea forming a flat expanse of land, often white with saline incrustations, and absolutely a desert, unless where one of the broad streams, or rather torrents, from the mountains can be directed over it.

5995. *The rivers of Western Peru* can scarcely be ranked as such, being merely torrents, which descend from the Andes, and roll along its narrow plain to the Pacific. The interior, however, is bordered, and partly traversed, by the greatest rivers in the world. The Amazons commences its unrivalled course among the Peruvian Andes. One branch rises from two lakes amid the mountains of Pasco, traverses the whole of the last-mentioned table plain, receiving all the waters of its boundary mountains. After following this course for about 500 miles, it forces its way through rocks and straits across the barrier of the Cordilleras, turns its direction eastward, and reaches that immense plain through which it pursues its course across America to the Atlantic. The greater river Beni rises in the Sierra de Cochabamba, in 18° S. lat., to the north of Oropesa, and rolls along the back of the Andes, draining all their eastern waters, and in 11° S. receives the Apurimac, forming with it the Ucayal, the largest branch of the Amazons. Its entire course is about 1000 miles. On the east, Peru, as already observed, has for its boundary part of the courses of the Madera and the Plata; but these belong more properly to Brazil and Paraguay. On the south the Pilcomayo, after forming its boundary, falls into the Plata, having passed through the richest mineral region in the world.

5996. *Lakes* in South America are not very grand or characteristic features; yet Peru contains one enclosed in its greatest table-land, the Lake of Titicaca, which, though twenty times the size of the Lake of Geneva, cannot come into any competition with the mighty inland seas of Canada.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

5997. *The great chain of Peruvian Andes* is divided between 14° and 20° of S. lat., into two longitudinal branches, which are separated from each other by a wide valley, or rather by a *plateau*, the surface of which is elevated 2033 toises above the sea. The northern extremity of this table includes the Lake Titicaca. The western chain separates the bed of the Lake Titicaca and the valley of Desaquavado from the shores of the South Sea, and it presents at least sixteen volcanoes in a state of activity. Its geognostic constitution is essentially volcanic, the volcanic rocks being chiefly trachytes, obsidian and tufas, while the eastern chain consists entirely of mountains of secondary and transition formation, of mica slate, syenite, porphyry, red sandstone, marl containing rock salt, gypsum, and oolitic limestone. From this eastern chain issue a great number of torrents, which empty into the Rio Beni, and which carry down with them auriferous sand. The mines of Peru have been long celebrated, and of these the most valuable are those of gold, silver, and mercury. The gold is obtained at present at Pataz and Huilies in Taoma; and from some veins of quartz traversing primitive rocks. There are besides gold washings on the banks of the Marañon Alto, and on many of the rapid mountain torrents. The quantity of gold coined in the royal mint of Lima between the years 1791 and 1801, amounted to 3450 marks Spanish. In Peru nearly the whole silver is extracted from the great mines of Yauricocha, or Lauricocha (commonly called mines of *Pasco*, and the *Cerro di Bombon*), and those of *Gualgayoc*, or *Chota*, and *Huantajaya*. The most valuable of these mines are those of Pasco, situated in the high table-land, 13,000 feet above the level of the sea, which afford annually about 2,000,000 dollars. The mines of Chota were discovered in 1771 by a Spaniard; but the Peruvians worked, in the time of the Incas, some silver mines near Micuipampa. Great wealth has been obtained, even at the surface, both in the mountain of Gualgayoc, which rises like a fortified castle in the midst of the plain, and at Fuentestiana, at Cormolache, and at La Pampa de Navar. In this last plain, for more than half a league, wherever the turf has been removed, sulphureted silver has been extracted, and filaments of native silver adhere to the roots of the grasses. Frequently the silver is found in masses, as if melted portions of this metal had been poured upon a very soft clay. All the mines comprehended under the name of mines of Gualgayoc, on the partido of Chota, furnished to the provincial treasury of Truxillo, between the month of April, 1774, and the month of October, 1802, 1,189,456 lbs. troy of silver, or at an average of 44,095 lbs. troy annually. The mines of Huantajaya, surrounded with beds of rock salt, are particularly celebrated on account of the great masses of native silver which they contain; and they furnish annually from 45,942 to 52,505 lbs. troy of silver. The conchoidal horn ore, or muriate of silver, silver glance, lead glance, quartz, calc spar, accompany the native silver. These mines are situated in the partido of Arica, near the small town of Yquique, in a desert destitute of water.

5998. *Cinnabar*, or sulphuret of mercury, the common ore of mercury, occurs in Guanca-Velica, a district of Peru, at no great distance south-west of Lima. It appears that the discovery of this great mercury mine goes back to a very remote period, since the Incas made use of cinnabar in painting themselves. Mercury is found in the environs of the town of Guanca-Velica, in beds and veins. In the great mine of Santa Barbara, the cinnabar is contained in a bed of quartzy sandstone of nearly 400 yards in thickness; but the metalliferous mass is not more than 70 yards thick. Besides the cinnabar contained in the sandstone of Santa Barbara, there is also some in this same part of the Cordilleras, in small veins, in alpine limestone. Tin and lead mines are worked at Chayanza and Paryas; there are considerable deposits of copper at Aroa, yet the inhabitants of Peru import that metal from Chili.

5999. Upper Peru, or Bolivia. — This state is interesting from the variety, extent, and value of the minerals it affords. The mountainous regions are principally composed of porphyry, and in the same chain there are volcanic mountains, some of which are in a state of activity. Gold is found in considerable quantity on the mountainous districts, but hitherto it has not been very extensively mined. It occurs associated with antimony, silver, and other minerals, and sometimes in masses of considerable size: the largest mass on record is one which was detached by means of lightning from a mountain near to La Paz, and for which 11,269 dollars were paid. But by far the greater part of the gold procured in Bolivia is obtained by washing the sands of rivers: the most productive of these *cavaderos*, or gold washings, is that of Tipuani. Silver has hitherto been the principal metallic production of Bolivia, and has conferred on it its great celebrity. In the rich mountain of Potosi alone, according to records kept at Potosi, of the *quintas*, or royal duties, from the year 1745 to the year 1800, no less than 823,950,509 dollars were coined during that period; and if to this be added the amount of the preceding years, not included, and that obtained in a clandestine manner, without the payment of the customary dues, not less than 1,647,901,018 dollars have been obtained from this source alone in the space of 255 years. The silver mines of Portugalete, in the province of Chicas, have acquired celebrity on account of the riches as well as the quantity of their ores, which yield from sixty to eighty marks of silver to the *caxon*, while those of Potosi only afford about ten marks from the same quantity of ore. At La Plata, Porco, and Lipes, there are silver mines, especially one in the latter province, celebrated for the purity of its ores, which were formerly in great repute, but since eclipsed by the more important ones of Potosi and of other places. In Carangas there are rich silver mines; and formerly the silver mines of Oruro were very productive.

Subsect. 2. *Botany.*

6000. *The country is a complete desert* from Copiapo, along the whole coast of Peru, to the mouth of the Guayaquil river, intersected only by valleys, which are twenty or thirty leagues apart. A few patches of Tillandsiæ and Cacti are almost the only vegetation seen, except for a short time in winter, when bulbous plants of great beauty appear, wherever there is soil for them to fix their roots: but they quickly vanish when the mist disappears, and the sun regains its power.

6001. Though the surrounding country be so cheerless, *the valleys of Peru enjoy a delicious climate*, the cool south breeze moderating, though it hardly obscures, the sun's rays. It is not, however, always favourable to health; intermittent fevers attacking almost all those who reside on the coast of Peru. From the perpetual spring that prevails in the valleys, vegetation is most luxuriant; almost every cultivated plant, from barley to rice and sugar-cane, coming to perfection, the climate permitting both planting and reaping at every day of the year. The traveller, on entering one of these valleys, is struck by the sudden transition from the sterility of the desert to the bright verdure of the irrigated land: the water channels are, of course, carried near the hills, to ensure more fall of water; and every inch of ground within these limits is covered with luxuriant vegetation; so that hills that are parched and barren beyond these bounds, within them are clothed with a beautiful verdure. Few trees or shrubs remain in these valleys; still, for the purposes of fuel, some are left, as Willow, Manglillo (*Manglilla Jussieui*), and Huarango (an *Acacia*). Among the shrubs that grow near Lima are various species of Cordia, Buddlea, Heliotropium, Lantana, Lycium, and Jussieua. East of the Andes, again, there are considerable forests, an extraordinary difference existing between the eastern and western parts of Peru. Towards the coast, the climate is temperate, the rivers small and few, and the hills bare of wood. Wild animals are very rare: there are few birds, and no noxious reptiles. The country, its climate and productions, appear to belong to the temperate zone. But if we cross the Cordillera, and descend to the east, we find lofty trees, wild animals, and venomous snakes: numberless birds of splendid plumage inhabit the trees, and alligators and tortoises abound in the Marañon and its numerous tributary streams. Here are all the productions of a moist tropical climate; yet the two districts are in the same latitude, only separated by the Cordillera.

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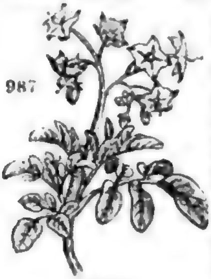

POTATO.

6002. ***Between Lima and Pasco***, a distance of about forty-five leagues, many interesting plants occur, especially the bright golden Amancaes (*Narcissus Amancaes* of Ruiz and Pavon), which is almost confined to the neighbourhood of the former place. This is a favourite flower with the inhabitants of Lima, who annually make a promenade to the spot where it most abounds, on St. John's day, and return home decked with its brilliant blossoms. Tillandsiæ, Mutisiæ, Melocacti, Cacti, and Schinus Molle also grow in this district, the latter plant affording a resin which is much valued as an application to bruises. The celebrated Yellow Potato of Peru (*Papas amarillas*) is cultivated at Huamantanga. It is deemed superior to every other variety, but is an indifferent bearer, and does not succeed near the coast. This may be considered as the native country of that valuable and widely diffused plant, the Potato (*fig.* 987.), which is very common about Valparaiso, inhabiting steep rocky places on the cliffs near the sea, and always bearing pure white blossoms free from the purple hue so common in the cultivated varieties. In the immediate neighbourhood of Pasco, that celebrated spot from which so much wealth has issued, few plants are to be found, those which most frequently occur being a few Gentians, Lupinus nubigenus, and some Compositæ. The pappus of Werneria rigida is used as tinder, and the fruit of Alstrœmeria dulcis is eaten by the children.

Subsect. 3. *Zoology.*

6003. *The Zoology* is as much unknown as that of Colombia: the researches of the accomplished travellers Humboldt and Bonpland, having been more directed to plants than to animals. Our notices must consequently be very brief, and confined to the three most celebrated animals of the Peruvian Andes, the Lama, the Vicugna, and the Condor.

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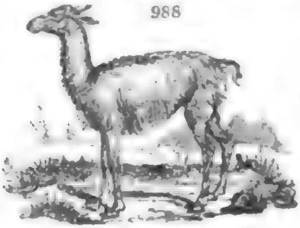

LAMA.

6004. *The Lama* (*Camelus Glama* L.) (*fig.* 988.) reminds the spectator of a very small camel, in which genus it has been placed by Linnæus. It has been supposed by Baron Humboldt, that the wild lamas are only individuals strayed from the domestic breed: but if this is correct, where was the animal originally brought from? The hair is long, soft, and elastic on the body; but close and short on the head and limbs. In manners, the lama is gentle and confiding, without showing much vivacity; its carriage is graceful, and even beautiful, when the pure white of the throat and breast is seen in front. It has not very great strength, but is trained to carry burdens.

6005. *The Vicugna* (*Camelus Vicugna* L.) is smaller than the lama, but is celebrated for the superior fineness of its wool. It inhabits the highest points of the southern Andes, and exhibits great liveliness. The manner of taking this animal so valuable for its fleece, is said to be as follows: — Ropes, to which bunches of feathers have been attached, are first stretched across the mountain passes, near their haunts; the animals are then hunted and driven in these directions. On reaching these barriers, the lamas stop in terror at the fluttering of the feathers, and wait to be slain or noosed by the Indians; unless, indeed, an alpaco (another species, not unlike the lama) happens to be among them. This animal, not so easily intimidated, will immediately leap over, and then the whole herd will instantly follow the example.

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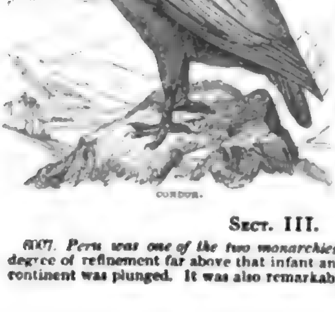

CONDOR.

6006. *The history of the Condor* (*Vultur gryphus* L.) (*fig.* 989.) was long enveloped in fable, until the publication of M. Humboldt's researches. It is one of the largest of terrestrial birds; but its size appears much greater, when seen by itself on a rocky peak, than it really is: for, when perched, it does not stand more than three feet high. It is peculiar to the Andes, and seems to prefer the highest points, bordering the limits of perpetual snow. Although they never attack man, yet they exhibit no fear at his approach: their food and habits are very similar to those of the bearded vulture of Europe. Two condors will dart upon a deer, or even a heifer, pursuing and wounding it for a long time, by their beaks and talons, until their victim sinks. They then immediately seize its tongue, and tear out its eyes. In Quito, it is said that the mischief done to cattle, by these formidable birds, is immense: their general food, however, is carrion or dead game. The skin of the condor is so thickly clothed with down and feathers, that it is capable of withstanding musket balls, when not closely fired; and the bird is killed with great difficulty.

Sect. III. *Historical Geography.*

6007. *Peru was one of the two monarchies* which, at the invasion of the Spaniards, had attained to a degree of refinement far above that infant and savage state of society in which all the rest of the American continent was plunged. It was also remarkable from the contrast of the character of its civilisation with that of the Mexicans. Instead of the fierce and lofty spirit, the bloody wars, the uncouth deities, and ferocious rites of that singular people, the Peruvians were united in tranquil subjection to a mild superstition, which represented to them their inca as the child of the sun, that supreme source of light and power, exercising in his name a beneficent sway, to which their unreserved submission was due. However fable may be mixed with truth in the tale of the first descent of Manco Capac and his spouse, from the heights of the Andes, there can be no fable in the story of the greatness of the empire to which their posterity attained. It comprehended not only the vast region we are now describing, but the territory of Quito, which, though united by Spain to New Granada, is covered with monuments of the empire of the Incas. Complete order and obedience were established in this dominion of more than 2000 miles in length. The land was carefully cultivated. As moisture was the chief want, all the rivers were diverted into *aqueas*, or irrigating canals; mountains were formed into terraces to receive them, and walls built to prevent the water from escaping; and thus large tracts were rendered productive, which, under European management, have relapsed into the state of desert. The grand imperial road, extending for 1500 miles, from Cuzco to Quito, though only eighteen feet broad, and not fitted for carriages, which, indeed, did not exist in Peru, was yet rendered a wonderful work by the natural obstacles which had been overcome, and the flying bridges by which a passage had been formed over the deep ravines. Robertson conceived that ancient Peru contained one city only, that of Cuzco, and that all the rest of the population was rural; but this opinion is at variance with the extensive remains observed by recent travellers. The ancient structures of Peru have nothing of that lofty character, to which those of the Mexicans attained. Perhaps they were thus formed for security in a country so subject to earthquakes. The walls, composed of immense blocks of stone, seldom rise to more than twelve feet in height; but they enclose immense spaces of ground, and are divided into an infinity of apartments; insomuch that one, observed by a late traveller, near Caxamarca, appeared capable of containing 5000 men. To the Mexican paintings and hieroglyphics, there is nothing analogous among the Peruvians, who, however, had their *quipos*, or strings, on which the colours represented the objects, and the knots their number. This contrivance, first used apparently for purposes of calculation, was afterwards employed as a record of events; though it cannot be said to be so effective as the Mexican pictures. Amid the mildness of all their rites and habits, the Peruvians retained one practice marked by the deepest barbarism. On the death of their Inca, or even of any great chief, a number of his vassals, often very considerable, were interred along with him. There were also deposited a portion of his wealth, and many precious and useful articles, destined for his use in the other world. The opening of these *huacas*, or tombs, has often proved a great prize to European adventurers; and in one instance there was found a treasure in gold amounting to no less than 150,000*l.*

6008. *Spain*, through the daring enterprise of a small band of adventurers, whose deeds we willingly decline recounting in detail, acquired, by a *coup de main*, this vast and rich empire. Peru then became the centre of the wealth and power of Spain in South America. An extensive dismemberment, indeed, took place, by the erection of the viceroyalty of Buenos Ayres, and the transference to it of the richest mining districts; yet Lima continued not the less to be the capital of all the southern states.

6009. *The spirit of revolution and independence*, which was kindled with such force by the French usurpation in the mother country, was much less strongly felt in Peru than in the less opulent seats of Spanish power. All the highest functionaries, and the richest merchants, were settled in Lima, and inspired a tone of feeling decidedly favourable to the mother country. So deep was this feeling, that Mr. Stevenson has heard affectionate parents declare, that they could not feel the same attachment to their children as if they had been born in Europe, and that, if they could suspect them of joining the American cause, they would murder them in their beds. Peru, therefore, not only remained for some time firmly attached to the Spanish cause, but made great exertions to suppress the opposite spirit in the neighbouring provinces; accompanied with cruelties which caused a general disgust and indignation, and gradually generated a feeling hostile to it. An external force, therefore, was necessary to give effect to the new system in Lima. It was not till the year 1820, more than ten years after the first revolution, that San Martin sailed with an expedition from Chili, landed at Pisco, and advanced upon Lima, which the viceroy La Serna abandoned to him without resistance. The triumph of the patriots seemed complete. But the misconduct and disunion of their chiefs, and the misfortunes of the army which they sent into Upper Peru, gave an unfavourable turn to affairs, and enabled the Spanish chiefs to regain possession of the capital. Bolivar, however, now came forward, and, having finally achieved the deliverance of Colombia, considered it essential to the general cause of American independence to destroy this last strong-hold of resistance. He marched down upon Lima, and La Serna again gave way: when the war was transferred to the defiles of Upper Peru, the patriot force was compelled to a disastrous retreat, in which it almost entirely mouldered away. La Serna was again master of Lima, which remained for some time in his hands; but Bolivar having called forth all the strength of Colombia, and the royalists being weakened by the defection of Olañeta, he was again obliged to retreat without a struggle. Yet the royalists in Upper Peru had once more rallied, and seemed on the point of regaining the ascendency, when General Sucre, by a bold and sudden attack, on the 9th December, 1824, gained a complete victory on the plains of Ayacucho: the whole Spanish army surrendered; its chiefs were conveyed to Spain; and the freedom of Upper and Lower Peru was to all appearance finally sealed.

Sect. IV. *Political Geography.*

6010. *Peru*, in consequence of its liberation, was formed into two separate republics: one, consisting of Lower Peru, considered now as Peru proper; and the other of Upper Peru, or Bolivia. It must be owned, however, that our information respecting the organisation and present state of these republics is very imperfect. Balbi states the revenue of Lower Peru at 1,250,000*l.*, its debt somewhat above 6,000,000*l.*, and its army at 7500. The revenue of Bolivia is stated at only 460,000*l.*, its debt 750,000*l.*

Sect. V. *Productive Industry.*

6011. *Agriculture* is not the branch on which the wealth of Peru in any great degree rests. The plain on the sea coast is a sandy desert, and the sides of the mountains are steep and broken into ravines; while the parameras or table-lands at the summit of the Cordillera are rendered nearly unfit for cultivation by the extreme cold and the perpetual snow which covers them; so that it is almost solely through the neglected remains of the Indian terraces and irrigating canals that any of the elevated tracts are rendered very productive. Some of the valleys, also, and of the lands along the rivers, are extremely fertile. Maize is the staple grain and chief food of the natives, in the various forms of bread, puddings, porridge, and roasted grain. It is also made into a fermented liquor called *chica*, which is agreeable enough; but, unfortunately for the fastidious taste of Europeans, the Indian women consider it their duty carefully to chew it, as a means of fermentation. Some of the higher grounds are better fitted for barley; but for wheat, Peru is dependent upon the Chilian province of Concepcion. The sugar-cane is cultivated with decided success, though not on a very great scale. Fruits of every climate, from the successive slopes of the Cordillera, are poured down into the markets of Lima. The neighbourhood of Pisco is covered with vines, from the grapes of which are made 150,000 gallons of excellent brandy; but the wine of Peru possesses no merit. Ipecacuanha, balsams, medicinal plants, and valuable dye-woods may also be mentioned.

6012. *Manufactures* are in a still less advanced state. In the mountain districts are made considerable quantities of coarse woollens, blankets, flannels, baize, and particularly *ponchos*, a loose riding cloak, generally worn throughout Spanish America, and sometimes made of great fineness. A few towns on the coast manufacture cottons. Goatskins are made into good cordovan. The Indians execute very fine filigree work in gold and silver, and their mats and other articles of furniture made from grass and rushes are very much admired. In general, however, the Peruvians look to Europe for a supply of all the finer manufactures.

6013. *The mines* have been the source of the unrivalled wealth of Peru. These are seated in the inmost depth of the Andes, approached only by steep and perilous passes, and in mountains which reach the limit of perpetual snow. The silver mountain of Potosi, in Bolivia or Upper Peru, has no equal in the world. It rises to the height of 16,000 feet, is eighteen miles in circumference, and forms one entire mass of ore. It appears from the city dyed all over with metallic tints, green, orange, yellow, grey, and rose-colour. Though since the conquest upwards of 240,000,000*l.* have been drawn from it, the mountain is still only honey-combed, as it were, at the surface; ore still lies at a somewhat greater depth, and is in some places overflowed with water. Yet it has sunk into such a state of decay, that in the ten years ending 1829, the annual produce is not believed to have exceeded 330,000 dollars. But the present depressed state of the mine is chiefly owing to the late political convulsions, and the exhaustion of all the capital that was formerly employed. These are evils which probably a state of peace will remedy, though no arrangement to that effect has yet been made. A company from Buenos Ayres offered 2,500,000 dollars (500,000*l.* sterling) for the exclusive working; but several English agents coming out in eager competition for the same object, Bolivar sent the proposals to London. They reached that capital at the well-remembered moment of deep depression, and did not obtain even an offer. The Spaniards assert that there are 5000 mines in Potosi; but these mines are only *estacas*, or lots portioned out to individuals, of which, when Mr. Andrews visited the place in 1826, there were not quite 100 at work; yet these few yielded a good profit, and there was no want of labourers: hence he calculates that a capital of 100,000*l.* would yield 18,000*l.*, or, in allowing a third to pay the high salaries expected by the agents, 12,000*l.* This is exclusive of any advantage from the use of machinery, and any improvement in smelting, refining, and other processes, which have hitherto been performed in the rudest manner. The exhaustion of timber will, however, be a serious obstacle; for the reported discovery of a vein of coal is not confirmed by Mr. Andrews. The mines of Pasco are situated at a prodigious height, on the knot where the Andes lock into each other, more than 13,000 feet above the sea. They are chiefly in the mountain of Lauricocha, forming a bed of brown ironstone, about three miles long and one and a half broad; from every ton of which two or three marks of silver are extracted. These mines, before the revolution, yielded annually 131,000 lbs. troy of silver. By that convulsion their working has been entirely suspended. The house of Abadia, by which it was chiefly carried on, has been ruined; and the royalists, in revenge for the part taken by that house, destroyed all the costly machinery: the water, which always occurred at the depth of 400 feet, took full possession of the mine. It would cost now a very large sum to bring it again into a productive state, though it is still believed that the returns in such case would be great. There are mines also at Hualgayas in the province of Truxillo, and Huanlaya in that of Arequipa. All the Peruvian mines, however, are so much declined, that their produce, during the entire period from 1819 to 1829, was under 4,500,000 dollars. The gold mines are found chiefly in the interior district of Tarma, bordering on the Amazon. The metal is partly obtained by the usual process of washing the earth impregnated by auriferous streams; but in some instances the gold is found embedded in veins of quartz rock. The mines of mercury are considered equally precious with those of silver, from its scarcity and its necessity in amalgamation. The discovery, therefore, of the mines of Guanca-Velica was of the greatest importance, and they yielded at one time an immense amount. The mountain, which is nearly 14,000 feet above the sea, being excavated into three successive galleries, and the props not having been made sufficient, a great mass fell in, and crushed the most valuable part of the works. Hence, even before the revolution, the produce had fallen to 15 cwt. The same district abounds with valuable mines of gold and silver, which, however, from the imperfect mode of working, were never very productive.

6014. *Commerce*, during the late crisis, can scarcely be said to have had an existence in Peru; nevertheless we must describe what has been, as likely to exist again, when peace and security revive. The export trade rests almost entirely on gold and silver, with a little bark, cocoa, cotton, and sugar. The value which, before 1739, scarcely exceeded 2,000,000 dollars, had risen between 1785 and 1794 to 6,690,000. The imports consist of all the articles of European manufacture, except those coarse and common fabrics, which are produced in the country itself. Those of Britain obtain a decided preference. Mr. Stevenson remarked with pride, on entering a house in Lima, that almost every thing was English; the brass furniture, the window glass, the dimity hangings, the linen and cotton dresses of the females, the cloth coats of the men, the plates, knives, and forks on the table; even the iron pots and pans in the kitchen. From the peculiar state of society, in which European habits prevail without European industry, the market for foreign goods is here, as in the other American states, much more than in proportion to their wealth and population. Mr. Proctor even heard it calculated by a well-informed person, that Lima, under favourable circumstances, would receive a value not less than 2,000,000*l.* sterling. The most saleable articles are cotton goods of almost every kind; Manchester broad flannels, Irish linens and lawns, fine Scotch cambrics and table linen; silks, crimson damask, and particularly narrow ribands. Thick broadcloth finds a market in the interior. Glass, earthenware, and hardware are also in regular demand. Toys need not be sent, as the gold and gems of the country are preferred. Hats, with leather, and every thing made of it, are so well manufactured in the country, as to render foreign supplies superfluous. The principal imports direct from Peru into Great Britain, in 1831, exclusive of gold and silver, were, Peruvian bark 206,574 lbs., hides 553 cwt., saltpetre 2,586 cwt., goat-skins 10,735, seal do. 4952, cotton wool 57,027 lbs.; but a good deal of Peruvian produce is imported at second hand from Buenos Ayres and Valparaiso. The real value of the total exports of British produce and manufactures to Peru, during the same year, was 409,000*l.* The principal articles were cottons, woollens, and linens. (See M'Culloch's *Commercial Dictionary*, art. LIMA.)

6015. *The roads in Peru*, as in other parts of South America, consist in general only of the foot tracks of the horses, or more frequently mules, by which they are trod. No carriage is attempted to be driven; but the effeminate traveller sometimes establishes on the back of the mule, a species of box or litter, the motion of which, however, is very unpleasant. It is only in the dreadful steeps of the Andes, that human art has been employed to form a path along the sides of precipices, to cut one through rocks, and even to form them into steeps; but these works, it is probable, were performed by the native Peruvians, and not by their European conquerors.

SECT. VI. *Civil and Social State.*

6016. *The population of Lower Peru*, according to two enumerations made about 1803, amounted to 1,076,000. Of these there were 136,000 Spaniards, 609,000 Indians, 244,000 mestizos, 41,000 free negroes, and 40,000 negro slaves. Humboldt has assumed 1,400,000 as the actual number; perhaps rather hastily; for there cannot, we suspect, under the circumstances of the last twenty years, have been any increase. According to statements obtained by Mr. Brackenridge at Buenos Ayres, Upper Peru, called there the Audiencia of Charcas, contained 1,716,000; of which 510,000 were Europeans and mixed races, 986,000 Indians, and 220,000 not distinguished. We cannot help suspecting this statement to be a little exaggerated, especially as to the first head; but we have no other. Peru, then, will contain in all 2,792,000 inhabitants.

6017. *The character of the Creoles*, or native Spaniards, of Peru, is painted under colours somewhat less flattering than that of the same class in almost any of the other states. The preponderance of the European Spaniards appears to have been more overwhelming than elsewhere. This political degradation, with the general diffusion of wealth and facility of subsistence, seems to have been the chief cause of the enervated state into which the natives of Lima had sunk. The male inhabitants are considered by Mr. Proctor to be almost too insignificant a race to be worthy of mention; destitute of all energy both mental and bodily; so that, notwithstanding the extensive trade, there are not above two or three mercantile houses carried on by native Peruvians; all the rest are conducted by foreigners, many of whom are from Chili and Buenos Ayres. The ladies act a much more conspicuous part; though not always, we are sorry to say, altogether to their credit. From their earliest years they are led to consider themselves as the objects of admiration and homage, and a system of the most decided coquetry, or at least flirtation, is established. Even Mr. Stevenson, their champion, allows it to be common for the mother to screen her advancing years by making her daughters address her as a sister. Their intrigues are greatly aided by a dress originally intended to mark reserve and seclusion; the *saya*, a light elastic gown fitted close to the frame, being covered with the *manto*, a large loose cloak of black silk gauze, which is wrapped round even the face (*fig.* 990.). Under this disguise, they sally forth, and amuse themselves by addressing their friends without being known by them; mixing with the crowd to view whatever exhibition may be going forward; and, it is too likely, in still more culpable indiscretions. Gaming prevails also among both sexes to a destructive extent; and families are extremely ill managed. Yet the Peruvians are courteous, humane, hospitable, and generous. In the country, these amiable qualities are combined with equal mirth, but a much greater degree of simplicity.

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FEMALE COSTUME OF LIMA.

6018. *The Indians*, or native Peruvians, are still, over all Peru, the most numerous class. They present nothing of that fierce aspect, and that untamed and ferocious character, which render the Caribs, the Brazilians, and the Indians of Canada, so terrible to European settlers. They have small features, little feet, well-turned limbs, sleek, coarse, black hair, and scarcely any beard. Ulloa and Bouguer have represented them as sunk in apathy and insensibility; as beings to whom good and evil fortune, honour or dishonour, life or death, appeared to be all alike. But though a certain tameness of character may have been generated by their former despotism, it appears that the shy, reserved, and gloomy aspect which they present to Europeans has arisen chiefly from the experience of oppression and accumulated wrongs; and when it is often said that no expedient can rouse them from their gross ignorance, Mr. Stevenson triumphantly asks, what expedient has been employed for that purpose? The Indians assuredly live in very miserable huts; and they show a wonderful patience under the greatest privations; yet they do not neglect the means of improving their condition: they are industrious cultivators, and manufacture often very beautiful fabrics from very simple materials. Several of them have distinguished themselves in the pulpit and at the bar; and, when completely at their ease, they are found to talk with even an excess of fluency. Chastity, especially in the married state, is a national virtue; but they are apt to indulge in too deep potations of chica, their favourite liquor. They have been converted to something which they call Christianity; that is, they celebrate the festivals of the church by drinking enormous quantities of chica, dancing through the streets to the sound of the pipe, with bells fastened to their legs, and cudgels, which they apply to any who attempt to obstruct their progress; in which devout exercises a whole week is sometimes consumed. They have, in a good measure, wiped off the reproach of cowardice, by late achievements in the cause of Old Spain. Yet they retain the deepest and most mournful recollection of the Inca, and in all the remote districts annually celebrate his death by a sort of rude tragedy, accompanied by the most melting strains of natural music.

6019. *The mixed races* are more numerous than the pure Spaniards, though less so than the Indians. They consist of the usual multiplied branches from the three original stocks of Europeans, Indians, and Negroes. According to Mr. Stevenson, the mestizo is strong, swarthy, with little beard, laborious, and well disposed; the mulatto is less robust, but is acute, talkative, imaginative, fond of dress and parade. In a public disputation at the university, a mulatto in the gallery will often help the embarrassed student out with his syllogism. The zambo (mulatto and negro) is violent, morose, and stubborn, prone to many vices, and guilty of more robberies and murders than any other class, only excepting the Chinos (negro-Indian), said to be the very worst mixed breed in existence, ugly, lazy, stupid, and cruel.

6020. *The religion*, as in every country over which Spain ever reigned, is exclusively catholic. Lima is the seat of an archbishop, who had for suffragans the bishops of Cuzco, of Panama, two in Chili, and six in the south of Colombia; but this extensive jurisdiction must now be curtailed. There are in Peru 2018 clergy, 2217 monks, and 1361 nuns. Immense wealth has been accumulated by several of the convents from pious donations. Some of the clergy are respectable, but a great proportion of the friars are said to lead very dissolute lives, and to promote rather than check the general licentiousness. Although no toleration is admitted, yet in 1812 the inquisition was abolished. An English traveller then resident saw its dungeons broken open, and their secrets disclosed: racks, pillories, scourges of knotted cord, tormentors of netted wire, with points projecting inward; and gagging instruments formed of human bone. There was a crucifix with a head capable of making a movement, which, being produced by a person from behind, had the appearance of being miraculous.

6021. *Literature* is not in so utterly depressed a state at Lima as in the other cities to the south of the Isthmus of Darien. Besides several colleges, there is a highly endowed university, founded in 1549, on the model of that of Salamanca. The professors do not deliver lectures; but examinations and disputations are maintained with considerable diligence. A number of scholars have been produced, who, in America, are accounted eminent. The *Mercurio Peruano*, a periodical work, carried on before the revolution, contained a good deal of valuable information. The emancipation has, as might be expected, been accompanied with extensive arrangements for diffusing knowledge among the body of the people.

6022. *The amusements* consist of the theatre, which, at Lima, is tolerably conducted; bull-fights, cock-fights, and religious processions; and the rage for public diversions, as already observed, is extreme. In regard to dress, the chief distinction seems to consist in the saya and manto, worn by the ladies, and already described. The favourite dishes are the well-known olla podrida, and the chupe, a mixture of fish, eggs, cheese, potatoes, and onions, eaten by the guests with spoons from a common dish in the middle of the table. The cigar is almost constantly in every one's mouth.

Sect. VII. *Local Geography.*

6023. *Lima* (*figs.* 991. and 992.), next to Mexico the most splendid city of Spanish America, is situated about six miles in the interior, from its port of Callao. It is of a form nearly semicircular; two miles long, and one and a half broad; the base being washed by the river Limac. It is surrounded by a wall of brick and clay, twelve feet high, but capable merely of serving for purposes of police. The houses run in straight lines, dividing the city into a multitude of squares of various forms and dimensions. They are built wholly of timber, cane, and unburnt brick, and are seldom more than one, scarcely ever more than two stories high; but those of the rich are surrounded by porticoes or open courts, enclosed by high walls and gates, which being, as well as the interior, painted with figures as large as life, and adorned with wooden pillars, coloured in imitation of stone, make a very gay appearance. The *plaza*, or principal square, is, as in other Spanish cities, surrounded by all the finest edifices. The viceroy's palace, however, is an old plastered and unsightly structure, of a reddish colour, the lowest story of which is strangely occupied by a row of mean shops, above which is a gallery open to the public. The apartments now employed as government offices display some vestiges of decayed magnificence. The cathedral is an elegant building, with a stone front, and two towers of considerable height; and the interior, particularly the great altar, is, or at least was, excessively rich. Close to it is the archbishop's palace, elegant, adorned with green balconies, though with the same bad taste of having little shops, among others, a drinking shop, on the ground floor. There are twenty-five convents in Lima, with churches attached to them; and fifteen nunneries. The convent of San Francisco, with its appendages, is the most extensive, and, though not so rich, is more elegant than the cathedral. An immense treasure in the precious metals was contained in these establishments; but during the revolution great part has been abstracted, though the base materials substituted have been carefully gilded over. The population of Lima is reckoned by Caldcleugh at 70,000, of whom about 25,000 are Spaniards, 2500 clergy, 15,000 free mulattoes, 15,000 slaves, 7200 mestizos, and 5200 Indians. Mr. Stevenson estimated the number at 87,000, and Mr. Proctor heard it reckoned at above 100,000; but no recent

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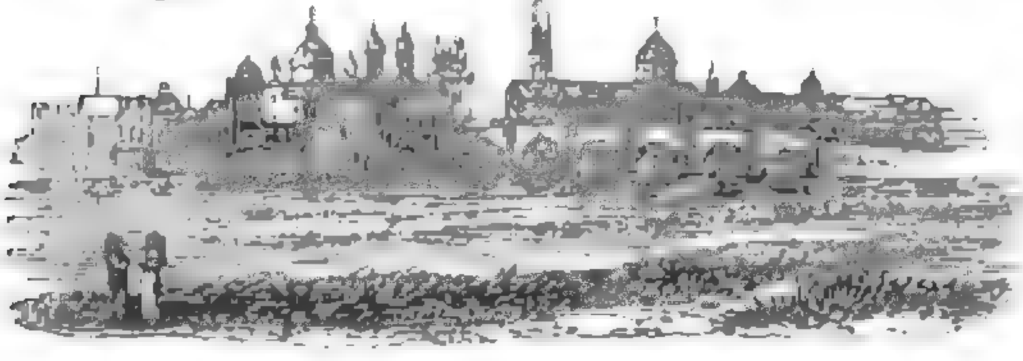

LIMA.

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LIMA FROM THE SEA.

census has been taken. Cállao, communicating with Lima by a very fine road, has an excellent harbour formed by two islands. The forts by which it is defended are handsome and strong; but Callao itself is a mere fishing village, of about 200 huts.

6024. *On the coast to the north of Lima* is Truxillo, a handsome little town, a miniature of Lima, and built in the same gay style. Around it is a very extensive and productive plain; and other tracts, which are now sandy wastes, are proved, by the remains of acequias, and the ruins of large towns, to have been cultivated and peopled in the time of the Incas. By its port of Huanchaco, which has a tolerable roadstead, Truxillo sends the produce of its territory to Lima, and receives British goods in return. On the 29th November, 1820, the Marquis of Torretagle, governor of Truxillo, proclaimed the independence of that intendency, and thus rendered an essential service to the cause of liberty in Peru. Huachi and Supe are large Indian villages, the houses poorly built of mud; but the inhabitants, an active and hardy race, carry on some fine manufactures of cloth and glass. Sanna is the seat of a considerable trade, and Lambayeque, to the north of Truxillo, is the most thriving place between Lima and Guayaquil. The inhabitants manufacture excellent cordovans of goatskin; cotton cloth, particularly table linen and canvas; soap, which, though much inferior to that of Europe, is preferred in Peru; and sweetmeats made from the fine fruits of the country, which are packed up in chip boxes, and sent all along the coast. Piura, still farther north, is generally accounted the most ancient city in South America, though it is not exactly on the site of the city founded by Pizarro. Its district is noted for the finest breed of mules in Peru, sometimes selling for 250 dollars each; also for a very fine breed of goats, from whose skins they manufacture good cordovans; and they make also some cotton, cloths, though not on so great a scale as at Lambayeque. The houses are built of cane and mud, and the streets, both here and at Truxillo, being unpaved, the passenger walks ankle deep in sand and mud. Payta, celebrated for the successful descent of Anson in 1741, is a commodious and well-frequented sea-port, the most northerly in Peru, and where, consequently, a considerable quantity of goods is landed from Panamá, to be distributed through the country. It being a complete desert of sand, potable water is brought from a distance of twelve miles, and sold at a high price.

6025. *To the south of Lima*, and only four miles distant, is Miraflores, an assemblage of villas surrounded by gardens, formerly the country residence of a number of the grandees of the capital, which the late disturbances have caused to be almost deserted. Four miles farther is Chilca, the Brighton of Lima, to which a great part of the population resorts during four months in the year, for coolness and for sea-bathing. In proceeding southward, the coast becomes very desolate. Pisco, though bearing the name of a city, is, in fact, only a poor village. On islands near it, however, are vast accumulations of the excrement of birds, forming the richest manure that is any where known. The vines in the neighbourhood produce fruit, from which is made a large quantity of good brandy. The intendency of Arequipa fills the space between the ocean and the Andes. It is one of the most fertile provinces in Peru; rich in maize, sugar, and vines, from which an esteemed red wine is made. There are some considerable silver mines, but not to be compared to those on the other side of the mountains. Arequipa is a large city, considerably in the interior, in an agreeable and healthy climate. All the principal houses are substantially built of stone. The river Chile supplies the city with water, and irrigates the surrounding lands. The population has been estimated from 24,000 to 40,000: the first number is the most probable. Arequipa has stood, notwithstanding shocks of earthquakes repeated three or four times in each century. Near it is a great volcano, whence arise clouds of ashes, which reach even to the ocean. Mollendo, its sea-port, is only a village. Arica was originally a port of considerable importance: but since the earthquake of 1605, and the plunder of the place, in 1680, by the pirate Warren, it has been in a great measure deserted, and the population has emigrated to Tacna, which is a thriving town, about thirty miles in the interior, employing extensive droves of mules to carry the merchandise landed at Arica into the provinces beyond the Andes. Moquehua, another interior place, is chiefly noted for the good wine produced in its district.

6026. *The northern interior of Peru*, forming part of the Spanish intendency of Truxillo, consists of the provinces of Huailas, Huamalies, and Conchucos: they occupy various levels in the great interior table-land of the Andes, and are reached by rocky and almost precipitous routes over the western chain. They present that variety of rich and valuable produce, which generally marks the American table-lands. Wheat, barley, cocoa, sugar, are grown in its different stages; fine cinchona is brought from the eastward, though the wasteful mode of collecting it may cause a dread of exhaustion; the fine soft wool of the alpaca and vicuna is collected. There is a great deal of manufacturing industry in these upper districts; the wool is made into ponchos, flannels, serges; the goatskins into cordovans; the tallow into soap. The mines, which were formerly worked to a considerable extent, are now almost all abandoned. Great hospitality prevails; any respectable traveller, on arriving at a town, has only to go to the best house in it, where he is sure to be entertained, usually without charge. Rudeness, however, is ascribed to the inhabitants, especially of Conchucos, and believed to arise from habits formed under the mining system. There are several pretty large towns in this high district, which serve as markets for the produce of the neighbouring country, and channels by which they receive European commodities. These are, Caxatambo, Huaras, and Caxamarca; each of the two last, according to Mr. Stevenson, containing 7000 inhabitants. Caxamarca is, above all, distinguished as having contained a palace of the ancient Incas, and being the spot where Atahualpa, the last of the dynasty, fell by the sword of Pizarro. An Indian family still boasts this high descent, and inhabits the remains of the palace of Atahualpa, and particularly the room in which that unhappy prince was confined, and where is still shown the mark in the wall, up to which he was to fill the apartment with silver. In the neighbourhood are also the remains of a vast mass of building, constructed of ponderous stones, in the Peruvian fashion, and capable of containing 5000 persons.

6027. *The vast plains called the Pampas del Sacramento* extend eastward from the provinces to the great river Beni or Ucailli. They are not naked plains, like the southern pampas, but covered with immense forests. The full occupation by the Indians is only interrupted by missionary settlements, which exist in considerable numbers.

6028. *The district of Tarma* is chiefly distinguished for containing the richest silver mines in Lower Peru, among which those of Pasco take the lead; but the working of them having ceased, from causes already described, the town is fast going to ruin. The town of Tarma contains about 5500 inhabitants, having a considerable manufacture of baize. Jauja, situated in a very fine valley, is also of considerable importance, as commanding the passage of the Andes from the interior to Lima. Guanuco, north of Tarma, is distinguished by Peruvian remains, and still more by containing the infant rivulet, which swells into the stream of the mighty Amazons.

6029. *Guamanga and Guanca-Velica* occupy the more southern valleys of the Andes. The former has many districts very fertile in green pasture, and its capital, of the same name, is a great and very handsome city, built of stone, and adorned with magnificent public places and squares. It has an university of royal foundation, richly endowed, and contains 16,000 inhabitants. Guanca-Velica is bleak and cold, only distinguished for the rich mines of mercury, which once rendered it a flourishing place, but are now so much declined that the population is reduced to 5000.

6030. *Cuzco*, the grand metropolitan seat of the ancient empire of Peru, is situated east of these provinces, and somewhat deep in the interior. It is placed upon a knot of the loftiest Andes, the summits of which are enveloped in eternal snow, but separated by valleys, and even extended plains, rich in pasturage, and in the grain of the temperate climates. The Peruvian fabrics of woollens and of cordovan leather exist still on a more extended scale than in any of the provinces yet mentioned. The imperial city of Cuzco, even in its fallen state, is still handsome, and even splendid. The cathedral is described as a noble pile. The Dominican church has been built from the materials of the ancient temple, on the same site, and the altar has taken place of the image of that deity.' On an eminence are the walls of the fortress of the Incas, raised to a great height, and built of truly astonishing masses of stone. Cuzco is stated by Mr. Jacob to contain 32,000 inhabitants, of whom three fourths are pure Indians, the rest mestizos, with only a small and diminishing proportion of Spaniards. The manufactures are considerable. Cuzco threw off the Spanish yoke earlier than Lima, but the city was soon retaken by the royalists, and remained with them till the final extinction of their power.

6031. *Upper Peru* forms an extensive territory, situated south and somewhat east of Lower Peru, with which it assimilates in aspect and productions. Yet, in 1778, it was separated by the Spanish government, and attached to the viceroyalty of La Plata; while in the course of the late revolution it was severed from La Plata also, and erected into an independent republic, under the name of Bolivia. This is among the least known regions of the globe, yet one which its natural features render peculiarly interesting. It is now ascertained, by the important observations of Mr. Pentland, to contain the loftiest mountain peaks in the New World, yielding in height only to those of the Himalayah. The summit of Sorata was found to be 25,400 feet high; that of Illimani, 24,350; so that Chimborazo, which is only 21,400, must hide its diminished head. The very elevated table plain from which these colossal summits rise appears to have prevented their extraordinary elevation from becoming sensible, till it was determined by barometrical measurement. This table plain, though not the most elevated, seems undoubtedly the most fruitful and populous on the globe. That of Thibet is as lofty, and vegetation ascends as high on the southern slopes of the Himalayah. But while Thibet, in general, presents only wide pastoral expanses, covered with numerous herds of goats, sheep, and oxen, this western table yields copious harvests of rye, maize, barley, and even wheat; it has cities above the region of the clouds; villages which would overtop the white pinnacles of the Jungfrau and the Schreckhorn; cottages as high as the top of Mont Blanc. The following are among the most remarkable heights: — the city of Potosi, 13,350 feet (its mines, 16,060); city of Púno, 12,832; of Oruro, 12,442; of La Paz, 12,194; of Charcas, 9332; of Cochabamba, 8440; cottages at the source of the Ancomarca, 15,721; post-house of Pati, 14,402. Mr. Pentland's observations of longitude, though imperfect, seem to show that the principal stations in this region are farther east, and more in the interior, than our maps represent them, in consequence of which these remarkable summits are not visible from the Pacific.

6032. *The new government* have formed Bolivia into eight departments: — Chuquisaca, La Paz, Oruro, Potosi, Cochabamba, Santa Cruz de la Sierra, Tarija.

6033. *A site has been fixed upon for a capital*, to bear the name of Sucre, the commander whose victory at Ayacucho secured the independence of the state; but as this city is not yet in existence, the interim metropolis is fixed at Charcas, which has been re-invested with the ancient Peruvian name of *Chuquisaca*, and has borne also sometimes that of La Plata, from the silver mines in its vicinity. It is a handsome city, containing about 12,000 inhabitants. Notwithstanding its astonishing elevation, the country round is fertile and smiling. There is an university numerously attended, and a library, said to be one of the best in South America.

6034. *La Paz*, to which M. Balbi, on Mr. Pentland's authority, assigns a population of 40,000, is really the chief city of Bolivia, and surrounded by the most interesting objects in that country. A few miles to the south is the Nevado de Illimani, and at some distance to the north rises that of Sorata, both already described as the highest mountains in the New World. At some distance to the north-west is the great lake of Titicaca, about 150 miles long, and the largest in South America. This lake is a sacred object in the eyes of the Peruvians, since, according to their most sacred traditions, it was on an island in its centre that Manco Capac and his spouse first appeared to give laws and arts to the empire. At the village of Tiahuanacu, near its banks, are the remains of a stupendous palace erected by the ancient Peruvians. The interior courts, 360 feet square, are built of enormous blocks of stone, some of which weigh eighty tons. The great gates are each composed of one single mass. There are also remains of colossal images, but rudely sculptured.

6035. *Potosi enjoys the greatest fame* of any city of this region, but retains, as already observed, few traces of the wealth which gained for it this celebrity. It is probably the most elevated city in the world, being, as stated above, 13,000 feet above the sea, and consequently higher than the Peak of Teneriffe. It is not a well-built town; the streets are narrow and irregular, and most of the houses indifferent. It has, however, a college and a mint. Reports vary greatly both as to its past and present population. The assertion that, in its most flourishing state, it ever contained 160,000, is probably much exaggerated. In its present decline, Mr. Pentland, the latest and perhaps best authority, states, that a census in 1826 found in it not more than 9000 inhabitants.

6036. *There are some other considerable places* in this region. Oruro has not more than 4000 or 5000 inhabitants; but the mines in its vicinity were once important. Cochabamba, in the midst of a fertile though mountainous territory, has been said to contain 30,000 inhabitants. Santa Cruz de la Sierra, situated amid an extensive plain in the eastward, is an ill-built town, with a population of about 9000. Large tracts in this quarter are occupied by the Moxos and Chiquitos, Indian tribes nearly independent, unless so far as the missionaries have reclaimed them from their savage habits. Tarija, a small province to the southward, belonging to the territory of La Plata, has voluntarily united itself with Bolivia. The republic, in their small extent of coast, have only one port, that of Puerto de Lamar, which labours under a deficiency of fresh water; so that they are obliged at present to receive almost all their foreign commodities across the mountains, by way of Arica.

Chap. IX.

CHILI.

Sect. I. *General Outline and Aspect.*

6037. *Chili*, or *Chilé*, consists of a long narrow band of territory situated between the Andes and the Pacific Ocean. The former, reaching unbroken from the northern to the southern extremity of South America, divides it into two very unequal parts. That on the east consists of plains of almost boundless extent, those of the Orinoco, Amazon, Plata, and of the Pampas; while the western, varying from 150 to 200 miles, is little more than the slope of the mountains downward to the Pacific. Of this western portion, Chili forms nearly the southern half. Its northern boundary is formed by the desert of Atacama, nearly on the tropic of Capricorn, or about 24° S. Mr. Caldcleugh terminates it on the south by the river Bíobío, the frontier of Arauco, a territory whose fierce and warlike tenants always maintained a decided independence; but as they have to the south the important ports of Valdivia and Osorno, we seem justified, by the authority of Humboldt, in extending Chili to the Gulf of Chiloe, comprising the island of that name, in about 44°. We have thus a length of 20°, or 1400 miles. The boundary on the side of Buenos Ayres is formed by a line drawn along the culminant point of the Andes, and through their eternal snows. From this line to the coast of the Pacific must be measured the breadth of Chili, not averaging more than 200 miles. The superficial content is estimated by Humboldt at 14,300 square geometrical leagues, or about 171,600 square miles; from which, however, must be taken off the considerable portion held by the Araucanos.

6038. *The surface of Chili* consists of portions the most strikingly dissimilar, but passing into each other by regular and insensible gradations. Between its mountain and ocean limit is a transition from the frozen to the torrid zone, similar to that which takes place in Mexico and Columbia, though not quite so abrupt. It is remarkable, in a region and range which has excited so much interest, that beyond 8° of S. lat. not a single summit has been measured by any geometrical or physical process. The range of the Chilian Andes seems peculiarly massive and unbroken; and the perpetual snow which covers it to a considerable depth, even at the points chosen as of most easy access, cannot well consist with a height of less than 14,000 or 15,000 feet. From these, according to Molina, three parallel chains descend towards the sea; but it seems more correct to say, that on this extended slope rise many steep eminences and ranges branching in various directions. The foreground of the Chilian landscape consists usually of mountain piled over mountain, and the back-ground of a continuous chain of snowy summits (*fig.* 993.). Yet the sides of the mountains are generally fertile and beautiful; foliage and verdure with rich pastures extend even to the border of the perpetual snow, and many of these upper valleys present such romantic and enchanting scenes, that Chili has been called the garden of South America. It is, however, a heavy misfortune to the Chilians, that the ground is not secure under their feet. Repeated earthquakes have laid their cities in ruins; and from time to time shocks are felt, which even when slight are rendered dreadful by recollection and anticipation.

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ANDES OF CHILI.

6039. *There is no river in Chili* deserving the name. Numberless torrents dash down from the steeps of the Cordillera, but with such rapidity that no boat can navigate their channel, and even in their estuaries the stream is too rapid to allow vessels to find in them a secure harbour. In return, every quarter of the country has the advantage of being at a very short distance from the sea coast.

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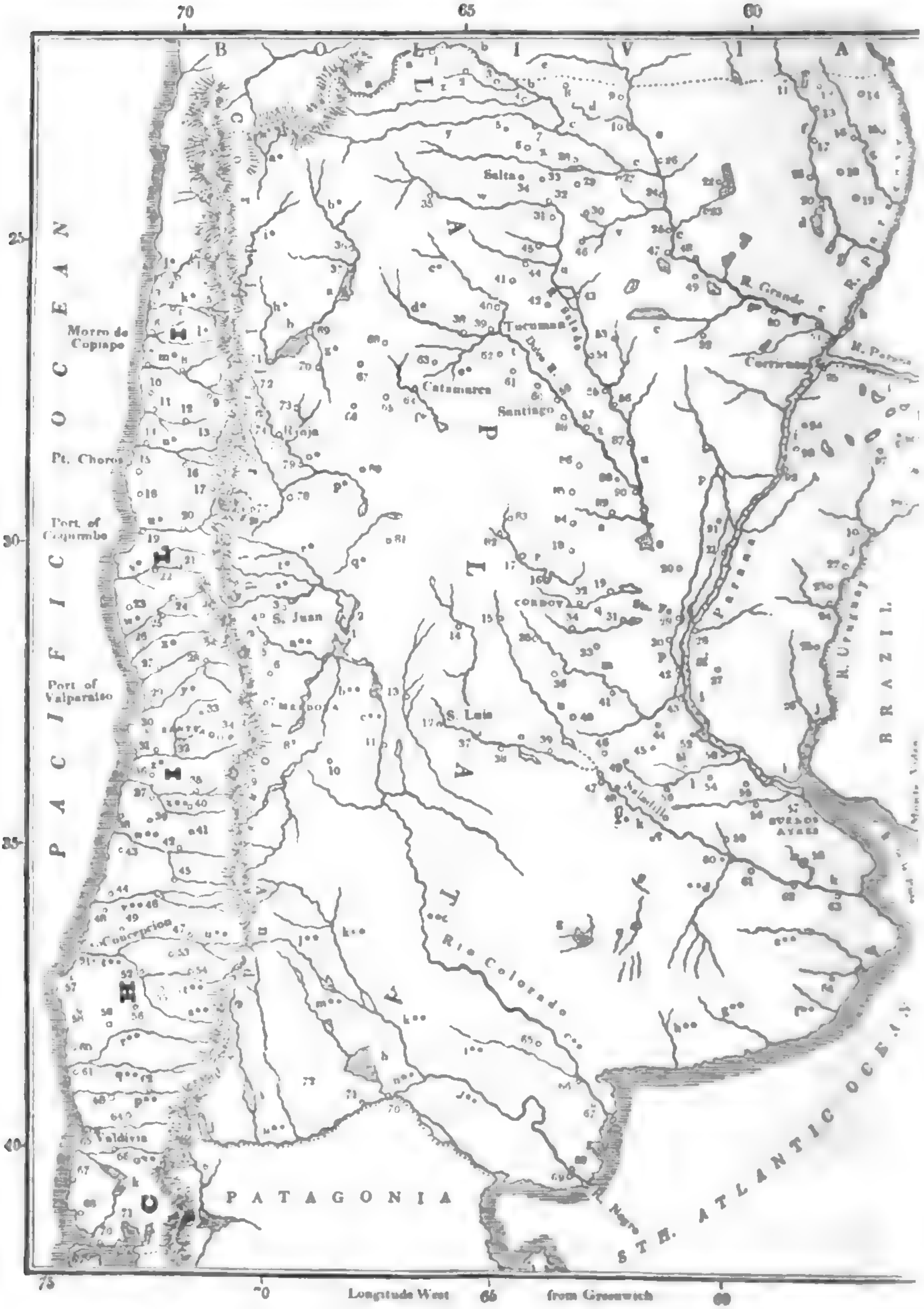
LAKE OF ACULEO.

6040. *Lakes* do not prevail in the Andes, the mountains of the chain being too closely wedged together to admit of their formation. That of Aculeo (*fig.* 994.), twenty miles south of Santiago, is distinguished by the softness and beauty of its scenery, and is compared by Mrs. Graham to those on the Italian side of the Alps.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

6041. *The central chain of the Cordillera*, we are told, is principally composed of the usual primitive rocks, through which there appear projecting, in many places, rocks of volcanic origin. The declivities on the western side abound in porphyries. At Las Pomas, on the eastern side, is a mountain entirely composed of


70
65
60
B O L I V I A
25
30
35
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P A C I F I C O C E A N
Morro de Copiapo
Pt. Choros
Port of Coquimbo
Port of Valparaiso
Concepcion
Valdivia
C H I L I
Salta
Tucuman
Catamarca
Santiago
Rioja
S. Juan
Mendoza
S. Luis
CORDOVA
Corrientes
R. Grande
R. Parana
Parana
R. Uruguay
B R A Z I L
Monte Video
BUENOS AYRES
Salado
L A P L A T A
Rio Colorado
Negro
P A T A G O N I A
STH. ATLANTIC OCEAN
75
70
65
60
Longitude West from Greenwich

pumice and obsidian. Few countries in the world are so continually and violently agitated by earthquakes as Chili: and these agitations occur principally on the eastern foot of the mountain range; seldom on the western. The most remarkable eruption of the Chilian volcanoes was that of Peteroa, on the 3d of December, 1760, when the volcanic matter opened for itself a new crater, and in a mountain in its vicinity a rent several miles in extent was formed. A large portion of the mountain fell into the Lontue, and, having filled its bed, gave rise to a lake, in consequence of the accumulation of the water. Springs of petroleum flow out in various places on the eastern side, and gypsum also occurs abundantly; limestone in Quillota and other places, and coal near the Bay of Concepcion. Fossil shells are found not unfrequently in the Andes, sometimes at an elevation of 9000 to 14,000 feet above the level of the sea. Deposits of clay, partly tertiary, partly recent, enclosing fossil shells, occur in the maritime provinces on the coast of the Pacific. These clays rest upon a brownish sandstone, which extends as far as the cuesta of Valparaiso, consisting of syenite, and forms the northern offset of the three secondary mountain ranges which branch off from the Cordillera by the cuesta of Chacabuco, and form the three ridges intervening between Santiago and Valparaiso. Similar organic remains are found near the mouth of the river Aconcagua, and on this coast farther north. Dr. Gillies informs us, that on making some excavations in this neighbourhood, several human skeletons were found in the clay in a state of good preservation, intermixed with the shells. The ground was too hard to admit of complete skeletons being procured, even although in good preservation. In the valley above Coquimbo, half a mile wide, are parallel roads resembling those of Glen Roy in Scotland, whose formation is connected with the rising of the land in this part of the New World.

6042. *The mineral productions of Chili*, according to Dr. Gillies, are very numerous, and many of them of great value and utility; but its produce in the precious metals has nevertheless been somewhat over-rated. Many of the richest mines cannot be worked under present circumstances. The desert country to the north of Copiapo does not permit the working of the rich mines of gold, silver, and copper at Chuco Cajo, and other parts of that country, as these districts are altogether destitute of water and other necessaries of life. In that part of the country there are also rock salt and fine statuary marble. To the north of this, in the province of Atacama, are mines of nitre, which have been recently explored; and the produce of this substance has been conveyed in considerable quantities from the port of Cobigo to Europe. In the country between the Bíobío and archipelago of Chiloe are numerous and rich mines; but none of them has been worked since the natives recovered possession of that country. The gold mines in the intermediate provinces are at Copiapo, Guasco, Coquimbo, Peteroa, La Ligua, Tiltie, Putuenda Algue, Huillipatugua, and other places. These were formerly worked to a great extent, but have been less attended to than formerly, since the commencement of the revolution. The richest mines of silver are in the provinces of Copiapo, Coquimbo, and Santiago. In these, the silver is generally found combined with sulphur, arsenic, lead, and other mineral substances; but a few years ago, a rich vein of silver was discovered at Coquimbo of great value, the silver being in the metallic form, and very abundant. Unfortunately, however, the hopes of the discoverers were disappointed on finding it to be of a very limited extent. The silver mines of San Pedro Nolasco, on the south side of the river Muypu, are valuable; but although they have been worked of late years by an Englishman, they have not been so productive as to remunerate the proprietor. They are situated near the summit of a very lofty mountain. The ore is extracted with difficulty from the hard rock in which it is contained, and requires to be carried on mules a distance of from twelve to

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References to the Map of Chili and La Plata.

CHILI.

1. El Chaca Alto
2. El Chaca Baxo
3. El Juncal
4. Da Ines
5. Juncal Alto
6. Ajojamento
7. Copiapo
8. S. Francisco de Selva
9. P. Negra
10. El Toboralilo
11. El Obispo
12. El Agua
13. Huasco Alto
14. Huasco
15. La Chepica
16. Huasco Baxo
17. Casa de Sal
18. Choros
19. La Serena
20. Duigulites
21. Hunilla
22. Huatalame
23. Matagorda
24. Illapel
25. Chuapo Alto
26. Mincha
27. El Ingenio
28. Aconcagua
29. S. Martin, or Quillota
30. Valparaiso
31. Logrono
32. Santiago
33. Arcay
34. S. Gabriel
35. Triana
36. S. Pedro
37. Rosario
38. Jevan
39. Punlatigui
40. S. Fernando
41. Curico
42. Jalca
43. Chanco
44. Couleum
45. Candelaria
46. Chillan
47. Tucapel
48. La Palma
49. Yumbel
50. Concepcion
51. S. Rafael
52. Arauco
53. Negrete
54. S. Barbara
55. Millaqua
56. Taquen
57. Palpilico
58. Mision
59. Purenalejo
60. Yapebue
61. Lainuo
62. Villarica
63. Baxo
64. Cheiqui
65. Valdivia
66. S. Fernando
67. Manzano
68. S. Luis
69. S. Carlos
70. El Astellero
71. Calbuco

LA PLATA.
North Part.

1. Pumayou
2. Cueba
3. Vugia
4. Boican
5. Perico
6. Blanco
7. Jujuy
8. F. del Negro
9. Senta
10. Guadalcazar
11. Cayza Seq. el Mana impreso
12. Turun
13. Capore
14. Camaculas
15. Aycoties
16. Boyaunos
17. Gurrucanos
18. Chilacutiquies
19. Tobetiones
20. Mongolas
21. Guatuas
22. Naparus
23. Jacolaquis
24. Chunples
25. Amulaes
26. Yacunampas
27. Malhalaes
28. F. de S. Barbara
29. F. S. Felipe
30. F. de Rio del Valle
31. Rodeo de Tala
32. Pasaje
33. F. de Cobos
34. Salta
35. S. Carlos
36. Mustavas
37. Paleipas
38. Lules
39. S. Miguel de Tucuman
40. Bipos
41. Trinco
42. Buenos Castumbre
43. F. Balbuena
44. El Rosario
45. Yastasca
46. F. S. Fernando
47. Callagaes
48. Palamos
49. Trende Espinosa
50. Dolores y Santiago
51. Amelcloy
52. Prentones
53. Socolonia
54. S. José de Patacas
55. Tuquiligasta
56. Matara
57. Pitambala
58. Marugasta
59. Santiago del Estero
60. Ximenes
61. Avinarus
62. Cachuyaco
63. Paquilac
64. S. Fernando de Catamarca
65. Guaycama
66. Capayan
67. S. Fernando
68. Colaria
69. Machigasta
70. Chumbicha
71. Betlen, or Bethlem
72. Angualasta
73. Amilgambo
74. Aminga
75. Rioja de la Nueva
76. Vinchayna
77. Pismasias
78. S. Juan de Jaclun
79. Mustnan
80. Simbolan
81. Villa del Valle Fertil
82. Pichano
83. Yquira
84. Durazno
85. Pontezuela
86. Yunta
87. Guanagasta
88. Saladillo
89. S. Miguel
90. Concezuone
91. Jesus
92. Santa Lucia
93. Garzas
94. Aldas
95. Corrientes
96. S. Augustin
97. Asuncion
98. S. Fernando
99. Yepeyu
100. S. Pedro

LA PLATA.
South Part.

1. S. Miguel
2. Ascension
3. S. Juan de la Frontera
4. Leoncllo
5. Los Pedernales
6. Ranchilios
7. Mendoza
8. Carrizalillo
9. F. S. Carlos
10. Tolderia de Corocorto
11. El Rebuden
12. S. Luis de la Punta
13. Yo'e de la Punta
14. Mercedes
15. Codosa
16. Avala
17. Julian
18. Antiguasi
19. Los Santos
20. F. de Melo
21. S. Xavier
22. S. Gregorio
23. Mandisold
24. S. Antonio
25. Calera de Barquir
26. Gualequachu
27. Notya
28. Baxada
29. Santa Fé
30. Coronda
31. S. Rosa
32. Cordova
33. Empira
34. Altagracia
35. El Pueblo
36. S. Augustin
37. S. Lorenzo
38. S. Peindo
39. S. Carlos
40. Tegua
41. Sanchez
42. Fort S. Espiritu Santo
43. Rosario
44. Desmochados
45. La Indimeurto
46. Loreto
47. Corso
48. Galeoto
49. Fortin de Mercedes
50. Fortin d'Areco
51. Arecive
52. Orato
53. S. Pedro
54. Ayola
55. La Cruz
56. Luxan
57. Buenos Ayres
58. G. de Ghascomus
59. Fortin de Lobos
60. Melo
61. Mont. de Lopez
62. Garay
63. Ayolas
64. N. S. del Pilar de Puelches
65. Gahueblahual
66. Doquelees
67. Lecouchu
68. Forte del Carmen
69. Poblacion del Sur
70. Chahalge
71. Ahanbet.

Rivers.

a Casabludo
b Yaviliguiaca
c Rio Grande
d Ocloyes
e Vermejo
f Pilcomayo
g Flagmngment Empela
h Paraguay
i Parana
j Uruguay
k Saladillo
l Arecive
m Tercero
n Quarto
o Quinto
p S. Thomeque Uaman el Salada
q Pucara
r Primero
s Sero
t Dulce
u Salado
v Caiman
w Artus
x Caldera
y S. Salvador, or Rio Grande de Jujuy
z S. Leon
a* Antiosa
b* Andahuallas
c* Choromoroma
d* Tucuman
e* Hondo
f* Del Valle
g* Chumlacha
h* Betlen
i* Malfin
j* Salado
k* Juncal
l* Chineral
m* Copiapo
n* Huasco
o* Angualasta
p* Fomalina
q* Fertil
r* Magna
s* Limari
t* Mendoza
u* Coquimbo
v* Limari
w* Chuapa
x* Quilamari
y* Aconcagua
z* Mapocha
a** Blanco
b** Arequia
c** Moya lee Leuvu, Desaguadero de Mendoza, or Rio Colorado
d** Flores
e** Tandil
f** Ygnacio
g** Guegaen
h** Claramecu
i** Picun
j** Cusu Leuvu
k** Sanquel
l** Longen
m** Pichipicontra
n** Sieu Leuvu
o** Bueno
p** Tolten
q** Penayco
r** Colpi
s** Vergara
t** Biobio
u** Lara
v** Chillan
w** Maule
x** Tinguaririca.

Lakes.

a Palcipa
b Andalgala
c Mataras
d Japaye
e Salados de los Porangos
f Grande
g Salinas
h Grande
i Limite
j Pesamangaine.

fifteen miles, to the banks of the river Maypu, where it is reduced by amalgamation. The copper mines are much more numerous and valuable than any of the others, and afford the staple mineral product of Chili. They occur between 24° and 36° S. lat.; but are principally confined to the provinces of Coquimbo and Copiapo. The copper ore is associated with sulphur and arsenic, which are separated by smelting. But it is only such mines as contain ore that yields one half of its weight of pure metal that are worked. About a thousand of these mines were worked in the time of Molina; but since that period, owing to the vicissitudes in the political and commercial condition of the country, the number worked has varied considerably. Of late years, however, owing to the improved commercial practices, this branch of industry has received an increased impulse. The rich and famous copper mine of Payen in the Araucanian country has long been unworked. Mines of quicksilver are stated to exist in Coquimbo, Copiapo, and Limachea. Formerly they were prohibited from being worked, and we do not hear of their having been opened since the restriction was removed. Mines of lead, iron, antimony, and tin are also found in Chili; but none of them are worked so as to be of importance in a commercial view. The secondary range of the Andes, situated on the eastern side of the Cordillera, which now belongs to the Argentine republic, and is called the Uspallata range, is by far the most productive in mineral treasures, and contains the celebrated silver mines of Uspallata and Famatina, besides many others in the same range. In the above tract is the alum mine of Guandacol, where this useful production may be had in great abundance. In it the alum earth is united with soda instead of potassa.

Subsect. 2. *Botany.*

6043. *If we consider the eastern side of South America*, in nearly the same latitudes as the western, we shall find a very different vegetation, owing to the extensive chain of the Andes, already noticed, which separates the two countries by a vast natural barrier. The Cordilleras gradually decrease in height as we recede from the tropics. In the neighbourhood of Quito, Chimborazo and Pichincha rear their summits to the height of nearly 22,000 feet above the level of the sea: near Santiago de Chili the highest land is 14,000 feet; farther south, at Concepcion, it is still lower; and, at Chiloe, there are few parts of the range exceeding 6000 feet in height. Between Chiloe and the Strait of Magellan, the average altitude may be taken at 3000 feet; but there are some of the mountains that may rise to between 5000 and 6000 feet high.*

6044. *One of the most striking features* presented on the approach to Chili by the Pacific is afforded by the view of the Andes. "I can conceive nothing," says Mrs. Maria Graham, "more glorious than the sight of the Andes this morning, on drawing near the land at daybreak; starting, as it were, from the ocean itself, their summits of eternal snow shone in all the majesty of light, long before the lower earth was illuminated, when, suddenly, the sun appeared from behind them, and they were lost, and we sailed on for hours, before we descried the land." Of the vegetation of these mountains, little is at present ascertained; and that little, collected principally from specimens gathered by Dr. Gillies, Mr. Cruckshanks, Mr. Macrae, and Mr. Cuming, is more interesting to the botanist than to the general reader. The intermediate country between the Andes and the coast is better known; but, as its vegetation passes insensibly into that of Peru, we shall endeavour to give a sketch of the more remarkable features, by some extracts from a little-known journal of our valued friend, Mr. Cruckshanks, very lately published in the second volume of the *Botanical Miscellany*. Chili, and that part of Peru lying west of the Andes, from their geographical situation and physical structure, offer an interesting field for studying the effect of climate on vegetation. The two countries present a line of coast, extending from 40° S. lat. to within a few degrees of the equator; the great chain of the Andes runs in a direction almost parallel to the coast, and the surface of the intervening country is similar throughout, consisting of ranges of mountains, diminishing in height as they recede from the Cordillera. These mountains, again, are intersected by valleys, varying little from due east and west; thus affording an opportunity of comparing the climate of the coast with that which obtains in the same latitude, varied by different degrees of elevation, from the level of the sea to the verge of perpetual snow.

6045. *The chain*, or, as it has aptly been called, the great wall of the Andes, exerts a powerful influence on the climate; the great atmospheric current, that, according to the season, flows north or south, and is affected elsewhere by local causes, here being maintained by this elevated barrier in its original direction. The average duration of the rainy season is about five months, from May to October. In the south of Chili, the rains are very heavy and fall frequently during the six or seven months of winter; but in the latitude of Valparaiso, it is seldom wet for more than two successive days, after which there will be fine weather for a week or two, or much longer. At Coquimbo, there is still less rain; and at Copiapo, the most northern part of Chili, the showers are few and light; while on the coast of Peru, rain is almost unknown, a dense mist being all that ever occurs, though this is dignified with the name of the "rainy season" (*tiempo de los aguaceros*), and the ladies of Lima often complain, after a short walk, of the heavy shower they have been exposed to, in what we should consider, in this weeping climate of ours, tolerably fine weather. Still nearer the equator, this mist diminishes, and the sun is rarely obscured. The gradual decrease of atmospheric moisture from the south of Chili to the north of Peru is a striking feature, and produces a remarkable effect on the vegetation. In Valdivia and Concepcion, where the rain is copious, forests of lofty trees abound, and the earth is generally covered with herbaceous plants, and produces large corn crops without artificial irrigation. From Concepcion is derived most of the timber consumed in Chili and Peru, the following being the commonest trees: the Roble (*Fagus obliqua*), Lingui (*Laurus Lingui*), the Queule (*Gomortega nitida*), Laurel (*Laurelia aromatica*), Canelo (*Drymis chilensis*), Reuli (?), Avellano (*Quadria heterophylla*), and Litri (*Rhus ? caustica, of Hooker and Arnott* in the *Botany of Capt. Beechey's Voyage*). The Araucaria, or Chili Pine (*fig.* 996.), is almost confined to the Indian country south of the Biobio; where the natives subsist entirely on its seed, which they harvest and bury in pits for winter use. Its wood is said to be very resinous and close-grained, but brittle; for which reason, probably, it is never exported. Some of the above-named trees are also found in other parts of the country. In the middle provinces, vegetation is less luxuriant, and the woods thin. Trees seldom attain a large size, except in ravines, and many of these are different from those of the south. Those most frequently found on the hills are the Molle, the Boldo (*Boldoa fragrans*), Quillai (*Smegmadermos emarginata*), and Peumo (*Peumus rubra*). The Mayten (*Maytenus chilensis*), Lilen (*Azara serrata*), Litri, and some others, are less common. The Patagua (*Tricuspidaria dependens*), Maqui (*Aristotelia Maqui*), Belleta (*Lucuma valparadensis* of Molina), and Canelo are confined to moist places in the valleys, where many Myrtles are likewise found, of which the Temu and Petra grow to a large size and produce useful timber. When covered with their fragrant white blossoms in early summer, these trees are truly beautiful. The Fuchsiæ (*fig.* 997.) also are confined to moist ground, except F. lycioides, which inhabits the driest spots on the hills. In many places, where the soil is too poor or too dry for other trees, the Espino (*Mimosa Cavenia*) grows; the wood of which is heavy, and much valued for fuel. Near the Andes, the Algaroba, a tree of the same family, is comon in similar spots; and large tracts of the hills are often covered with Pourretia coarctata. It is chiefly in the middle provinces that the Palm of Chili (*Micrococcos*) is found. It is not a common tree, being very

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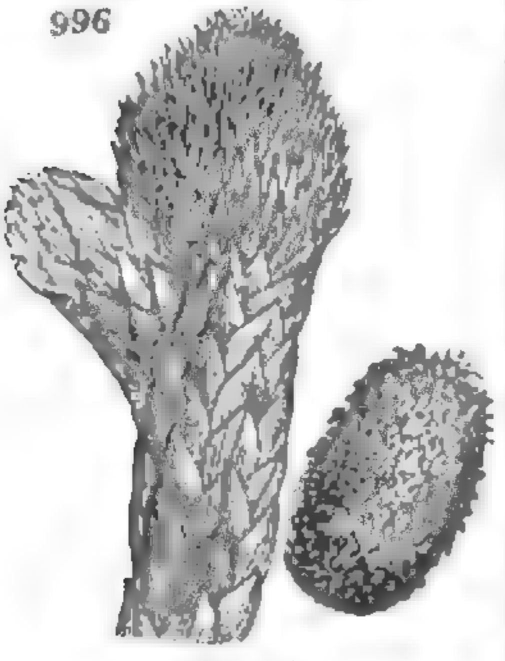

CHILI PINE.

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* King, in *Journal of the Royal Geographical Society of London*, loco cit.

partial; but several estates owe much of their value to the number of these palms, of which, though the stem is useless, the leaves, sap, and fruit yield a large income to the proprietor. For thatching houses, the leaves are considered the best and most durable material; the sap, boiled to syrup, is used as an agreeable substitute for honey; and the small nuts, about an inch in diameter, of which every tree produces a great number, are highly esteemed, and form a considerable article of export to Peru. A curious method is employed to free the nut from the green husk that envelopes it; a process formerly attended with a great loss of time and much trouble. A number of cows and oxen are driven into an enclosure, where a quantity of this fruit is spread, and, being very fond of its husk, they presently set to work eating the fruit, very slightly masticating it in the first instance, and swallowing it whole; afterwards, while chewing the cud, the nuts are ejected; and when the meal is finished, a heap of them is found, before each of the animals, perfectly free from the husk; the cattle being thus supplied with food at a season when little grass remains on the hills, at the same time that they effectually perform a very useful operation.

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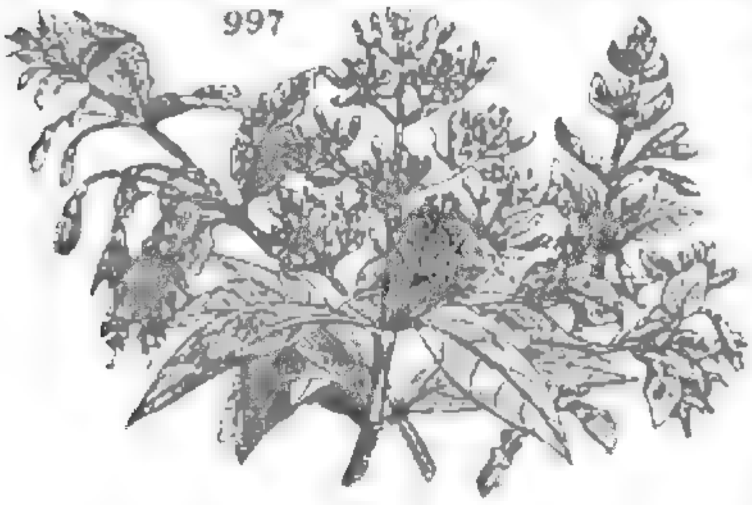

FUCHSIA.

6046. *In the district* of which Valparaiso may be considered the centre, though the surface seems barren, yet pasture abounds during the rains; and near the coast some corn is grown. In the interior, cultivation is confined to the valleys.

6047. *The northern provinces have a barren aspect;* there are few trees, though plenty of shrubs and beautiful annuals are common in the wet season; but, except in the valleys which are capable of irrigation, there is no culture. The Carbon (*Cordia decandra*) is almost the only tree; its wood is hard and heavy, and used for fuel in smelting copper ore, as are the Talguea and various Cacti, with columnar stems, which grow thirty or forty feet high, and throw out many branches.

Subsect. 3. *Zoology.*

6048. *Our information on the Zoology of Chili* is very slight: a meagre list of about a dozen birds has been given by one of the modern travellers in this country, but we may consider it as a region unexplored by the professed naturalist. The Lama and Vicugna, two wool-bearing animals of the Andes, have already been described under the head of Peru: to these we may add three other kindred species, called by travellers the Paco, Chilihuque, and Humel, as natives also of Chili. We have just received a fine collection of Chilian birds, which will form the subject of a distinct volume of our *Ornithological Drawings.* Among them are two or three new genera of Larks and Lark-warblers, which were supposed to be unknown in South America.

6049. *The most celebrated bird* is the Condor; while another, called the Plantcutter (*Phytotoma rara* Gm.), is singular, from the bill being toothed like a saw, and used, like that instrument, to cut down plants, that the bird may feast on the tender leaves. More recently has been discovered in this country a new species of Humming-Bird, near four times the size of any other yet known to naturalists: hence it has received the name of Trochilus giganteus, or the Patagonian Humming-Bird. It is only remarkable for its size, since it is without any of those brilliant colours which deck the plumage of its congeners.

Sect. III. *Historical Geography.*

6050. *Chili,* when first discovered by the Spaniards, was found in possession of the most active and hardy races of the Indians that people the New World. Almagro, in 1535, penetrated with great difficulty through the mountainous and desert tracts leading to it; but was so disgusted with the hardships and losses which he endured, that, in 1538, he returned to Cusco. The real founder of Spanish dominion in Chili was Pedro de Valdivia, who, after an obstinate contest of ten years, between 1540 and 1550, subdued the greater part of the country, founded the cities of Valdivia, Concepcion, and Quillota, and established a naval intercourse with Chili. He had then to encounter the warlike Araucanians, with whom the Spaniards sustained that long war, which has been celebrated by Ercilla, the first of the Spanish epic poets. Valdivia was defeated, taken, and put to death by the Araucanian chief, Caupolican; the Araucanians afterwards baffled all attempts to subdue them, and continue to separate the main body of Chili from the southern district of Valdivia.

6051. *The dominion of Spain* was maintained over Chili, interrupted only by the inroads of the Araucanians. The English made one and the Dutch several attempts to form a settlement; but, not being supported by the natives, they made no lasting impression. Chili, in 1567, was separated from Peru, and placed under a captain-general solely dependent on the king of Spain. It never drew the attention nor rose to the importance of Mexico and Peru; but the produce of its mines, which was considerable, and the many fertile districts which it contained, secured to it a progress in population and wealth, similar to that of the other colonies.

6052. *The emancipation of Chili* was prepared and produced by the same causes which excited all the other provinces to shake off the Spanish yoke. On the 22d of June, 1810, intelligence was received of the events which had occurred in Europe. The Chilians repelled the demand made by the French government for their submission, and in a few days elected a new governor and a junta of administration. This ostensible act was designed, as in other instances, to keep the sovereign power for Ferdinand VII.; but it was not long ere a general disposition arose to embrace the opportunity of shaking off the oppressive yoke of Spain and the European Spaniards. In April, 1811, a national congress was summoned, and the independence of the country seemed in a favourable train. A force, however, was sent from Peru to re-establish the royal cause, which, being aided by the disunion of the patriot generals, defeated them, though after a brave resistance, and drove them over the Andes towards Mendoza. They were there received and supported by San Martin governor of that city. That enterprising and remarkable person now took the lead in the revolution of south-western America. He assembled a considerable force, with which he crossed the Andes, and, being joined by the great body of the Chilians, soon compelled the royal troops to take refuge in the port of Concepcion. The governor of Peru, however, being now determined to make a grand effort, assembled almost all his disposable troops, to the amount of 5000 men, and sent them to reinforce those already in Chili. The patriot force was at first defeated and driven back; but, being rallied by the zeal and abilities of San Martin and O'Higgins, it met the enemy on the plain of Maypó, and gained a complete victory; which finally secured the independence of Chili. San Martin was even encouraged to advance into Peru, the capital of which country he succeeded in occupying; though its liberation, as we have seen, did not then prove to be final. O'Higgins became director of Chili; but, endeavouring to rule by a self-elected senate, he became unpopular, and was obliged to yield to Don Ramon Freire, under whose auspices a general representative congress was called. Chili has ever since formed a republic completely independent of Spain, though not without a good deal of interior agitation.

Sect. IV. *Political Geography.*

6053. *The political system of Chili* is as yet in a vacillating and uncertain state. The congress was to be composed of deputies chosen on the principle of direct election, and of one deputy for every 15,000 inhabitants. A considerable disposition seems to prevail for a federal form of government.

6054. *The finances* are not in the most flourishing condition. According to the statements in Mr. Caldcleugh's Appendix, the customs yielded 1,100,000 dollars, and all the other revenues 200,000; making a total of 1,300,000 dollars. The annual expenses of the province of Santiago amounted to 1,026,948 dollars; of Concepcion, 360,000; of Valdivia, 180,000; expenditures caused by the loan, 400,000: in all, 1,966,948 dollars; making the heavy deficit of 666,948 dollars. A loan, the capital of which was 1,000,000*l.* sterling, was raised in London in 1822, at 70 per cent.

6055. *The army*, under the pressure of circumstances, has been supported on a large scale, compared with the population and resources of Chili. That country sent into Peru, in support of the patriotic cause, no less than 7500 troops, who had been well disciplined, and who proved brave and effective. Besides these, about 3000 remained in the country. The militia consists chiefly of cavalry who are ill disciplined, but brave, and admirable riders.

6056. *The navy*, though it distinguished itself under Lord Cochrane, never formed any considerable force, comprising only one ship of sixty guns, two or three of fifty, with some corvettes and gun brigs. Being old ships purchased from Britain, and having been in hard service, they are now considerably decayed, and the present state of the Chilian resources will probably prevent much being done to repair them.

Sect. V. *Productive Industry.*

6057. *Agriculture* is carried on extensively, though with very rude implements, of the same form with those that were introduced 300 years ago. The plough is only a piece of knee timber, shod at one end with a flat plate of iron, into which a long pole is fixed by means of wedges. It proceeds amid the trees, of which only the trunks are cut off. A bundle of fresh branches serves for a harrow, made heavier, if necessary, by stones, or by one or two men placed upon it. The cart is formed of canes and straw-floored and bound with hide, without a single nail or piece of iron. The only pains bestowed upon the land is irrigation, rendered absolutely necessary by the eight months of dry weather in the year; the fields being crossed by canals fed by a stream common to the neighbourhood. Wheat has been hitherto the chief object of agriculture; its quality is fine, though small-grained, and there is a regular demand for it in Peru, Guayaquil, and the other equatorial tracts. Potatoes, in this their native soil, grow in perfection; pumpkins, lettuces, and cabbages are reared with care and success; and fruits, with but very little culture, are produced in profusion and of excellent quality. A good deal of wine is made, though not of the first excellence; the flavour of the best somewhat resembling Malaga. That exquisite vinegar, which derives its name from Chili, is made from the juice of a grape peculiar to the country. The greatest extent of ground, however, is laid out in cattle farms, which are managed with great success. The horses are small, but beautiful, and of fine temper and spirit, so that they are preferred to those of Buenos Ayres. The oxen and mules are equal to any in the world; but, as the latter do not amount to the number required for crossing the Andes, a further supply must be brought from Mendoza. Agriculture, as in Mexico, is much impeded by the enormous grants which were made to individuals at the time of the conquest; yet it is stated, that in many districts fine land may be obtained at the rate of a dollar for two acres.

6058. *The manufactures*, as over all America, consist only of coarse articles made by the country people for domestic use, with the simplest instruments. From Mrs. Graham we learn, that they bring to market ponchos, hats, shoes, coarse shifts, coarse earthenware, and sometimes jars of fine clay.

6059. *Mining* is the branch of industry for which Chili has been most celebrated, but it is not the source of her most substantial wealth. The mines occur in the interior from Coquimbo, in a barren tract in the northern part of the country. The metals are gold, silver, and copper. The latter is by far the most abundant, there being many hundred mines of it; the others are much rarer, and, as they attract more speculators, generally answer much worse: hence, the common saying is, that if a man finds a copper mine, he is sure to gain; if it be silver, he may gain or he may not; but if it be gold, he is sure to lose. In consequence of the great expense of first opening a mine, the discoverers, who are often poor, are usually obliged to have recourse to *habilitadores*, a class of rich individuals resident in the cities, who supply the funds necessary for working the mine, while the owner delivers to them the produce at a fixed rate, calculated to yield them a large profit. Captain Hall estimates the annual average produce of copper at 60,000 quintals, which, in 1821, was worth twelve dollars the quintal; that of silver, 20,000 marks, at eight dollars each; that of gold, trifling, and diminishing. The northern mines are situated in a bleak and barren country; and many of them are in very rugged and inaccessible situations; none so much so as that of San Pedro Nolasco, on a lofty pinnacle of the Andes, where the snow, even in summer, lies from 20 to 120 feet deep, and in the winter its drift is so tremendous that the miners have been buried under it 150 yards from their own house. The southern mines are in a more fertile state; but, on the whole, by the reports of Messrs. Head and Miers, it seems that, for the reasons already stated in respect to the La Plata provinces, there is no prospect of any increase, or of any advantage to compensate the application of English capital. Mrs. Graham conceived the machinery brought out by Mr. Miers to be 100 years in advance of the present state of the country. A very fine vein of coal has been found near Concepcion, which has begun to be shipped from that port for other parts of Chili, and even for Peru.

6060. *Commerce in Chili* labours under great difficulties from its extreme remoteness; since it is separated by about half the circumference of the globe from the civilised countries of Europe, Asia, and even North America. It has, however, a very extended sea-coast; and, to the bold skill of modern navigation, the circuit of the globe is scarcely more arduous than a Mediterranean voyage was 100 years ago. The intercourse between England and Chili is more extensive than that between England and any other country of South America, Brazil excepted. During the year 1831, the real or declared value of the articles of British produce and manufacture exported to Chili amounted to 651,617*l.* Of these, cottons alone amounted to above 450,000*l.*; the other leading articles were linens and woollens. The returns, which consist of bullion, copper, wool, hides, &c. are made partly direct and partly through Buenos Ayres. In 1828, sixty-nine British vessels, of the burden of 13,869 tons, cleared out from Valparaiso. Exclusive of the trade with Europe, the Chilians have also a considerable trade with Peru, to which they export wheat, flour, &c.; they have also, notwithstanding the formidable obstacles opposed by the Andes, a considerable trade with Buenos Ayres.

6061. *Fishing* is neglected by the Chilians, though many fine species are found in their seas. The shell fish are particularly delicate.

6062. *Artificial communications* remain still in a very imperfect state. A good road was lately made from the capital to Valparaiso, but it is not kept in complete repair. The cross roads, as Mrs. Graham describes them, are not such as in England would be considered passable, though she has seen worse in the Apennines.

Sect. VI. *Civil and Social State.*

6063. *The population of Chili* is more involved in doubt than that of any state of South America. Humboldt states, from Spanish authorities, that a census, in 1813, gave 980,000, and that the present amount is probably 1,200,000. More recently, Mr. Caldcleugh and Mr. Miers have estimated it only at about 600,000; but this seems to have been founded on very superficial observation; and the best informed persons, who have penetrated into the interior districts, do not believe it to fall short of 1,500,000.

6064. *The social state of Chili* differs scarcely by a shade from that of the rest of Spanish America. There is the same native courteousness, politeness, kindness of heart, ignorance, extravagant love of diversion, abject superstition, and propensity to quarrelling. This last passion, which among the lower orders is fed chiefly by a resort to *pulperias*, is alleged by Mr. Proctor to be more prominent than among other Americans, and oftener productive of bloodshed. The ladies often can neither write nor read; but Mrs. Graham and Captain Hall join in praising their natural talents, and the unstudied grace of their manners. Mr. Caldcleugh conceives the general deportment of those in the higher ranks to be almost unexceptionable.

6065. *The Catholic religion* has hitherto reigned in Chili with the same supremacy as in the other states; but under the new system, the convents have been very sensibly thinned, no one being allowed to take the vows under the age of twenty-five; and many of the religious shows and processions have been suppressed; a change not altogether agreeable to the body of the people, whom it has deprived of one of their favourite amusements. The Roman catholic religion continues the exclusive one, though numerous heretics are allowed to live in the country without molestation. The Protestants have even a consecrated burial-place, though not the public exercise of their worship.

6066. *Knowledge* in Chili is beginning to disperse the general ignorance which prevailed. Mr. Caldcleugh is of opinion that, before the revolution, there was not a printing-press in the country. That since established at Santiago has been chiefly employed upon gazettes and political pamphlets. The government once proclaimed the freedom of the press; but as soon as an unfortunate writer, taking them at their word, began to criticise their measures, he was instantly seized and deported to the Isle of Juan Fernandez. The people, however, soon regained the freedom of the press, which they now enjoy in its full extent. The government do not seem to have shown the same zeal as elsewhere for the promotion of knowledge, though they have established Lancasterian schools in the principal towns; that of Santiago containing 400 boys. There is a library of several thousand volumes, formerly belonging to the Jesuits, containing some curious manuscripts respecting the Indians, but otherwise composed chiefly of scholastic divinity. The only fine art cultivated with any ardour by the Chilians is music, their application to which is truly indefatigable: the girls being set down to it almost from infancy, and having constant practice at their evening parties. The importation of piano-fortes is said to be truly immense. They do not play with consummate science, but with considerable feeling and taste.

6067. *The habitations of the lower ranks in Chili* are of the most rude and primitive construction: the walls merely of stakes crossing each other, and fastened with thongs, or hemp twine; the roofs, which must resist the rain, composed of branches plastered with mud and covered with palm leaves. These, on both sides of the Cordillera, are called *ranchos*. The name of houses is assumed, where the walls are built of brick, which is easily formed in almost all the environs of Valparaiso, by merely digging out the clay, watering, treading, and then drying it in the sun. The walls are solid and thick; the apartments spacious, well furnished, and often richly gilded.

Sect. VII. *Local Geography.*

6068. *Chili* has been divided into three provinces: Santiago, the central and metropolitan one; Coquimbo in the north, and Concepcion in the south. This division is sufficiently minute for the details into which we are able to enter; but it may be mentioned, that, in 1824, a new division was formed, and still subsists, into Coquimbo, Alvacagua, Santiago, Colchagua, Astante, Concepcion, Valdivia, and Chiloe.

6069. *Santiago* seems to derive its pre-eminence from its fertile and agreeable territory, particularly in the plain of Maypó, and that which surrounds the capital; from its mines of gold and silver, a more brilliant, though really not so valuable an object as the copper mines of Coquimbo; and from the residence of the government.

6070. *Santiago, the capital,* is situated in a richly wooded plain, at an elevation of 2600 feet above the sea, which renders the climate agreeable and salubrious. Its aspect is irregular and picturesque. The dark tints of the fig and olive, with the lighter hues of the mimosa, mingled with steeples and houses, produce a novel and imposing effect. The houses having in general only one floor, and being surrounded by large gardens, the town appears completely overshadowed with foliage. Each house, in general, stands by itself, and, being strongly barricaded towards the street, forms a little fortress. The streets, however, are regularly laid out; the cathedral, several of the churches, and the director's palace, may be reckoned handsome, though they do not exhibit any thing very splendid in architecture. The river Maypocho runs through the city; but being, like most in this country, dry at one season and swoln to an overwhelming torrent at another, it has been necessary to erect not only a bridge, but a wall to confine the violence of the stream.

6071. *The vicinity of Santiago* presents the most romantic and sublime prospects: on one side over an expanse of plain bounded by the distant ocean, on the other over successive mountain ranges crowned by the awful snowy pinnacles of the Andes. Near the city is a very picturesque waterfall (*fig.* 998.), called the Salto de Agua, or water-leap, which Mrs. Graham compares to Tivoli, though it wants the villa and temple to crown it.

6072. *Valparaiso* (*fig.* 999.), the port of Santiago, and the main seat of Chilian commerce, is situated on a long narrow strip of land bordering a semicircular bay, over which impend on all sides steep cliffs nearly 2000 feet high, and sparingly covered with shrubs and stunted grass. One street, about three miles long, runs along the sea, and contains the houses of the most opulent citizens; it is prolonged by the Almendral, or Almond Grove, a sort of detached village, which forms the most agreeable residence. The lower ranks are huddled into the quebradas, or ravines, among the hills behind. None of the buildings are handsome; even the governor's house is scarcely tolerable; but the commercial progress of the town is marked by the many new and handsome warehouses erected. Originally a mere village, it acquired some importance by becoming the channel for conducting the intercourse with Lima, to which all the trade of Chili was then confined. All the commerce of the world being now thrown open to it, and numerous settlers attracted from Europe, it has acquired a population of 14,000 or 15,000, and assumed almost the appearance of an English town. In 1828, sixty-nine British ships, of 12,746 tons, entered its harbour. During the summer, which lasts from November to March, the bay affords a safe and pleasant anchorage; but in winter, especially in June and July, precautions are required against the north wind, which blows often with peculiar violence. Quillota is a small but agreeable town, a little in the interior, giving name to the province in which Valparaiso is situated.

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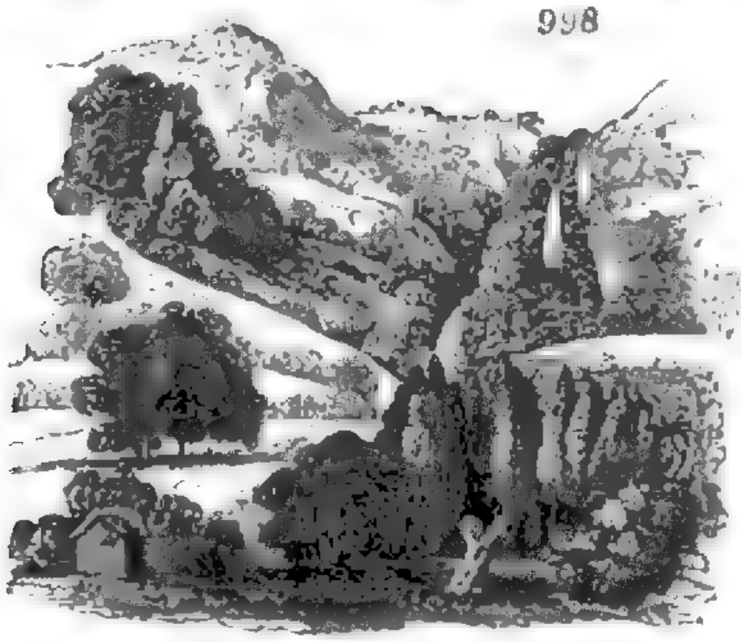

SALTO DE AGUA.

999

VALPARAISO.

6073. *Coquimbo* is the most southern province of Chili; but, instead of assuming a gayer aspect as it approaches the brilliant regions of the tropic, it becomes more and more sterile. At the town of Coquimbo, even the brushwood which covered the hills round Valparaiso disappears, and its place is only supplied by the prickly pear bush, and a scanty sprinkling of wiry grass; while at Guasco, four degrees farther south, there is no longer a trace of vegetation. The greater part of the interior consists of a rock, composed entirely of pieces of broken shells, sometimes covered with a thin soil, but more commonly with a white powder like snow, which proves to be sulphate of soda. It is only on the banks of the streams, that the eye is gratified with verdure, cultivation, and pasturage. Its importance arises solely from its mines, which include both silver and gold; but the most productive and valuable, as already observed, are those of copper. The produce of the mines usually belongs to some capitalist at Santiago, who causes a vessel to call at Coquimbo for the copper, which is to be exchanged, perhaps, for a cargo brought to Valparaiso from Europe or India, and instructs his correspondent at Coquimbo to have a sufficient quantity in readiness. This employment gives some importance to the port of Coquimbo; though the inhabitants, unaccustomed to any varied traffic, retain much native simplicity, kindness, and hospitality. About fifty miles in the interior is Copiapo, in the heart of the mining district, of which it may be considered the capital. This place is subject to the dreadful calamity of being once in about every twenty-three years completely destroyed by earthquake. That of 1819 shook it entirely to pieces; the wrecks of its houses and churches lying scattered in every direction. The walls, though three or four feet thick, of large sun-dried bricks, seem to have toppled down, some inwards, some outwards, like so many castles of cards. The people had all crowded to the great church of La Mercéd, which they were judiciously advised to leave, and had scarcely quitted it when it fell to the ground, and would have buried the whole population had they remained. The Copiapians, in 1821, rebuilt their fallen city. Copiapo is bounded on the north by the desert of Atacama, which separates Chili from Peru, and is considered as belonging to the latter.

6074. *Concepcion*, the most southern part of Chili, is the most highly endowed with all the real bounties of nature. Its situation, indeed, and the cold rains, render it unfit for tropical produce; but all the grain and fruits of the finest temperate climate are reared in such abundance as to make this the granary and garden of South America. Wheat of excellent quality was the staple, and the southern markets were chiefly supplied from Concepcion; to which may be added barley, maize, pulse, and all kind of vegetables. It yields also a sweet wine, the best in the New World, which Mr. Stevenson reckoned equal to Frontignac, and for which the demand at Lima was almost unlimited. The cattle farms are also numerous and valuable, yielding a large export of jerked beef. The exports, according to Mr. Stevenson, amounted to 2400 tons of wheat, 8000 quintals of jerked beef, 36,000 gallons of wine, with hides, wool, and other minor articles. Concepcion, with four conventual churches, a nunnery, a cathedral in progress, and many handsome houses inhabited by some of the old Spanish nobles, might almost dispute with Santiago the rank of capital of Chili. The houses, like those of Santiago, are mostly of one story, built of mud or sun-dried brick; but here they form regular streets at right angles to each other. The people are peculiarly kind and hospitable, and their gay and festive habits are accompanied with comparatively few irregularities. Such, at least, was Concepcion; such, and more, will it doubtless be again; but the last accounts represent it to have suffered with peculiar severity from the late contest. Alternately occupied by the Spaniards and the patriots, it was rudely treated by both, but especially the former. General Sanchez directed to military objects all the timber destined for the new cathedral, and, on finally abandoning the city in 1819, set fire to a number of the principal houses. When Captain Hall visited it, in 1821, he found it almost desolate. Whole squares had been reduced to rubbish, and the streets were knee-deep in grass and weeds. Of the bishop's palace there remained only the sculptured gateway; many of the houses still standing were uninhabited; and, through the luxuriant vegetation of the climate, were enveloped in a thick mantle of shrubs, creepers, and wildflowers. The churches were all in a ruinous state; of the cathedral, the western aisle had fallen in, and the rest was rapidly crumbling into dust. Besides the usual conflict of Spanish parties, Chili had been laid waste by the Araucanians, who, led by Benavides, a bold outlawed native of Concepcion, carried on a war of perpetual inroad, similar to that which once raged on the Scottish and English borders, and which, though picturesque and eventful in narrative, was most calamitous to the parties concerned. Talcahuano, the port of Concepcion, is a small town of about 500 inhabitants, on a large bay, with a good and secure anchorage. Its defences have the reputation of being very strong; but during the late war they were neglected; wherefore, being of mud, and incapable of resisting the heavy rains of the country, they are nearly ruined.

6075. *Valdivia*, the most southern province of Chili and of America, comprises a territory of about 130 by 120 miles in extent, watered by three rivers, and containing several plains that are very productive in grain and cattle. There is scarcely any European culture; but the missionaries have, at different points, succeeded in forming the Indians into peaceable and tolerably industrious little communities. Valdivia was founded in 1553, destroyed by the Indians in 1603, and re-established in 1645. It was recruited to a limited degree by convicts sent from other parts of Peru and Chili, and employed in the public works. The town of Valdivia is situated about sixteen miles above its port, which is good, and defended by strong batteries. Its population, which never exceeded 963, was reduced in 1820 to 749. This decrease was occasioned chiefly by the emigration to Osorno, built about forty miles distant, in the middle of the last century, the most southern town in the New World. The capture of the port of Valdivia, in 1819, by Lord Cochrane, with 319 troops, opposed by 1600, was one of the boldest and most brilliant achievements in the American contest.

6076. *Arauco* has been already mentioned as an extensive territory, which interposes itself between the Spanish districts of Concepcion and Valdivia. It extends north and south for about three degrees of latitude, reaching inland to the mountains. This region, celebrated in Spanish story and song, is described by Mr. Stevenson as really one of the finest in South America. The Araucanians, having adopted the rude agriculture of the Spaniards, raise Indian corn in abundance; they grow most admirable potatoes, which are, probably, indigenous; and have a good stock of horses and horned cattle. The whole country is divided into four districts, governed by hereditary rulers, called *toquis*, confederated together for their own benefit and the injury of their neighbours. Particular districts are ruled by subordinate chiefs, also hereditary, called *ulmenes*. When war is declared, the toquis elect one of themselves, or even some other chief, who assumes the supreme command They have appended the European musket to their own original arms of the bow, arrow, and club. When they set forth on an expedition, each individual merely carries a small bag of parched meal, trusting that ere long he will be comfortably quartered on the territory of his enemies. During the Spanish dominion, every new governor of Chili generally endeavoured to distinguish himself by the conquest of Arauco; and having assembled an army, he usually beat them in the field; but he soon found himself obliged, by a continued series of harassing warfare, to sue for peace from a proud race, whom nothing will ever induce to make the first advances. The Araucanians have a religious belief, but without temples, priests, and sacrifices. They have Pillian, the supreme toqui or ruler, with many subordinate deities or ulmenes, among whom the chief are Meuben, the good genius; Ulencuba, the evil genius; and Epunamun, the god of war. Omens and divinations are also objects of firm belief; and the warrior who would intrepidly face an armed battalion, will shake with terror at the flight of an owl. Witchcraft is in their eyes the most deadly sin, for which numerous unhappy victims are devoted to death. Marriage is always celebrated with a show of violence; for even after the consent is obtained, the bridegroom conceals himself on the road, seizes the bride, carries her to his house, where, perhaps, the parents are waiting to share the nuptial feast. Polygamy prevails among the chiefs, and all the hard work devolves upon the females, who plough, sow, and reap; and each wife must present her husband with a poncho or cloak, which is the chief manufacture of the country: some of these garments are very fine, selling at 150 dollars, though in general they can only be called a coarse rug. The towns of Arauco, Tubul, and Tucapel, are only villages, perched on the top of the most inaccessible rocks, and even these were built by the Spaniards. The abode of the principal cacique was a thatched house with mud walls, sixty feet long, and twenty feet broad, which behind, throughout its whole length, contained a range of sleeping places resembling stalls; and in front a long narrow apartment, in which the family, forty in number, spent the day. Their chief amusements are out of doors; within, they are seen trotting through the room to sounds which resemble the filing of a saw, in uncouth movements imitating the dance. Though resisting all attempts at conquest, they have entered into a treaty with the republican government, and even agreed to a species of political union, though a long interval must elapse before this can be completely effected.

6077. *The large island of Chiloe*, with others surrounding it, which form a species of archipelago, have been formed into the most southerly province of the Chilian republic. They have a rude and rocky aspect, and are as yet thinly inhabited.

6078. *The Island of Juan Fernandez* may be considered as an appendage of Chili. This little island, of which a view is here exhibited (*fig.* 1000.) is so diversified by lofty hills, streams, and varied vegetation that it has been described as one of the most enchanting spots on the globe. It was early noted as being the solitary residence of Alexander Selkirk, during several years; an event upon which Defoe founded his celebrated narrative of Robinson Crusoe. The island afterwards afforded to Anson the means of recruiting his shattered squadron, after the passage of Cape Horn. A small colony was lately settled there; but it seems doubtful whether it still subsists.

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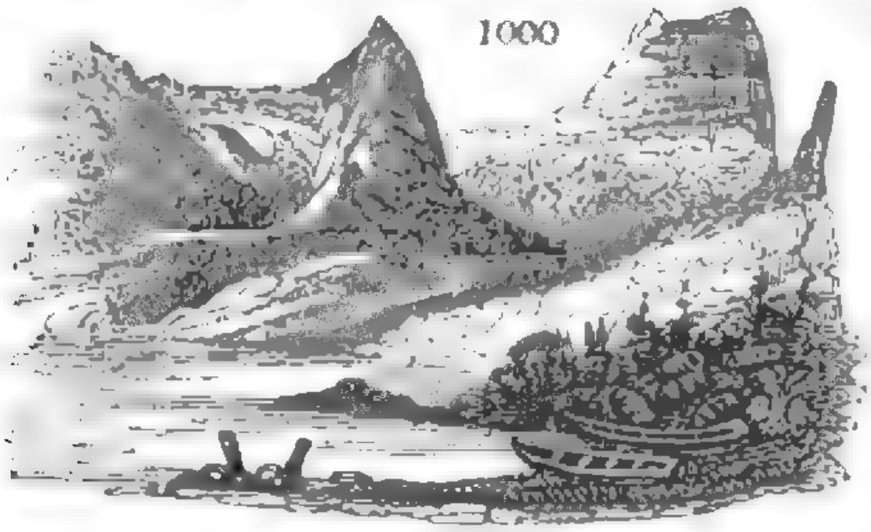

JUAN FERNANDEZ.

Chap. X.

LA PLATA.

6079. *La Plata* is the name given to an extensive region of South America, watered by the great river of that name, and which, under Spanish dominion, formed one of the principal viceroyalties. It had then annexed to it Upper Peru, including the mines of Potosi;

but this country has, by recent events, been severed from it, and forms now an independent republic, under the name of Bolivia. The remaining territory consists chiefly of detached cities, with surrounding cultivated tracts, which form, as it were, oases in a vast expanse of uninhabited plain. Buenos Ayres, the principal city, and commanding the navigation of the river, has endeavoured to form the whole into a republic, of which she herself shall be the capital, or at least the federal head; but there reigns through the different districts a strong provincial spirit, which has hitherto rendered this union imperfect and precarious.

Sect. I. *General Outline and Aspect.*

6080. *La Plata* may, in a very general view, be considered as occupying nearly the whole breadth of America, south from the tropic of Capricorn, leaving only the narrow stripe of Chili on the west, and on the east a section cut out of it by Brazil. On the north, the Pilcomayo, while it runs from west to east, forms the natural boundary from Upper Peru; but after its great bend to the south, the line must be considered as continued eastward, cutting the Rio de La Plata and onwards to the Paraná. On the east, the boundary of Portugal may be considered as fixed by the Paraná and the Uruguay, though the districts immediately west of these streams have not, since the revolution, been actually possessed by Buenos Ayres; and south of the Plata, the Atlantic is the clear boundary. On the south, the Rio Negro terminates the country actually occupied; but, on the principle so generally adopted by different European settlers, of extending their respective claims till they come into collision, we suspect that the Buenos Ayreans stretch their frontier to the Straits of Magellan, or even to Cape Horn. On the west, the uniform boundary is Chili, separated by the lofty summits of the Andes. The contents of this very extensive territory are calculated by Humboldt at 89,750 square geometrical leagues, or about 1,077,000 square English miles. It is thus nearly, though not quite, equal in extent to Colombia, and to the United States east of the Mississippi.

6081. *The surface* of this territory consists of a plain the most extensive and uniform, perhaps, on the face of the earth, bounded only by the eastern slope of the Andes. The Pampas, west from Buenos Ayres, form an uninteresting level of more than 1000 miles across. This plain is divided into three successive portions: the first covered with thick clover and flowering thistles, that rise sometimes to the height of ten or eleven feet; then 450 miles of long grass, without a weed; lastly, a forest of low evergreen trees and shrubs, standing so wide, that a horse can gallop through them. At the end of this ocean plain, the Andes shoot up abruptly their wall of unbroken rock covered with eternal snow, which to the traveller from the east appears to present an impenetrable barrier. The banks of the Plata consist also of immense plains, though not quite so level, nor covered with such varied vegetation.

6082. *Of the rivers*, the chief is that from which the region derives its name and character, and which forms one of the grandest features on the globe, the Rio de la Plata. To Buenos Ayres, which it reaches after a course of nearly 3000 miles, it brings down a body of water thirty miles broad, resembling an arm of the sea; yet completely fresh. The largest vessels can ascend to the vicinity of that port and Monte Video, though the shore is obstructed by rocks and sand-banks. These increase as the stream ascends, and render it impossible for vessels of any magnitude to arrive at Asuncion. From the west the Plata receives the Pilcomayo, the frontier stream of Upper Peru, which passes through the richest mining districts, and the Rio Vermejo; both navigable. On the east it receives the half-Portuguese streams of the Paraná and the Uruguay. Large rivers, the Saladillo, and the Colorado or Desaguadero de Mendoza, run across the Pampas, and are supposed to reach the Atlantic. The latter rises in the Cordillera east of Coquimbo, and has a course of 1000 miles, during which it forms numerous lakes; but it has not yet attained any commercial importance; and another, the Rio Negro, forms the extreme southern boundary of settlement.

6083. *There are several lakes*, as that of Hiera, in the Entre Rios, fully 100 miles in length; some round Mendoza, formed by the streams descending from the Andes; and others farther in the interior; but none of these can be said to correspond in grandeur to the other features of this region.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

6084. *The whole extent of this province* forms one continuous and unbroken plain of great fertility, and covered with perpetual vegetation. Rocks are rarely seen. Some gypsum occurs near to Buenos Ayres, and limestone is mentioned as occurring in different parts of the country. The stones used in paving the streets or in building are brought from the island of Martin Garcia, at the mouth of the Uruguay, or as ballast from Europe. Many of the lakes to the south of Buenos Ayres are strongly impregnated with salt. Salt occurs in greatest abundance and purity at Las Lagunas de las Salinas, situated in lat 37° S. in a south-west direction from the city, and not far distant from the mountains called La Sierra de la Ventana. At these lakes, when the evaporation has been considerable, salt is procured in great quantities; and to obtain supplies of this substance, considerable numbers of Indians and Creoles visit the place at particular periods; but owing to the distance, and expense of land carriage, little of it reaches Buenos Ayres, as it can be obtained cheaper and of a superior quality from England.

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6085. *Patagonia, Straits of Magellan, and Terra del Fuego.* The expedition under Captain King, for the purpose of surveying the Straits of Magellan, left Monte Video on the 19th of November, 1826, and, after putting into Port St. Elena, about lat. 45° S., and remaining for a day or two in the vicinity of Cape Fairweather, continued for ninety days within the Strait; during which time its shores to the east of Cape Froward were surveyed under the superintendence of Captain King himself; while his consort, under our former pupil Captain Stokes, examined the western entrance. The coast at Port St. Elena is described by Captain King as consisting of porphyritic claystone; of which the hills, from 300 to 400 feet high, are entirely composed. On the beach was a conglomerate, apparently of an alluvial character. Cape Fairweather is near the southern extremity of a range of coast, occupying between two and three degrees on the east of Patagonia, composed of horizontal strata of clay, in cliffs from 300 to 400 feet high, and entirely bare of vegetation. Some of the specimens from this quarter, Dr. Fitton, in his report, remarks, consist of a white marl, not unlike certain varieties of the lower chalk; and with these are portions of a greenish sand-rock, much resembling that of the upper green sand formation, and of a clay having many of the properties of fuller's earth. The pebbles on the shore consist of quartz, jasper, and flinty slate, but do not contain any mineral identical with chalk flint. Cape Virgins, at the north-eastern entrance of the Straits of Magellan, consists of clay cliffs, like those of Cape Fairweather; and between these two capes the coast is of the same character. What may be called the eastern branch of the Straits, from Cape Virgins to Cape Froward, though its general course is from N.E. to S.W., varies considerably in width and direction; but from thence to the western entrance the direction is nearly straight, from S.E. to N.W., and the width much more uniform; and one of the principal points already determined by Captain King's survey is, that the *fissure* forming this portion of the strait is continued in the same direction for about 100 miles towards the S.E. from Cape Froward; through St. Gabriel's Channel, and a deep inlet, discovered by Captain King, and named "Admiralty Sound," which runs nearly fifty miles into the interior of Terra del Fuego. Dr. Fitton remarks that this separation of the land by a narrow rectilinear channel of such great length, appears to be analogous to the division of Scotland, by the chain of lakes on the line of the Caledonian Canal. In proceeding westward from the eastern entrance, the coast gradually changes its character; and primitive rocks appear about Cape Negro, near Elizabeth Island, where mountains of slate rise to the height of from 2000 to 3000 feet. Captain King remarks that the direction of all the ranges, commencing at Port Famine, about thirty miles from Cape Froward, is towards the S.E.; and that all the sounds and openings of the land in Terra del Fuego tend in the same direction: *this being also the direction of the strata*, which dip towards the south. This coincidence in the direction of the mountain ranges is expressed on Captain King's map: and he supposes that a similar structure holds good throughout the western branch of the Strait, from Cape Froward to the entrance on that side.

6086. *Specimens from Freshwater Bay*, about 120 miles from Cape Virgins, on the Patagonian side of the strait, consist of highly crystallised greenstone, and hypersthene rock, resembling those of Scotland; and the pebbles and boulders on the shore are of granite, syenite, quartz, and flinty slate.

6087. *The vicinity of Mount Tarn and Eagle Bay*, about midway between Port Famine and Cape Froward, affords various hornblende rocks; with greywacke, flinty slate, and grey splinty limestone. The slate of Mount Tarn contains traces of organic remains. Specimens from the south side of the eastern branch of the strait consist of micaceous gneiss, found at the entrance of St. Magdalen's Sound, and at Card Point on the south-west of St. Gabriel's Channel. The rocks at Cape Waterfall, near Card Point, are of clay slate; and the shores of Admiralty Sound afford granite, clinkstone, porphyry, and greenish compact felspar. Captain King also mentions his having observed here reddish quartz or sandstone, like that of the *old red sandstone* of Europe; and he remarks, that the soil over this rock is barren, while that above the slate produces luxuriant vegetation; beeches of great size growing there within a few feet of the water side. In general, the hills in this part of Terra del Fuego appear to be slate; they rise to the height of 3000 feet, and are covered with ice and snow. Mount Sarmiento, however, which is more than 5000 feet high, appears, from the shape of its summit, to be *volcanic*; and was called by the navigator, after whom it was named, "The *snowy volcano*."

6088. *Specimens from the western branch of the Straits of Magellan*, collected by Captain Stokes, all consist of primitive rocks. Cape Notch, Cape Tamar, and the Scilly Islands, affording granite; Port Gallant, and Cape Victory, gneiss and mica slate; and Valentine's Bay, clay slate much resembling that of Port Famine. These places are all on the north side of the strait. On the southern side, in Terra del Fuego, Cape Upright affords granite and gneiss; and the latter rock is found also at Tuesday Harbour, and in the neighbourhood of Cape Pillar: the columnar mass, from which that remarkable point was named, is composed of mica slate.

SUBSECT. 2. *Botany.*

6089. *In a former chapter*, p. 1291-2., some account was given of the botany of the Terra del Fuego and the Straits of Magellan. The eastern coast of Patagonia, from the entrance of the Straits of Magellan to the river Plata, is comparatively low, and a great portion of it occupied by *pampas*, extensive plains, covered with grass, but destitute of trees. This peculiarity of country, indeed, exists upon the most extensive scale in the province of Buenos Ayres: a vast superficies, the whole of which is a plain (interrupted only here and there by a few hills, the highest scarcely 300 feet), extending from the Atlantic Ocean to the foot of the Andes, a space of 720 leagues. Many of the rivers, from the extreme evenness of the surface, are (with the exception of five or six that are received into the Parana or Paraguay) arrested in the plain, without any decided course, and insensibly absorbed, like the rains which fall on the same ground.

6090. "*The level surface* which so uniformly characterises the whole province of Buenos Ayres affords little scope for variety in its vegetable productions: still the aspect of the country is marked by many striking peculiarities. Different kinds of *clover* and other *leguminous* plants, intermixed with *grasses*, constituting the great mass of the vegetation, give to the country its verdant appearance, and form an inexhaustible source of nutriment, not only to the deer and other wild animals which are so abundant, but to the numerous herds of cattle and horses which may be seen grazing in all directions. The country is naturally destitute of wood, and, with the exception of an occasional natural copse of the Tala shrub, of very inconsiderable height, nothing resembling a tree is to be seen. The Ombu (*Phytolacca dioica*), however, sometimes makes its appearance to diversify the scene, and relieve its monotony. Trees of this kind generally point out to the traveller the site of some habitation, near which they are usually planted; since, from the great rapidity of their growth, they soon become conspicuous at a distance, and afford a grateful shade to the inhabitants, during the hot season of the year. They are otherwise very useless, on account of the spongy nature of the trunk, which is so soft that it has sometimes been used as wadding for artillery, during the wars which prevailed in the country. In the more inhabited districts of the province, and especially in the neighbourhood of the city, numerous plantations are met with of peach trees, which are cultivated for firewood, and form a very profitable investment of land and capital, as they grow with great luxuriance, and may be cut down every four years; so that, by dividing a plantation equally, a fourth part may be felled yearly, which is sure to meet with a ready sale, being the principal fuel used in Buenos Ayres. The fruit, which is produced in great abundance in such plantations, is applied to no useful purpose, except the feeding of pigs and poultry." *

6091. *A very remarkable feature*, occasioned by plants of exotic production, is given to the pampas of Buenos Ayres by two kinds of Thistle, well known in Europe; but principally of the Cardoon (*Cynara Cardunculus*, β. *Hooker, in Botanical Magazine*, t. 2862.). The native country of this plant is the south of Europe and north of Africa; but, the seeds having been conveyed to South America, it has escaped into the extensive plain that lies between Buenos Ayres and the Andes, and has given such an extraordinary feature to that country, as deserves to be recorded in a description of its vegetation. "The great plain or pampas of the Cordillera," says Captain Head, in his "Rough Notes, taken during some rapid Journeys across the Pampas, and among the Andes," "is about 900 miles broad; and the part which I have visited, though in the same latitude, is divided into regions of different climate and produce. On leaving Buenos Ayres, the first of these regions is covered for 180 miles with clover and thistles; the second, which extends for 430 miles, produces long grass; and the third region, which reaches the base of the Cordillera, is a grove of low trees and shrubs. The second and third of these regions have nearly the same appearance throughout the year; for the trees and shrubs are evergreens; and the immense plain of grass only changes its colour from green to brown; but the first region varies with the four seasons of the year, in a most extraordinary manner. In winter, the leaves of the thistles are large and luxuriant, and the whole surface of the country has the rough appearance of a turnip-field. The clover, at this season, is extremely rich and strong; and the sight of the wild cattle, grazing in full liberty in such pasture, is beautiful. In spring, the clover has vanished, the foliage of the thistle has extended across the ground, and the country still looks as if covered with a rough crop of turnips. In less than a month the change is most extraordinary; the whole region becomes a luxuriant wood of enormous thistles, which have suddenly shot up to a height of ten or eleven feet, and are all in full bloom. The road or path is hemmed in on both sides; the view is completely obstructed; not an animal is to be seen: and the stems of the thistles are so close to each other, and so strong, that, independent of the prickles with which they are armed, they form an impenetrable barrier. The sudden growth of these plants is quite astonishing; and though it would be an unusual incident in military history, yet it is really possible that an invading army, unacquainted with the country, might be imprisoned by these thistles, before it had time to escape from them. The summer is not over before the scene undergoes another change; the thistles suddenly lose their sap and verdure; their heads droop, the leaves shrink and fade; the stems become black and dead, and they remain rattling with the breeze one against another, until the violence of the pampero or hurricane levels them with the ground, where they rapidly decompose and disappear; the clover rushes up, and the scene is again verdant." If by any accident the dry stems of the thistles chance to catch fire, the conflagration spreads with such rapidity as to destroy much agricultural produce, and great numbers of cattle and other animals, which are unable to escape. In the neighbourhood of the city, they are cut down in large quantities, and sold for the purpose of heating ovens. The florets of this thistle are in common use in the country for the purpose of coagulating milk, which they effect in the same manner as rennet. A quantity of these florets is tied up in a rag and stirred about in warm milk for a few minutes. This thistle is also eaten as a vegetable; the tender footstalks of the leaves, and the young stems, when boiled and the outer skin removed, have the flavour of artichokes. When the plants of the pampas become too strong, it is customary to set fire to them, which gives a remarkable aspect to the country, as thus described by Azara: — "This operation, which is intended to make the plants send out new and tender shoots, must have the effect of diminishing the number of species; because the seeds are destroyed, and the fire inevitably exterminates some of the more delicate kinds. It is requisite to use precaution in setting the plants on fire, because there is nothing but water or roads that can limit its progress. I have travelled 900 successive leagues, in a southern direction from Buenos Ayres, continuing along the same plain, that had been all burned at one time, and where the grass was beginning to shoot again: and still I did not arrive at the termination. There was certainly no obstacle that could stop the flames. Woods arrest its ravages, because they are so thick and green, that they do not burn; but the edges of them become dry and scorched to such a degree, that the next conflagration finds them an easy prey. This custom destroys whole swarms of insects and reptiles, with immense numbers of the smaller quadrupeds, and even of horses, which have not so much courage as the oxen in forcing their way through the fire."

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* Dr. Gillies's account of Buenos Ayres, in Napier's edition of the *Encyclopædia Britannica.*

6092. *Of trees*, Azara observes, that in this singular country, from the River Plata to the Straits of Magellan, there appear to be none, and shrubs even are exceedingly unfrequent. In some places near the frontier are *viznagas*, a large wild Carrot, and Thistles, which are collected for fuel; but as this is still scarce, the inhabitants burn the bones and fat of animals, and the dung of horses. At Buenos Ayres and even at Monte Video, much of the latter substance is consumed, especially in the ovens; though the peach trees, that are cultivated for this sole object, aid in the supply. A little wood, too, is procured on the banks of streams near the north coast and in the islands of the Paraná and Uraguay. There, too, wood that is fit for making carts, houses, and boats of various sizes, may be obtained; but the major part of this comes from Paraguay and the missions. In the Chaco, there are plenty of trees, growing thick and tufted on the river banks and more thinly in the open country; consisting of Cebile, Espinillo, Quebracho, Algaroba, and various species, which are quite unlike those that are known by the same name in Europe. The fruit of one of the Algarobas (a species of *Acacia*) is a large blackish pod, which, after having been peeled, would be as good as nut-galls for making ink, and perhaps for dyeing. The fruit of another resembles Haricot beans; it is much eaten by the poor, who peel and put it in water, where by fermentation it produces a liquor, called chica, of a pleasant taste and possessing inebriating qualities. From the river Plata to the missions, the trees are only seen by the sides of the rivers, and they diminish as the country becomes more peopled. In the Jesuit missions, and as you advance northward, there are extensive woods, not only near water, but wherever the soil is uneven. These are so thick and so full of Ferns, that walking is difficult; and yet the circumstance that seeds cannot vegetate in these situations, because they fall on a soil that is covered with leaves, and are neither affected by wind nor dust, nor capable of reaching the earth, renders it difficult to account for the multiplicity of the trees, whose only mode of increase is by suckers from the root; while the closeness of their stems would rather dispose them to push upwards, than to send out fresh shoots from below.

6093. *Azara* gives an interesting account of many vegetables of Buenos Ayres, Paraguay, and Paraná; but, unfortunately, without mentioning their scientific names, so that we are too frequently at a loss to know what plant he means. Among them are the following: — "The Curiy, a kind of Pine (*Araucaria brasiliensis?*), grows in large forests not far from the rivers Paraná and Uraguay. It seems to excel the pine of the north, and is equally straight. It is said that it has but one very thick and straight root, and that its wood much resembles the fir; but the leaves are shorter, broader, and lanceolate at the point. The branches issue from the stem in regular and distant stages, they grow horizontally, and are rather slender. The fruit is a round cone, of the size of a child's head, with scales that are not so distinct as those of the common fir, but when ripe they expand and show the central nut, about as large as one's finger. The seeds are very long, and the thickness of the thumb at the biggest end; when roasted, they have a flavour superior to chestnuts. The savage Indians are remarkably fond of them, and make flour and bread of them. The Jesuits have sowed some of these trees in the missions, where they have grown so large that it would be worth the while to cut one of them down, and, floating it to a desirable place, make a trial of it for a mast or a rudder, for I am convinced that it would be applicable to this purpose, as well as for any kind of planks. The seeds of this tree should be tried in Europe, and with this view I brought away a dozen cones; but they, with my other seeds, as well as all my luggage, were taken from me by the Portuguese. I have seen a single individual in a garden at Buenos Ayres, where it grew very well. The Ybaro is another large wild tree. The Jesuits planted a long avenue of it, from their settlement called the Apostles, to the fountain, that the Indian women might, in passing, pull some of the fruit, and use them instead of soap for washing linen. This tree (*Sapindus saponaria*) produces an immense number of round fruits, the kernels of which serve for playthings to the children, and of which they make large rosaries, because they are brown, bright, and glossy. Between these nuts and the outside skin there is a glutinous pulp that may be used for soap, by smearing it upon linen; but it is probable that the quality is not very excellent."

6094. *Though the family* of the torch-thistles (*Cactus* Lin.) have their trunk, joints of the branches, and foliage in the flat form of a batt, and are of all trees or shrubs those whose general proportion and aspect are the least pleasing; "yet," says Azara, "I have seen two individuals which were the finest trees possible. The stem was 20 to 24 feet high, as round and as smooth as if it had been turned in a lathe. It was destitute of foliage, except at the top, where it was terminated by a sphere of branches or leaves of a flat shape. Both the fruit and foliage, though similar to other species of this family, were smaller. I found these two Cacti, in Paraguay, in two different woods of the settlement of Atirà, nearly a league distant from one another; and I was surprised to see them thus solitary among other trees without another of the same species. So that this kind of Cactus, reduced to two individuals, perhaps the last of the sort, will disappear at the death of those which I have just described."

6095. *Reeds*, probably species of Bamboo, attain a great size, as thick as the thigh, and hollow; they are very strong, and are important in making scaffolding and other useful articles. The Jesuits employed these reeds, strengthened with bull-hides outside, to make the guns that they used in the war against the Spanish and Portuguese in 1752. These reeds grow on the banks of the streams, excelling all the trees in height; like others of the same tribe, they spring up in tufts, and it is said that seven years are requisite to bring them to the full size, after which they wither away, the root not sending up any suckers till after two years. There are at least seven kinds of reed in this country, some hollow and some solid, all of which might be advantageously introduced to Europe, where the least useful species (*Arundo Donax*), perhaps, is the only one known.

6096. *The famous* Paraguay Tea must not be passed over unnoticed; and we must observe that the editor of *Azara's Travels* (M. Walckenaer), has fallen into a strange error in supposing the plant to be the same with the "Culen jaune" of Molina (the *Psoralea glandulosa* Linn.). It is a plant belonging to a widely different family, that of the Holly, and is the Ilex paraguensis (*fig.* 1001.), which grows wild in all the woods, fringing the rivers and streams which fall into the Uraguay and the Paraná, as well as those whose waters swell the current of the Paraguay from the east, from lat. 24° 30′, northward. Some of these shrubs are as large as a good-sized orange tree; but in those spots where the leaves are regularly gathered, they never become more than bushes, because they are cleared out every two or three years, and the foliage requires that interval of time to arrive at perfection. The plant is evergreen, its stem is as thick as a man's thigh, with a smooth white bark, and boughs that point upwards, as those of the laurel, the whole plant presenting a thick and very branched appearance. The leaf is elliptical, rather broadest towards the end, four or five inches long, and about half as wide; it is thick, glossy, toothed all round, of a deeper green above than below, and the petiole is short and reddish. The flowers grow in bunches of thirty or forty; they have each four divisions and as many pistils placed in the intervals. The seed is very smooth, reddish-violet, and like peppercorns. To bring the Paraguay Tea into a state for use, the leaves are slightly scorched, by drawing the branch itself through fire. Then the leaves are roasted and broken down to a certain size, that they may be packed under strong pressure, the flavour of the recently prepared leaves not being considered agreeable. The use of this herb is general in Paraguay, and even in Chili, Peru, and Quito. The Spaniards have derived the custom from the Indians of Maracaya, and it is now so universally diffused, that the importation, which amounted but to 12,500 quintals in 1726, exceeded 50,000 in 1800. To drink this infusion, it is customary to put a pinch of the leaves into a cup or small calabash, called Maté (from which the name of the plant, Yerva Maté, is derived), full of very warm water, and to drink off the fluid immediately, by imbibing it through a little tube or sucker, pierced with small holes in the lower part, which only allow the passage of the water and keep back the leaves that float on the surface. The same herb serves three times, by macerating it in fresh boiling water. Some drink it with sugar, or a few drops of lemon juice, and it is taken at all hours of the day, the average daily consumption of each inhabitant being an ounce. If not drunk immediately, the infusion turns quite black. One man can easily collect and prepare at least a quintal in the day. The Jesuits planted a great many of these trees round their towns and missions, for the convenience of preparing and exporting the leaf; but their example has been but little followed, nor has the government adopted those provident measures which might ensure the preservation and propagation of this valuable tree. At present, the groves of Paraguay Tea are situated in wild spots, often exposed to the invasion of the uncivilised tribes; these have sometimes murdered the labourers, who are exposed to many hardships and privations. By forming the plantations in inhabited districts, such difficulties would be avoided, the gathering would cost less, from women and children being employed, and the present destructive method of collecting the leaves might be in a measure obviated. The Jesuits were also more careful in the mode of preparing the leaves, from which they removed all the broken bits of wood and pounded them small, thus making three kinds from the same plant. There is, however, but little difference in the flavour, the principal requisite being that the foliage should be thoroughly scorched and roasted, and collected at a suitable time, as damp weather is very injurious to the quality. Thus, without regarding the intermixture of bits of wood, or the size of the leaves, the Paraguay Tea is divided into two classes, the Fuerte and the Electa. The latter, which is the best, is consumed in the provinces of La Plata to the amount of 1,250,000 lbs.; the other goes to Chili, Peru, and Quito. The South Americans ascribe numberless virtues to this plant, which is certainly aperient and diuretic, but perhaps possesses no other good qualities. Like opium, it produces some singular and contrary effects, giving sleep to the restless and spirit to the torpid. Those who have once contracted the habit of taking it, do not find it easy to leave it off, or even to use it in moderation, though, when taken to excess, it brings on similar disorders to those produced by the immoderate use of strong liquors.

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ILEX PARAGUENSIS.

6097. *Many resins and gums* are produced in Paraguay. Among them is the well-known Gum Elastic, Caoutchouc or Indian Rubber, which distils from the Hevea guianensis. Though applied to so many purposes in Europe, economical and medicinal, especially in rendering cloth water-proof, in its native country this gum is only used to make balls for children to play with, and to give light at night in the desert. For the latter, they make a round ball of the resin, and, throwing it into water, observe the part that floats upwards, in which they insert a burning match, which lasts a whole night, or till the ball is entirely consumed. When the trunk is pierced, a large quantity of resin soon flows out, which is received on a piece of leather stretched on the ground; it quickly condenses, and may be drawn out in long strips; or, by pressing it together, it forms a compact mass. Another tree, called Nandipa, affords a resin which, mixed with equal parts of Cane Brandy, forms a beautiful varnish. Turpentine and Gum Elemi are the produce of two other trees; and a strong milky glue exudes from a common tree called Curupicay. The Aquaraibay, of which the trunk is sometimes as thick as a man's body, furnishes a much esteemed article, called the Mission Balm. This is procured from its leaves, which are boiled in wine or water till it becomes a syrup, fifty arrobas of leaves producing one of balm. A tribute of 2 lbs. of this balm was paid by all the Indian nations where the tree grows, and transmitted to the king's apothecary at Madrid. In its native country, it is called Curalo Todo (or *universal remedy*), and considered equally efficacious whether administered internally or externally, in wounds, bruises, colics, catarrhs, diarrhœas, and stomach or head complaints.

6098. *Climbing plants*, commonly called Ysipos, are very abundant in the woods: they climb and descend upon the largest trees, passing from one trunk to another, and sometimes entwining them so closely as to form apparently but one and the self-same body. There are also innumerable parasitic air-plants, which spring up and vegetate on the stem and branches of other trees: some are remarkable for the extraordinary form or beauty of their blossoms, and others recommend themselves by their surpassingly delicious odour. At a particular season, the large forest trees are adorned with the yellow orange flowers of some of those species; and it is customary to place them on all the balconies at Buenos Ayres. One kind, called Guenbé, springs up within the hollow trunks of decaying trees. Its stem, of which there are several on each plant, is as thick as one's arm, and from three to five feet long, the leaves two feet in length, and a foot wide, glossy and deeply cleft. This plant produces a spike like maize, with seeds of a pleasant flavour, and long straight roots, without any knots, that, after having twined several times round the trunk, strike into the earth. These roots are carefully peeled, and their bark, which is deep violet, fine and easily detached, serves to make cables and other cordage employed in navigating the Paraguay, without other preparation than that of drying it after it has been wetted. These ropes are cheap, they are not liable to decay in mud or water, and will stand a strong pull; still they are not so durable as hemp. Friction and bending are apt also to injure them. Our frigates used these ropes with advantage during the latter years of the war.

6099. *The plants* usually known in the country by the name of Pitas, Cardas, and Caraguatas (*Tillandsia* and *Bromelia?* perhaps *Agave*) grow in great abundance; some as parasites, and some on the ground. They all contain more or less water, which is perfectly clear and fresh, and often serves to quench the traveller's thirst. Two are more remarkable than the others: one of them grows in large quantities on the edges of woods and even in open spots, but does not extend to the river Plata. Its long and thick foliage, like that of the pine-apple, yields a strong fibre, the inside leaves, which precede the developement of the fruit, being quite pearly; the small blossoms are followed by fruits, like dates, which, when ripe, are of a fine orange colour and good to eat. The other is called Ybirá: its fruit resembles a pine-apple, but is quite worthless; but from the foliage is manufactured an excellent cordage, called Caraguata. This is used for various purposes, even in preference to hemp, because it neither stretches, nor decays in water. A rope, an inch thick, made of this substance, was compared with an hempen one of the same thickness, and it proved the strongest.

6100. *It is reasonable* to suppose that on the western extremity of the great plain we have above alluded to, about Mendoza, the vegetation begins to alter, and to partake of that of the mountains, that city being situated at the eastern foot of that vast range. One of its most remarkable features, and that which would be least expected from its extra-tropical latitude, is the number of species of Cactus found in its vicinity. Schouw gives 26° S. lat. as the southern limit of the cactus region. Dr. Gillies, in a morning's ride from Mendoza, has been able to gather twenty-two distinct species of this curious genus, all of which he has introduced to the gardens of Great Britain, and all are growing in one establishment, the Glasgow Botanic Garden.

6101. *At Buenos Ayres*, wheat yields 16 for 1, at Montevideo 12 for 1; but the grain is not much above the half the size of that of Spain. From S. lat. 40° to the Straits of Magellan, Azara considers the soil to be too salt to yield wheat.

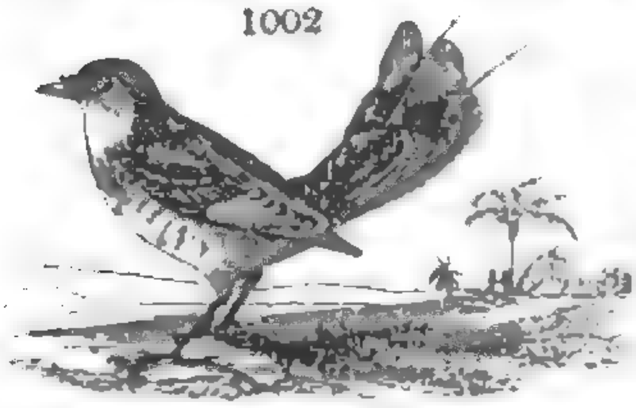
6102. *Vines* were once more extensively cultivated than at present. In 1692, the city of Asuncion, the capital of Paraguay, supported in its neighbourhood 2,000,000 vine-stocks. Mendoza and San Juan, both situated near the eastern foot of the Cordillera, towards the close of the last century yielded annually to Buenos Ayres and Monte Video, the former 3313 barrels, and the latter 7942 barrels of wine. Tobacco is largely grown, and 15,000 quintals per annum have been exported. Sugar, Mandiocca, Indian Corn, Batatas, and other vegetables requiring a warm climate, are, as may be expected, readily cultivated.

Subsect. 3. *Zoology.*

6103. *On the Zoology of Paraguay*, and of the provinces bordering on the great Rio de la Plata, the only authentic information is to be found in the memoirs of Azara, whose ample accounts of the native animals may be consulted with the greatest advantage. Unfortunately, however, this writer uses only provincial names; so that the scientific naturalist, unless he detects the animal from its description, is quite in the dark as to its generally received name. Most of the quadrupeds and birds are of species common also to southern Brazil. The Puma and Jaguar, among the ferocious animals, have been already mentioned; while the vast inland plains, or pampas, are well known to swarm with wild Oxen and Horses, the descendants of those brought from Europe by the Spaniards. So little, however, do the inhabitants appear to turn the former animals to any other use than making candles of their fat, and traffic of their skins, that milk is a scarce article, Irish salted butter a luxury, and the making of cheese nearly unknown.

6104. *The Burrowing Owl*, and *the Cock-tail Waterchat*, are two of the most singular birds of Paraguay. Of the first (*Strix cunicularia*), a ridiculous account has been given by a "galloping" traveller. (*Mag. of N. H.* i. 285.) It appears to live in the deserted holes made by a species of Marmot. The evidence of this was clearly presented by the ruinous condition of the burrows tenanted by these birds; while the neat and well-preserved mansions of the marmot show the active care of a skilful and industrious owner. (*Bon. Am. Orn.* i. 71.) These Owls hunt during the noon-day sun, and appear to live in the villages of the marmots, whose deserted habitations they occupy; for there is no evidence that the marmot and the owl habitually live in one burrow.

1002



COCK-TAIL WATERCHAT.

6105. *The Cock-tail Waterchat* (*Alecturus alector*) (*fig.* 1002.) is not much bigger than the Stonechat; the colours are plain, but the highly singular structure of the tail, shaped like that of a cock, renders it very remarkable. It lives on the ground, in open plains, near water; but flies with great celerity. The males frequently mount vertically in the air, flapping their wings, and moving their tail in an extraordinary way, and then darting down suddenly to the ground from a great height.

Sect. III. *Historical Geography.*

6106. *La Plata* had no claim to a place among civilised nations before the discovery of America. The Indians on the banks of the Paraguay, as on those of the other great rivers, were at that time in the lowest stage of savage life.

6107. *The Rio de la Plata* was discovered by the Spaniards early in the sixteenth century. In 1534, Don Pedro de Mendoza founded the city, and in two years established settlements as high as Asuncion. Thirst for gold was probably the motive for penetrating so quickly and so far into the interior; but no gold rewarded the search. The first importance of Buenos Ayres was derived from a few cattle having strayed into its immense plains, where they multiplied with astonishing rapidity amid the rich pastures, and in later times their hides became a great staple of commerce. Paraguay derived great benefit from the missionary establishments formed there by the Jesuits; where the rude Indians, on a greater scale than in any other part of America, were reclaimed from their savage life, and trained to regular, peaceable, and industrious occupations. The re-establishment of the order may produce political changes of great importance throughout all the republics of South America.

6108. *In* 1778, *Buenos Ayres*, hitherto subordinate to Peru, was erected into a viceroyalty, including all the provinces east of the Andes, and thus comprehending Upper Peru, with the mines of Potosi; which rendered it, next to Mexico, the most important division of Spanish America.

6109. *The emancipation of Buenos Ayres* was in some degree prepared by the British expeditions in 1806 and 1808, which formed one of the least creditable parts in the military history of the last war. But the grand impulse was given, here as elsewhere, by the compulsory abdication of Ferdinand. In May, 1810, Cisneros, the viceroy, after having taken violent measures to support the Spanish authority, was obliged to assemble a junta, and to allow an independent government to be formed, acting in name of Ferdinand VII. After this the country was agitated by many disturbances and vicissitudes. Monte Video still resisted; and when reduced by General Artigas, it was occupied by that person as an independent chief: while the Portuguese, encouraged by this disunion, advanced and seized the town, together with the whole of the territory called the Banda Oriental. This step, however, was resisted by Buenos Ayres vigorously and successfully, and the government of Brazil was obliged to evacuate this territory, and allow it to be formed into an independent republic. Dr. Francia also contrived to occupy the upper province of Paraguay so firmly as to baffle all attempts to expel him. With these exceptions, and with that of Upper Peru, a general congress of all the provinces of the viceroyalty was held at Tucuman in March, 1816, and adjourned the following year to Buenos Ayres; and a republic was constituted, under the title of "the United Provinces of South America." This union, however, has not been permanent. In February, 1820, the provinces broke off, and each at present has an administration of its own, though negotiations are still pending for an united government.

Sect. IV. *Political Geography.*

6110. *The constitution of Buenos Ayres* is that of a representative republic. The legislative power is exercised by two chambers, the representatives and the senators; the former consisting of forty-one deputies elected by the direct suffrages of the provinces, and renewed by half their number every two years; the senate is formed by two deputies for each province, making thirty in all, who are renewed by one third at a time: they are elected by eleven members of each province. The executive power is exercised by a citizen holding the title of president, elected in the same manner as the senators, and holding his office for five years. He is re-eligible, and his powers are very extensive. He appoints to all offices civil, military, and ecclesiastical, except to archbishoprics and bishoprics, which are nominated in ternaries by the senate. The despatch of business is intrusted to five ministers, responsible for every unconstitutional measure, the president also being liable to impeachment before the senate and house of representatives. The judicial power is exercised as in other South American states; but it is to be observed, that the ministers of the supreme court of justice, as well as the lowest judges, are all nominated by the president.

6111. *The administration of justice* has been placed on a respectable footing, with the exception of trial by jury, for which Mr. Caldcleugh doubts if the state of society be as yet adapted. There are four counsellors, called judges in the first instance, with salaries of 2000 dollars; five judges of the high court, with 2500 dollars; and a council for commercial affairs.

6112. *The military forces* are estimated by a late traveller at 2500 or 3000. Their manœuvres are very simple compared to those of the British troops; and their attire bears rather too great a resemblance to that of the levies of Sir John Falstaff; however, they have of late considerably improved. During the war with Brazil, about 10,000 troops were collected, with a numerous militia.

6113. *The revenue*, during a continued war, and disorganised internal government, necessarily fell into an embarrassed state. It is remarkable, that the old government, notwithstanding the oppressive alcavala, and its fifth on the product of the mines of Potosi, never drew from this viceroyalty more than 700,000 dollars (175,000*l.*). The independent government, under its necessities, was driven to forced loans, which destroyed confidence; and to enormous custom-house imposts, which led to a ruinous contraband. At length, in 1821, fixed and moderate rates were established, being for most articles 15 per cent.; but for sugar, tea, coffee, and *maté*, or herb of Paraguay, 20 per cent.; wines, liquors, and ornamental furniture 25 per cent. Materials of manufacture and some other favoured articles, are only 5 per cent. There are also small export duties: hides, half a real; other productions, 4 per cent. The produce of these duties in 1822 and 1823 was nearly 2,000,000 dollars; and when added to direct contributions, stamps, and licences, came in the last year to 3,000,000 dollars, or 675,000*l.* The debt, incurred by loans from the never-failing purses of London capitalists, amounts to 4,500,000 dollars, or 1,000,000*l.* sterling. In 1822 and 1823 were paid off 845,000 dollars. Thus the financial state of the republic may, on the whole, be considered as good.

6114. *The provinces*, since the breaking up of the congress in 1819, have remained in a state of separation; though they have assisted Buenos Ayres in her war with Brazil. In general they are loud and rather unreasonable in their complaints against her; but a new congress is projected at Cordova, and it is hoped that an union will at last be effected. In Paraguay, Dr. Francia continues to exercise a most absolute and tyrannical sway over the ignorant natives, for the reports of his death seem to be premature. Monte Video and the Banda Oriental have formed a separate republic, the constitution of which we have yet no means of knowing.

Sect. V. *Productive Industry.*

6115. *The agricultural produce* consists almost entirely in the vast herds of horses and horned cattle which cover those boundless plains, clothed with rich herbage, which constitute the Pampas. The gaucho, or farmer, has no care in rearing or feeding; he has only to throw over them the lasso, or long leathern noose, to kill or drive them into Buenos Ayres, and in the case of horses, to break them, and put a mark on them by which they may be known. Beef can scarcely be said to bear any price, since a cow may be had for twenty shillings, and the hide is worth more than half that sum. Wheat and barley, for which the soil is perfectly adapted, are cultivated in a slovenly way immediately round Buenos Ayres, the grain being threshed by making cattle gallop over it. Notwithstanding the encouragement given to agriculture by the government, there was still a necessity, in 1823, to import 70,000 barrels of American flour. The milk is not made into cheese or butter; and garden vegetables are no object of culture, the gaucho considering them as food fit only for beasts. In this naked and exposed country there is a great want of timber for fuel; the peach tree has been found to grow, and answer the purpose of fuel, better than any other. Paraguay produces its herb, or *maté*, of which the infusion, like that of tea, is prized over all the most southern countries of America. Quantities of this commodity have been sent down the river to the value of 1,000,000 dollars in the year; but Dr. Francia, of Paraguay, prohibited its exportation.

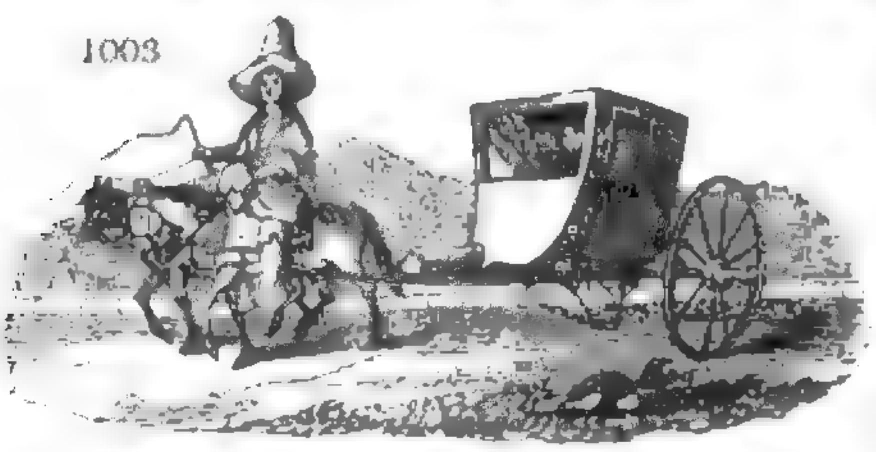
6116. *The mines* of Potosi, the richest in South America, may now be considered as again attached to Peru. There are, however, scattered along the eastern border of the Cordillera, a number of mines of gold, silver, and copper, from which high expectations were once formed in this country; and it was supposed, that, by the application of British skill, industry, and capital, they might be rendered far more productive than they had ever been. The observations of Captain Head and Mr. Miers have dispelled these hopes. It appears that mining, before the revolution, had been pursued to excess; adventurers being urged at once by the immense profits which had, in a few instances, attended it, and by the cheap rate at which the compulsory labour of the Indians could be obtained. Under this impulse, mines had been worked, which in Cornwall would not be thought worth working. All these poor mines are now deserted, being unable to pay the high rate demanded by free labourers for such severe work, when they are surrounded by the richest unoccupied land, and masters of as many cattle as they can catch. Machinery, supposing it were worth employing, is of very difficult application, from the want of water and timber, and from the vast extent of land-carriage by which iron must be conveyed. The English association, therefore, formed for working the mines of the Rio de la Plata, after investing a large capital, have judged it wiser to submit to the entire loss than to proceed. This branch of industry will never, perhaps, regain its former height; and the prosperity of the state must rest upon other and more solid foundations.

6117. *There is scarcely any manufacture*, except that of ponchos, or riding cloaks, which are universally worn, and from habit are made better than those hitherto supplied by the Manchester manufacturers, who are exerting themselves, however, to improve the fabric of this article. That indolence, which the South Americans inherit from the Spaniards, will, probably, long prevent them from becoming a manufacturing people.

6118. *The commerce* of Buenos Ayres is large, compared with the population and general wealth of the state. The country is dependent on foreign supplies for almost every article, both of manufactured goods and colonial produce, and even for a little grain; in return for which it gives the refuse of its cattle, hides, horns, hair, and tallow. The trade with Great Britain has increased considerably. It is difficult, however, to form any precise estimate of its amount, as the exports to Monte Video as well as Buenos Ayres are confounded, in our Custom-house accounts, under the general name of the states of the Rio de la Plata. In 1831, the declared or real value, of the various articles of British produce and manufacture exported to them was 339,570*l.*, little more than the half of the exports to Chili. During 1832, forty-seven British ships, of the burthen of 8864 tons, entered Buenos Ayres. Hides are the great article of export. In 1832 there were, dry hides, 877,132; salted, 48,378; horse hides, 4076; nutria skins, 1456 dozen; horns, 2,049,017, &c. (M'Culloch's *Commercial Dictionary*, 2d edit.) A very considerable inland trade is also carried on by enormous waggons, which are driven very rapidly across the Pampas to Mendoza and other towns at the foot of the Cordillera, and, having often to be dragged over bog, quagmire, and torrents, arrive commonly in a very shattered state. They carry some manufactures and colonial goods, and bring back wine, brandy, and mineral produce. The intercourse with the countries up the river is, at present, obstructed by political causes.

6119. *Roads, canals, and bridges* have no existence in the territory of La Plata. It is supposed to be enough, in this immense flat surface, that successive travellers beat down the grass, shrubs, and thistles, for those who are to succeed them. But, though the ground be even, great obstacles are opposed by swamps, torrents with steep banks, and sometimes broad rivers, which can only be crossed by fording, though the water should reach breast-high. A still greater danger arises from holes made by animals, called *biscachos*, which burrow in the ground like rabbits. Into these the horse and his rider are ever and anon precipitated, with the danger of breaking a limb, at the distance of 500 miles from medical aid. Spirited half-wild horses are, indeed, to be had in abundance, but as they know no pace between a walk and a gallop, it is only by the extreme skill of the drivers that the light waggons (*fig.* 1003.), employed for the conveyance of travellers, pursue the journey without being dashed to pieces.

1003



THE PAMPAS.

SECT. VI. *Civil and Social State.*

6120. *The population* of the territory of La Plata bears, undoubtedly, a very small proportion to its vast extent. It is by no means well ascertained, but is generally supposed not to exceed 700,000; exclusive of the territory governed by Francia, and of the Banda Oriental, of which Monte Video is the capital. These may raise the whole to somewhat above 1,000,000.

6121. *Society*, over all Spanish America, wears a very uniform aspect. The creoles, now every where the ruling class, are acute, polite, courteous, indolent, unenterprising, passionately fond of diversion, especially in the forms of dancing and gaming. Every lady holds her tertulia, or evening party, to which even the passing stranger will sometimes be invited. They are less charged with intrigue, however, than in other great cities of the New World; the conduct of the young ladies is very strictly watched, and they are married at thirteen or fourteen. The lower ranks pass through the streets in a very orderly manner; but they are too much addicted to frequenting pulperias, or drinking-houses, where gaming sometimes gives rise to deadly quarrels. Horses being easily procured at Buenos Ayres, it is an object of pride to keep a number of fine quality, on the equipment of which the inhabitants often bestow more care than on the due clothing of their own persons. Every one has a horse; even the beggar begs on horseback.

6122. *The Gauchos*, who inhabit the wide surface of the Pampas, and appropriate the numberless herds that roam over them, are a very singular race. Some travellers hold them as downright savages; but Captain Head assures us, that they are often of good birth, and very estimable persons. The gaucho is at once the most active and the most indolent of mortals. He will scour the country whole days at full gallop, breaking wild horses, or chasing the jaguar or the ostrich; but once alighted and seated on the skeleton of a horse's head, nothing can induce him to move. He considers it a degradation to set his foot to the ground; so that, notwithstanding a general vigour almost preternatural, the lower limbs are weak and bent, and he is incapable of walking to any distance. His dwelling is a mud cottage, with one apartment, and so swarming with insects, that in summer, the whole family, wrapped in skins, sleep in the open air. All round is a desert, with the exception of the *corral*, or circular spot, enclosed by stakes, into which the cattle are driven. Neither grain nor vegetables are cultivated, nor is the cow made to yield milk. Beef is the only food; and it is roasted, or rather twisted, on large spits stuck in the floor, in a slanting direction, so as to overhang the fire, a twist being from time to time given, to expose all sides of the meat in succession, and slices are cut out by the surrounding family: the juices, of course, fall into the fire, and are lost. A certain proportion become robbers, for which vocation these desolate plains afford scope; and Captain Head does not consider it safe to meet a party without a display of three pistols ready cocked.

6123. *The Indians of the Pampas*, a savage and terrible race, driven before the Gauchos, have in no degree coalesced with them, but continue in a state of deadly and raging hostility. Whoever encounters them in these wilds must expect death in its most terrible forms for his immediate lot; and the travellers, meeting each other, ask, with trembling voice, if any Indians have been seen on the route. They appear of the genuine Arauco breed; are nobly mounted, having each two or three horses, so that, when one is exhausted, the rider leaps on another. They delight in midnight expedition and surprise. On reaching the hut of an unfortunate Gaucho, these marauders set fire to the roof, when the family, who, at the same time, hear the wild cry which announces their doom, must rush to the door, and are instantly killed, without any distinction, except of the young girls, who are placed on horseback, and carried off to serve as wives, in which capacity they are well treated. A large body were lately in a state of regular war with the colonists, but they have been defeated, and driven beyond the Colorado.

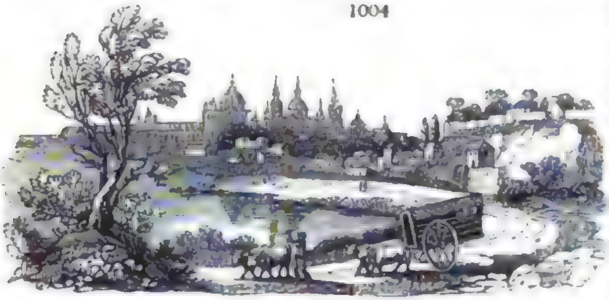
6124. *The Catholic religion* prevails exclusively in these states, as over all South America; but the splendour of the churches, and the endowments of the clergy, appear to be greater here, compared at least with the means of supporting them, than in any other province. There prevails, also, a particular laxity in the conduct of the clergy. A late traveller, one Sunday evening, in passing the arena for cock-fighting, saw a number of clergymen, each with a fighting-cock under his arm. The government at Buenos Ayres has shown a considerable activity in reforming the abuses of the church, having suppressed a number of convents, and at one time prohibited any accession to the number of monks and nuns; but the influence of these communities is still very strong in the interior provinces, to which this conduct of Buenos Ayres has rather served as a ground of disunion.

6125. *Knowledge*, as in the other new states, is encouraged by the government, without having yet made any very deep impression on the body of the people. Several large schools have been established on the plan of mutual instruction, and an university has even been founded, without permission from the pope; but it is little more than a classical school. There are three newspapers, but no literary or scientific journals. A history of the country, by Don Gregorio Funes, enjoys reputation.

Sect. VII. *Local Geography.*

6126. *The city of Buenos Ayres* (*fig.* 1004.) is situated on the southern bank of the Rio de la Plata, about 200 miles above its mouth; and, being raised about twenty feet above the river, and presenting the spires of numerous churches and convents, it makes rather a fine appearance. The houses are new, built of brick, whitewashed, and with flat roofs, over which may be taken a pleasant and even extensive walk. The windows are protected by iron bars, causing each mansion to resemble a lock-up house, and to form, indeed, a complete fortification; which enabled the town to make a formidable and effectual resistance to the British army, absurdly marched into it by General Whitelock. Along the beach there is a street which resembles Wapping, being crowded with grog shops. The cathedral, though built of brick, is a very handsome structure, as are several of the other churches and monasteries. The fortress in which the viceroy formerly resided is situated near the river. The town, on the whole, is rather handsome, especially the houses surrounding the great square. The environs on the land side have a very monotonous aspect, being animated neither by varied vegetation, nor by the chirping of birds. The population is estimated at 70,000. Large vessels cannot approach nearer than two or three leagues.

1004



BUENOS AYRES.

6127. *Monte Video*, capital of the Banda Oriental, or eastern shore of the Plata, possesses the best harbour upon that river, and before the late disturbances was a flourishing city; the population of which was estimated at 15,000 or 20,000. It has suffered severely in passing through the hands of the insurgent Artigas, and then of the Portuguese. For an American town it is well built, with wide and regular streets, but few prominent edifices. The country around is agreeably diversified with hills and valleys, and the gardens abound with the finest fruits and flowers; but there is otherwise little cultivation; though extensive cattle farms are found in the interior. It exports large quantities of hides. Monte Video, it appears, is now to be the seat of an independent republic, though doubtless in close alliance with Buenos Ayres, by whose exertions its independence has been vindicated against Brazil. Below Monte Video is the small port of Maldonado, and, above, the still smaller one of Colonia del Sacramento, with a good but neglected harbour.

6128. *The province of Entre Rios*, which is situated higher up, between the Uruguay and the Plata, derives from these two rivers some of the most extensive and rich alluvial plains on the surface of the globe. Even the swampy and inundated tracts might easily be converted into the most luxuriant meadows. The herb of Paraguay is found there, and it is supposed might be produced of equally good quality as in the upper quarter, where only it has been hitherto reared in perfection. Mr. Rodney calculates the population of this province and of the Banda Oriental to be as yet only 50,000. Corrientes, at the junction of the Plata and the Paraná, must, from this happy situation, rise in time much above its present moderate importance. Lower down, on the opposite side of the river, is Santa Fé, distant eighty leagues from Buenos Ayres, which has risen to considerable importance by becoming a depôt for the goods on the river. This city, with its district, has formed itself at present into an independent state, strongly repelling all union with Buenos Ayres. The Santa-Ferino was represented to Mr. Caldcleugh as more wild, and cruel, and regardless of the laws, than any of the other provincials. The population of the town is not supposed to exceed 4000; and of its district, 30,000.

6129. *Paraguay*, still farther up, between the Plata and the Paraná, forms a very fine district, which has fallen under the absolute dominion of a person of the name of Francia. Having taken a degree at the university of Cordova, he applied his knowledge in astronomy and physics, and the instruments connected with those sciences, to impress this simple race with a belief in his supernatural powers. By these and other arts, he rules them with absolute sway; and his first maxim is to allow no person or thing to come into or go out of Paraguay. Of things, the most valuable is the herb of Paraguay, which the neighbouring countries, were they permitted, would take off to the value of 1,000,000*l.* sterling; and of persons, Bonpland, the illustrious botanist and companion of Humboldt, was long detained in prison, though recently liberated. The violent steps, however, by which this person is now supporting his sway, seem to indicate that it has gone beyond what the temper of the nation will bear, and therefore is not likely to be permanent. Asuncion, the metropolis of the Upper La Plata, is a considerable place, with about 7000 inhabitants, but with little regularity and beauty It is built on a bank above the river, which is daily washing away part of the ground beneath it. This place, with the smaller ones of Coruguaty and Villa Rica, were the staples for the herb of Paraguay. Two other villages, Santa Lucia and Little Santa Fé, sent down to Buenos Ayres and Monte Video lime and gypsum, for the purpose of whitewashing the walls of those cities.

6130. *Cordova, Tucuman, and Salta* form together an extensive region, which has been often comprehended under the general appellation of Tucuman. They fill the interval between the Rio de la Plata and the Andes, which does not consist of dead level plains, like those in the south, but is crossed by branches of the Andes, and even by parallel chains, of which the most considerable is that called the Sierra de Cordova. Between these mountains are found valleys and extended plains of great fertility, on which every species of tropical produce is raised; but the prevailing stock consists in cattle, sheep, and, above all, mules, which, being indispensable for conveyance across the Andes, are reared with great care, and exported in great numbers to Peru. There are also many species of valuable wood; honey and wax are produced of excellent quality; and wool, both of the sheep and vicuna, is manufactured into cloth. This district eminently distinguished itself in the war of independence, contending in favour of that cause at once against the governors of Buenos Ayres, Chili, and Peru; and the first congress of the La Plata provinces was held at Tucuman. They at present hold aloof, being unwilling to acknowledge the superiority claimed by the distant capital of Buenos Ayres. The people, according to Mr. Caldcleugh, bear the reputation of being more industrious, religious, and orderly, than those of the other provinces.

6131. *Of the capitals of these provinces*, *Cordova* is a neat small town, well paved, with a handsome cathedral and market-place. It possesses the only university in the interior provinces, which has recently produced some men of considerable eminence. It carries on a manufacture of cloths, and a trade in mules. Salta is a considerable place of 400 houses, situated in the beautiful valley of Lerma, on the high road from Buenos Ayres to Potosi. It is the capital of Tucuman, and a bishopric. About 60,000 mules are reared in the neighbourhood. An annual fair is held in February and March for mules and horses. The people, and those of other towns in the district, have a hard struggle to maintain with the tribes of unsubdued Indians, who hem them in on all sides. Tucuman and St. Jago del Estero are also old towns, situated in fertile plains, and deriving some importance from their position on the main route from Buenos Ayres to Peru. Near Tucuman are some silver mines, not yet worked.

6132. *Mendoza*, a province separated from that of Cordova, consists of some beautiful, fine, and well-watered valleys, overshadowed by the amazing rocky and snowy steeps of the Andes. Its staples are the same as at Cordova, mules, wool, cloth. A considerable number of mines of gold, silver, and copper occur both here and farther north; but, as already observed, they are not likely to answer the sanguine hopes once cherished by British capitalists. The importance of Mendoza rests on its fertile soil, and on its being the sole route of communication between Buenos Ayres and Chili; which, though rugged, leading over the loftiest steeps of the Andes (*fig.* 1005.), is a continual thoroughfare. A product, almost unique in America, is that of wines and brandies, which are very tolerable, and are sent to the neighbouring provinces. Mendoza is a neat town, well built of brick, the streets refreshed by streams from the river, and the interior of the houses well fitted up. The population is generally reckoned from 6000 to 10,000; though Mr. Caldcleugh makes it 20,000. They are described as a quiet, respectable, well-disposed people, though they give themselves up without reserve to the indolence generated by the climate, enjoying an unbroken siesta, or sleep, from twelve to five in the afternoon, when they rise to walk on the alameda, which commands a noble view of the plain and the Andes: but this is the usual train of life in these interior cities. San Luis, to the east of Mendoza, on a frequented though circuitous route from Buenos Ayres, is a much smaller place, consisting of a number of mud huts, scattered over a large space of ground, but in a situation highly picturesque, being enclosed by a lofty branch of the chain of Cordova. San Juan, to the north of Mendoza, has another but much less frequented route through the Andes.

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ROUTE OVER THE ANDES.

6133. *Patagonia*, which, since the settlement formed on the Rio Negro, the Buenos Ayreans number as one of their provinces, is in full possession of an Indian race, all mounted on horseback, and in habits and aspect closely resembling those who desolate the Pampas. They have drawn the attention of navigators by their size, and have been actually reported as a nation of giants. Although this be exaggerated, yet they really seem tall above the ordinary standard. They are described to be excellent horsemen. The eastern coast of this country is bordered by a prolongation of the Andes; but these mountains, after passing Chili, display no longer that stupendous elevation which has marked so great a portion of their range. Their general height from thence to the Straits of Magellan is not supposed, by Captain King, to exceed 3000 feet, though some peaks rise to 5000 or 6000, when they wear a most dreary aspect, being covered with perpetual ice and snow. This part of the chain has no valley interposed between it and the ocean, whose stormy waves beat direct against its cliffs, and have furrowed the land into almost numberless islands, separated from the continent and each other by long and narrow channels. One continental peninsula alone, that of Tres Montes, is said to be directly exposed to the waves of the Pacific. Of these isles, the largest and most northerly, called Wellington, is separated from the continent by the channel of Mesier, 160 miles long, whose shores are bordered by low hills, covered with thick woods. To the southward is the archipelago of Madre de Dios, which is little known; but the channel of Concepcion, which divides it from the continent, is broad and safe, and the opposite coast deeply indented with bays, the principal of which, called St. Andrew, is terminated by abrupt mountains, covered by enormous glaciers. Next follows Hanover Island, of considerable extent, and to the south of it a numerous group, called the Archipelago of Queen Adelaide, which borders on the Straits of Magellan. In the interior from the coast are two large saline lakes, one fifty and the other thirty-four miles long, called Otway and Skyring.

6134. *Opposite to the southern boundary of the American coast* extends the dreary region of Terra del Fuego. Narrow straits, crowded with islets, divide it into three parts, of which the most eastern, and much the largest, is called King Charles's Land, the middle and smallest, Clarence Island, the most westerly, Desolation Land. Between Terra del Fuego and the continent extends the long narrow winding strait, celebrated under the name of Magellan, who by it first penetrated into the Pacific Ocean. This channel presents three entirely distinct portions. The most western, composed of granite and other primitive rocks, exhibits mountains irregularly heaped together, a coast deeply indented by bays, forming bold promontories, while the passages are filled with innumerable islets and dangerous rocks. In the central part the mountains, composed of slate clay, are bold, elevated, and in some parts covered with perpetual snow; but no rocks or islands occur to obstruct the navigation. In the eastern quarter, the coast again assumes a granitic character, and is also diversified by islands, though not so numerous as in the western channel. The southern coast of Terra del Fuego is also broken into numerous islands. Two of them, Hoste and Navarin, are separated from the main land by a long narrow channel, stretching almost in a direct line, and named, from Captain King's ship, the Beagle. Staaten Land, another large island, lies off the eastern coast, from which it is separated by the Straits of Le Maire. One of the islands belonging to the group, called L'Hermite, is remarkable as containing Cape Horn, the most southerly point of America, and facing directly the wastes of the ocean which surround the Antarctic pole. It was once deemed "infamous for tempests;" but it is now found that in a proper season Cape Horn may be passed with little danger, and it is commonly preferred to the winding and difficult channel of Magellan. The Petcherais, who inhabit Terra del Fuego, are a handful of miserable savages, in the lowest state of wretchedness, and subsisting solely by the shell-fish which they pick up on the shore. The Spaniards made an early attempt to form a settlement at Port Famine, in the middle of the strait, but could not maintain it.

6135. *The eastern coast of Patagonia* is comparatively low. That immediately north of the straits is covered in a great measure with extensive plains, or pampas; but from Port St. Julian, in about 49° S. lat., to 44°, it is broken by considerable eminences. Ports Desire, St. Julian, and Santa Cruz afford tolerable anchorage, often resorted to by vessels destined for the southern fishery. The natives are seldom seen on this coast, which they are said to frequent only for the purpose of interring their dead.

Chap. XI.

BRAZIL.

6136. *Brazil* is a very extensive region, which occupies nearly the whole of the eastern tracts of South America, and, after being long held as a Portuguese colony, has of late, by peculiar circumstances, been formed into a separate empire. It extends over more than half the continent of South America.

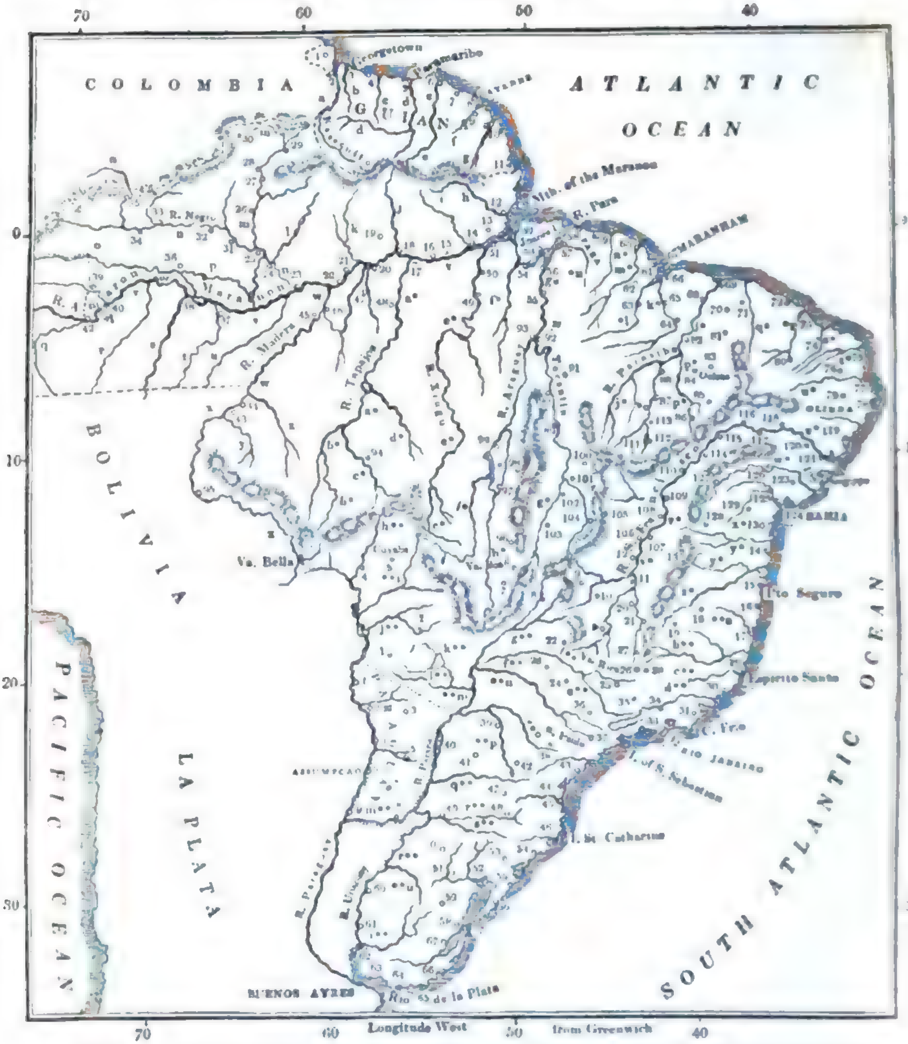
Sect. I. *General Outline and Aspect.*

137. *Brazil is bounded* on the east by the Atlantic, whose shores describe round it an irregular arch, broken by very few bays or inlets of any consequence. In the interior, this empire borders on every side upon the former provinces of Spain; but the two nations, in the course of 300 years, could not determine on the boundary lines to be drawn through the interior of these vast deserts. The discussion was rendered still more intricate by attempts to refer the question to the authority of the Pope, who allowed to the Portuguese 100 leagues west from the islands of the Azores and Cape Verd, without indicating which island or what league was to be used; and by successive congresses of pilots and cosmographers, who had only imperfect and often ideal maps by which to guide themselves. The line seems to begin on the south with the great estuary of the Rio Grande do Sul, whence it passes to the Paraná, and thence by the Madera to the junction of that river with the Amazons. The sea-like channel of the lower Amazons has been supposed to bound Brazil on the north, and to separate it from Guiana; but Humboldt seems to reckon all Portuguese America as Brazil. The separation from Colombia is then marked for a great length by the Parime, and afterwards by a line drawn direct to the sea, without regard to any natural feature. The Brazilian government, taking advantage of the dissensions which reigned in the new state of Buenos Ayres, occupied with its troops the whole territory as far as the Plata, which it insisted made the most natural and compact of all boundaries; but the Buenos Ayreans, unable to discern the beauties of this arrangement, took arms in order to oppose it; and the contest has issued in the disputed territory being formed into a separate republic.

6138. *The dimensions of this immense range of territory* may be taken from about 1° N. to 32° S. lat.; and from about 45° to 65° W. long. This will give about 2300 miles of extreme length, and 2000 of breadth. The area of the whole has been estimated by Humboldt, after careful measurement of the best maps, at 257,000 square marine leagues, or 3,340,000 square miles. It is thus twenty-five times the extent of the British Islands, nearly three times that of either Mexico or Colombia, and greater by a fourth than the entire domain of the United States from the Atlantic to the Pacific. It is rather more than half of all South America. Of this immense space, indeed, not above a fourth can be considered as at present in an effective and productive state; and that part is scarcely cultivated and peopled up to a fourth of its actual capacity. But nearly the whole, from soil, climate, and communications, is capable of being brought, at some future and distant period, into full improvement.

6139. *The Brazilian ranges of mountains* are of great extent, but reach by no means to that stupendous height which distinguishes the Andes of Colombia and Peru. The principal mass of these mountains lies N.W. of Rio de Janeiro, towards the sources of the rivers San Francisco, Paraná, and Tocantines. From that point extends a parallel chain towards the north coast, under the names *Cerro das Esmeraldas*, *Cerro do Frio*, and others; another chain extends south in a direction equally parallel; and a third, that of Mato Grosso, reaches towards the N.W. as far as the plains of Pareses, the central savannah of South America. This last chain pours its waters on one side into the rivers Tocantines and Ghingu, and on the other into the Paraguay and the Paraná. Some mountain chains, but little known, cross near the Tocantines. Towards the banks of the San Francisco is another great plain, called Campos Gerães. On the north coast, between Maranham and Olinda, occurs the Sierra de Itiapoba, one of the most considerable in Brazil. These mountains are not generally higher than from 2000 to 3000 feet; only a few detached peaks rising to about 6000. Geographers have filled the interior with lofty chains, which have remained as fixtures in modern maps; but it seems now ascertained that these vast regions are in general very level; and that even the separation of the waters of the Amazon, the La Plata, and the Madera, is made by plains, the highest ridges of which are only apparent by that separation. The banks of the Lower Amazons present plains almost boundless.

6140. *Rivers*, the greatest in America and in the world, flow around all the borders of Brazil. Its northern frontier is watered by the course of the Amazons, its western by the Madera and the La Plata. Within its territory flow, tributary to the Amazons, the Topayos, the Ghinga, the Araguay, and Tocantines, which, though here secondary, may rival the greatest waters of other continents. But these rivers, flowing through regions which will one day be the finest in the world, when they will bring down an endless succession of valuable products, roll at present through savage deserts, and impenetrable forests, which have never felt either the axe or the plough. The only really useful rivers are those between the coast chain and the sea, none of which can attain any long course. Much the greatest is the Rio Francisco, which, flowing northward along the back of these mountains to their termination, there finds its way to the Atlantic. There are two Rios Grandes, one falling into the sea north of Porto Seguro, the other (Rio Grande do Sul) in the extreme south, watering the province that bears its name. Yet so little is Brazil at present dependent on



References to the Map of Brazil Paraguay, and Guiana.

NORTH PART.
1. New Middleburgh
2. Essequibo
3. Georgetown
4. New Amsterdam
5. Paramaribo
6. Dutch Fort
7. Iracuba
8. Cayenne
9. Roura
10. St. Louis, or Oyapock
11. Macary
12. Villa Nova de Madre de Dios
13. Fragoso
14. Desterro
15. Oituro
16. Montalegre
17. Santarem
18. Obidos, or Panxis
19. Faro
20. Villa Nova de Rainha
21. Sylca, or Yves
22. Serpa
23. Rio Negro, or Fontaleza de Barra
24. Aras
25. Mour
26. Carmo
27. S. Maria
28. S. Felipe
29. S. Joaquim
30. S. Rosa
31. Barcelos
32. Thomar
33. Caldas
34. S. Antonio de Castanheiro
35. S. Jose de Marabytauna
36. S. Antonio de Marapi
37. Avelios, or Coary
38. Tere, or Villa de Ega
39. Assumpsion
40. Matura
41. Olivenza, or S. Paulo de Omaguas
42. Tabatinga
43. Balsamao
44. S. Antonio
45. Missao
46. Borba
47. Ilhamberanas
48. Aldea de Mundrucus
49. Taruana
50. Veiros
51. Gurupa
52. Chaves
53. Tenorio
54. Oeiras
55. Alcobaza
56. Villa Vicosa
57. Para
58. Cintra
59. Braganza
60. Arcos
61. Alcantara
62. Vianna
63. S. Bento
64. Caxias
65. Lagos
66. Itapicura
67. Maranham
68. S. Eugenio
69. Parnaiba, or S. Luis
70. Piracrura
71. Vicosa
72. Scara, or Villa del Forte
73. Aracati
74. Villanova, or Princesa
75. Natal
76. Campinha
77. Paraiba
78. Olinda } Pernam-
Recife } buco.
79. Limoaro
80. Crato
81. Marvad
82. S. Francisco
83. Valencia
84. Oeiras
85. Gamelleira
86. Picada
87. Matto Grosso
88. Jeramenha
89. Assumpção
90. S. Lorenzo
91. Mirador
92. S. Joao das duas Barras
93. Fort de S. Joao das duas Barras
94. Povoacao
95. Fort do Principe de Beira
96. Borinos
97. Angeja
98. Ponte de Lima
99. Lamacal
100. Natividade
101. Conceicao
102. S. Feliz
103. Aguaquente
104. Flores
105. S. Maria
106. Carynhanda
107. Malhada
108. S. Rosa
109. Bomjardim
110. Arcalo
111. Tabequinha
112. Pernagoa
113. Almeargo
114. Centore
115. Joazeiro
116. S. Maria
117. Pambo
118. Moxoto
119. Alagoas
120. Italanga
121. Villanova
122. Sergippe
123. Nhambupe
124. Bahia, or S. Salvador
125. Tacoipe
126. Pombal
127. Jacobina
128. Rio de Contas
129. Maracas
130. Boyema.

SOUTH PART.
1. S. Barbara
2. Porto de Campaao
3. Villa Bella
4. Villa Maria
5. Cuyaba
6. Villa Boa
7. Claro
8. S. Cruz
9. Paracatu.

internal navigation, that none of its great ports are situated upon these rivers, but merely upon small interior bays.

6141. *Lakes* are not leading features in Brazil: but in the southern province of Rio Grande, there are the Patos and the Mirim, extensive and shallow, communicating with the sea, yet chiefly fresh, and forming the receptacle of all the streams which come down from the interior. Farther inland, the Paraguay, by its superfluous waters, forms the Lakes Xarez and Ibera, which spread in the rainy season over a prodigious extent of ground.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

6142. *Granite*, occasionally associated with syenite, appears to abound in Brazil, forming the basis of the low country, and also the central, and often the higher parts of the mountain ranges. Resting upon it there occur gneiss, mica slate richly impregnated with iron ore, chlorite slate, talc slate, quartz rock, limestone, hornblende rock, and greenstone. Upon these old rocks repose sandstone, with slate clay, and upon these various alluvial formations. True volcanic rocks have not hitherto been met with. Eschwege has published a section of the country extending from Rio Janeiro to Villa Rica, which exhibits all the different rock formations just enumerated.

6143. *The minerals* distributed among these formations occur in cavities, veins, beds, or disseminated; and of these the gems and ores are the most important. The most precious and beautiful of the gems, the diamond, is one of the characteristic minerals of Brazil. Hitherto it has been found chiefly in alluvial sands and conglomerate (*cascalho*). Eschwege mentions having seen it embedded in brown iron ore. The district of Serra do Frio is that in which it occurs most abundantly; and it is said also to be a native production of the territory of Matto Grosso. According to Eschwege, the supply of diamonds during the eighty-four years from 1730 to 1814 was at the rate of 36,000 carats per annum; but the return from the registers of the administration of the diamond mines from 1800 to 1806 was only 19,000 carats.

6144. *Large diamonds* do not abound in Brazil, but some of considerable size are occasionally met with. Topazes of great beauty and of considerable size are met with in the diamond district, the chrysoberyl and the green tourmaline or Brazilian emerald in the Serra dos Esmeraldas, and splendid rock crystals and beautiful amethysts are of frequent occurrence.

6145. *Iron*, in the form of magnetic iron ore, specular iron ore, and brown iron ore, is found in vast quantities. Gold in grains is found in the sands of most of the principal rivers and their chief branches; or it occurs in the consolidated sand and gravel named *cascalho*. Gold also occurs disseminated in different primitive rocks, but there are not mines for the gold they contain; all the gold exported from Brazil being obtained by washing the sands of rivers. Native copper and also ores of copper are met with, but hitherto they have not been turned to any use. Common salt occurs in some clays and marls, and nitrate of potash or saltpetre is produced in abundance in the extensive limestone beds of Monte Rodrigo, between the Rio dos Velhos and the Paraná.

Subsect. 2. *Botany.*

6146. *Brazilian botany* is almost too extensive for us to touch upon; yet, with the powerful aids of St. Hilaire, Martius, and others, it would be unpardonable not to attempt giving some idea, however imperfect, of it. Dr. Abel, in his Voyage to China in the Alceste, has conveyed, in few words, a striking picture of that portion of the country which is most frequented, and must, consequently, have been visited by thousands of Europeans; and he shows how great is the advantage possessed by a traveller acquainted with natural history over the common observer, both with respect to pleasurable expectation, and the chances of its fulfilment. The objects of his studies are infinitely numerous, and each in its simple relations is so completely a centre of observation, that he must always be repaid for the labour of research. "On first entering the harbour of Rio Janeiro he feels unutterable delight. No apprehension of disappointment darkens his prospect. The certainty of meeting Nature in her gayest and most exalted colours, in all her varied and attractive forms, gives him unmixed enjoyment. The brilliant tints of the mountain foliage feed his botanical imagination; whilst the dazzling insects which flutter about the ship tell to him the stores of animated nature. As a geologist, he may almost remain on the deck of the vessel and prosecute his researches; immense ridges of primitive mountains, traversed by deep ravines, and rising in succession to the very boundary of his vision, afford him an ample subject of interesting investigation. When once the naturalist has landed, he quickly bends his way to the rocky woods that cover these hills, and finds himself encompassed by all the beauties of Flora. Thus I was entirely overwhelmed for some minutes by my sensations, on first beholding the glorious productions of a tropical climate in their native soil. Plants that are reared in England at great expense, and attain, under the best management, but a puny and uncharacteristic form, flourished around me in all the vigour and luxuriance of their perfect being. A thick coppice was formed by numerous species of Cassia, Cæsalpinia, and Bauhinia, whose gay colours and elegant forms were curiously contrasted with the grotesque characters of the Aloe and Cactus. The trunks of the forest trees were covered with beautiful Creepers, and parasitic Ferns occupied their branches. Emerging from the wood, I entered groves of Orange trees, bearing fruit and flowers in the greatest profusion. I approached them in wonder, and scarcely dared to taste their abundant produce, when I was astonished by receiving permission to gather them in any quantity. Having laden myself with plants, I returned along the rocky beach to my boat; walking, at every step, over land

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References to the Map of Brazil, Paraguay, and Guiana — continued.

10. Gondem
11. Lagoa
12. Olhos
13. Joazeiro
14. Ilheos
15. Porto Seguro
16. Alcobazo
17. S. José do Porto Alegre
18. Bom Successo, or Fanado
19. Arachahy
20. Cabral
21. Duas Barras de Curvello
22. Desemboque
23. S. Carlos de Jacuhy
24. Conceicao
25. S. Jose del Rey
26. Villa Rica
27. Sabara
28. Marian
29. Espiritu Santo
30. Stapemirim
31. Ubataba
32. Rio Janeiro
33. Guaratiba
34. Guarda
35. Jurucca Ari.
36. Jaguari
37. S. Paulo
38. Villa Nova
39. S. Xavier
40. Guaira
41. S. Thome
42. Pintagui
43. Cananea
44. Paranagua
45. Villa do S. Francisco
46. Villa da Laguna
47. Papagayos
48. S. Jose
49. Salto Ano
50. S. Miguel
51. Yacuy
52. Portalegre
53. Registo
54. Conventos
55. Quintao
56. Comprida
57. Rio Grande
58. Gonzalo
59. S. Rosa
60. Jose
61. Almagro
62. Soriano
63. Colonia
64. Monte Video
65. Maldondado
66. Castaneio
67. Mangrullo.

PARAGUAY.

1. Toldano
2. Itapecaguaco
3. Voquila
4. Benado de Capitata
5. Villa de Curuguaty
6. Assumpçao
7. Villa Rica
8. Ytapua
9. Neembucu.

Rivers.

a Essequibo
b Demerara
c Courantine
d Surinam
e Marony
f Guayca
g Oyapock
h Anamirapuca
i Vaccarapy
j Orizimina, or Trombetos
k Guatamas, or Vatuma
l Juaguapira
m Branco
n Negro
o Copueta, or Yapura
p Codaya
q Javary
r Jutay, or Hyutahy
s Tefe, or Teffe
t Coary
u Puru, or Purus
v Amazon, or Maranon
w Madera
x Ibenes, or Guapore
y Jauy, or Yauy
z Machado, or Giparanna
a* Tapajos, or Topayos
b* Juruenna
c* Arinos
d* R. de tres Barras
e* Xingu
f* Annapu
g* Tocantin
h* Araguay
i* Mortes
j* Parnaiba
k* Itapicura.
l* Meary
m* Turiassu
n* Guama
o* Gerguea
p* Fidalgo
q* Camozin
r* Jaguaride
s* Conchas
t* R. Grande
u* Paraiba
v* S. Francisco
w* Itapicuru
x* Paruagunca
y* Contas
z* Rio Grande de Belmonte
a** Mucuri
b** Doce
c** Espiritu Santo
d** Paraiba
e** Rio Verde
f** Rio Grande
g** Paranahyba
h** Paraguay
i** S. Lorenzo
j** Tacoary
k** Vermelha
l** Anhanduhy Guaru
m** Parana
n** Tiete
o** Parana Panema
p** Pirapo
q** Grande da Curitaba, or Iguaca
r** Uruguay
s** Que
t** Negro
u** Ybigui Guasu.

crabs and the larvæ of insects, whose numbers gave an appearance of animation to the soil. Standing on the beach, with my back to the sea, I had immediately before me the dark face of the Sugar-Loaf Mountain, rising from a wood of flowering trees. To the right hand, the same wood climbed the precipitous ground, intersected by paths leading to a rugged rock. Here, groves of orange trees afforded a retreat from the blaze of the unclouded sun; while the cool sea breezes heightened the effect of the scene, and, blowing over fields of bloom, came charged with delicious fragrance."

6147. *Martius most fully corroborates* all that Dr. Abel has stated. "Scarcely," says he, "were we beyond the streets and noise of Rio Janeiro, when we stopped, as if enchanted, in the midst of a strange and luxuriant vegetation. Our eyes were attracted sometimes by gaily coloured birds, or splendid butterflies; sometimes by the singular forms of the insects, and the nests of wasps and termites, hanging from the trees; sometimes by the beautiful plants scattered in the narrow valley, and on the gently sloping hills. Surrounded by lofty, airy Cassias, broad-leaved, thick-stemmed Cecropias, thick-crowned Myrtles, large-blossomed Bignonias, climbing tufts of the honey-bearing Paullinias, far-spreading tendrils of the Passion-flower, and of the richly-flowering Coronilla, above which rise the waving summits of Macaubu Palms, we fancied ourselves transported into the gardens of the Hesperides. Passing over several streams which were turned to good account, and hills covered with young coppice wood, we reached the eminence along which the spring-water for the city is conducted. Between the woody hills, there are diversified romantic prospects into the valleys below. Sometimes you traverse open spots, where a stronger light is reflected from the flowery ground, or from the shining leaves of the neighbouring high trees; sometimes you enter a cool shady bower. Here a thick wreath of Paulliniæ, Securidacæ, Mikanias, Passionflowers adorned with an incredible number of blossoms, climb through the crowns of the Celtis, the flowering Rhexias and Melastomas, Bauhinias, delicate Mimosas, and glossy Myrtles; there, bushy Nightshades, Sebestanas, Eupatoria, Crotons, Ægiphilas, and innumerable other plants, form an impervious thicket, amidst which grow immense stems of the Silk Cotton Tree (*Bombax*), of silver-leaved Cecropias, thorny Brazil-wood tree, of the Lecythis, with its singular fruit resembling a pitcher, slender stems of the Cabbage Palm, and many other sovereigns of the wood. The majestic sight, the repose and silence of these woods, interrupted only by the buzz of the gay Humming-Birds fluttering from flower to flower, and by the singular notes of unknown birds and insects, peculiarly affect the mind of the man of sensibility, who feels himself, as it were, regenerated in the prospect of the glorious country. The stream, which the aqueduct conveys to the city, falls in one place in beautiful cascades over the granite rocks. Oblique-leaved Begonias, slender Costus and Heliconias, the red flower-stems of which shine with peculiar splendour, contrasted with the gloom of the forest arborescent Ferns and Grasses, hanging bushes of Vernonias, Myrtles, and Melastomas, bending under a load of blossoms, adorn the cool spots that surround them. Large and small-winged butterflies sport above the rippling water; and birds of the gayest plumage contend, as it were, morning and evening, to overcome the noise of the brook by their various notes. The higher one ascends, the more rare do the large trees become, and the Bamboos and Ferns more numerous, among which is a beautiful arborescent Fern, fifteen feet high. Coffee trees are planted on the sides of the hills, the top of which is crowned by the Brazilian Pine (*Araucaria imbricata*), with its dark grotesque branches, extended like candelabra. In the surrounding forest grows a kind of Bark, which has been exported under the name of Quina do Rio (*Coutarea speciosa?*), the efficacy of which, in intermittent fevers, has been proved by experiments made in Portugal. Though not possessing all the anti-febrile qualities of the Peruvian bark, it is preferable to many other sorts which come to Spain from Peru, mixed with the better kind; and, were the pieces of wood carefully selected, it might afford a very powerful medicine. Another Brazilian plant, containing a great quantity of bitter, is the Carqueja (*Baccharis genistelloides*), which is much used against intermitting fevers."

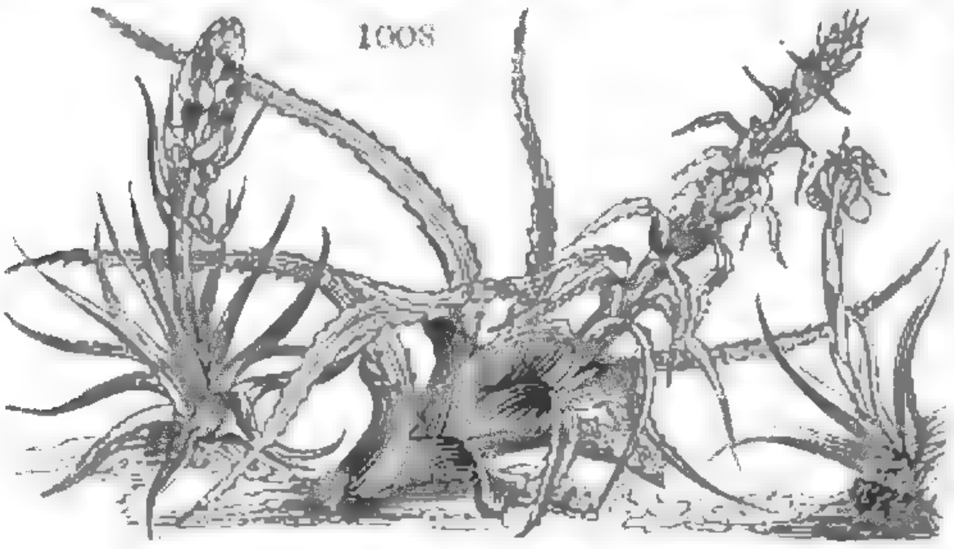
6148. *It is remarkable that upon all the shores of the New and Old World* between the tropics, Rhizophora Mangle, the Mangrove Tree (*fig.* 1007.), Bruguera, Conocarpus and Avicennia, with seeds, shooting, while attached to the parent plant and branches striking into the earth, seem by their roots above and below, at once to convey the image of that rich and generous vegetation which we admire in these latitudes. As these plants belong in an especial manner to the sea-coast, so every large river has a flora of its own along its whole course, which forms one of the most important features in the physiognomy of the country through which it flows. Thus, on the shores of those immense rivers, the Rio de San Francisco, the Tocantin, the Parnaiba, and the Amazons, there are certain species which mark the peculiar character of their vegetable productions, and are extremely interesting to the botanical geographer, as indicating, to a certain degree, the basis of the forms of each individual flora. Those shrubs and trees which emit roots from their branches require to come into contact with the sea, in order to attain their perfect growth; and, with their wide-spreading and very superficial roots, they appear especially to affect the swampy soil of its shores. Though their wood be solid and not unfrequently thick, they grow with extraordinary rapidity. The Mangrove (*Rhizophora Mangle, Mangue vermelho*) is distinguished by forming a very thick bark in a proportionably short period. In those places where the scarcity of timber does not make it necessary entirely to cut down the Mangle Trees, as, for instance, in Maranhao, it is usual, particularly at the commencement of the rainy season, when the sap begins to flow between the wood and bark, to tear off the latter and use it for tanning. On the summits of these forests growing on the shore, are seen, in sailing along, the most beautiful white herons sitting, gay-coloured halcyons watching for fish, and within the thicket various waterfowl, running about or swimming. Wherever these trees grow, the whole neighbourhood is converted into marshes and swamps, and serves only for an abode for a peculiar species of crab.

1007

MANGROVE TREE.

6149. *The celebrated Russian voyager and traveller, Baron von Langsdorff,* has a beautiful country residence in Brazil, at the foot of the Organ Mountains, called Mandiocca, on account of the excellence of the Mandiocca roots (*Jatropha Manihot*) which are cultivated there. This estate is bounded on the northward by a chain of mountains, traversed by several narrow dells, and covered with wood. In the midst of these great forests are the tracts (*rossados*) which, after burning the felled trees, are planted by the landowners with Mandiocca, Maize, Beans, Coffee, &c. These plantations (*rossas*) are generally abandoned after a few harvests, and in a few years are covered again with a thick brushwood (*capoeir*) which is particularly distinguished by the absence of large kinds of trees, of a slower growth. The primeval forests, which stand, as testimonies of the creative energy of the New Continent, in all their original wildness, and still unprofaned by human hands, are called, in Brazil, Mato Virgem, Virgin Forests. In them, European coolness refreshes the wanderer, and, at the same time, presents the image of the most luxuriant profusion; the never-ceasing power of vegetation makes the trees shoot up to a majestic height; and, not contented with these gigantic primeval monuments, Nature calls forth, upon every stem, a new creation of numerous verdant flowering parasite plants. Instead of the uniform poverty of species in the forests of Europe, there is an endless diversity in the forms of stem, leaves, and blossoms. Almost every one of these sovereigns of the forest, which here stand near to each other, is distinguished, in the total effect of the picture, from its neighbour. While the Silk Cotton Tree, partly armed with strong thorns, begins at a considerable height from the ground to spread out its thick arms, and its fingered leaves are grouped in light and airy masses, the luxuriant Lecythis and the Brazilian Anda shoot out, at a less height, many branches profusely covered with foliage, which unite to form a verdant arcade. The Jacaranda attracts the eye by the lightness of its doubly-feathered leaves; the large gold-coloured flowers of this tree and the Ipé dazzle by their splendour, contrasted with the dark green of the foliage. The Spondias arches its pinnated leaves into light oblong forms. A very peculiar and most striking effect in the picture is that produced by the Trumpet Tree (*Cecropia peltata*), among the other lofty forms of the forest. Its smooth, ash-grey stems rise, slightly bending, to a considerable height, and spread at the top into verticillate branches, standing out at right angles, which bear, at the extremities, large tufts of deeply lobated white leaves. The contour of the tree appears to indicate, at once, hardness and pliability, stiffness and elasticity, and affords the painter a subject, equally interesting and difficult, for the exercise of his pencil. The flowering Cæsalpinia, the airy Laurel, the lofty Geoffræa, the Soap Trees with their shining leaves, the slender Barbadoes Cedar, the Ormosia with its pinnated foliage, the Tapia or Garlic Pear-tree, so called from the strong smell of its bark, the Maina, and a thousand undescribed trees, are mingled confusedly together, forming groups, agreeably contrasted by the diversity of their forms and tints. Here and there, the dark crown of a Brazilian Pine (*Araucaria imbricata*) among the lighter green, appears as a stranger among the natives of the tropics, while the towering stems of the palms, with their waving crowns, are an incomparable ornament to the forests, the beauty and majesty of which no language can describe. If the eye turns from the proud forms of those ancient denizens of the forest, to the more humble and lower, which clothe the ground with rich verdure, it is delighted with the splendour and gay variety of the flowers. The purple blossoms of the Rhexia; profuse clusters of Melastoma, Myrtle, and Eugenia; the tender foliage of many Rubiaceæ and Ardisiæ, with their delicate flowers blended with the singularly formed leaves of the Theophrasta; the Conchocarpus; the reed-like Dwarf Palms; the brilliant spadix of the Costus; the ragged hedges of Maranta; magnificent Stifftias; thorny Solana; large-flowering Gardenias and Contarea, entwined with garlands of Mikania and Bignonia; the far-spreading shoots of the mellifluous Paullinias; of the burning Dalechampias and the Bauhinia, with its strangely lobed leaves; strings of the leafless milky Bindweed, which descend from the highest summits of the trees, or closely twine round the strongest trunks, and gradually kill them; lastly, those parasitical plants by which old trees are invested with the garb of youth; the grotesque species of Pothos and Arum; the superb flowers of the Orchideæ, the Bromelias, which catch the rain water; the Tillandsia (*fig.* 1008.), hanging down like Lichen pulmonarius, and a multiplicity of curiously formed Ferns; all these admirable productions of so young a soil combine to form a scene which alternately fills the European naturalist with delight and astonishment.

1008

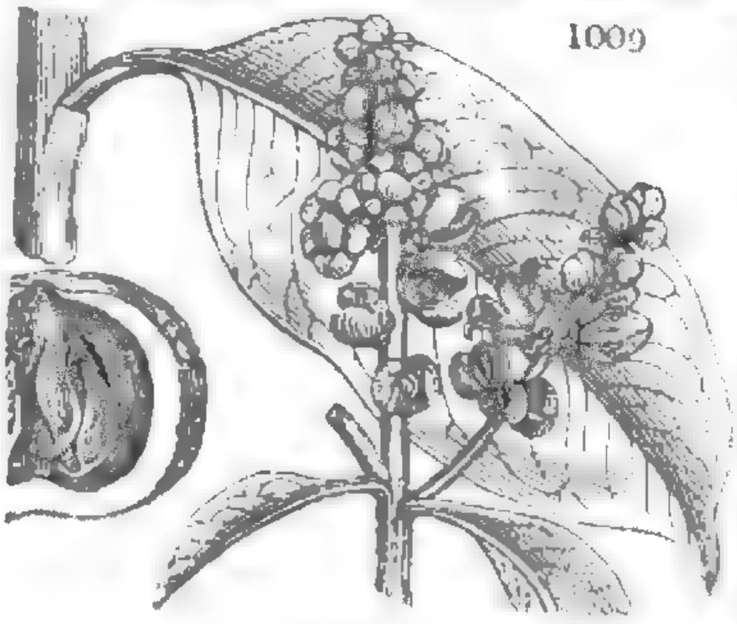


BROMELIA. TILLANDSIA.

6150. ***When here attempting to sketch the interior of a tropical forest***, it is requisite to point the attention of the reader to the relative situation of each individual plant, with regard to the tendency to self-preservation. With such a fulness of life, and such a vigorous striving at developement, even so rich and fertile a soil as this is not capable of furnishing the necessary nourishment in sufficient abundance; hence those gigantic trees are in a constant struggle for their own preservation, and impede each other's growth, still more than do the trees in our forests. Even the stems which have attained a considerable height, and require a large supply of nutriment, feel the influence of their stronger neighbours, are suddenly arrested in their growth by being deprived of the requisite juices, and thus become, in a short time, subject to the general laws of nature, which lead them to a rapid dissolution. Thus we see the noblest trees, after suffering an atrophy of some months' duration, eaten away by ants and other insects, seized with decay from the root to the summit, till, to the terror of the solitary inhabitants of the forest, they fall down with a tremendous crash. In general, it is remarked that stems which stand singly, among several of a different kind, are more easily kept down by the latter. When, at some future period, a regular system of forest cultivation, which, indeed, has not yet been thought of in these thinly peopled woods, shall be introduced, it will be found necessary, not so much to promote the growth of the trees close together, as to take care that they stand at a sufficient distance from each other.

6151. ***Brazil nuts are the fruit of Bertholletia excelsa***, (*fig.* 1009.) one of the most interesting plants of the New World, and which deserves to be cultivated in the warm parts of America, as we grow the almond and walnut. It has been stated that the weight of the fruit is so enormous, that at the period when it falls, the savage natives dare not enter the forests without covering their heads and shoulders with a strong buckler of wood. The people of Esmeraldas still describe the dangers which they run, when this fruit, which is as large as a child's head, and whose shell is so hard as almost to defy the sharpest instrument, drops from a height of fifty or sixty feet. The produce is abundant, each containing from fifteen to twenty large and well-flavoured kernels. Humboldt declares himself to have been most fortunate in procuring Brazil nuts during his voyage on the Orinoco. He and his party had subsisted for three months on bad chocolate and boiled rice, without butter or salt, when they procured a quantity of the fruit of the Bertholletia excelsa, which the Indians had just been gathering in the month of June. The Portuguese of Para have long carried on a considerable traffic in these nuts, which they export to Guiana, Lisbon, and England; and the oil extracted from them is much esteemed in Brazil. A French privateer captured, during the war, an English vessel, loaded with Brazil nuts, which were purchased by a merchant of Rouen, who found the oil they afforded so preferable for burning to that extracted from any European fruit, that he wrote to Paris to enquire the botanical name of the tree that bore these nuts, and for information as to its native country, with a view to obtain a larger supply.

1009



BRAZIL NUTS.

6152. *The Brazil Wood* of commerce is the produce of Cæsalpinia brasiliensis; and Rosewood, now so well known and extensively employed as an ornamental material for furniture, that of a Jacaranda.

6153. *Balsam of Copaiva* is afforded by the genus Copaifera.

6154. *Ipecacuanha*, the true Brazilian drug, respecting which there has been so much discussion, is the root of the Cephaëlis Ipecacuanha of Richard (*fig.* 1010.). Its discovery is due to the native Brazilians. Marcgraaff and Pison were the first who made it known in Europe, and experiments proved the utility of this truly valuable drug. Their description, however, was so defective that Ipecacuanha was long used before the plant that produced it was known: till, in 1800, Dr. A. Gomes brought flowering specimens to Europe, which Brotero described in the *Transactions of the Linnæan Society*, and thus set all uncertainty at rest. The use of Ipecacuanha is too universal to render a long detail of its qualities necessary. Every body knows that it is emetic and sudorific, and useful in chronic catarrh, strengthening the digestive organs, and curing the dysentery. A small trade is carried on in Ipecacuanha at Rio Janeiro. According to Gomes, 430 arrobas were exported in 1795, and 314 in 1800. The substance is easily recognised, and this is the only ipecacuanha actually sent abroad from the capital of Brazil; for it is not true that the roots of Ionidium Ipecacuanha, still less those of Ionidium parviflorum, which grows in a very distant province, are mixed with those of the true Cephaëlis Ipecacuanha. Though this latter has been exterminated in the environs of Rio Janeiro, and near most of the large towns, it is still very common in many spots; but the practice [illegible] pulling up the plant indiscriminately, whether the seeds be ripe or otherwise, with the daily diminution of the virgin woods where it grew abundantly, cannot fail to render it scarce; and it were most desirable that some plan for cultivating it were adopted. This is easily accomplished by seeds or runners; and it requires no care, if grown under the shade of large trees; but an artificial shelter would be necessary, if it were cultivated in open spots.

1010

CEPHAELIS IPECACUANHA.

6155. *Cacao*, probably an aboriginal native of Brazil, though extensively cultivated in other warm countries, is the fruit of the Theobroma or Chocolate tree (*fig.*1011.). The latter, which is an Indian appellation, is derived from the neighbouring coast of Choco, where the Cacao is much grown; and so fond are the Columbian and Peruvian ladies, more especially the nuns and *devotas*, of this national beverage, that the temporary want of it is considered quite a misfortune; almost as heavy as the loss of tobacco. Such inveterate smokers are the fair Popayanejas, that when the possession of Cauca by the patriot army cut off their supply of this article and of sugar, they used to send their slaves to pick up such ends of cigars as had been dropped in the streets; and when they had exhausted all the *caramelas* and syrups of the apothecaries' shops in sweetening their indispensable chocolate, they bethought themselves of boiling dried figs, and using the sweet liquor thus obtained, as a substitute for sugar. The generic name Theobroma (food of the gods), was conferred on this tree by Linnæus, to mark his opinion of the excellence of its seeds; though Benzoni, who travelled in South America in the sixteenth century, formed a different estimate of its merits, and declared that chocolate was "a drink fitter for a pig than a man." The Cacao [illegible] the kernel of this tree, which it is customary to bury for forty days, in order to deprive it of its acrid flavour: many aromatic ingredients, especially Vanilla, being added to do away its native nauseous taste—"Le moëlleux Cacao s'embaume de Vanille," according to the author of *Les Jardins*.

1011

CHOCOLATE TREE.

6156. *The following* is the process used by the chemist, M. Cadet, in preparing Chocolate. The Cacao seeds are roasted like coffee beans, either in an iron pan or a cylinder; and, when half cold, are spread on a table, and bruised with a wooden rolling-pin, to remove the arillus: then they are winnowed, sifted, and cleansed. When the kernels are perfectly purified, they are pounded in a mortar of heated iron over burning charcoal, and thus reduced to a coarse paste, which is set to cool on a marble slab. A second rolling is bestowed with a steel cylinder on a smooth freestone, and as soon as the paste becomes sufficiently smooth, it is mixed with sugar in a hot basin and poured into tin moulds. Cadet mixed 8 lbs. of the Caracca Cacao, which is the finest kind, with 2 lbs. of the third kind (Island Cacao), and 8 lbs. of powdered sugar. The addition of ginger, cloves, and pimento, and even musk and ambergris, commonly given in America, renders chocolate, which is by no means easy of digestion, still more heating and exciting. Cadet recommends that only 2 oz. of cinnamon and 3 oz. of vanilla should be put into 20 lbs. of plain chocolate paste. Chocolate is not very much consumed in England; it is in greater esteem in France; it forms the ordinary breakfast in Spain; and in Mexico, according to Humboldt, it is not considered an object of luxury, but of prime necessity.

6157. *The botany* of the northern parts of South America, namely, Guiana and Colombia, is far less known than that of Brazil. Guiana presents a singular appearance as you approach it from the sea, being remarkably low for a great extent towards the interior, so that it cannot be discovered, even from the mast-head of a vessel, until close to it. It then presents a curious fringed aspect; for nothing but the tops of the tall trees by which the land is covered are visible on the horizon, apparently floating in the air; being seen through the medium of an atmosphere charged with watery vapours, that are raised by the excessive heat of the climate from a humid soil. "Up the Orinoco," says the lively author of *Campaigns and Cruises in South America*, "the scenery is strikingly beautiful; and, when viewed from a ship's deck as she glides slowly along the smooth water, presents a magnificent moving panorama. The banks on each side are covered with impervious forests of majestic trees, chained to each other, as it were, by the Bejuco or gigantic creeping plant of South America, which grows to the thickness of an ordinary cable. These ancient trees, when decayed through length of years (for the axe of the woodsman has never yet resounded in these wilds), are supported upright by these enormous plants, which bear a striking resemblance to the huge water snakes that lurk in the swamps beneath. There are many other parasitical plants which bear flowers of various brilliant colours, forming festoons on the trees to which they cling. Among the branches, monkeys of every description gambol and follow the vessel, springing from tree to tree by means of the Bejuco, which has obtained, from this circumstance, its Indian name of monkey's ladder. The most conspicuous among this mischievous tribe is the araguato, a large red monkey, always seen in herds, the young ones clinging to their mother's shoulders. These are very destructive among the plantations, where they pull up and destroy more roots and fruit than they eat or carry away. Their howling during the night is much louder than could be considered possible, considering the size of the animal. The noise they make may be easily fancied to proceed from panthers, or other large beasts of prey. This is so much the case, that three English soldiers, who had deserted from Angostura, were so terrified by the noises made by these animals in the middle of the night, that they hailed the boats in which the other troops were, and begged to be taken on board, declaring that they were surrounded by tigers. Parrots and macaws, with toucans and other birds of beautiful plumage, complete this splendid picture, and fill the air with their discordant screams, to which the metallic note of the darra or bell-bird, responds at measured intervals; at one moment sounding close to the ear, and the next, dying away in the distance. Up the small creeks, which are completely embowered by magnificent evergreens, are seen pelicans, spoonbills, and garzons, or gigantic cranes, all busily employed in fishing. When to this is added the occasional appearance of that tyrant of the stream, the alligator, floating in conscious superiority among the bulky manatis and the more agile toninos, which are incessantly rising and blowing [illegible] shoals, the scene may be somewhat imagined, but cannot be adequately described."

6158. *Among the many* medicinal and poisonous plants growing on the banks of the Orinoco, one of the most singular is a species of Bejuco, which, when properly administered, proves a powerful preservative from the effects attending the bite of every description of poisonous serpents. It even appears to deprive these reptiles either of the power or inclination to use their fangs. Some of the leaves and small branches are pounded, and applied in this state as a cataplasm to both arms; the skin having been previously scarified freely above the elbows. This species of inoculation is repeated at stated intervals; the juice of the bruised plant, diluted with water, being also occasionally drunk. Several soldiers, belonging to General Zedeño's division of the patriot army, had undergone this treatment, and frequently found the advantage they thus had acquired. They were thereby enabled to take shelter in deserted huts, which others dared not enter, for fear of the snakes always lurking in such places; although those men could bring them out in their hands without sustaining any injury. No deception was practised, nor any reward asked or expected, for exhibiting their skill in destroying these reptiles. The Zarsaparilla grows in the same neighbourhood in great abundance. Some of the creeks are so full of it, that the natives come to them for leagues around, to bathe, and drink the water, which they assert to be sufficiently impregnated with the virtues of the plant to effect cures in many obstinate chronic complaints.

1012

VANILLA AROMATICA.

6159. *Among the splendid* parasitic orchideous plants, which invest the living as well as the dead trunks of the forest trees with verdure and blossoms not their own, is the Vanilla (*V. aromatica*) (*fig.* 1012.); the fruit of which is so well known for its very sweet and balsamic odour, and its warm, pungent, and highly agreeable taste. A volatile and odoriferous oil is extracted from it, which both water and alcohol take up. Three kinds of vanilla are distinguished in commerce, the Pompona or Bova, which has very thick, swollen, and strong-scented pods; the Vanilla de Ley, or legitimate vanilla, which is the best, and has slender and very fragrant pods, of a deep rich brown, neither black nor red, neither too dry nor too gummy: of this kind it is requisite that the packet of fifty should weigh at least five ounces, that which carries down eight ounces being considered *sobre buena*, or superexcellent. The fragrant scent of this latter kind produces an intoxicating or drowsy effect; the fresh pod being filled with an oily fluid, replete with innumerable small black seeds. The third sort is called Bastard Vanilla, and is the worst of all. It is probable that all the kinds are but varieties, arising from soil, culture, degree of maturity, and perhaps mode of preparation. According to Aublet, the following is the process to which the inhabitants of Guiana subject the vanilla: — When a dozen or more pods are gathered, they string them as quickly as possible near the peduncle, and bleach them instantaneously, by dipping them into boiling water. Then they are hung up in the open air exposed to the sun, and the following day smeared with oil, to prevent their shrinking or drying too fast. It is necessary, also, to bind them round with an oiled thread, that the pods may not split open. While hanging up, the superabundant viscous fluid flows from the point which is downwards, and they lose their clamminess, and become brown, wrinkled, soft, and shrunk to a quarter of their former size. In this state they are rubbed with oily hands and deposited in a varnished pot, to keep them fresh. In the torrid parts of America, it were most easy to cultivate vanilla, and to produce much larger quantities than are now obtainable; but the inhabitants only collect such fruit as is found on the wild plants, which are confined to the shores of creeks and other swampy spots liable to occasional inundation. There, the vanilla twines over the stems of the mangrove, and flowers in the month of May, bearing its fruit in September. The use of vanilla should be confined to persons of feeble constitutions; its heating and irritable qualities would render it dangerous to such as are liable to feverish, inflammatory, or cutaneous symptoms. It is used in cakes, lemonade, sherbet, and ice; but especially for giving a flavour to chocolate.

6160. *Cayenne Pepper* is the fruit of Capsicum annuum.

6161. *The Bixa Orellana*, or Arnotta, which yields the dye with which cheeses are coloured red, arrives to the stature of a large tree in Guiana.

6162. *Quassia*, that intensely bitter drug, is the wood of Quassia amara.

6163. *The* Cannon-ball Tree (*Couroupita guianensis*) is a striking plant, an inhabitant of Guiana, remarkable for the size and beauty of its blossoms and for the magnitude of its fruit. The tree grows to 50 or 60 feet high, covered with foliage that is mixed with racemes of flowers, sometimes containing a hundred highly fragrant blossoms, of a lovely crimson red colour, succeeded by enormous fruits. The fallen shells or husks that strew the ground, so nearly resemble a cannon ball, that one might easily imagine a company of artillery had bivouacked in its shade. If we may trust in the poetic language of M. Descourtilz, *Flore Pittoresque et Médicale des Antilles*, the noise these fruits make in falling affords an additional reason for the name. "Beneath a pure and dazzling sky," says he, "gracefulness is ever united to the magnificence of nature; there the hidden streams only reveal their presence in gentle murmurs, or by the silvery light that they cast upon the rocks, or the soft sound with which they trickle through the grass, or the increased verdure with which they endow the plants. But when the silence of nature is broken by those violent hurricanes which too often, in the torrid zone, blast all the hopes of the cultivator, you may hear the report of the fruits of the cannon-ball tree, whose bursting produces an oft-repeated echo, and resembles the rolling fire of a discharge of artillery." The shell is used in South America for domestic purposes, as the calabash. The pulp contains sugar, gum, malic, citric, and tartaric acids, and is employed to afford a refreshing drink in fevers; but in the perfectly ripe state, it exceeds whatever is filthy, stinking, and abominable in nature; yet the scent is remarkably vinous, and so permanent, that our late friend, the Reverend Lansdown Guilding, on examining some portions of the fruit that had been preserved in rum two or three years, found the native odour of the plant so strong, as to render the apartment almost insupportable. Insects revel in this filthy and disgusting pulp. Beetles and earwigs feed upon it; while the formicas find shelter in the hollow of the shells.

6164. *Among the palms*, the Manicot Palm and the Cokarita are the most celebrated.

6165. *Of the different* kinds of Yam, which are cultivated in most tropical countries, though only natives of intertropical India, we shall speak more fully when we come to treat of the vegetable productions of the South Sea Islands, where they form one of the principal articles of food to the natives.

6166. *Batatas*, or sweet Potatoes, are the fleshy, spindle-shaped roots of a Convolvulus (*C. Batatas*). There are several varieties, the culture being easy, and the plant bearing Batatas at all seasons of the year, those put into the ground in February being fit for use from June to March of the following year. In the South of France, the Convolvulus Batatas is cultivated in the open air, in a warm situation and light soil, but a hotbed is requisite for its growth in more northern countries. This root is nourishing and of easy digestion; and forms a staple article of food in many parts of South America, especially Guiana. There are various modes of cooking it, either made into cakes, boiled, or baked; but the best way for preserving its genuine flavour is to steam the roots or to bake them under the ashes. This is the kind of potato which is alluded to by Shakspeare, as possessing stimulating properties (in his comedy of the *Merry Wives of Windsor*), and not the root of Solanum tuberosum, which was unknown in Europe in the time of the great English dramatist. The Batatas contain a great deal of saccharine matter, and when submitted to the process of distillation, afford an alcohol, of which many of the South American nations are but too fond. The foliage is much relished by cattle; and cows that are fed upon it yield an increased and improved quantity of milk.

6167. *Cassava bread* is nowhere, perhaps, more abundantly prepared than in Guiana. It is produced from the root of the Jatropha Manihot (*fig* 1013.), and in the following manner: — The root is rasped on large tin or wooden graters, fixed on benches, behind which the women employed in making it stand in rows. A sufficient quantity having been rasped for one time (as the surplus would ferment and spoil), they put it in long circular baskets of plaited rushes, about 10 feet long, and 9 inches in diameter, called *mangueras*. These are hung up, with weights attached to the lower end, which draw the plaited work tight together, diminishing its capacity, and squeezing out the juice. When all the fluid is extracted, the mangueras are emptied of their contents on raw hides, laid in the sun, where the coarse flour soon dries. It is then baked on smooth plates, made of dry clay, with a slow fire below. This is the most difficult part of the process. The coarse flour is laid perfectly dry on the hot plates, where the women, with a dexterity only to be acquired by practice, spread it out in a round and very thin layer, nearly the size of the plate it is laid on. This they do, merely with a piece of calabash, which they keep in constant motion; pressing gently every part of the surface, until the heat has united the meal into a cake, without in the least altering its colour or scorching it. Their method of turning a cassava cake of that size resembles sleight of hand; for they effect it with two pieces of split cane, without breaking it, though scarcely so thick as a dollar, and only as yet half cemented together, and of a substance always brittle, especially when warmed. This bread is very nourishing and will melt to a jelly in a liquid; but it is dangerous if eaten in any quantity when dry, as it swells, on being moistened, to many times its original bulk. It will keep good for any length of time, if preserved in a dry place. The expressed juice deposits, after standing for some time, a fine white starch, which, when made into jelly, is not to be distinguished from that prepared from the arrow-root.

1013

JATROPHA MANIHOT.

6168. *When it is considered* that the Jatropha Manihot belongs to a highly poisonous tribe, and is itself one of the most virulent of the species, it cannot but excite astonishment to find that it yet yields so abundant a flour, rendered innocent by the art of man, and affording nourishment to many thousands in South America. Even in our own country it is largely imported and served up at table, under the name of Tapioca. Such is the poisonous nature of the juice of Manioc, that it sometimes occasions death in a few minutes; and thus many of the unhappy Indians destroyed their Spanish persecutors. A Surinam physician administered it, by way of experiment, to dogs and cats, who died after twenty-five minutes of dreadful agony. Dissection proved that it operated by means of the nervous system alone, an opinion confirmed by thirty-six drops being afterwards given to a criminal. These had scarcely reached the stomach when such torments and convulsions ensued, that the man expired in six minutes; three hours afterwards the body was opened, when the stomach was found shrunk to half its natural size; so that it would appear that the fatal principle resides in a volatile substance, which may be dissipated by heat, as indeed is satisfactorily proved by the mode of preparing the root for food. The root of manioc is also the basis of several fermented liquors, and the leaves are boiled and eaten. An acre of ground planted with the Jatropha Manihot yields nourishment to more persons than six acres cultivated with wheat.

6169. *A delicate aromatic* seed is known in this country by the name of Tonquin Bean. This is the seed of Dipterix odorata.

6170. *Among the numerous* interesting plants of Colombia, two are especially deserving of notice; the Cow Tree and the Arracacha. The first of these (*Galacrodendron utile* of Humboldt) is almost confined to the coast Cordillera near the Lake of Maracaybo. Humboldt had often heard of this tree, and been assured that the negroes on the farm, who drank plentifully of this vegetable milk, regarded it as wholesome: but so acrid and poisonous are all other lactescent trees, that nothing but experience convinced him that the virtues of the Palo de Vaca are not exaggerated. The tree is handsome, with the general aspect of the Star Apple (*Chrysophyllum Cainito*). When incisions are made in the trunk, an abundant gummy and thick milk exudes, which diffuses a pleasant balsamic smell. Humboldt drank a large quantity of this milk, night and morning, without experiencing any disagreeable effect, the tenacity of the fluid being the only thing that was unpleasant. The negroes soak their Maize or Cassava bread in it; and give the name of *cheese* to the curdy, tough, membranaceous substance which collects on the surface, after some days' exposure to the air. Humboldt says*: — "Among the many curious phenomena that I beheld during my journey, there was hardly any that struck my imagination so forcibly as the Cow Tree. Every thing connected with milk and with farinaceous food inspires us with interest, and reminds us of our helpless infancy. Ancient and modern nations have felt a religious veneration for grain; and milk seems exclusively an animal production. Such being our first impressions, the surprise that seizes the mind at the sight of such a tree is but natural. It grows on the rocky side of a mountain, scarcely insinuating its roots in the stone. For many months, not a shower of rain falls on its dry and coriaceous leaves, the branches seem dry and dead; but pierce the trunk, and a sweet and nourishing milk flows. At sunrise, this vegetable source is most abundant; then the blacks and native people hurry from all parts, provided with jugs, to catch the milk, which turns yellow and thick on the surface. Some drink it on the spot, and others carry it to their children, till one might fancy that a cowherd was distributing to his family the milk of the flock."

6171. *From this extraordinary* fluid, Dr. Thomson, Professor of Chemistry, has extracted a new substance, which he calls Galactine.

6172. *The* Arracacha (*Arracacia esculenta*, Bot. Magazine, t. 3092.) is a productive and hardy root, grateful to the palate, and of easy digestion. It is peculiar to the hilly country, and is particularly cultivated near the city of Santa Fé, where it is planted in the same manner as potatoes, to which it is preferred, resembling, in shape and taste, the Jerusalem artichoke. The natives frequently use it, together with maize, for making that celebrated Indian beverage called *chica*, which is commonly drunk by the mountaineers. The roots are irregularly shaped, and adhere in clusters to the original plant. The culture of the Arracacha root has lately been extended to Jamaica, the climate of which seems perfectly suited to its nature. The soil which suits yams appears equally adapted to the Arracacha.

Subsect. 3. *Zoology.*

6173. *The Zoology* of Brazil is of such a nature, that we know not how to convey an adequate idea of its magnificence or its richness. Yet, if we view it in reference to that of any other region of equal extent, it is beyond dispute the most splendid in the world. This extraordinary luxuriance of animal and vegetable life, which is the chief characteristic of the New World, but more particularly of its intertropical regions, has been the astonishment and admiration of all who have visited its shores. But no one has more happily illustrated, with every appearance of truth, the probable causes of this fecundity, than the celebrated Humboldt. "The narrowness," observes this accomplished traveller, "of this variously indented continent, its great extension towards the icy pole, the wide ocean over which the tropical winds blow, the flatness of the eastern coasts, the currents of cold sea-water which flow northwards from the Terra del Fuego towards Peru; the number of mountains, the sources of countless springs, and whose snow-clad summits tower above the clouds; the abundance of large streams, which, after many windings, always seek the remotest coast; deserts without (naked) sand, therefore the less heated; impenetrable forests which cover the well-watered plains near the equator, and which in the interior of the country, where the mountains and the water are most remote, exhale immense masses of imbibed or self-producing water: all these circumstances give to the flat portion of America a climate which, by its moisture and coolness, forms a surprising contrast with that of Africa. To these causes are to be ascribed that extraordinary luxuriance of vegetation, that exuberant foliage, which forms the peculiar characteristic of the New Continent."

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* *Relation Historique*, book v. ch. xvi. p. 109.

6174. *In applying these philosophic observations to Brazil*, some modifications must be made, and some exceptions pointed out. Two years spent in traversing these enchanting regions, and exploring their zoological treasures, enable us to state the following particulars from personal observation. Vegetation, indeed, covers every portion of this immense empire, but in very different degrees, and with some remarkable modifications. A stupendous range of virgin forests may be said to extend from one extremity of Brazil to the other, running parallel with the coast, and forming a magnificent belt between that and the interior: here the soil is uncommonly rich, being principally vegetable mould, or a fat red loam. In these virgin forests vegetation attains its greatest luxuriance: they produce all the large timber trees; and the ground, when cleared for cultivation, gives an amazing increase. But no sooner does the traveller pass beyond these limits, than he meets with a totally different country. The *Sertam* districts then commence; a name indiscriminately applied by the Brazilians to all inland parts situated beyond the virgin forests of the coast; nevertheless, the natives give more accurate distinctions to the different features of the interior. The names of *Campo* and *Tabulara* are applied to those extensive and somewhat elevated plains which are covered with coarse grass, or interspersed, like a park, at short distances, with low and often stunted evergreens. Clear of underwood, and open to the traveller in every direction, these plains are frequently broken by narrow valleys, or gentle hollows, where the trees become rather higher and acquire a more flourishing growth, thus forming woods; yet they are so matted with an underwood of cacti, bromeliæ, and other spiny shrubs and plants, as to be almost impassable to any but the hunter. These dry woods are termed *Catingas*. The general character of the soil in all these situations is more or less sandy, and, although never destitute of verdure, the vegetation can scarcely be called luxuriant, particularly when compared to that of the coast and the majestic virgin forests which border its shores. These observations are not, of course, applicable to the mountainous districts of the mines, but are descriptive, with little variation, of all those provinces north of Minas Geraes. It is this diversity in the aspect of the country which so naturally influences the distribution of its animals as well as its vegetables. The number and variety of insects towards the coast is inconceivable; moisture and shade, with rich and soft vegetable juices, seem essential to numerous tribes; but on the campos and tabularas, and in the catinga woods, where the soil is dry and hot, water scarce, and the foliage harsh and stunted, insects really appear to be scarce; for the traveller may journey onwards for hours, without being attracted by the appearance of a butterfly. The birds, indeed, are much more numerous, particularly those of the Tanager family, as these derive their principal food from the small fruits and berries which the catinga trees produce in abundance. But we must no longer dwell on these general peculiarities, however interesting, but proceed to a rapid sketch of those tribes most remarkable in the zoology of Brazil.

6175. *Among the Quadrupeds*, we are struck with the number and variety of Monkeys and Bats. The satyr-like Apes and Baboons of the Old World far exceed in size any of their tribe yet discovered in America; neither are the genera of this continent similar to those of Africa or of India; all have tails, but are without cheek pouches or naked callosities on their buttocks. The Howling Monkeys (*Mycetes* Ill.) live in the deep recesses of the virgin forests, and are heard morning and evening sending forth such tremendous and frightful howls, as to impress the listener with the idea of the sound proceeding from some gigantic and ferocious animal. The Ursine Howling Monkey (*M. ursina* Humb.) is of this description, and although small, its voice, louder than that of a bear, is perfectly terrific. Monkeys are only abundant in the virgin forests: they live entirely among the loftiest trees; and their tails, being prehensile, give them an additional facility in leaping and jumping from branch to branch with the most perfect ease. No less than sixty-five species are described as natives of Brazil and the regions adjacent.

6176. *The Bats* are surprisingly numerous; and are, no doubt, powerful instruments to keep within due limits the myriads of flying insects: some, however, live almost entirely upon fruits, while others, like the deadly vampire of the East, enter the cattle stables, and even the huts of men, and suck the blood of both. We have more than once had a horse or mule so much weakened by these animals during the night, as to be incapable of travelling.

6177. *The ferocious Quadrupeds* are mostly small, and, although of many species, they appear to be few in number, and are fearful of man. The largest are the Puma and the Jaguar, the last being a most formidable animal. There are, besides, several small and elegantly marked Tiger Cats; but the Lion, Tiger, Panther, Hyæna, and the whole list of savage quadrupeds so common in Africa or in India, are totally unknown in the New World.

6178. *The Puma* (*F. concolor*) may be said to represent the Lion in the New World; like that, it is large and uniformly yellow, but without a mane or tufted tail. It is about five feet long, and two and a half high. Azara informs us that it climbs trees with the greatest ease, although it generally lives in the forests, and lies concealed in underwood. In its wild state, it never attacks man; and when in confinement becomes as gentle as a dog. Whether this Paraguay species is the same as the Puma mentioned by Major Smith, (*Grif. Cuv.* 2438.) is not quite clear.

6179. *The Jaguar* (*F. onca* L.) is not unlike the American panther: they are solitary animals, inhabiting thick virgin forests. They attack cows, and even bulls of four years old, but are especially enemies to horses. It will, indeed, not attack man, unless pressed by hunger; but this is no security to the traveller, as Azara mentions an instance of two men who were seized and carried away by these animals when sitting before a large fire. There are two races, the one larger than the other, but both are fierce and untameable. The Tapir and different species of Sloth are well known inhabitants of tropical America, and have been repeatedly described. The Armadillos likewise belong to this continent. Travellers mention small deer; while numerous Cavys, Squirrels, and lesser quadrupeds, abound. Horses and mules are the only beasts of burden, and sheep are almost unknown.

6180. *The ornithological features of Brazil* have already been noticed; and, in regard to species, it may safely be pronounced the richest in the whole world. Not more than one fifth of the whole empire has been yet explored; yet upwards of 500 different birds have been already discovered, and new objects are continually enriching our museums. To enumerate these would be tedious, even were it possible; but a few general particulars will not be misplaced.

6181. *The Rapacious Birds* are not proportionably numerous. Large Black Vultures are every where seen perfectly tame, and sitting on trees by the way side, ready to devour offal or any dead animal substance. They appear of a different species to the turkey buzzard and black vulture of the United States. The King Vulture (*V. papa* L.) is nearly of the same size, but is much more rare, and is remarkably elegant in its plumage. The forests of Guiana, Pará, and other parts of Brazil, shelter the Aquila destructor, or Great Destroying Eagle, one of the most formidable and ferocious of birds. It considerably surpasses in size the golden eagle of Europe, measuring near three feet long; the back and upper plumage is black, the under greyish white, and on the hind head is a semicircular crest of feathers, which is erected at pleasure. It flies with majestic rapidity, and preys only upon the larger quadrupeds, as deer, sloths, monkeys, &c., pursuing them indiscriminately, and tearing them to pieces by its enormous talons. In contrast to this formidable bird of prey is a little owl, not much bigger than a sparrow, a pair of which were the first birds we shot after landing in South America. The Caracara, or Brazilian Crested Eagle, we have recently illustrated (*Zoological Illustrations*, Pl. 2.), and many other buzzards occur towards Paraguay.

6182. *The extensive order of Perching Birds* offers numerous tribes conspicuous for their beauty, their splendour, or their singularity. The Tyrant Flycatchers (*Tyranninæ* Sw.) are seen in all the open tracts, perched on the surrounding branches, and perpetually on the watch for insects. The Water-chats (*Fluvicolinæ* Sw.) run along the sides of the rivers and lagoons bent on the same pursuit, and perpetually wagging their tails. In the damp and thick virgin forests reside small troops of those elegant little birds, the Manakins (*Piprinæ* Sw.), varied with black, golden, and azure blue, seeking the soft berries of the Melastomæ and other similar shrubs. The Trogons (*Trogoninæ* Sw.), Motmots (*Prioniti* Ill.), and Puff-birds, seek the most sombre shades; the Ant thrushes (*Myotherinæ* Sw.) and the Bush Shrikes (*Thamnopholinæ* Sw.) are more frequent in the catinga woods; while perched upon the higher trees are seen flocks of Toucans (*Ramphastidæ* Sw.). The Fruit-eaters are heard morning and evening from the same situations; and one, called the Araponga, Blacksmith, or Bell-bird (*fig.* 1014.), uttering a loud note like the noise of a hammer upon the anvil. On proceeding more inland, different tribes and new species await the traveller. The Chatterers (*Ampelinæ* Sw.), Woodpeckers (*Picianæ* Sw.), and Tree-creepers (*Certhianæ* Sw.) frequent the catinga woods, the former to feed upon berries, the latter to search for insects on the stems. Innumerable Tanagers, with flocks of variously coloured Parrakeets, occur in the tabulara woods, and on the less naked campos; while the palms, common to these districts, are frequented by splendid Mackaws, which crack the stone-like nuts with perfect facility.

1014

ARAPONGA.

6183. *Humming-birds* are to be seen wherever a tree is in full blossom, darting about from flower to flower, among splendid butterflies often much larger than themselves.

6184. *The Water Birds*, along the swampy coasts of Pará and in some other parts, are abundant; but these tribes, upon the whole, are but locally dispersed. The splendid scarlet Curlew and the red Flamingo are met with near Pará, in flocks of many hundreds.

1015

BRAZILIAN FROG.

6185. *Serpents and Reptiles* appear much less frequent than in the equinoctial regions of Africa. Alligators of a small size are often seen basking on the sunny edges of the savannahs; but others are mentioned by travellers of a much larger size and of more ferocious habits. The Rattlesnake appears to be unknown, or very rare, although there are other snakes whose bite is believed to be equally venomous: we must, however, observe that the Brazilians are uncommonly ignorant in these matters, and that we were particularly struck with the paucity of these reptiles met with in our daily journeys and woodland excursions. Many, however, are very beautiful in colour. Boas of a large size are said to be met with on the banks of the great rivers. The frogs in some situations are innumerable, and their croaking is almost deafening. We well remember a little negro boy bringing to us, as a curiosity even to the natives, a frog of such vast dimensions, that the little urchin could scarcely walk with it in both hands: its body was certainly bigger than the head of an ordinary man. We omitted to ascertain the precise species (*fig.* 1015.).

1016

CUPID BUTTERFLY.

6186. *To enumerate the countless variety of Insects* would be almost impossible. Near the virgin forests they absolutely swarm. The diurnal Butterflies (*Papilionidæ*), more particularly, are of a size and brilliancy unrivalled by any in the whole world; of these gaily coloured tribes we estimate that between 600 and 700 species are found in Brazil alone. Some of the lesser are perhaps the most brilliant. One, in particular, named after the God of Love (*Pap. Cupido* L.) (*fig.* 1016.), has the under wings embossed with gold spots in such a way as to appear as if liquid drops of that metal had fallen upon the wings and cooled without injuring them. Ants are as numerous as in Western Africa; but the scorpions and centipedes are small, rarely seen, and do not appear to alarm the natives. Many of the Beetle tribe are remarkable for their grotesque appearance, and others for the splendour of their colours. The Great Fire-fly (*Fulgora lanternaria*) (*fig.* 1017.), is said to emit from its snout a light more sparkling than that from a dozen glow-worms. This fact, however, we have never verified, although we frequently found the insect. The Diamond Beetle we have before mentioned; but even this is surpassed in magnificence by two others of the same genus, peculiar to the more southern provinces towards St. Catharine's.

1017

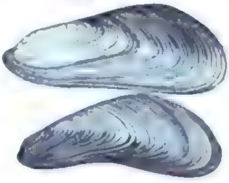
GREAT FIRE-FLY

6187. *The Marine Shells* of the Brazilian coast are remarkably few, the Capsa brasiliana (*fig.* 1018.) being almost the only example of a genus peculiar to these seas. The exterior is covered with an olive epidermis; the interior is tinged with violet. Two new species of Modiolæ or Date-muscles (*fig.* 1019.) have recently been brought from Rio de Janeiro, and the rare Voluta brasiliana of Lamarck is stated to have come from this coast. Few bivalve shells have yet been found in the large rivers; but these are different from all the North American species, and may be known by their superior iridescence. The genus *Hyria* Lam., and its various subgenera, among which is the Castalia of the same author, are all from the Brazilian rivers. Some very singular land shells also occur in the forests, one of which, the Bulimus ovalis (*fig.* 1020.), often exceeds four inches in length.

1018

CAPSA BRASILIANA.

1019



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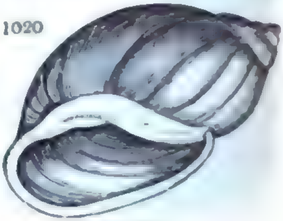

BULIMUS OVALIS.

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Sect. III. *Historical Geography.*

6188. *The coast of Brazil* was first touched in 1499 by Vincent Yanez Pinzon, one of the companions of Columbus, who does not appear, however, to have penetrated far beyond the mouth of the Marañon. Next year it occurred unsought to Alvarez Cabral, while conducting a fleet from Lisbon to the East Indies, then the almost exclusive object of Portuguese ambition. In endeavouring to avoid the coast of Africa, he came upon Porto Seguro, which then appeared to be part of a large island. Cabral immediately sent back one of his ships with tidings of the discovery; and Brazil, as it was called from the ornamental wood which appeared its most valuable commodity, was speedily colonised. As it seemed, however, to yield no other important article, and as the ground could be kept only by severe contests with the savage natives, the progress of the settlement was slow, and it was long before it could come into any rivalry with those which had been formed by Spain.

6189. *The other European nations* did not fail to dispute the possession of so wide and open a coast. Villegagnon carried over a body of French Huguenots to Rio Janeiro, which was even for a short time termed Antarctic France; and the English attempted to fix themselves in the north at Paraiba: but the fierce and determined attacks of the Portuguese rooted up both these establishments. A more formidable effort was made by the Dutch, after the transference of Brazil to Philip II., with whom they were at open war. Under Prince Maurice they made themselves masters of the whole north of Brazil, which they held for nearly half a century. But their establishment having been too much reduced, and their attention being engrossed by other objects, the Portuguese, in 1654, commenced a series of brisk attacks, by which they soon recovered possession of the whole territory. After several attempts to retrieve their affairs both by arms and negotiation, the Dutch, in 1661, were obliged to make a final cession of Brazil to Portugal. The Brazilians had subsequently some occasional quarrels with the Spaniards, especially in 1762, when the governor of Buenos Ayres took from them the fortress of Colonia del Sacramento, which, however, was restored at the conclusion of peace in 1763.

6190. *The great prosperity of this colony* dates chiefly from the year 1699. That was the epoch of the discovery of gold, which was succeeded by that of diamonds; two brilliant objects, which placed Brazil completely on a level with the richest of the Spanish possessions. At the same time the fertility of the soil was fully ascertained, and some progress was made in causing it to yield the richest articles of tropical produce.

6191. *The separation of Brazil from Portugal* was first occasioned by events in Europe. Napoleon having sent Junot, in 1807, with an army to occupy Lisbon, the Prince Regent with all his court sailed on the 25th of January, 1808, for Rio Janeiro. Even after the downfall of the French imperial power had restored him to the dominion of Portugal, this prince, now king, lingered in Brazil, which seemed to be considered as decidedly the most valuable of the two portions of the empire. In 1821, however, the constitutional movements in both hemispheres induced him to return to Europe, leaving his son, Don Pedro, Regent of Brazil. The violence of the Portuguese cortes called upon the prince also to return, and his endeavour to reduce Brazil into a subordinate appendage of Portugal drove the transatlantic state into open resistance and decided separation. At the king's death, Don Pedro did not attempt to follow up his right of inheritance over both kingdoms, but contented himself with the American share. In consequence of internal disturbances, however, he has since been obliged to abdicate in favour of his infant son.

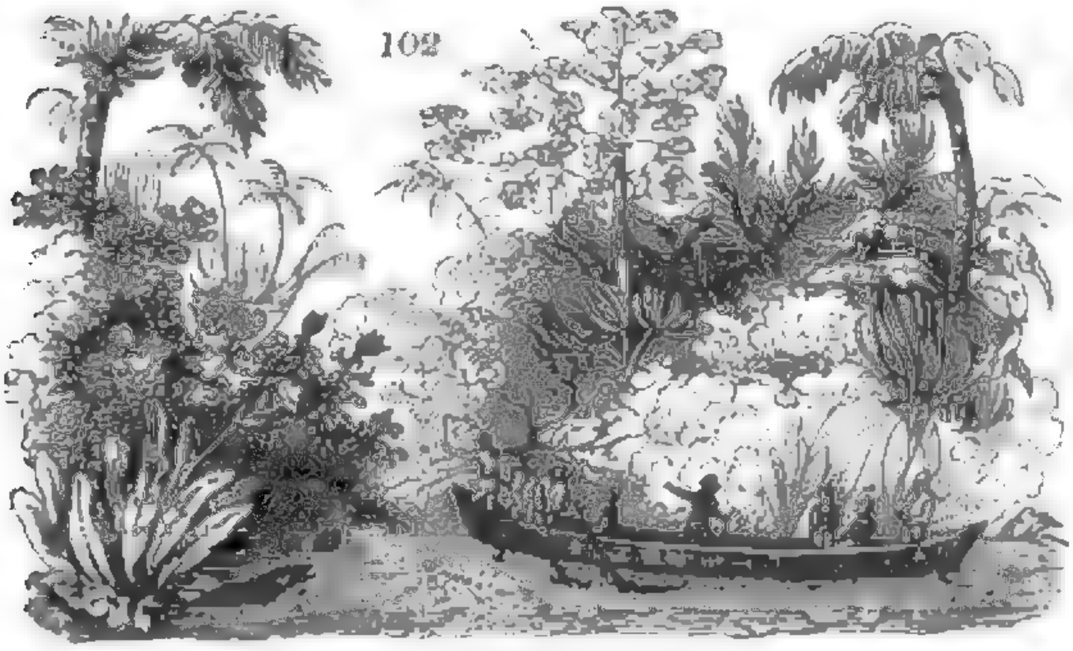
Sect. IV. *Political Geography.*

6192. *The constitution of Brazil* is ostensibly a limited monarchy, on the model of the British, except that there is no hereditary house; the senate, as well as representatives, being elected by the people, with some concurrence of the sovereign. There is, however, a great difficulty in enforcing the measures of any general and central administration over so wide an extent of country, and over provinces so deeply imbued with a local spirit. The northern districts, in particular, have made vigorous attempts and still cherish the wish to form a separate and republican government, on the model of those now established over the rest of America.

6193. *The revenue of Brazil* is stated at about 20,000,000 crusados, about 2,300,000*l.* This is burdened with a debt of 30,000,000 crusados. The military force consists of 30,000 troops of the line, with 50,000 militia; and there is a considerable marine.

Sect. V. *Productive Industry.*

6194. *The natural capacities of Brazil* are fully equal to those of any region in the New World. The soil is capable of yielding profusely sugar, cotton, coffee, tobacco, all the richest tropical productions; the forests are immense, and abound in the most valuable timber; the fields are covered with numberless herds of cattle; and the most precious of metals are found near the surface of the earth. Its chief defect is, that, destitute of those fine elevated table lands, which cover so much of Spanish America, it affords no eligible situation for European colonists; and the labouring classes consist almost wholly of negro slaves; a circumstance adverse to its prosperity, and necessarily engendering many evils.


102

BRAZILIAN FOREST.

6195. *Dense and impenetrable forests* (*fig.* 1021.) cover a great part of the interior of Brazil, and exhibit a luxuriance of vegetation almost peculiar to the central regions of South America. "The infinite variety of tints which these woods display, give them an aspect wholly different from those of Europe. Each of the lofty sons of the forest has an effect distinct from that of the rest. The brilliant white of the silver tree, the brown head of the Mangoa, the purple flowers of the Brazil wood, the yellow laburnums, the deep red fungus, and the carmine-coloured lichens, which invest the trunks and the bark, all mingle in brilliant confusion, forming groups finely contrasted and diversified. The gigantic height of the palms, with their varying crowns, give to these forests an incomparable majesty. All these are interwoven with a network of creeping and climbing plants, so close as to form round the large trees a verdant wall, which the eye is unable to penetrate; and many of the flowering species, that climb up the trunks, spread forth and present the appearance of parterres hanging in the air. These woods are not a silent scene, unless during the deepest heat of noon, but are crowded and rendered vocal by the greatest variety of the animal tribes. Birds of the most singular forms and most superb plumage flutter through the bushes. The toucan rattles his large hollow bill; the busy orioles creep out of their long pendent nests; the amorous thrush, the chattering manakin, the full tones of the nightingale, amuse the hunter; while the humming-birds, rivalling in lustre diamonds, emeralds, and sapphires, hover round the brightest flowers. Myriads of the most brilliant beetles buzz in the air; and the gayest butterflies, rivalling in splendour the colours of the rainbow, flutter from flower to flower. Meantime the beautiful, but sometimes dangerous, race of lizards and serpents, exceeding in splendour the enamel of the flowers, glide out of the leaves and hollows of the trees. Troops of squirrels and monkeys leap from bough to bough, and large bodies of ants, issuing from their nests, creep along the ground." It concerns us here to remark, that these immense forests are rich in timber of every description for use and ornament, suited either for carpentry, shipbuilding, dyeing, or furniture. That kind specially called Brazil wood is particularly celebrated for the beautiful red dye which it produces.

6196. *Agriculture is exercised in Brazil* upon valuable products, and in fertile soils, but in a very slovenly manner. The farmers, till of late, were a most ignorant race, not believing that there were any countries in the world except Portugal and Brazil, nor any except the last in which the sugar cane grew. They have begun, however, to hold intercourse with the world in general, and to introduce improved processes from the West India islands. Land is so abundant that they never think of employing manure, but break up a fresh spot whenever a cultivated one is exhausted. They do not even grub up the trees, but plant the sugar canes among the stumps, the luxuriant shoots from which cannot be cleared away without great labour.

6197. *Among the objects of culture* sugar has long been prominent; the rich and moist soils on a great part of the coast being particularly suited to it. Notwithstanding the cheapness of land, a considerable capital is necessary to establish a sugar plantation, including at least forty slaves and a variety of machinery. The amount is from 3000*l.* to 10,000*l.*, which is often borrowed, payable by successive small instalments. Cotton has of late become a leading article, in consequence of the extensive demand in Britain. The best is that of Pernambuco; that of Maranham and Seara being coarser, though it is the staple of both places. In the districts southwards it also declines, and at Rio Janeiro is of little value. Tobacco is cultivated, along with the sugar, for home use, and is an object of traffic between the provinces. Coffee is only of recent introduction; but within these few years the culture has been so vastly extended as to render it the most important object of Brazilian commerce. For food, chiefly to the negroes, manioc and kidneybeans are the articles most raised. Maize and bananas are not so much used as in most tropical countries. Rice is largely cultivated only in Maranham.

6198. *Cattle* multiply to an immense extent in all the provinces of Brazil, but more especially in the south. The great farms contain 2000, 3000, 4000, and sometimes even 40,000 head. The bulk of these roam at large in a wild state, with no attendance except that of two or three peons or herdsmen, riding constantly round the wide pastures, to keep them within the bounds, and defend them against the attacks of wild beasts. Once a year only they are collected within an enclosure, and branded with the mark of the master. Portions of these roving herds are from time to time caught and killed, chiefly for the hide, though the flesh also is dried in a peculiar manner, and sent to the northern provinces. A certain number, notwithstanding, are tamed, to supply milk, and to serve for meat, which is considered more delicate than that of the wild cattle.

6199. *Mines*, however, form the most celebrated, though by no means the most valuable, source of Brazilian wealth.

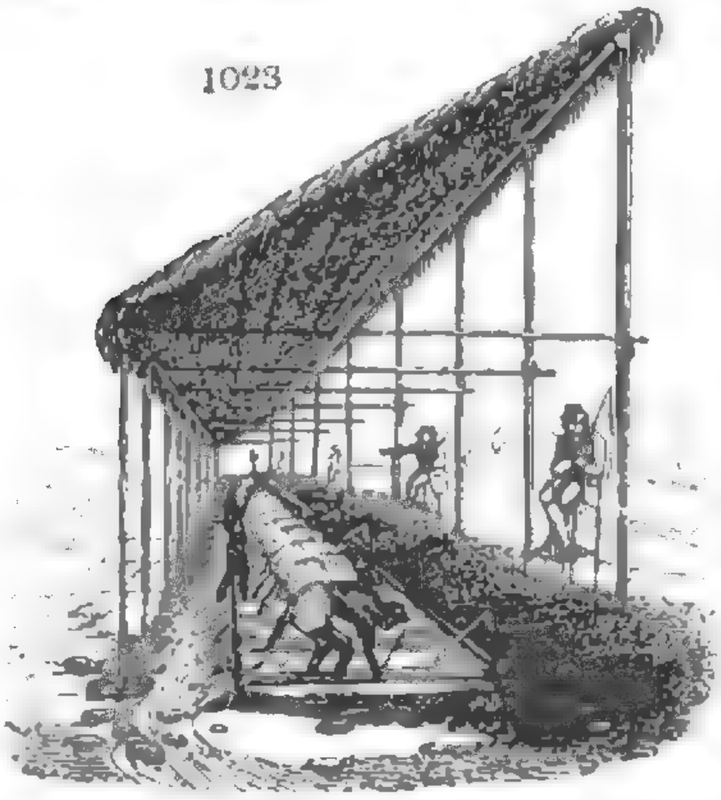
6200. *The gold of Brazil* occurs, like that of Africa, in the form of dust brought down by streams which descend from the hills, and from which it is separated by agitation in water. No attempts seem yet to have been made to penetrate into the interior deposits of this precious metal. When the auriferous streams overflow their banks, the inhabitants, to whom the search seems generally left open, hasten in crowds to this attractive occupation. A man takes his station at the edge of the stream, and begins with a small hoe to open a trench, which may be carried in any direction that suits him, provided it does not encounter that of another adventurer. The water is allowed to stand through the day, and is poured off at night; the sediment deposited, called *cascalho*, is then carried home, and made, though by very rude processes, to render up its gold. That the soil may be impregnated in every direction, channels are formed down the sides of the golden mountain, and pits dug, by which processes it is perforated like a honeycomb; and the earth being all washed away, presents a picture of desolation which excites the astonishment of strangers. The produce of gold has greatly diminished, and on the whole the precious metal has proved to Brazil a fatal gift. The eager search and hope have continued after the amount ceased to repay the labour. A few instances of wealth suddenly acquired have generated a dislike of steady and regular occupation; and the rich soil in the neighbourhood of the mines, and from which the most solid wealth might have been derived, is allowed to lie waste. The fifth claimed by the king, though extensively evaded, presses heavily on this branch of industry.

6201. *The diamonds of Brazil* are a source of wealth still more brilliant, yet even less productive. The principal diamond ground is in a circuit of sixteen leagues round Tejuco, in the district of Serro do Frio. The trade has been monopolised by the government; and, as usual in such cases, has been conducted at a very great expense. Not less than 35,000*l.* annually is said to be expended in officers, negroes, machinery, and instruments. All proprietors resident near the spot eagerly proffer their negroes at a very low rate; to which proceeding it is alleged that sinister motives frequently impel them. The diamonds of Brazil are found in a situation similar to that of the gold, among portions of alluvial earth. Of all the depositaries of diamonds, the most celebrated is the river Jiquitonhonha (*fig.* 1022.), which flows nearly as broad as the Thames at Windsor. When worked, the channel is turned aside either by canals or pumps, and the earth from the bottom dug out. The cascalho is then laid in heaps by the side of a flooring (*fig.* 1023.), divided into various compartments, into each of which a current of water is admitted. While this passes through, the cascalho is kept in constant motion by raking it till the earthy particles are washed away. The negro stationed at each compartment then begins a most diligent search for the diamonds. When he finds one, he claps his hands, and holds it up between his forefinger and thumb to the overseer, who places it in a bowl suspended from the centre of the structure. When a negro presents a stone of seventeen carats and a half, he receives his liberty; and handsome presents are given whenever any diamond of inferior, though of considerable, size is found. On the other hand, the strictest precautions are taken to prevent any from being secreted. Three overseers, placed on high seats, command a view of the whole group; and the negroes are frequently changed from one compartment to another, lest they should thrust a diamond into a corner, and return to take it away. There is an infinite variety in the size of the diamonds. Some are so very small that sixteen or twenty are required to make up a carat; while, on the other hand, two or three are usually found in the course of a year, weighing from seventeen to twenty carats. It is not expected that one weighing thirty carats will be found oftener than once in two years. The diamonds of Brazil are larger than those of India, and as brilliant, but not so hard. At the first discovery of the mines they sent forth no less than a thousand ounces of diamonds, which made a prodigious impression on the market; but of late their annual produce has not much exceeded 22,000 carats.

1022

DIAMOND RIVER.

1023



WASHING FOR DIAMONDS.

6202. *Of other mineral products,* iron and copper are said to abound in the interior province of Matto Grosso; but they have not yet been worked. There are also topazes larger than those of Saxony and Siberia, tourmalines, and rock crystal.

6203. *Manufactures* have made smaller progress in Brazil than in any other of the South American colonies. The only fabric of importance is that of gold and silver, which is carried on in the capital to a great extent. The articles wrought are of great beauty, and are an object even of export.

6204. *Commerce flourishes* in consequence of the very dependence of the country upon foreign manufactures, as well as the valuable products of its soil. Rio Janeiro is the centre of trade for the southern coasts, which send to it provisions for its own consumption, as well as hides, tobacco, sugar, and cotton; vast trains of loaded mules also come and go to the interior provinces, especially S. Paulo and Minas Geraes. Bahia carries on most of her trade, and Pernambuco and Maranham nearly all of theirs, direct with Europe. In 1829, the trade between Britain and Brazil employed 254 ships, 57,682 tons, and 3044 men outwards; 168 ships, 38,322 tons, 1968 men inwards. The principal articles of export from

Britain were, cottons to the value of 1,488,000*l.*; woollens, 278,000*l.*; linens, 181,225*l.*; silks, 10,969*l.*; brass and copper manufactures, 134,306*l.*; hardware, 67,996*l.*; iron and steel, 49,913*l.*; glass, 25,958*l.*; hats, 53,045*l.*; earthenware, 37,050*l.*; apparel, 20,614*l.*; soap and candles, 24,100*l.* The chief imports were, 28,878,000 lbs. cotton; 3,393,000 lbs. coffee, 85,202 cwt. sugar. The total exports of Brazil may at present be estimated at

	£	£
Sugar, 75,000 tons, worth in Brazil	20	1,500,000
Coffee, 40,000 — —	55	2,200,000
Cotton, 180,000 bags —	5	900,000
Hides, 500,000 —	1	500,000
Bullion, rice, tobacco, dye and other woods, cocoa, &c.		500,000
		£5,600,000

The real or declared value of the various articles of British produce and manufacture exported to Brazil in 1831 was 1,238,371*l.* Cotton goods amounted to more than the half of this sum; of the other articles the principal were linens, woollens, soap and candles, and earthenware. (M'Culloch's *Com. Dict.*, 2d edit., art. Rio de Janeiro.)

1024

CROSSING A RIVER.

6205. *The roads* from Rio to the leading points of the interior are said to be tolerable; though the entire absence of waggons seems to imply a very low degree of improvement. In the more unfrequented districts the roads are merely paths cut in the woods, and made extremely narrow, not only that less labour may serve to make them, but that the constant tread over one spot may check the continual encroachments to be dreaded from tropical vegetation. The numerous streams, destitute of bridges, and, in many cases, of ferryboats, are crossed on rafts moved by poles, while the horse, held by the head, is made to swim over (*fig.* 1024.).

Sect. VI. *Civil and Social State.*

6206. *The population of Brazil* has been very vaguely estimated, and generally much under the truth. Sir George Staunton, in the end of the last century, did not suppose it to exceed 200,000 whites, and 600,000 negroes. From further enquiries it was ascertained that the number could not be less than 3,000,000. But according to a report made to the king of Portugal in 1819, and different statements furnished by the captains-general and other officers, Brazil, between 1816 and 1818, contained 3,617,000 inhabitants. Of these there were 843,000 whites, 426,000 freemen of mixed blood, 159,000 free negroes, 1,728,000 negro slaves, 202,000 slaves of mixed blood, 259,000 Indians. The number must since that time have increased greatly, both from immigration and from the introduction of negro slaves, which, by Mrs. Graham's tables, averaged 23,000 in the years 1821 and 1822. Probably, also, many of the returns were defective; and we therefore incline to agree with Humboldt in thinking that the real number is a good deal more than 4,000,000.

6207. *The great predominance of the negro population* distinguishes Brazil unfavourably from the other South American states. By the above statement, it appears that not a fourth of the population are of unmixed white race, and that more than half the entire number are slaves. The continual importation of these negroes, the numbers who perished in the voyage, and the manner in which they were exhibited in open market (*fig.* 1025.), presented scenes equally distressing and degrading to humanity. By a law of the state, however, this importation was, in February, 1830, finally to cease. The existing slaves are exposed, of course, to all the capricious and brutal treatment of their masters; and with less protection from law than in the West Indies. On the whole, however, their actual condition is much more favourable than either there or in the United States. The religious principles of Christianity, even

1025

SLAVE MARKET.

in its most corrupted state, must always impress a sense of the original and essential equality of man. It is a matter of course that the slaves must be baptized and receive some elements of religious instruction; marriage is encouraged, and various privileges are conferred. Even the multitude of festivals affords a relief to the slave, and gives him opportunities of doing a good deal for himself. Public opinion is against the master who obstructs the negro in endeavouring to procure his own emancipation, and refuses a reasonable price for it. What is of more importance, as soon as the negro or mulatto is free, he labours no longer under that dire proscription which disgraces the boasted freedom of the American States. He is admissible to all offices, is equal to the white in the eye of the law, and not very much inferior in public opinion. Mrs Graham saw at the levee several negro officers taking in their black coarse hands the fair hands of the queen, and applying them to their lips. Mr. Mathison even conceives that, in the event of a slave insurrection, all the class of free negroes would make common cause with the whites.

6208. *Of the Brazilian character* report does not speak very favourably. The emigrants consist, in a great measure, of adventurers, often of inferior rank, who have gone out with the view of amassing a fortune in any shape, and pursue a traffic partaking more of peddling and retail habits than of any liberal principles of trade. Many of the free negroes and mulattoes seem to have a good deal of the scoundrel about them. The ladies have less liberty than in Europe, and do not make the very best use of what they have. The charges against them seem often too sweeping; but, from the concurrent testimony of travellers, they rank lower than those of Europe, and have not the same graces either of attire or manners. Mrs. Graham, however, observed a warmth of domestic affection which she never saw equalled, unless in some of the Highland clans, and which shows itself rather unluckily by marriages of uncles with nieces, nephews with aunts, and others within the forbidden degrees. On the whole, the night of ignorance in which Brazil has hitherto been involved must serve as an excuse for many faults; and, in proportion as this is dispelled, much improvement may be expected.

6209. *Science, literature, and art* have scarcely yet any existence in Brazil. Some of the higher classes, and of the officers of the government, are well informed, and the sea-port towns are beginning to imbibe the spirit and knowledge of Europe; but these improvements have made little way into the interior. In 1808, the prince regent carried out a library of 70,000 volumes, which is open to the public; and there is a museum, containing a fine collection of diamonds, crystals of gold, and other Brazilian minerals, but not rich in any other respect. The plan of founding an university is not yet executed; and the Brazilians who seek a finished education must cross the sea to Coimbra.

6210. *The Indians in Brazil* are in a much more uncivilised and unpromising state than in the Spanish settlements. They have never been incorporated in any shape with the European population, but have always retired before the progress of civilisation into the depths of their forests. They have borrowed, indeed, from the Portuguese some scanty portion of raiment. But they have never attempted the taming of animals, or the planting of grain; they subsist solely on the spontaneous fruits of the earth, the roots which they can dig up, and the game brought down by their arrow, which they shoot with marvellous dexterity, taking an almost unerring aim at the distance of forty or fifty yards. They have always ranked, even among American savages, as pre-eminently rude and barbarous. They have been regarded as anthropophagi; though, perhaps, the evidence of late travellers to this point is not quite decisive; for we cannot admit as such the hideousness of their aspect, or their custom of devouring flesh half roasted. As among other savages, some most uncouth customs prevail. The Botocudos, who inhabit the back settlements of Porto Seguro, have a favourite mode of ornamenting themselves by what is called the *botoque*. This consists of large pieces of wood pendent from the ears and the under lip, to which they are fastened by holes bored for that purpose. The result is, that the ears are stretched till they hang down, like wings, sometimes to the shoulder; while the lip is made to project, and half the lower teeth are protruded in the processes of eating and speaking. They sometimes also paint themselves frightfully, the body black and the face red, probably to strike terror into their enemies. The Puries, Pataches, Machacaries, with sundry other tribes, of name and aspect equally uncouth, have the same general character, with sundry fantastic peculiarities belonging to each.

Sect. VII. *Local Geography.*

6211. *The provinces of Brazil* can scarcely as yet be exhibited in any very minute local and statistical details. In taking a view of their leading features, we may divide them into the provinces of the southern coast, Rio Janeiro, St. Catharine, Rio Grande do Sul or Pedro, Espiritu Santo, Porto Seguro; those of the northern coast, Bahia, Seregipe, Alagoas, Pernambuco, Paraiba, Rio Grande do Norte, Seara, Piauhy, Maranham; the interior provinces, Minas Geraes, San Paulo, Uruguay, Paraná, Goyaz, Matto Grosso, Pará.

6212. *Rio Janeiro* (*fig.* 1026.), the capital of the province of that name, and of the kingdom, may now, perhaps, rank as the largest and most flourishing city of South America. It lies on the western side of a noble bay, seventy or eighty miles in circumference, forming one of the most spacious and secure receptacles for shipping in the world. Mrs. Graham, after successively admiring the bay of Naples, the Frith of Forth, and

Trincomalee, considers the bay of Rio Janeiro as surpassing them all in beauty. It is studded with upwards of 100 islands; the ships of all nations are seen passing through its channels, and innumerable little boats flitting about. The shore rises immediately into green and wooded hills, thickly planted with villas and convents, and behind which lofty mountains shoot up their heads in the most picturesque and romantic forms. These objects compose the most enchanting scene that can be imagined. It struck a late traveller as greatly resembling the Trosachs at the entrance of Loch Katrine. The town is tolerably well built, much in the European style, the houses being three or four stories high, though the streets are rather narrow. Two of them extend the whole length, with new and broad streets striking off from them; and there are several very handsome squares. The town is well supplied with water, by excellent aqueducts. There is a greater stir and bustle than is usual in an American city, though the crowd of half-naked blacks and mulattoes offends the eye of the newly arrived European. The population has been fixed only by rude conjecture. Before the arrival of the court, it was supposed to fall short of 100,000; but that event caused a great increase, and it has even been estimated as high as 150,000. The environs of Rio de Janeiro are delightful in the extreme, the valleys and sides of the hills being covered with trees, shrubs, and creeping plants of peculiar beauty. The bay of Bottafogo, and the sides of the rude and lofty mountain called the Corcovado, are the spots most particularly celebrated. The king has a rural palace, called San Christovao (*fig.* 1027.), of light and pavilion-like architecture, and which from its site has a much more pleasing effect than that in the city. We have already noticed the trade of Rio Janeiro, centring in itself that of all southern Brazil. The cultivation of sugar, coffee, tobacco, cotton, and other tropical products, is rapidly extending; but the greater part of the flour made use of is brought from the United States and the Cape of Good Hope. The trade is chiefly in the hands of the British. The arsenal, the dockyard, and marine establishments are on a small island within the harbour.

1026

RIO JANEIRO.

6213. *St. Catharine* is a long narrow province, which is chiefly remarkable for the island of the same name. It has a fine climate: its perpetual verdure and its conical rocky hills give it a beautiful aspect from the sea. The town has 5000 or 6000 inhabitants, many of whom have chosen it merely as an agreeable residence. The coast is as yet thinly peopled, though it contains several excellent harbours, as Laguna, Guaropas, and particularly San Francisco, on a river of the same name, which will increase in importance when a road is opened over the mountains into the fine plain of Orotava.

1027

PALACE OF SAN CHRISTOVAO.

6214. *Rio Grande do Sul*, the most southern province, comprises a long extent of level and alluvial coast, in which the large lakes of Patos and Mirim run parallel with the sea. The plains are covered with vast herds of cattle, which afford hides and *charque*, or beef dried in a peculiar manner, making a copious object of export. Some of the *fazendas*, or farms, comprise no less than 600,000 acres. The chief town is Portalegre, to which the opportunities of its trade have attracted even English settlers. Being situated at the head of the lake, its maritime intercourse is carried on by the port of St. Pedro, which is also flourishing.

6215. *The provinces of Espiritu Santo and Porto Seguro* extend for about 400 miles along the coast northward from Rio; but though the latter was the point first discovered, and though they possess ample natural advantages, they have remained always in a comparatively rude and unimproved state. The coast ridge of Brazil is here formed, according to the observation of Prince Maximillian, of a broad tract of high forests, extending from Rio de Janeiro to Bahia, which has not yet been occupied by Portuguese settlers. Only a few roads have been opened, with considerable labour, along the rivers which traverse them. A few settlements have been formed along the coast, which supply with timber and manioc flour the large cities of Rio and Bahia. These are so closely pressed by the Puries, Botocudos, and other tribes of Indians, that it is dangerous for settlers to penetrate into the interior, unless well armed and in large parties. These tracts, susceptible of the highest cultivation, are covered at present with noble virgin forests, in which the cedar, the Brasil wood, the Peruvian balsam tree, and other aromatic and valuable species, abound. The Rio Doce is the only river of a long course; and it can be ascended in canoes propelled by poles. It is in most places bordered by forests so thick and impenetrable, as seldom to leave ground on which a house could stand: they echo with the roar of the tiger, the ounce, and the wild boar, and of men still more savage and dangerous. Among numberless other birds are seen the magnificent macaws, screaming aloud and soaring above the tops of the highest trees. Of the sea-ports, the largest is Casa Velha, to which may be added those bearing the names of the provinces, Espiritu Santo, or Victoria, and Porto Seguro; as also Benavento and St. Mattheus. These towns consist generally of houses one story high, and the streets are straggling, unpaved, and covered with grass. In Porto Seguro, though so near the sea, they have no other food than salted fish, which renders the scurvy very prevalent.

6216. *The fine province of Bahia, or St. Salvador*, follows north from the two rude regions already described. It is the most flourishing and industrious part of all Brazil. Besides being originally the metropolitan province, it was long occupied by the Dutch, who introduced their own commercial and improving habits. The territory called the Reconcale, containing a sweep of from twelve to forty miles in breadth, is in high cultivation, and contains many flourishing interior towns. Sugar, tobacco, and cotton are largely cultivated and exported.

6217. *The city of Bahia*, or St. Salvador, is situated within Cape St. Antonio, the eastern boundary of the noble bay of All Saints, which strikingly resembles that of Rio Janeiro. It is similarly studded with many islands, and traversed by numberless sails, almost all the provisions and vegetables being brought by water. The shores, though not mountainous, are high and richly wooded, and the town has a magnificent appearance from the water. With these attractions the interior does not correspond, at least that of the lower town, where the houses are high, the streets confined and narrow, wretchedly paved, never cleaned, and therefore disgustingly dirty. The upper town, however, placed upon the side of a hill which rises abruptly behind, though not well built, has a number of handsome private houses and public buildings. The sites and prospects are beautiful in the extreme. Every step brings to view some magnificent scene; the woods, the steep banks and gently sloping lawns, generally opening to the sea or the lake behind the town, have a peculiar freshness and amenity. The cathedral and several other churches are handsome and richly ornamented; but the finest of them, the Ex-Jesuits' church, built entirely of marble imported from Europe, has been converted into barracks. Society is not considered, by Mrs. Graham, to be so polished as at Rio; the dress and appearance of the ladies in the morning are extremely slovenly, though in the evening they appear fully attired in the French style. Gaming, the resource of vacant minds, is eagerly followed by both sexes. Intellectual pursuits seem little regarded; and though there is a large library, with some valuable manuscripts respecting the interior of America, it is allowed to lie in a neglected state. The police is bad, the dagger being generally worn, and too often used: the deaths by assassination are estimated at 200 in the year; yet St. Salvador is esteemed the gayest city in Brazil. In 1832, 124 British ships, of the burden of 27,119 tons, cleared out from Bahia.

6218. *Of the other towns of Bahia*, Cachoeira, the principal of those in the Reconcale, is handsome and well built, and contains nearly 10,000 inhabitants. Jacobina, more in the interior, was formerly enriched by mines, which are now given up. Ilheos, a prettily situated port, was once very considerable, but it sunk with the banishment of the Jesuits, and is now of little importance.

6219. *Pernambuco* is the next province to Bahia, with the intervention of the small and unimportant ones of Seregipe and Alagoas. Pernambuco ranks decidedly as the third province in the empire, being comparatively very industrious, and having experienced a rapid improvement from the extension of the growth and export of cotton. The harbour is one of the most singular in the world. It is formed by a *recife* or reef of rocks, which run parallel with the shore, and on the exterior side of which a heavy sea is perpetually breaking. To the interior channel, however, this reef serves as a complete breakwater, and vessels which have once turned its point hear the surf dashing without, and see the spray, while they themselves are sailing on calmly and smoothly. What is called the town of Pernambuco is a compound of four towns: Olinda, seated above on a range of rocky hills, and the most ancient, but now much decayed; Recife, built on a sand-bank level with the water, and deserving its name from the reef opposite to it already mentioned, — the seat of trade, highly flourishing, and rapidly increasing; St. Antonio, or the middle town, composed of large and broad streets, and containing the governor's house, and two principal churches; lastly, Boa Vista, an extensive agreeable suburb, where the principal merchants have commodious gardens. Pernambuco has flourished extremely and increased rapidly, chiefly in consequence of the augmented culture of cotton, and the ample market for it in Europe. The cotton of Pernambuco is said to be the best in the north of Brazil. In 1809, Mr. Koster reckoned the population at 29,000; while, in 1821, Mrs. Graham's estimate was 70,000. Probably the increase could not be so very great, and there must be some error. The spirit of liberty, and even of republicanism, is very strong at Pernambuco. It showed itself first in promptitude to separate from the mother country, and next in reluctance to submit to the sway of the emperor, to which the inhabitants were at last reduced only by force of arms. This city, the third in the empire, carries on an extensive commerce in cotton, hides, sugar, and wood.

6220. *The river St. Francisco*, much the largest of any which belongs wholly to Brazil, enters the sea in the southern border of this province, after a course of nearly 900 miles through the back territories behind the coast chain. The navigation is much injured, however, first by a succession of falls, and then by shallows at the mouth of the river, which render it scarcely passable even for boats. Till of late, therefore, its banks were occupied only by a few scattered fishermen and banditti. Now towns and villages are rising, and Penedo, the port, about eighty miles up, is becoming a thriving place.

1028

SERTANEJO.

6221. *The interior country* behind Pernambuco consists of plains reaching to a vast extent, though traversed in part by the great middle chain of mountains. They are called the *Sertam*, a term contracted from Desertam, which, however, they do not merit in its most rigorous sense, but bear more analogy to the Llanos of the Orinoco, or the Pampas of La Plata, being covered with luxuriant grass, on which vast herds of cattle are fed. The Sertanejos (*fig.* 1028.), as they are called, occupy *fazendas*, or cattle farms, of such vast extent, that few know their bounds, though they attempt [illegible] calculate them by the hundreds of heads of cattle pastured upon them. Their leagues, as in all other thinly inhabited tracts, are of immeasurable and deceiving length, sometimes four miles. Their dress consists of jacket, hat, and long pantaloons or leggings, all of brown untanned leather, a tanned goatskin over the breast, and a pair of coarse cotton drawers or trousers. They live in mud cottages thatched with leaves, and if they possess a table, consider it useless at meals, when the whole party squat round on a mat, with the bowls, dishes, or gourds in the centre. The wife seldom appears, and would be suspected of holding undue sway in the household, were she to make any attempt to discourse. They eat meat three times a day, with milk and a little manioc flour, or French beans. The children are often suckled by she-goats, which are thence called *comadies*, or godmothers. All their religious ministrations are derived from itinerant priests, who carry about an altar, and all the apparatus for mass, on so small a scale as to be thrust into a pack-saddle; from which they are drawn whenever a sufficient number is found to pay for the ceremony. This, with implicit faith in charms and relics, forms the whole of their religion, to which they are yet so strongly attached as with difficulty to deem it credible that Mr. Koster, whom they understood to be a heretic, should be of the same shape with themselves. They are, on the whole, after all, rather a good sort of people; hospitable, liberal, and open-hearted. Their distance from the seat of justice renders them too prone to take the law into their own hands, and to wash out any deep offence with the blood of the offender. Hence arise deadly and lasting feuds. The traffic is conducted by travelling pedlars, who give them, in exchange for their live stock, hides and cheese, various trinkets, articles of luxury, and English cottons, which are now superseding the coarse fabrics of the country. The Sertam keeps up its intercourse with Pernambuco by Goiana, a considerable and increasing town, forty miles in the interior, on a navigable river of the same name.

6222. *The other provinces of the northern coast*, Paraiba, Rio Grande do Norte, Seara, Piauhy, and Maranham, extend chiefly from east to west towards the mouth of the Amazon. They, in general, present an aspect resembling Pernambuco; the coast containing many fertile and improvable districts, but the interior occupied extensively by the great Sertam, already described, which reaches as far as Bahia. They are chiefly employed in the culture of cotton, and rest their prosperity upon the increasing demand for that material. Maranham, in particular, an alluvial isle, formed by the branches of great rivers, exports, on an average, 70,000 large bales, of 180 lbs. each, besides a considerable quantity of rice and hides, and has attained a population variously estimated at from 12,000 to as high as 30,000. The other capitals are small. Paraiba, noted for the abundance of Brazil wood, was formerly considered of more importance than now; however, it has in fact continued to increase, though eclipsed by the superior importance of Pernambuco. Rio Grande is covered to a great extent with hills of fine and white sand, and is fertile in sugar, yet thinly inhabited; and Natal, its capital, is little better than a village. Seara has a pretty brisk trade on a small scale; but, according to Mr. Koster, the difficulty of land carriage, the want of a good harbour, and the dreadful droughts, prevent any sanguine hopes of its rise to opulence. Piauhy is almost entirely an inland province, and its little interior capital, Oeyras, is scarcely at all known. The isle of Majo dos Soanes, situated at the mouth of the Amazons, is very fertile; but the heats would be insupportable were they not tempered by the sea-breezes. A great part of its surface is covered with woods, tenanted by wandering Indians.

6223. *The interior provinces* consist, in the first instance, of the three in the south, San Paulo, Paraná, and Uruguay; which, with the exception of the chain separating them from the coast, form a vast lowland, traversed by noble and navigable rivers; but as these do not direct their course towards the sea, but all towards the central channel of the Plata, they are as yet of little benefit to commerce.

6224. *San Paulo* was at first an Indian settlement, formed by a Jesuit missionary in 1550; but, being reinforced by numerous refugees and adventurers, a mixed race was formed, of a lawless and daring character, who make a great figure in the early history of Brazil. These Paulistas, as they were called, set the Portuguese government almost at defiance, and made themselves formidable to the neighbouring provinces. They are now brought down to the character of tolerably quiet subjects; but they still maintain, throughout Brazil, the reputation of hardy frankness, undaunted courage, and a romantic love of adventures and dangers. Their features are strongly marked and expressive, their eyes full of fire, and all their motions lively and vigorous. They are the strongest, healthiest, and most active inhabitants of Brazil; and their adventurous spirit leads them to migrate through all its provinces. A good deal of maize is cultivated, sufficient for private consumption; but the chief wealth of the inhabitants consists in the vast herds of horses and cattle with which the plains are covered. The former are of an active and valuable breed; and the inhabitants display a surprising strength and activity in pursuing and taming them. The Paulistas are frank and jovial, but the inferences hence made to their disadvantage are said to be unfair. The ancient province of San Vicente is enclosed in that of San Paulo.

6225. *Uruguay* is formed of seven missions on the eastern bank of the river of that name, ceded by Spain in 1750. Its chief importance consists in the production of the tea or herb of Paraguay, which is considered, over a great part of South America, as much a necessary of life as the tea of China is with the English. That of Uruguay is indeed inferior to what is produced in the territory west of the Paraná; but as Dr. Francia, the present ruler of that region, has capriciously prohibited its exportation, the Brazilians supply all the neighbouring countries with this valuable commodity. The whole country, as far as the La Plata, has indeed been lately erected into a new province, named Paraná; but part of this is, in fact, the undisputed domain of Francia, while his claim to the rest has been successfully resisted by Buenos Ayres.

6226. *Minas Geraes*, the most central province in Brazil, is distinguished as containing the principal mines of gold and diamonds. In passing into it from San Paulo, a decided change is observable in the aspect of nature. The country swells into hills, and gradually assumes the features of a romantic and alpine region. The golden mountains, which traverse the whole extent of Minas Geraes, do not rise above 3000 or 4000 feet; they exhibit not the rugged clefts or gigantic rocky summits of the Alps or of the Cordilleras; they consist of long series of detached ranges, with agreeable campos on their summit, and separated by sloping and pastoral, but not very deep, valleys. The country is often extremely fertile, and might yield the most valuable productions, were not the attention of the inhabitants drawn off by the glittering but often useless treasures found in the bowels of the earth. S. Joao del Rey is a neat little town of whitewashed, red-tiled houses, surrounded by a singular scene of round hills and broken rocks, with tracts entirely sterile, and others covered with the most luxuriant verdure. Its situation is so agreeable and central, that an intention was once formed of making it the capital of Brazil. The mine from which its distinction is derived is merely a deep pit, into which the streams from the neighbouring hills are directed, and in which any one is allowed to search. Its produce, and the hopes formed from it, have much diminished, and S. Joao supports its somewhat languid prosperity chiefly by an inland trade, keeping four caravans, of fifty mules each, constantly going backwards and forwards to Rio Janeiro. Villa Rica may be regarded as the El Dorado of Brazil, from its highly productive gold mines, already described. The place is large, its inhabitants being variously reported from 8000 to 20,000. There are 400 or 500 good houses; and the government palace, the town-house, the theatre, and the prison, have rather an unusual air of magnificence. Water is supplied from fourteen fine public fountains. The produce of the mines has declined; but the internal trade is very brisk. Tejuco, the capital of the diamond district of Serro do Frio, is situated in a most dreary tract, where all the necessaries of life must be brought from a considerable distance. It is well built, on very rugged ground, and contains 6000 free inhabitants, and as many slaves employed in searching for diamonds. Villa do Principe, in a fine country, on the borders of the diamond district, enjoys a more solid prosperity, and contains about 5000 people.

6227. *There are still several exterior provinces of Brazil*, which have been occupied by the Portuguese only at a few detached points, while by far the greater part remains in full possession of the unsubdued Indians. These provinces are, Goyaz, Matto Grosso, and Pará. To them may be added the still more exterior regions beyond the Amazons and the Madera, Solimoens and Guiana, the domination over which can be considered by the Portuguese as only future and prospective.

6228. *Goyaz* is a province, or rather kingdom, of vast extent, watered by the mighty streams of the Tocantines and the Araguay, which unite in their progress towards the Amazons. The aspect is described as generally uneven, though seldom mountainous, comprising many sandy sterile plains, wooded only upon the banks of the rivers. Gold was the lure which attracted settlers into this desolate and unfrequented region; and in the country round Villa Boa, the capital, the quantity produced was for some time considerable, though now it is much diminished. Villa Boa contains also a governor, a bishop, and about 6000 inhabitants.

6229. *Matto Grosso*, west of Goyaz, is a still vaster region, extending far into the interior, and bounded only by the Madera and the Upper La Plata. It consists for the most part of immense plains, similar to the Llanos or Pampas; for the lofty chain which our maps have hitherto interposed between the Amazons and the Plata, has, according to Humboldt, been ascertained to be a mere dividing ridge, rendered sensible only by the separation of the waters. The principal settlement is at Cuyaba, in the south-western district, where it can hold communication with the more civilised regions. Here, too, gold was the first attraction, and even when the quantities which it produced began to diminish, the country was found so fine and fertile, that its cultivation amply indemnified the Cuyaban settlers. They amounted, in 1809, according to Mr. Mawe's estimate, to 30,000. The official capital, however, is Villa Bella, on the Guapore, one of the principal heads of the Madera; a neat small city, perhaps the most advanced point which the Portuguese hold in America. The most powerful of the native tribes in this region are the Guaycurus, a numerous people, who have adopted and carefully reared all the domestic animals of Europe, and have thereby greatly added to their power and numbers, without any deduction from their ferocity. They never cultivate the ground, but subsist entirely on their herds, and the produce of the chase; and, like the Tartars, when pasturage and game are exhausted, they migrate in large bodies from one spot to another. The mothers, it is said, still retain the savage practice of destroying the embryo, till they have attained the age of thirty. The Guaycurus are the terror of all the neighbouring Indians; when successful in war, they massacre all the adults, and carry off the children into slavery. Perhaps in the struggle which must finally ensue between them and the Portuguese, the triumph of the latter may not prove quite so certain as some have anticipated.

6230. *Pará* forms the southern part of this vast interior, filling the interval between the two last-mentioned provinces and the stream of the Amazons. The greater part is, if possible, still less known or occupied than even Matto Grosso; but there is a district near the mouth of the great river, which is not only very fertile, but cultivated to a considerable extent. It is well fitted for sugar, and, since the cotton trade rose to such importance, has particularly prospered, yielding a description little inferior to that of Bahia. The population of Pará has been stated at 20,000; but probably this includes the immediately surrounding district. The water communications, however, of this city with the interior are so immense, that it must continue to advance with the progressive settlement of the provinces of Goyaz and Matto Grosso.

6231. *The province of Solimoens* is still more remote from the sphere of European and civilised existence. It extends beyond the Madera, south of the Upper Amazons, which here receives four great rivers; destined, perhaps, to be the scene of a crowded navigation, but whose banks at present are only traversed by nameless and thinly scattered tribes of savage Indians. Its only tincture of civilisation has been derived from Franciscan missions, of which nine have been established along the banks of the great rivers.

6232. *The region of Portuguese Guiana* is still more vast, extending 900 miles by 600, and nearly on an equality as to settlement and civilisation. It includes nearly the whole course of the Rio Negro, the rival of the Orinoco, and one of the greatest tributaries of the Amazons. The Rio Negro derives its name from the black colour which its waters present to the eye; notwithstanding which, taken out of the river, they appear perfectly clear and pellucid. Its navigation is good, and by the Cassiquiare it has a communication with the Orinoco, which may hereafter prove of the greatest importance. Three leagues above the mouth of the river, the Portuguese have established the town of Rio Negro, where they not only keep their stores and a small garrison, but have endeavoured to form manufactures of cotton and pottery, which must be considered here as very forced undertakings. They have also several small settlements and missions higher up the river, and on the Rio Branco, its chief tributary. Still farther up, the Amazons receives the Yapura, another immense tributary, coming across from the Cordillera. Its banks are covered with noble woods, indicating a fertile soil; but the navigation is rendered difficult by the rapidity of the current; and the shores have been found unhealthy for European constitutions. The channel of the Lower Amazon, for about 1600 miles, forms a sort of inland sea, in which the opposite banks are often not visible, and the whole of which is believed to be navigable for the largest vessels. This course is through an immense and magnificent plain, not encroached on even by a hillock from the bordering Andes, but sloping gradually and almost insensibly down to the Atlantic. But this region, which will one day be the most flourishing on the face of the earth, is at present occupied only by tribes of wandering Indians, and a few settlements, which the Portuguese have formed by banishing their felons into it. These emigrants, at a distance from all law and restraint, have availed themselves of their superior arms and skill cruelly to oppress the natives, against whom they carry on a regular system of slave-hunting. Charges of cannibalism have been made against these Indians to all travellers, including Mr. Mawe, who descended the river; but they have never been confirmed by credible eye-witnesses, and are alleged by D'Acunha to have been invented by the Portuguese, in order to justify their own outrageous conduct. Equally ancient and continued have been the reports of tribes of warlike females inhabiting the banks; and, though destitute of any regular confirmation, and evidently much exaggerated, they may probably have some foundation in truth.

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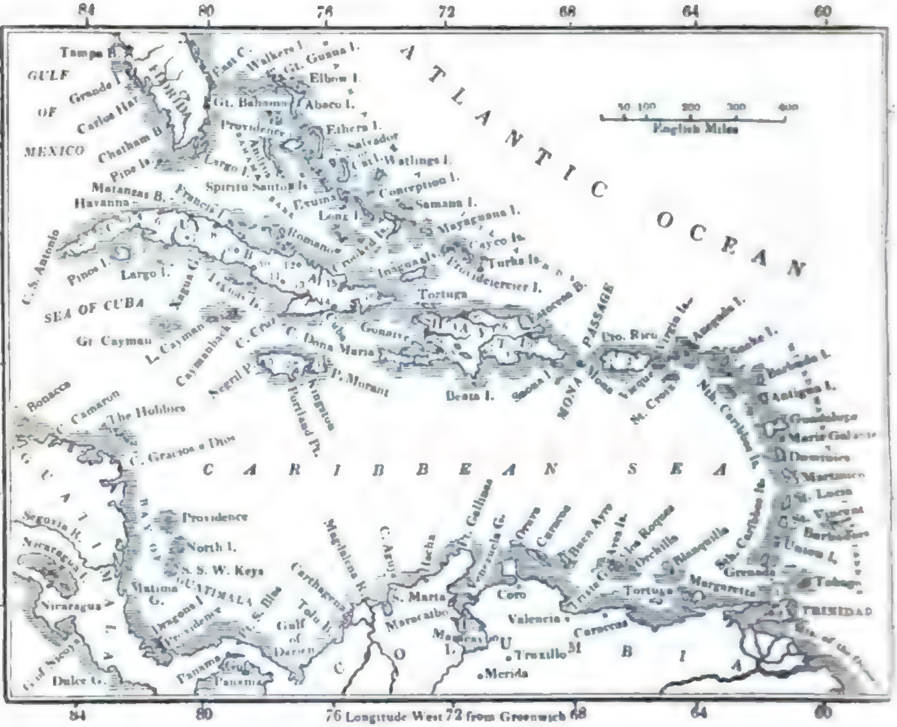
Chap. XII.

THE WEST INDIES.

6233. *The West Indies* consist of an archipelago of large and fine islands, situated in the wide interval of sea between North and South America. Their rich products, their high cultivation, and the very singular form of society existing in them, have rendered them in modern times peculiarly interesting.



References to the Map of the West Indies.

CUBA.
1. S. Isabela
2. Nombre de Dios
3. Honda
4. Havana
5. Batavano
6. Matanzos
7. Cienega de Zapata
8. S. Juan
9. Espiritu Santo
10. Negrillo Port
11. Villa del Principe
12. Nuevita
13. S. Salvador
14. Cuba
15. Porto Nipe
16. Baracoa.

JAMAICA.
1. Kingstown
2. Spanish Town

3. Savanna la Mar.

HAYTI.
1. St. Nicholas
2. St. Mark
3. Port au Prince
4. Cape Henry
5. M. Christi
6. S. Jago
7. Baltos
8. S. Domingo
9. Savanna

PORTO RICO.
1. Aquadillo
2. San Juan

TRINIDAD.
1. Porto Espana
2. Monserrat.

Sect. I. *General Outline and Aspect.*

6234. *These islands* extend in a species of curved line, first east, and then south, beginning near the southern point of the United States' territory, and terminating at the coast of South America, near the mouth of the Orinoco. On the east and north they are bounded by the Atlantic; on the south, the Caribbean Sea separates them from the coast of Colombia; on the west, the broad expanse of the Gulf of Mexico is interposed between them and that part of the continent. They are situated generally between the fifty-ninth and eighty-fifth degrees of west longitude; and, excluding the Bahamas, between the tenth and twenty-third degrees of north latitude. The largest are those which extend from the Gulf of Mexico eastward; Cuba, St. Domingo, Jamaica, and Porto Rico. Those which run from north to south are smaller; but many of them, as Barbadoes, Martinico, Guadaloupe, Trinidad, are very important from their fertility and high cultivation. This latter part of the group is frequently called the Windward Islands, from being exposed to the direct action of the trade winds, blowing across the Atlantic; they are named also the Antilles, and frequently the Caribbee Islands, from the name of the people, called Caribs, found there by the discoverers.

6235. *Mountains* of considerable elevation diversify each of these islands, causing them to resemble the elevated remains of a portion of the continent, which some convulsion overwhelmed. Generally speaking, the interior is composed of a range or group, sometimes of little more than a single mountain, the slopes of which, and the plain at its feet, constitute the island. The most elevated peaks of Cuba, St. Domingo, and Jamaica exceed 8000 feet; while the highest summits of the Windward Islands range from 3000 to 4000 feet. Most of these eminences have evidently been the seat of volcanic action; but this appears to have ceased in all of them, except the Soufrière of Guadaloupe, which still exhibits some faint indications of it.

6236. *The streams* which descend from these lofty heights, and water the plains along the sea shore, are numerous and copious, and form one main cause of the fertility which distinguishes this region; but as they soon reach the sea, none of them are so important as to call for notice in this general survey. Neither do their waters expand into lakes of any importance.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

6237. *Cuba.* A range of mountains traverses this island from east to west, dividing it into two parts. At the foot of these the country opens into extensive savannahs. The lower districts are composed of secondary formations, through which we observe granite, syenite, gabbro, and gneiss rising in masses of greater or less extent. The highest mountains, probably composed of mica slate, and named the Copper Mountains (Sierra de Cobre), at the south-eastern end of the island attain an elevation of nearly 10,000 feet. From hence towards the east there is a hilly range 1800 feet high, in which pure limestone and argillaceous sandstone are the predominating rocks. Near Villa Clara a silver mine has been discovered, and also native gold, ores of copper, and coral marbles, of various kinds, are mentioned as occurring in the island.

6238. *St. Domingo.* We have no account of the geology of this island.—The long and narrow granitic tongue of land, which extends, in St. Domingo, from Port au Prince westwards to Cape Tiburon, was fearfully wasted by an earthquake, in the year 1770. Whole mountains were overturned. The other parts of the island were not disturbed by the earthquake. Hence it may be conjectured, says Von Buch, that this chain rests upon a great internal vent.

6239. *Jamaica.* A part only of the geology of this island has been described by Mr. De la Beche, in the *Geological Transactions.* The tract examined is confined to that quarter situated to the eastward of a line drawn from Alligator Pond Bay to St. Anne's Bay, thus taking in nearly the eastern half of the island, where the highest mountains occur. The Blue Mountain range is principally composed of transition rocks, as greywacke, associated with trap rocks. Resting upon these, at a lower and lower level, are red sandstone and conglomerate, white marl and limestone, in some places intermingled with traps and porphyries; the flat country, from Somerset to Kingston, being diluvium and alluvium. An extinct volcano occurs at Black Hill, in St. George's.

6240. *Volcanic Islands.*—The smaller islands, named the *Caribbean Islands*, geognostically considered, form two groups; an eastern, or exterior, of Neptunian formation, and a western, or interior, of Volcanic formation. The volcanic islands appear, according to Von Buch, to stand in immediate connection with the primitive ranges of the Caraccas, because the earthquakes in the Caraccas ceased when the volcano in St. Vincent broke out. But, if this is the case, the connection must be through the islands of Tortuga and Margarita. This range of volcanic islands extends onwards in a curved direction, and terminates in a new primitive chain, at that point where the range has again assumed the same direction as the Silla of Caraccas. The Blue Mountains in Jamaica, the granite mountains in the southern part of St. Domingo, and in Porto Rico, run parallel with the Silla, and they (as appears on inspecting the map) are equally a continuation of the volcanic series of the small Antilles, as these are of the Silla. None of these volcanoes are very lofty, the highest scarcely attaining an elevation of 6000 feet above the level of the sea. *The Volcanic islands* are Grenada, St. Vincent, St. Lucia, Martinique, Dominica, Guadaloupe, Montserrat, Nevis, St. Christopher, and St. Eustatia: the *Neptunian islands*, which are low, and principally composed of limestone, are Tobago, Barbadoes, Marie-Galante, Grande Terre, Deseada, Antigua, Barbuda, St. Bartholomew, and St. Martin.

6241. *Neptunian Islands.*—The only island of this group of which we have a detailed account is Antigua, described by Dr. Nugent in the sixth volume of the *Geological Transactions.* It contains, besides the characteristic Neptunian rocks, also formations of volcanic origin; and hence may be considered as connecting, in a geognostical point of view, the Neptunian and Volcanic islands. The whole north-eastern part of the island is composed of a yellowish white, earthy, nearly friable, limestone, which in its upper strata contains *Helices* and *Bulimas*, but in the lower, great abundance of *Cerithiæ*, principally enclosed in a siliceous bed of a dark colour, which is subordinate to the limestone. It appears to belong to the tertiary class, and forms hills from 300 to 400 feet in height. The island is crossed from N. W. to S. E. by a conglomerate, which, in a clayey basis, contains many crystals of felspar, abundance of green earth, probably disintegrated augite, and masses of basalt, also of amygdaloidal dolerite or greenstone, lava, hornstone with impressions of corals, and numerous pieces of petrified wood of all sizes and forms, principally palms and other tropical trees. Trees of the same kind also occur in the siliceous bed in the limestone. The rocks of this conglomerate are generally steep towards the S. W., and gently inclined towards the N. E. The limestone evidently rests upon this conglomerate. To this follows, in the south-western part of the island, a doleritic basalt, which forms the greatest height. The separation of these rocks is accurately in the direction of the volcanic islands, that is, from N. W. towards S. E. Hence the island of Barbuda, which is farther removed from the volcanic range, lies entirely in the limestone region. The shells in the limestone differ but little from those of the surrounding sea; but the limestone expands over the whole island, which, although it is eighteen miles long, and thirteen miles and a half wide, is nowhere higher than about 110 feet above the sea. A basaltic cover, therefore, separates this limestone from the volcanoes; and probably these latter, before reaching the surface, have previously forced their way through the basalt. It occurs again in Tobago: specimens of dolerite, containing remains of cerithiæ, have been sent from the island; showing that a limestone similar to that of Antigua lies over it. Barbadoes, in its general composition, is very much like Antigua; and the same would appear to be the case with St. Bartholomew and St. Martin. In Deseada, Marie-Galante, and Grande Terre, limestone only appears. This limestone extends to the north and east sides of Martinique.

6242. *Volcanic Islands.—Grenada.* Coral reefs bound the coast from S. W. to N. E., but not on the west side. Basaltic pillars occur on two places on the coast. The *Morne Rouge*, formed of three conical hills, from 500 to 600 feet high, is entirely composed of slags and vitrifications. It is, therefore, probably a cone of eruption.

6243. *St. Vincent.* The volcano Morne Garou, which is the loftiest mountain in the island, is 4740 feet high. It was ascended on April 26. 1812, the day immediately preceding the eruption which has made the island so well known to geology. The crater was half a mile in diameter, and from 400 to 500 feet deep. In the middle of it there rose a concave hill, from 260 to 300 feet high, covered, in the lower part, with vegetation, but the summit with sulphur. Vapours of sulphur also ascend from many crevices in the rocks. The crater, according to Anderson, exhibited the same appearance in 1785; and he remarks how evidently St. Vincent, the Soufrière of St. Lucia, Montagne Pélée in Martinique, and Dominica, were extended in the same line. On April 27. 1812, ashes burst from the crater, and, during the night, flames; on the 20th, during the night, lofty pyramidal flames were seen; and, on the 30th, at 7 A. M., lava burst open the north-west side of the mountain, and flowed so rapidly downwards, that it reached the sea in the course of four hours. At three o'clock, a frightful eruption of ashes and stones took place from the great crater, which destroyed nearly the whole of the plantations in the island.

6244. *St. Lucia.* The crater occurs in a sharp and steep chain of hills, from 1200 to 1800 feet high, which traverses the island from N.E. to S.W. The sides of the crater are very lofty and steep, especially on the south-east side. Vapour breaks out on all sides. At the bottom there are numerous small lakes, in which the water appears to be perpetually boiling, and in some places the ebullition is so violent that the water is thrown up to a height of four or five feet. Many places are incrusted with sulphur; and brooks which flow down the sides of the mountain abound in carbonic acid. It is reported that, in the year 1766, an eruption of stones and ashes took place.

6245. *Martinique.* The mountain Pélée, in the northern part of the island, which is 4416 feet high, contains a great crater, or a soufrière. Many smaller craters, at a height of 3000 feet, show former lateral eruptions. On the 22d of January, 1762, a small eruption, preceded by a violent earthquake, took place. Dr. Chisholm says the mountain is surrounded with pumice, and granite (trachyte) forms its body; Dupugot also speaks of a hillock of pumice, thirty feet high, on the west side of the mountain, which announces the existence of trachyte in its interior. The Piton of Carvet, probably the highest in the Antilles, rises in the middle of the island. Streams of felsparry lava appear on its acclivity, and basaltic pillars in the hollow between this and the third peak of the island, in the southern part, on the Pic de Vauclin.

6246. *Dominica.* Dr. Chisholm says this island is a confused mass of mountains, the loftiest of which is 5700 feet high. Many solfataras occur in it, which are not burnt out, but, on the contrary, occasion small sulphur eruptions. The lower parts of the mountains are of trachyte.

6247. *Guadaloupe.* The Saints Islands, composed of columnar basalt, connect this island with Dominica. The highest hill among them is on the Terre d'en Haut, which is 966 feet. Probably these basalts form a border around trachyte hills. The Soufrière of Guadaloupe is 4794 feet high, according to Le Boucher; 5100 feet, according to Amic. It is situated in the centre of the island. On the 27th of September, 1797, after the Antilles had been agitated by earthquakes for eight months, this crater threw out a quantity of pumice, ashes, and dense sulphureous vapours, which evolution was attended with loud subterranean noises.

6248. *Montserrat.* Nearly the whole island is composed of trachyte, with embedded, broad, beautiful crystals of felspar and of black hornblende. The Soufrière is situated in the Heights of Galloway, and is from 300 to 400 yards long, and about half as broad. Vapours of sulphur rise through the loose stones and heat the ground. The water which flows along in the neighbourhood of these vents is heated to boiling; that which flows at a distance remains cold. But the sulphur does not always rise from the same vents: new vents are daily forming, and old ones are closing up. Hence it happens that the whole mass of rock in the neighbourhood becomes impregnated with sulphur. A similar soufrière is situated an English mile distant from this.

6249. *Nevis* has a very characteristic crater, from which vapours of sulphur are condensed, and many hot springs rise in different parts of the island.

6250. *St. Christopher's*, or *St. Kitt's*, is composed of rough precipitous mountains. The loftiest among them, Mount Misery, rises to a height of 3483 feet above the sea. This mountain is composed of trachyte, and conceals at its summit a perfect crater. The island formerly suffered much from earthquakes; but since the great eruption, in June, 1692, the ground has been but rarely agitated.

6251. *St. Eustatia* is a conical mountain, about twelve miles in circumference, provided in the middle with a crater which much exceeds, in magnitude, circumference, and regularity, all the craters in the Antilles.

6252. *Bahama Islands.* This numerous group, as far as we know, is entirely composed of limestone; which, in many places, displays magnificent caves. They may be considered a continuation of the limestone islands of the Caribbean Sea.

6253. *Trinidad* appears to make a part of the continent; and Dr. Nugent remarks, that its rocks are either primitive or alluvial. The great northern range of mountains that runs from east to west, and is connected with the high land of Paria on the continent, by the islands of the Bocas, consists of gneiss, of mica slate containing large masses of quartz, and, in many places, approaches in nature to talc slate; and of bluish limestone, traversed by veins of calc spar. From the foot of the mountains, for many leagues to the northward, there extends a low and perfectly flat land, evidently formed by the debris of the mountains, and by the copious tribute of the waters of the Orinoco, deposited by the influence of currents. The famous asphaltum or pitch lake, situated amidst a clayey soil, is about three miles in circumference; and, in the wet season, is sufficiently solid to bear any weight, but in hot weather is often in a state approaching to fluidity. The asphaltum appears to be supplied by springs. At the south-west extremity of the island, between Point Icacos and the Rio Erin, are small cones, resembling those of the volcanoes of air and mud, near Turbaco in New Granada, which are of the same nature with those of Macaluba and the Lake Naftia in Sicily.

Subject. 2. *Botany.*

6254. The splendour of the vegetation in the islands of the West Indies is the theme of every traveller there. We must content ourselves with noticing some of the most important of its productions.

6255. Few plants are more extensively valuable, in a commercial point of view, than the *Mahogany* (*Swietenia Mahagoni*) (*fig.* 1030.). The uses of this wood are too well known to render it necessary here to mention them, further than to say that almost all our valuable furniture is formed of it, and that it is particularly adapted to such purposes by its great beauty, hardness, and durability, and the exquisite polish it is capable of taking. It is said, too, to be indestructible by worms or water, and to be bomb-proof: hence the Spaniards used to make their vessels of mahogany, and Captain Franklin took with him to the Arctic Sea, boats constructed in England of that material, as being the lightest (in consequence of the thinness of the planks), and the most portable, combined with great strength. Jamaica formerly yielded the greatest quantity of this wood, and the old Jamaica mahogany is still reckoned the most valuable; though the largest importations are now made from Honduras, where 200 years are considered necessary from the time of the plant springing from seed, till its perfection and fitness for cutting. This operation commences about August; the gangs of labourers employed in this work consisting of from twenty to fifty, each being headed by one man, called the captain, and accompanied by a person termed the huntsman, whose business it is to search *the bush* and find employment for the whole. The latter cuts his way among the thickest woods, where he climbs the highest tree, and thence minutely surveys the country. The leaves of the mahogany tree are invariably of a reddish hue; and an eye, accustomed to this kind of exercise, can at a great distance discern the places where the tree is most abundant. Thither he directs his steps, without other compass or guide than his recollection affords, and never fails of reaching the exact spot, though he is sometimes obliged to use dexterity to prevent others from availing themselves of his discovery, and seizing first on the hidden treasure, those who follow him being entirely aware of any arts he may use, and their eyes being so quick, that the lightest turn of a leaf, or the faintest impression of a foot, are unerringly perceived.

1030

MAHOGANY.

6256. *The Mahogany tree* is commonly cut about ten or twelve feet from the ground, a stage being erected for the axeman. The trunk, from its dimensions, is considered the most valuable portion; but for ornamental work the branches are preferred, the grain being closer and the veins more variegated. The cutting of roads is the most laborious and expensive part of the work; but it is customary to facilitate this as much as possible, by placing the scene of operations near a river. The underwood is cleared away with cutlasses, which the people use with great dexterity; but it is often necessary to clear away some of the harder and larger trees with fire. The quantity of road to be cut in each season depends on the situation of the body of mahogany trees, which, if much dispersed, will increase the extent of road-cutting: it not unfrequently happens that miles of road and many bridges are made to a single tree, which tree may ultimately yield but one log. The roads being now all ready, which may generally be effected in December, the *cross-cutting*, as it is technically called, commences. This is merely dividing crosswise, with the saw, each tree into logs, according to its length; some trunks yielding but one, others four or five logs: the chief rule for dividing the trees being so as to equalise the loads which the cattle are to draw. A supply of oxen are constantly kept in readiness, lest the usual number should be overburdened by the weight of the log: this is unavoidable, owing to the very great difference of size of the mahogany trees; the logs taken from one being about 300 feet, while those from the next may be 1000. The largest log ever cut in Honduras was of the following dimensions; length 17 feet, breadth 57 inches, depth 64 inches; measuring 5168 superficial feet, or 15 tons weight. The largest log of mahogany ever brought from Honduras to Glasgow is thus described: — It was taken to the wood yard on a four-wheeled carriage, and there placed between two other logs, preparatory to being cut up, as no saw-pit was capable of containing it. The length was 16 feet, depth 5 feet [illegible] inches, and breadth 4 feet 9 inches. It contained 418 cubic feet, and 5016 feet of inch deal; the cost of sawing it, at *3d.* a foot, amounted to 62*l.* 14*s.* The value of the whole, estimated at 1*s.* 2*d.* per foot, was 292*l.* 12*s.*; and the weight was 7¾ tons. The time of drawing the logs from their place of growth is April or May, the ground at all other seasons being too soft to admit of the heavily laden trucks passing without sinking, and it is essential that not a moment of dry weather be lost in drawing the wood to the river. The night is employed in this work, as the days are too hot. Nothing can present a more extraordinary spectacle than this process of trucking, or drawing down the mahogany to the river. Six trucks are commonly employed together, occupying a quarter of a mile of road: the great number of oxen; the drivers, half naked (clothes being inconvenient from the heat and dust), each bearing a lighted torch; the wildness of the forest scenery, the rattling of chains, the sound of the whip echoing through the woods; then all this activity and exertion so ill corresponding with the still hour of midnight, makes it wear more the appearance of some theatrical exhibition than what it really is, the pursuit of industry which has fallen to the lot of the Honduras woodcutter. In the end of May the periodical rains recommence: the torrents are so great as to render the woods impracticable in the course of a few hours; when all trucking ceases, the cattle are turned into pasture, and the trucks, gear, and tools, &c. are housed. In the end of June, the logs of mahogany are floated down the swollen rivers in *pitpans* (a kind of flat-bottomed canoe) followed by the gang of labourers, to disengage them from the overhanging branches and to form them into rafts at the end of the voyage, where they are taken out of the water, re-smoothed with the axe, and the ends, which have frequently been split and rent, by dashing against rocks in the river, are sawed off, when the mahogany is ready for shipping. The average expense of mahogany cutting is usually estimated at about 70*l.* sterling each labourer per annum, independent of the capital sunk in the purchase of the works, cattle, trucks, &c. &c. In St. Vincent's, where the mahogany is not indigenous, the trees do not attain a greater height than fifty feet, and a diameter of eighteen inches. The bark of mahogany is very astringent and bitter; and in its action on the human frame has been said to coincide nearly with the Peruvian bark.

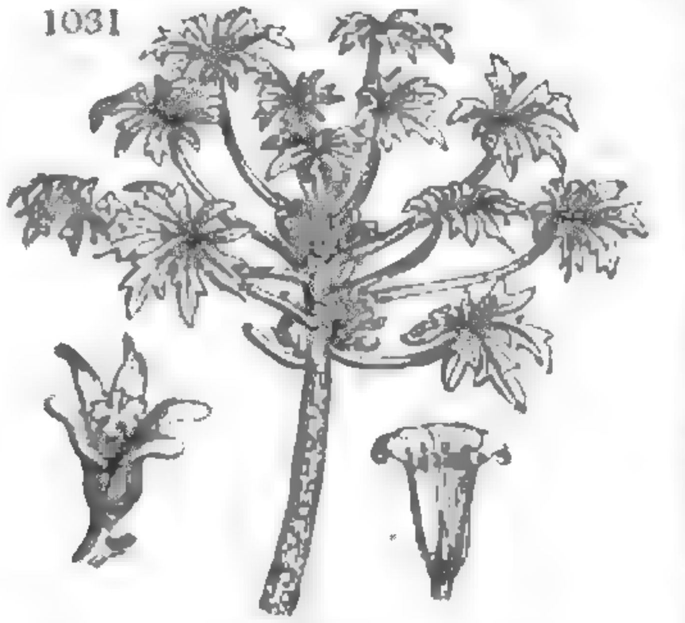
6257. *The Maranta arundinacea* is a plant of considerable interest, as it is believed to yield Arrow-root, a well known and elegant article of diet, which is prepared, according to the late Dr. Sims, from its roots, not by drying and pounding, as has been stated, but by maceration in water, in the same manner as starch is made from wheat, potatoes, and other farinaceous substances. Great quantities of arrow-root have, of late, been imported into this country from the West Indies, and much recommended as food for young children, and as a light nourishment in sickness. A similar substance, probably in every respect of equal efficacy and not less salubrious, has, of late years, been prepared in considerable quantities, in the Isle of Portland, from the roots of the common Cuckow Pint (*Arum maculatum*). The Maranta arundinacea is an herbaceous perennial, and increased by parting the roots. It grows two or three feet high, with broad leaves and a spike of small white flowers.

6258. *Myrtus Pimenta*, the handsome tree which produces the Allspice or Pimento of commerce, is a native of the West Indies, and especially the island of Jamaica. Its profusion of white blossoms contrast most agreeably with the dark green leaves that clothe its numerous branches, while the rich perfume that is exhaled around, renders an assemblage of these trees one of the most delicious plantations of even a tropical clime. When the foliage is bruised, it emits a fine aromatic odour, as powerful as that of the fruit, and by distillation, a delicate oil, which is often substituted for oil of cloves. The allspice tree is of difficult cultivation, seeming to mock the labours of man in his endeavours to extend or improve its growth; not one attempt in fifty to propagate the young plants, or to raise them from the seeds, in parts of the country where the tree does not grow spontaneously, having succeeded. The enormous crop which the pimento tree sometimes yields, would render its culture very profitable. In a favourable season, one tree has been known to afford 150 lbs. of the raw fruit, or 1 cwt. of the dried spice; a loss of one third generally occurring in curing it. So plenteous a harvest seldom occurs above once in five years. Pimento combines the flavour and properties of many of the oriental spices; hence its popular name of Allspice.

6259. *The Avocado Pear* is a beautiful smooth fleshy fruit, the production of *Laurus Persea*. Its flavour combines the taste of artichoke and filberts, but is not comparable to many of the European fruits; lemon juice and sugar, pepper and vinegar, are often added to give it pungency. All animals are extremely fond of it, and many virtues are ascribed both to the fruit and an infusion of the buds of this tree, which is frequently ordered by the physicians in the West Indies.

6260. The native country of the *Papaw Tree* (*Carica Papaya*) (*fig.* 1031.) has been much contested; writers on the East and writers on the West Indies being equally disposed to claim it as an aboriginal. That learned botanist and philosopher, Robert Brown, infers, from various circumstances, that the papaw tree is a native of America and the West Indies, but has been naturalised in Hindostan, the Philippines and Moluccas. It is a tree of rapid growth. St. Pierre probably spoke from his own knowledge, when he described Virginia as having planted a seed, which in three years' time produced a papaw tree twenty feet high, loaded with ripe fruit. It is for the sake of this fruit, mainly, that the tree is cultivated; but if the flavour in its native country be not better than what is produced in our stoves, we cannot speak highly in its favour. In Jamaica, it is generally eaten boiled, and mixed with lime juice and sugar, or baked like apples. The juice of the pulp is used as a cosmetic to remove freckles, and the negroes in the French colonies employ the leaves to wash linen, instead of soap. As a medicinal tree it is deserving of notice, the milky juice of the fruit or the powder of the seed being a very powerful vermifuge. But the most extraordinary property of the papaw tree is that which was first related by Brown in his *Natural History of Jamaica*, namely, that water impregnated with the milky juice of this tree makes all sorts of meat washed in it very tender; but that eight or ten minutes' steeping will make it so soft, that it will drop in pieces from the spit before it is roasted, or turn to rags in boiling. This circumstance is confirmed in Mr. Neill's interesting *Horticultural Tour through Holland and the Netherlands*, and by the testimony of gentlemen who have been long resident in the West Indies, who state that the employment of this juice for such a purpose is of quite general occurrence; and more, that old hogs and old poultry, which are fed upon the leaves and fruit, however tough the meat they afford might otherwise be, are thus rendered perfectly eatable, and excellent too, if used as soon as killed; but that the flesh soon passes into a state of putridity. The very vapour of the tree serves the purpose; it being customary in Barbadoes to suspend the fowls and meat from its trunk, to prepare them for the table. The existence of this astonishing property in the papaw tree is attributed to the *fibrine*, which has been proved by M. Vauquelin, the eminent French

1031



PAPAW TREE.

chemist, to exist in its juice, a substance that had previously been supposed to belong exclusively to the animal kingdom.

6261. *The tree which* produces the Cashew nut (*Anacardium occidentale*) bears much resemblance to the walnut, and its foliage has nearly the same scent. The fresh nut is well tasted, it improves the flavour of many dishes, and forms great part of the food of the inhabitants of the Philippine Isles and many parts of India. They roast it in the husk, and eat it with salt. The husk contains a mucilaginous, acrid, burning, and caustic juice, which affords so indelible a stain, that it is used for marking ink, and for cleansing foul ulcers. It also consumes excrescences and warts, but it is necessary to wash the parts with water immediately after its application. A more dubious property is that attributed to the Anacardium, of brightening the faculties, strengthening the memory, &c.

6262. *With regard to the* Banana or Plantain (*Musa paradisiaca* and *M. sapientum*) (*figs.* 1032. and 1033.), Humboldt thus writes: —" It is to be doubted whether there is another plant in the world which on so small a space of ground produces such a mass of nourishing substance. In eight or nine months after the sucker is planted, the Banana begins to show its flowering stem, and the fruit may be gathered in the tenth or eleventh month. When the stalk is cut down, one among the many shoots is always found, which is about two thirds as high as the parent plant, and will bear fruit three months later. Thus a banana ground is kept up without any further trouble than that of cutting down the stem of which the fruit has ripened, and stirring the ground a little, once or twice a year, about the roots. In one year a space of 100 square mètres, containing 30 or 40 banana plants, gives upwards of 2000 kilogrammes or 4000 lbs. weight of nourishing substance. What a difference between this produce, and the grain that is yielded by the most fertile parts of Europe! Calculations prove that the amount of nourishing substance obtained from a banana ground is as 133 to 1, when compared with the growth of wheat on the same space; and as 44 to 1, of potatoes. In the stoves of our country, the banana never ripens properly; the soft saccharine mucilage that fills it bearing no more resemblance to the matured and mealy fruit, than the milky substance that is contained in the green corns of wheat does to the hard and ripened farinaceous kernel. It would be difficult to describe the various processes by which the South Americans and West Indians prepare this fruit. I have often seen the natives, after a day of great fatigue, make their dinner on a very small quantity of manioc and three bananas of the larger kind. Generally speaking, in hot countries, the people are partial to saccharine food, which they consider not only palatable, but highly nourishing. The muleteers on the coast of the Caraccas, who conveyed our baggage, frequently preferred raw sugar for their dinner to fresh meat. The ripe fruit of banana, exposed to the sun, dries like a fig; its skin turns black, and the whole smells like smoked ham: in this state it is most wholesome. A great advantage arises from the facility with which the banana is raised, which makes it even preferable to the bread-fruit, which, though loaded with fruit for eight months of the year, when once destroyed, as it often is during the native wars, causes lasting distress to the country."

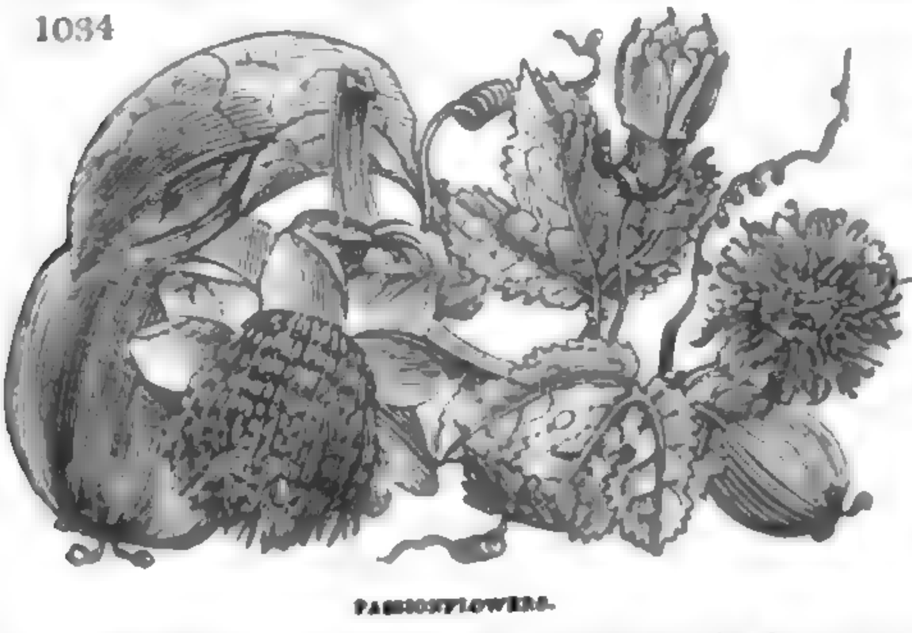
1032

BANANA.

1033

PLANTAIN.

1034



PASSIONFLOWERS.

6263. *Passionflowers* (*Flos Passionis*) (*fig.* 1034.) of four different kinds, so named from the fancied resemblance exhibited by the plant to the instruments of our Saviour's passion, produce the fruit called in the West Indies the Grenadilla. The latter name is derived from its similarity to the Pomegranate (*Punica Granatum*). In the lanceolate leaves of the passionflower, our Catholic ancestors saw the spear that pierced our Saviour's side; in the tendrils, the whip; the five wounds in the five stamens; and the three nails, in the three clavate styles. The greatest resemblance lies in the filamentous crown, which not unaptly represents the crown of thorns, or, as some have it, the crown of glory; but as it required even more than monkish ingenuity to have made the twelve apostles out of the ten divisions of the floral covering, they limit the number of these saints to ten; excluding Judas, who betrayed his master, and Peter, who denied him. Old cuts still exist, where all the flower is made up of these things.

6264. *The Pine Apple*, of which several species are natives of the West Indies, is too well known in this country to require any lengthened description: —

" Its luscious fruit *Anona* rears
Amid a coronet of spears."

The careful cultivation that it receives in Europe is said to render the fruit even better than in its native soil; a circumstance that may readily be believed, when we know how far superior are the grapes of our hot-houses, to those raised in the open air, a skilful treatment and choice of sorts more than making up for the want of sun and the deficiency of natural temperature.

6265. The Mammee (*Mammea americana*) is a lofty tree, bearing a yellow fruit, not unlike a very large russet apple, of which the pulp resembles a fine apricot, and is highly fragrant, with a delicious flavour. The Mammee is abundant and much prized in the West India markets, where it is considered one of the best native fruits.

6266. *In the West Indies*, so fine are the climate and soil, that tropical plants, from all parts of the world, are readily cultivated; and a beautiful picture of the garden and surrounding country of St. Vincent's is given by the late Reverend Lansdown Guilding, an eminent naturalist and most successful draughtsman, whose loss to science we have recently had cause to deplore. "The part that is crowded with trees of larger growth is, perhaps, most calculated to interest the European visiter. If he derives any pleasure from the beauties of picturesque scenery, he will scarcely be able to define what most excites his admiration, the individual beauty and contrast of forms,

' or that eternal spring
Which here enamels every thing,'

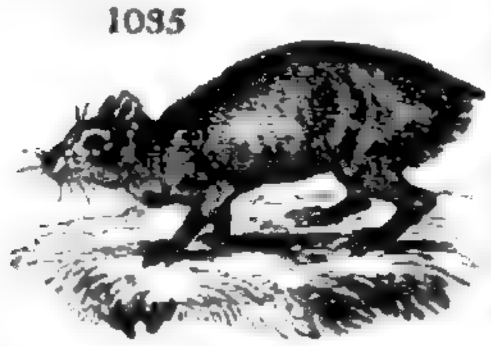
and calls forth a luxuriance of vegetable life in every direction. Nature appears prodigal of organic matter. The ground is overloaded with plants, which have scarcely room for their developement. The trunks of the older trees are every where covered with a thick drapery of ferns, mosses, and orchideous plants, which diffuse into the air the richest odours, and almost conceal from sight the noble stems that uphold them. Their growth is favoured by the great moisture of the air, and these lovely parasites, sheltered from the direct rays of the sun, are seen ascending on every side, even the larger branches. So great is the variety of vegetable beauties that sometimes decorate a single trunk, that a considerable space in an European garden would be required to contain them. Several rivulets of the purest water urge their meandering course through the brushwood; various plants, of humbler growth and which love humidity, display their beautiful verdure on their edges, and are sheltered by the wide-spreading arms of the Mango (*Mangifera indica*), Mahogany (*Swietenia Mahagoni*), Teak (*Tectona grandis*), Mimosas, and other woods, remarkable for their stateliness, and clothed in wild and magnificent pomp. The vegetation every where displays that vigorous aspect and brightness of colour, so characteristic of the tropics. Here and there, as if for contrast, huge masses of trap, blackened by the action of the atmosphere, and decayed Tremellæ, present themselves; those blocks which, in colder climates, would be doomed to eternal barrenness, or, at most, would only nourish the pale and sickly Lichen, here give support to creeping plants of every form and colour, which cover with yellow, green, and crimson, the sides of the sable rock. In their crevices, the succulent species are daily renewed, and prepare a soil for larger tenants; from their summits, the Old Man's Beard (*Rhipsalis Cassutha* of Hooker), and similar weeds, which seem to draw their nourishment from the air, hang pendent, floating, like tattered drapery, at the pleasure of the winds. At a distance is seen the Trumpet tree, whose leaves seem made of silver plates, as the blast reverses them in the beams of the mid-day sun. In a solitary spot rises a wild Fig tree (*Ficus religiosa*), one of the gigantic productions of the torrid zone. The huge limbs of this tree, covered with perpetual verdure, throw down, often from the height of eighty or ninety feet, a colony of suckers of every possible size, from that of packthread to the vast cable of a ship, without any visible increase in their diameter and without a joint; these, reaching the ground, become other trees, but still remain united, — happy symbol of the strength which proceeds from union. At other times, the suckers blown about by the winds are entangled round the trunk or some neighbouring rock, which they surround with a network of the firmest texture, as if the hand of man had been employed. All the beauties which Nature has lavished on the equinoctial regions are here displayed in their fairest and most majestic forms. Above the rocky summit of the hills, the Tree Ferns, which are the principal ornament of our scenery, appear at intervals: Convolvuli and other creepers have climbed their high stems and suspended their painted garlands. The fruits of our country scattered around within our reach, and the wide green leaves of the Bananas and Heliconias, planted beneath, serve to minister to our refreshment, and to convey water from the neighbouring spring. On every side, innumerable Palms of various genera, the Cocoa-nut, Date, Cabbage Palm, &c., whose leaves curl like plumes, shoot up majestically their bare and even columns above the wood. The portion of the botanic garden near the house of the superintendent has been devoted to the reception of the Spices, the medicinal and other useful plants. In the same group are seen the precious Nutmeg (*Myristica officinalis*), exposing, in the centre of its bursting drupe, the seed surrounded by the crimson Mace; the Cassia, with its pendent pods of curious length; the magnificent Lagerstrœmia (*L. Reginæ*), displaying one extended sheet of lovely blossoms; the Cannon-ball Tree (*Lecythis bracteata* or *Couroupita guianensis*), with its sweet and painted flowers, scattering its fetid fruit, so much resembling the fatal shell, that we might suppose a company of artillery had bivouacked in its shade; the Calabash, with its large green pericarp, so useful in the poor man's hut; and the Screw Pine (*Pandanus odoratissima*), with its fruit carved in rude and curious workmanship, and its ribbed stem, supported on a bundle of fagots. Assembled together are the various fruits, transplanted from the islands of Asia and other distant lands, or the Antilles, attracting, by their nectared flowers, the gaudy humming-birds. You behold the Bread-fruit (*Artocarpus incisa*) of the Friendly Islands, the most precious gift of Pomona, and the Jack of India (*A. integrifolia*), bearing their ponderous fruit of the weight of 60 or 70 lbs. on the trunk and arms; huge deformities for the lap of Flora. Here, too, a stunted Cork Tree (*Quercus Suber*), and a small European Oak (*Q. Robur*), sadly contrast their sickly forms with the proud offspring of the tropics. The Vanilla (*Epidendrum Vanilla*), with its long suckers, the Black Pepper (*Piper nigrum*) of Asia, hang suspended on the boughs; the gaudy blossoms of the Passiflora and the long tubes of the Solandra (*S. grandiflora*) appear amid the wood, mingling their blossoms with those of the neighbouring trees in wild confusion; while, at intervals, the Agave throws up its princely column of fructification from a host of spears. Innumerable Cacti and Euphorbiæ, covered with fruit or flowers, differing in the articulation of their stems, the number of their ribs, and the disposition of their spiculæ, give variety to the scene. At every step, plants remarkable for their beauty or fragrance ornament your path. But the reader will weary of the enumeration of the vegetable wonders that adorn this paradise. In proper beds are the useful herbaceous species, or the vegetables with which our tables are supplied. By the side of every rivulet rise large clusters of the Bamboo (*Bambusa arundinacea*), without a doubt the most generally useful of our plants. Nothing can exceed the beauty of this arborescent Grass, which rises to the height of sixty or eighty feet, waving its light or graceful foliage at every breath of the wind. The Sago (*Cycas revoluta*) and several kindred plants, so valuable for their nutritious fecula, are scattered about, attaining their greatest height in spots where nothing is allowed to impede their free developement."

Subsect. 3. *Zoology.*

6267. *The Zoological productions* of our West Indian possessions have been but little attended to. Botanists of nearly every nation have repeatedly visited and explored the principal islands, that the conservatories of the great might be decked with blooming exotics; but, as regards Zoology, nearly a century has elapsed without any material addition being made to the antiquated history of Sir Hans Sloane on the animal productions of these islands. Of their native quadrupeds, many have, doubtless, been exterminated by civilisation; and, although we have no good data to go upon for the surmise, it may be supposed that cavies, armadilloes, and other smaller quadrupeds, still exist in the woody and less cultivated districts of the interior. An indescribable sort of mental lassitude, not to say apathy, appears to seize upon a European the moment he becomes resident in a hot country, and to this cause do we attribute the indifference of our countrymen to pursuits of a scientific nature.

6268. The Agouti (*Dasyprocta Acuti* Ill.) (*fig.* 1035.) may be considered in the West Indies as representing the hare of Europe, and it is about the same size. Although once common, it is now only met with in the less cultivated islands. It runs with great celerity, particularly up rising ground, but will frequently roll over, like the hare, in descending a hill: it feeds on all vegetables, but is very fond of nuts. In Cayenne, the Agouti is more common, and is there seen in troops of more than twenty.

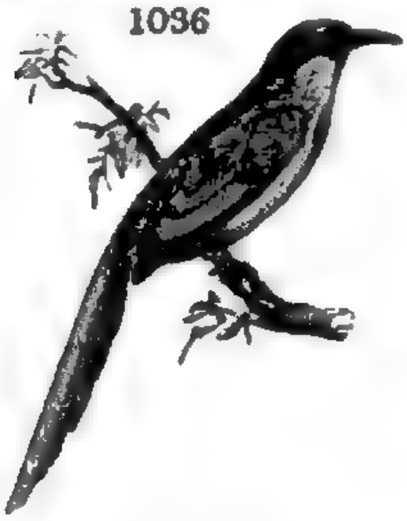
1035



AGOUTI.

6269. *The Birds* are almost as little known as are the quadrupeds: they seem, however, to belong to the same families, and in numerous instances to the same species, as those of the neighbouring parts of Florida and Georgia, mixed with several others more particularly belonging to the Terra Firma. Our friend, Mr. Lees, has transmitted us, from the Bahama Islands, the Brazilian Motmot (*Prionites Momota* Ill.) (*fig.* 1036.), the *Trichas velata* Sw. or Veiled Yellow-throat, a beautiful new Trogon, &c.; while the celebrated Mocking-bird of the United States (*Orpheus polyglottus* Sw.) is known to have a range over Jamaica, Cuba, and several other islands. Trinidad, however, appears to be the chief island for birds: the ruby-topaz, the ruff-necked, and the emerald-crested Humming-birds are particularly splendid; the crimson-throated Maize-bird (*Agelaius militaris* Vieil.), the Mexican Hangnest (*I. mexicanus* Ill.), and the Red-headed Tanager (*Aglaia gyrola* Sw.) have all been sent from this island. Turkey Vultures of a large size, and entirely black, are not uncommon; but the precise species has never been clearly ascertained. Most of the North American summer birds pass the winter in these islands, which seem to be the farthest point of their southern range.

1036



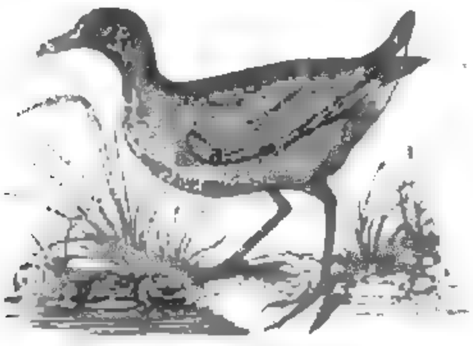
BRAZILIAN MOTMOT.

6270. *The wading and swimming birds* have the same general character as those of the adjacent continent. Pelicans, Great White Herons, Flamingoes, and other well-known birds, haunt the salt-water marshes; while the Jacana, and a beautiful waterhen with a yellow bill and deep blue plumage, called the Martinico Gallinule (*fig.* 1037.) are common in the freshwater swamps. The Snake-neck or Darter is sometimes met with; its colour is dark, interspersed all over with innumerable white spots, while its long thin neck more resembles that of a serpent than of a bird (*fig.* 1038.).

6271. *We may pass over an enumeration of serpents and reptiles*, to notice two which afford delicious food. The Guana lizard is by some thought as great a delicacy as the green turtle, and both these are common in the West Indies.

6272. The Common Guana (*L. Iguana* L.) (*fig.* 1039.) is sometimes five feet long: its general colour is green, prettily variegated, but its hues are changeable, like those of the cameleon. According to Catesby, these animals are, or were, particularly abundant in the Bahama Islands, so as to constitute one of the chief articles of food with many of the natives; and Brown mentions them as inhabiting Jamaica. They are excessively nimble, and are hunted by dogs. Such as are not wanted for use are salted and barrelled. Guanas are also found on the continent; and when roasted, we can affirm that their flesh is peculiarly delicate, being tender, sweet, perfectly white, and not unlike the inside of a lobster's claw.

1037

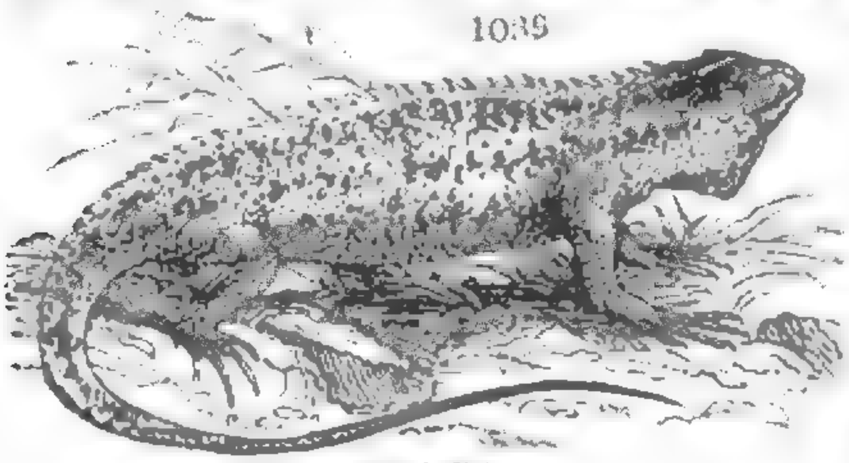


MARTINICO GALLINULE.

1038

SNAKE-NECK OR DARTER.

1039

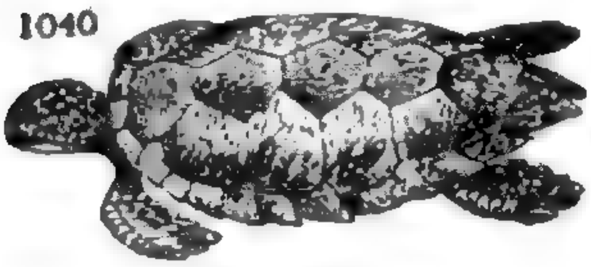


COMMON GUANA.

6273. The Green Turtle (*Testudo Mydas* L.) (*fig.* 1040.) is that particular species so highly prized by epicures. So common does it appear to be in these seas, that, when Sir Hans Sloane wrote, forty sloops were employed by the people of Port Royal, Jamaica, in their capture. The Bahamans also are extensively concerned in this fishery, carrying them to Carolina and other parts where turtle are scarce. This species derives its name from the fat being green, and it feeds on a kind of grass, called turtle grass, which grows at the bottom of the sea. They are principally caught, says Catesby, in April, when the fishermen go in little boats to Cuba and the neighbouring islands, watch the turtle during the evening, turn them on their backs, and afterwards collect them at leisure.

6274. *The marine shells* are few, and, when compared with those of the Indian Archipelago, sink into insignificance. The largest are the Horned Helmet (*Cassis cornuta* L.) (*fig.* 1041.) and the Strombus Gigas, with a pink mouth, both much esteemed for mantel-piece ornaments. Those inhabiting the land, on the contrary, are much more numerous than in Asia. Jamaica, in particular, produces a very great variety; while it is in the island of St. Vincent alone that the rare Plecocheilus undulatus (*fig.* 1042.) has hitherto been found.

1040



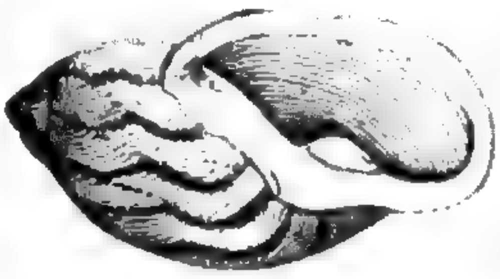
GREEN TURTLE.

6275. *The Insects* offer nothing of particular interest to the unscientific reader, and it is a general remark, that in all islands the species are much fewer than upon continents. A very excellent naturalist, the Reverend Lansdown Guilding, long resident in St. Vincent's, has recently discovered that the substance generally known by the name of seed pearl, and so frequently sent over in boxes with small shells, is the exuviæ of an insect which lives among, and preys upon, the ants. This substance has the appearance of roundish seeds, somewhat larger than those of the mustard, and of the same tint, yet shining with a rich gloss of gold; indeed, they might, by a superficial observer, be easily mistaken for grains of that precious metal. They are, however, very light, and, on close examination, a small hole will be perceived, through which the adult insect has made its escape from the shell, which is, in fact, the chrysalis. Unfortunately for science, Mr. Guilding has fallen a victim to the climate, since this last paragraph was written.

1041

CASSIS CORNUTA.

1042



PLACOCHILUS UNDULATUS.

Sect. III. *Historical Geography.*

6276. *The grand career of discovery* in the New World commenced with the West Indies. Columbus, in 1492, when he sailed to explore a new route to India, landed first on one of the Bahamas, and then on Hayti, or St. Domingo. He, and the navigators who immediately followed him, visited successively the different islands. They formed settlements, but were soon engaged in contests with the natives, whom they treated with such reckless cruelty, that the whole race were nearly exterminated. For about a century and a half these islands remained in possession of the Spaniards, though neglected by them for the more splendid regions of Mexico and Peru. During the 17th century they became the hold of a desperate band of outlaws and pirates, called Buccaneers, who waged with success a predatory warfare along the whole circuit of the Spanish main: at the same time, the English and French, not without some concurrence with these adventurers, sought to obtain possessions in this archipelago. Before the end of the century, the English were masters of Jamaica, the French held half of St. Domingo, and the two nations had divided between them nearly the whole of the Windward Islands. These acquisitions, though much inferior in extent and natural advantages to those still held by Spain, were so much better improved and cultivated, that they soon became of far superior value. This prosperity, however, was in some measure procured by means deeply to be deplored; the compulsory labour of numerous bands of slaves, who, conveyed from Africa under circumstances of the severest hardship, have become much the most numerous part of the population.

6277. *A memorable crisis in West Indian history* took place in 1792, when the National Assembly of France passed rash decrees, abolishing all distinction of ranks, and proclaiming the complete equality of mankind. This step was soon followed by a general rising of the negroes in St. Domingo, who, after a long and bloody struggle, succeeded in establishing their independence, and in incorporating into their new state the Spanish part of the island. At the same time, the condition of the slaves in the colonies belonging to England drew the attention of the philanthropists of that country, who, after long representations and efforts, succeeded in procuring a complete prohibition against the further importation of negroes from Africa. Nor did they cease their efforts till arrangements were made which will ensure, in a few years, the entire liberation of this unfortunate class of human beings.

Sect. IV. *Political Geography.*

6278. *The political relations* of all these islands are subordinate to those of the mother country, to which they are subjected. In those belonging to Britain, the white proprietors are represented in houses of assembly, which exercise some of the functions of the British parliament. The limits between the two jurisdictions, however, have not been very precisely defined; and in several instances, particularly that of the treatment of the slaves, some rather serious collisions have taken place. Hayti, as already observed, forms an independent republic.

Sect. V. *Productive Industry.*

6279. *An uncommon measure of wealth and prosperity* was for a long time enjoyed by these islands. They flourished especially during the last century, when they supplied almost exclusively sugar, coffee, and other articles, the use of which had become general over the civilised world. After the French revolution and that of the negroes in St. Domingo, the islands belonging to Britain became almost the sole quarter whence Europe was furnished with West India produce. The prosperity thus caused excited in an extraordinary degree the envy of Napoleon, who made astonishing efforts to shut first France, and then the whole Continent, against all merchandise coming from Great Britain or her colonies. But this exclusion was never complete. The last twenty years have produced a very severe reverse. The great encouragement thus afforded led to an over-production, and consequent depreciation, which was further augmented by the competition that arose in South America and other quarters of the world, and also by the commercial depression in Europe. Hence it is complained that the prices obtained by West India cultivators have for some time ceased to be remunerating, and that it is only with great difficulty, and by incurring heavy incumbrances, that they have been able to continue their operations.

6280. *A sugar plantation* forms a great manufacturing as well as agricultural establishment, in which a large capital must be invested. It cannot be carried on with advantage, especially since the fall in the value of produce, unless on a considerable scale; as the white servants and the machinery must be nearly the same on a small as on a large estate. Plantations, according to Mr. Hibbert, vary from 500 to 3000 acres, and from 100 to 500 negroes. An average one may contain 300 negroes, who may produce about 200 hogsheads of sugar This will require 300 acres of land planted with cane, and 300 head of cattle, for the maintenance of which 600 acres will be requisite. For negro grounds and wood 500 more will be necessary. The whole extent will thus be 1400 acres. The original price of good land is 10*l.*; the expense of clearing, 10*l.*; of planting, 10*l.*: in all, 30*l.*; making 4200*l.* of original outlay upon the land. The buildings and machinery are estimated as follows: — A mill, 400*l.*; warehouse, 1200*l.*; curing-house, 600*l.*; distillery, 600*l.*; copper and still, 3000*l.*; dwelling-house, 900*l.*; trash-houses, 310*l.*: in all, 7300*l.* currency, or 5250*l.* sterling; which, added to the cost of the land, makes 9450*l.* The expense of rearing a slave is reckoned by Mr. Hibbert at 86*l.* Of this, 36*l.* is supposed to be incurred the first year, including 20*l.* for loss of the mother's labour; in the next thirteen years he allows annually 2*l.* for food, 1*l.* 1*s.* for clothes, 16*s.* 8*d.* for medicine, taxes, &c. By the age of fourteen, the labour of the negro is supposed more than to compensate his maintenance. The negroes of a great plantation are divided into three gangs: the first of which, composed of the most vigorous and active, amounts to about seventy-seven; the second, to thirty-one; the third, to twenty-seven. Besides these there are eleven grass-cutters, fifteen watchmen and cooks; nine drivers of mules and carts; twenty-eight masons, carpenters, smiths, and coopers; twelve for attending cattle; seventeen overseers; twenty-one hospital attendants; six for watching grounds, &c. The export of sugar to Britain, during the year 1832, amounted to 3,585,188 cwts., which, at 28*s.* per cwt., amounts to 5,119,000*l.*, and the duty, at 24*s.*, was 4,352,000*l.* The exportation of rum, in 1832, amounted to 4,758,789 gallons, the value of which, at 2*s.* 9*d.* a gallon, would be 755,644*l.* Of this amount, 3,513,000 gallons, retained in Britain for home consumption, paid a duty of 1,570,000*l.*

6281. *Coffee* ranks next to sugar in importance, and, though introduced from a remote quarter of the world, has been cultivated with such success, that the coffee of Berbice and Jamaica ranks second to that of Mocha, and superior to that of any other country. Within the last few years, however, the competition from other quarters has been so great as to give the planters occasion to complain that it is still more unproductive than sugar, and its culture has in consequence somewhat declined. The importation into Britain, in 1832, amounted to 24,600,000 lbs., the value of which, at 6*d.* a pound, may be 685,700*l.* A few other articles, though very secondary to those above mentioned, are produced in these islands. Cotton was formerly considered one of their staples. In 1786, the produce was 5,800,000 lbs.; and in 1828 it was almost the very same, or 5,890,000. But this amount, which in the first period was nearly a third of the whole British consumption, was in the second period not a fortieth part of that consumption. In 1831 and 1832, it averaged only 1,950,000 lbs. The United States have supplanted the islands, both as to the abundance and quality of this commodity. Yet the cotton of the latter, though inferior to the best American, still maintains a respectable price in the market. Cacao, the principal material of chocolate, has also much declined, chiefly perhaps on account of that beverage being almost entirely disused in Britain. The recent reduction of duty, however, may probably lead to an extended consumption. The average of 1831 and 1832 was 1,050,000 lbs.

6282. *Manufacturing industry*, from the peculiar state of society in these islands, scarcely exists, even in its humblest form, for domestic use.

6283. *Commerce, on the contrary*, is carried on to a much greater extent than in any other country of the same wealth and populousness. Almost every product of West Indian labour is destined for the market of the mother country, from which in return these islands receive all their clothing, and a great proportion of their daily food. They supply the British empire with nearly all the sugar, rum, and coffee consumed in it.

6284. *In 1832, the shipping employed* in the trade between Britain and the West Indies was to the following amount: — Inwards, 828 ships, 229,117 tons, and 12,656 men. Outwards, 808 ships, 226,105 tons, and 12,814 men. The value of the imports in 1829 was 9,807,914*l.*; of the exports, 3,612,075*l.* The leading articles of import were, 4,152,614 cwt. sugar; 6,934,759 gallons rum; 26,911,785 lbs. coffee; 4,640,414 lbs. cotton; 684,917 lbs. cacao; 390,626 cwt. molasses; 3,585,694 cwt. pimento; 6,081 cwt. ginger; 13,985 tons mahogany; 9748 tons logwood; 2105 tons fustic; 212,000 lbs. indigo; 63,850 lbs. cochineal; 9041 lbs. castor oil; 128,536 lbs. sarsaparilla; 6345 lbs. pepper. The articles of export from Britain, stated according to their value, were, cottons, 1,050,280*l.*; linens, 385,303*l.*; woollens, 120,192*l.*; silks, 19,383*l.*; apparel, 251,192*l.*; hats, 56,594*l.*; manufactures of iron and steel, 163,197*l.*; of brass and copper, 67,220*l.*; hardware, 90,101*l.*; tin, 15,637*l.*; lead, 10,026*l.*; earthenware, 30,259*l.*; leather, 116,512*l.*; saddlery, 26,267*l.*; beef and pork, 113,831*l.*; beer, 55,565*l.*; butter and cheese, 79,488*l.*; fish, 94,165*l.*; cordage, 23,537*l.*; coals, 32,523*l.*; soap and candles, 117,168*l.*; glass, 76,660*l.*; painters' colours, 30,042*l.*; plate, 29,500*l.*; stationery, 23,827*l.*; books, 10,893*l.*

6285. *The West Indies* also carry on an extensive intercourse with the United States and the British colonies in North America, to which they send their staple productions, and receive in return grain, provisions, fish, and timber. The trade with the British colonies employed, in 1831, 486 ships of 75,896 tons, with 5074 men, outwards. That from the United States in the same year employed, according to Mr. Bliss, 56,825 tons, of which more than two thirds were American.

Sect. VI. *Civil and Social State.*

6286. *The population of the different portions* of the West Indies has been ascertained with varying degrees of accuracy. Reserving more precise details for the local section, we shall give the following, as a near approximation of the whole: —

Spanish islands	1,000,000
British (inclusive of Demerara)	788,000
Hayti	800,000
French islands (inclusive of Cayenne)	222,000
Other European islands (including Dutch Guiana)	150,000
	2,960,000

Of these it is probable not above 500,000 are Europeans; the rest are of negro origin, and, unless in Hayti, the greater part of them are in a state of slavery.

6287. *The social state* of these islands is peculiar and painful. The population consists of three portions, between which scarcely any sympathy exists: — 1. The whites; 2. the slaves; 3. the mixed population and emancipated negroes. On a subject which has excited so much interest, and given rise to so many controversies, into which our plan forbids us to enter, some very general observations will be sufficient.

6288. *The whites*, who form so small a part of the population, are the masters, in whom all the power and property centre. They consist, partly of proprietors superintending the cultivation of their own lands, partly of agents and overseers employed by owners residing in Britain. As a body, they do not merit many of the reproaches thrown upon them by the zealous friends of humanity. Inheritance rather than choice has placed most of them in circumstances of severe trial and difficulty. Some of them have abused their inordinate power in deeds of wanton cruelty, which have brought a stain upon the whole body; but such conduct does not appear to be general, and others have distinguished themselves by showing to their slaves every degree of indulgence of which their unfortunate situation admitted. In their intercourse with each other, the planters are peculiarly frank, liberal, and hospitable. They are strongly animated by a spirit of liberty, and even a sense of equality, which may seem strangely inconsistent with their habits and situation. Yet the same anomaly has occurred in Greece, in Rome, and in the United States of America. The sanguine temper, and extravagant estimate of their wealth, with which Mr. Edwards reproaches them, is likely to have been effectually cured by the great reverses which they have recently experienced.

6289. *The slaves* form the most numerous part of the population; but their situation has been the subject of so much controversy, that a precise estimate of it would be difficult. They are undoubtedly in a worse situation than the serfs of Europe, who were merely attached to the soil, and obliged to deliver a certain portion of what their labour had drawn from it. Their lot is harder also than that of the Oriental slave, who, employed as a domestic servant, rises often to the rank of a favourite. The West Indian slave is placed continually under the lash of a taskmaster, and is regarded only according to the amount of labour which can be extracted from him. It never can, however, be the interest of the master to inflict physical injury on his slave, or to withhold whatever is necessary to preserve him in health and vigour. The bondsman has even an assurance of being supplied with the necessaries of life more complete than is possessed by the labouring classes in a free community. Yet this very security tends to degrade their character, and to prevent them from acquiring habits of reflection and foresight. Their lot must depend too entirely on the personal character of their master or overseer: those who are fortunate in this respect may enjoy much comfort; but others have no sufficient protection or redress against the bursts of passion and caprice to which human nature invested with power is liable. Edwards seems to admit their liability to the vices to which men are exposed, when held in a state of degradation: these are, dissimulation, a propensity to pilfer, and a proneness to low sensual indulgence. It is impossible not to look forward with interest and hope to the recent arrangements of the British legislature, by which this bondage is to be immediately converted into a species of apprenticeship, and at the end of seven years to be entirely abolished; while the planters are to be indemnified by having distributed among them the large sum of 20,000,000*l.* sterling, to be raised by small additional taxes on the principal articles of West India produce.

6290. *A considerable part* of the negro population have already obtained their *liberty*, which was either granted by masters who had conceived an attachment to them, or earned by the industrious employment of their leisure hours. The intercourse, also, between the black and white races has produced a number of mulattoes, who are never enslaved. This class, however, have not derived all the advantages which should naturally have followed from the possession of freedom. They considered it inconsistent with their situation to share the toils of their enslaved brethren, yet had little means of attaining any higher employment. They were excluded from all intermarriage or association with the ruling class, and from all offices of trust or importance; their testimony in many cases was not received by a court of justice. The females, despising the young men of their own class, form, very generally, illicit connections with Europeans, though it is said that their general behaviour is modest, and that they view this tie in nearly the same light as marriage. On the whole, the character and deportment of the freed negroes, when existing as a detached and degraded class, cannot be taken as a criterion of that which they would exhibit when invested with the rights of citizens, and forming the main body of the people.

Sect. VII. *Local Geography.*

6291. *The division* of the West India Islands, as they appear interesting to Europeans, is, according to the nations by whom they are occupied, into British, Spanish, French, Dutch, to which are to be added a few Danish and Swedish, and, finally, the independent negro republic of Hayti.

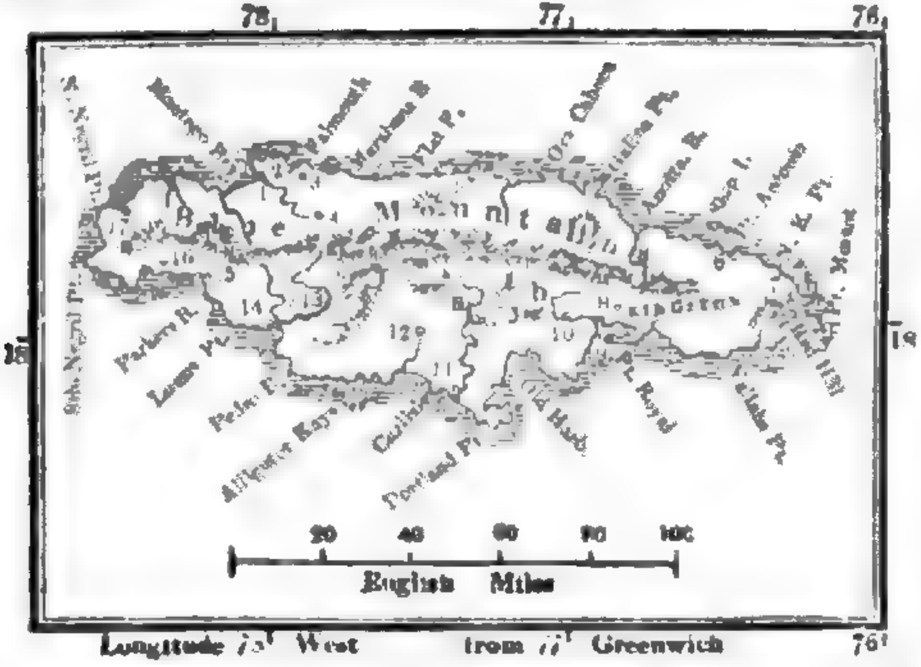
6292. *The British possessions*, though not the most extensive or naturally fruitful, are, since those of France have sunk into secondary importance, undoubtedly the best cultivated, most wealthy, and productive. Perhaps no part of the globe, in proportion to its extent, yields such an amount of valuable commodities for exportation. The following table exhibits the population and commerce of each of these islands. It is drawn up from materials furnished by Mr. M'Culloch in his *Dictionary of Commerce*, which, like the other statements in that work, are derived from the most authentic sources.

Places.	Whites.	Free Coloured.	Slaves.	Produce of			General Value of	
				Sugar.	Rum.	Coffee.	Imports into Britain.	Exports from Britain.
				Cwts.	*Gallons.*	*Lbs.*	£	£
Antigua - -	1,370	3,020	29,537	158,611	155,514	242	146,657	123,101
Barbadoes - -	15,029	4,326	81,500	336,881	2,357	334	369,828	293,417
Dominica -	791	4,077	15,392	60,063	36,321	1,016,631	27,478	24,583
Grenada - -	2,154	2,450	23,604	213,160	298,933	28,541	93,015	88,247
Jamaica - -	37,152		322,421	1,379,347	3,213,503	19,758,603	2,761,483	1,684,726
Montserrat -	330	814	6,262	20,646	49,075	- -	890	7,531
Nevis - -	700	2,000	9,142	54,236	51,243	1,362	25,223	21,456
St. Christopher's	1,612	3,000	19,085	133,452	219,706	44	97,254	71,717
St. Lucia - -	866	2,828	13,348	86,971	12,817	113,517	51,505	37,681
St. Vincent -	1,301	2,824	22,997	261,551	173,262	124	99,891	94,665
Tobago - -	265	1,196	12,091	93,471	428,810	- -	51,568	49,326
Tortola and Virgin Islands -	477	1,296	5,399	17,099	- -	- -	5,666	4,922
Anguilla - -	365	327	2,388					
Trinidad - -	3,683	16,302	23,776	204,987	12,941	54,502	361,077	252,851
Bahamas - -	4,240	2,991	9,705	- -	- -	195,637	51,524	39,571
Bermudas -	4,181	1,068	4,371	894	2,987	- -	24,817	22,490
Demerara - -	3,006	6,360	65,556	780,286	1,859,710	3,447,426	502,236	487,585
Berbice - -	523	1,161	20,645	110,967	234,618	2,316,909	51,587	51,215

This table will afford an accurate notion of their relative importance, and will render unnecessary any minute details respecting a region which presents in general so uniform an aspect.

6293. *Jamaica* is the largest and most valuable island in the British West Indies. The lofty range of the Blue Mountains in the interior, covered with ancient and majestic forests, gives to its landscapes a grand and varied aspect. From these heights descend about a hundred rivers, or rather rills, which dash down the steeps in numerous cascades, and, after a short course, reach the sea. From these elevated tracts the island is supplied with the vegetable productions of a temperate climate; and the Guinea grass, which has prospered remarkably, enables the planters to maintain numerous and valuable herds of cattle. Yet the soil is considered to be by no means universally good, and its actual fertility is ascribed in a great measure to diligent manuring and cultivation. The abundance of water must always be a main source of fertility in tropical countries. The rum of Jamaica is considered superior to that of any of the other districts; but its coffee ranks second to that of Berbice. Pimento, the plantations of which are extremely ornamental, is peculiar to this island, and has been often termed Jamaica pepper. With her natural and acquired advantages, however, Jamaica has not been preserved from the pestilential influence of the climate, which renders it extremely dangerous to European constitutions.

Fig. 1043. MAP OF JAMAICA.



6294. *The towns of Jamaica*, as of the other islands, are all sea-ports, and supported by commerce. Spanish Town, the most ancient, and still the seat of the legislature and courts, is of comparatively little importance, and has not more than 4000 or 5000 inhabitants. Port Royal, possessed of a secure and spacious harbour, was, in the end of the seventeenth century, enriched both by the trade of the island, and the contraband traffic with the Spanish main. It was then, with the exception of Mexico and Lima, the most splendid and opulent city in the New World. Suddenly an earthquake swallowed up the greater part of the city and its inhabitants. Yet the advantages of its situation caused it to be soon rebuilt, and ten years after, when it had been burnt to the ground, it was reared again from its ashes. But in 1722 it was assailed by a hurricane, the most dreadful ever known, even in these latitudes. The sea rose seventeen or eighteen feet, undermined and overthrew a great part of the houses; the shipping in the harbour was entirely destroyed, with the exception of a few large vessels, which had only their masts and rigging swept away. Port Royal, being then viewed as a fatal spot, was abandoned for Kingston, and is now reduced to 200 or 300 houses. The fortifications, however, which are very strong, are still kept up, and the navy yard is maintained there. Kingston, about twenty miles S.E., is now the real capital of Jamaica. It is situated in a fine plain, extending six miles in breadth to the foot of the mountains. Its commerce, though not equal to what that of Port Royal once was, is great, and is favoured by a spacious and commodious roadstead. All these towns are on the south-eastern coast, which is the most level and fertile, and most favourable for trade. Montego Bay, a place with about 4000 inhabitants, carries on the more limited commerce of the northern coast. Savanna la Mar, in the west, is little more than a village, since it was nearly destroyed by the hurricane of 1780; yet it has a good harbour, and a little trade.

6295. *Barbadoes* is the island which ranks next in value and importance; indeed, it was the earliest settled and improved of all the English possessions. Having been founded during the period of the civil wars, it afforded a refuge to persons of various parties who successively suffered persecution. It thus made very rapid progress, and in 1650 there were estimated to be 20,000 white men in the island, half of whom were able to bear arms. It has been alleged to have undergone a considerable decline towards the end of the eighteenth century, in consequence of the dreadful hurricanes with which it has been ravaged, and of the exhaustion of the soil, which now requires manure in order to maintain its fertility; yet the population and produce were greater in 1829 than in 1753, the supposed period of its highest prosperity. Barbadoes, having no mountains in the centre, is less copiously watered than the other Antilles; and, being farther out in the Atlantic, is peculiarly exposed to the general scourge of hurricane. Its soil, though deficient in depth, being composed chiefly of a fine black mould, is well fitted for the culture of sugar; and its rich plantations, diversified by the gentle hills which rise in the interior, present a delightful landscape. Bridgetown, the capital, is one of the gayest and handsomest towns in the West Indies, containing above 20,000 inhabitants. It has an excellent harbour, much frequented, not only for the trade of the island, but by vessels which, in consequence of its easterly position, reach it before any of the other islands, and touch there for refreshment.

6296. *St. Christopher's*, known often by the familiar appellation of *St. Kitt's*, is not the next in importance; but, on account of its early settlement, may be noticed here, in preference to recent acquisitions. It was first occupied by the English in 1623; and, though repeatedly disputed by the Spaniards and French, has, with the exception of some short intervals, remained in the possession of Britain. The interior, rising into the lofty peak of Mount Misery, is peculiarly rugged and mountainous, but the plain along the sea surpasses in richness and beauty that of any of the other islands, abounding in the black mould which is peculiarly fitted for sugar. Basseterre, the capital, on the south-west coast, contains 6000 or 7000 inhabitants.

6297. *Antigua*, to the east of St. Christopher's, is by no means so uniformly fertile; a large proportion consisting of a stiff clay, which yields only bad grass. Being deficient in springs or rivulets, water is procured only by preserving the rain in cisterns, and in years of drought the crop sometimes entirely fails. In favourable seasons, however, there is a very considerable produce of sugar. Antigua, St. Christopher's, and several others now to be mentioned, form what are called the Leeward Islands, which, running from east to west, are supposed to be less exposed to the action of the trade wind. All the Leeward Islands have one governor, who resides at Antigua. Hence John's Town, its capital, admired for its agreeable situation and the regularity of its buildings, derives a considerable degree of importance, and is a favourite resort.

6298. *The other Leeward Islands* consist of Montserrat, Nevis, Barbuda, Anguilla, and the Virgin Islands. The first is agreeable and picturesque, but by no means fertile. Nevis is a small, but beautiful and fertile island, consisting of one conical mountain above twenty miles in circuit. Barbuda and Anguilla, still smaller, are also fertile, but little cultivated: Anguilla has a valuable salt-pond; the tobacco of Barbuda is particularly esteemed. The Virgin Islands are, upon the whole, the most arid and least productive of any

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References to the Map of Jamaica.

1. Montego
2. Martha Brae
3. Falmouth
4. Trelawney
5. St. Anne
6. Port Antonio
7. Manchineel
8. Kingston
9. Port Royal
10. Spanish Town
11. Carlisle
12. St. Dorothy
13. Lacovia
14. Blackbirch
15. Bluefields
16. Savanna la Mar
17. Lucea.

Rivers.
a Black
b Cobre.

in the West Indies. They are numerous, and in some degree shared by the Spaniards and Dutch; but Tortola, the only one of much consideration, belongs to the English. — The islands now enumerated include all that were originally settled and colonised by Britain. But conquest within the last seventy years has conveyed to her others of great value, by which her possessions in this quarter of the world have been nearly doubled. Part of these were captured during the war which closed in 1763, others in that which broke out on occasion of the French revolution.

6299. *Dominica* stands in the former predicament. It is a large island, but not productive altogether in proportion to its extent, much of the surface being mountainous and rugged. Several of its volcanic summits throw out from time to time burning sulphur, but they do not act to any destructive extent. It is interspersed, however, with fertile valleys; a large quantity of coffee is raised on the sides of the hills. Roseau, the capital, is by no means so flourishing as before the fire of 1781; it is well built, but many of the houses are unoccupied.

6300. *St. Vincent's*, ceded by the same treaty, is one of the most elevated and rugged of the Antilles. It contains the only very active volcano in these islands, which, after being dormant for a century, burst forth in 1812 with tremendous violence, exhibiting the most awful phenomena. Several plantations were destroyed, and almost all those on the eastern coast were covered with a layer of ashes ten inches deep. The peak of Morne Garou is nearly 5000 feet high. Yet the intermediate valleys, being fertile in a high degree, render St. Vincent's on the whole a very productive island. It contains small remnants of the native Carib race, mingled with some free negroes, who were early introduced, and have adopted many of the Indian usages. Kingston, the capital, has been supposed to contain 8000 inhabitants.

6301. *Grenada* exhibits a considerable variety of surface, which, on the whole, however, is extremely productive, and renders it an important acquisition. The scenery, though not so grand as that of some of the others, is peculiarly beautiful, and has been compared to that of Italy. St. George, the capital, named formerly Port Royal, possesses one of the most commodious harbours in the West Indies, and has been strongly fortified.

6302. *Tobago*, the last of the cessions of 1763, is a small but fertile and beautiful island. Notwithstanding its southerly situation, the heat is tempered by breezes from the surrounding ocean, while at the same time it appears to be out of the track of those hurricanes which have desolated so many of the other islands. It yields the fruits and other products common to the West India Islands with those of the bordering Spanish main. Scarborough, a town of about 3000 inhabitants, is its capital.

6303. *Trinidad*, separated only by a strait from the coast of South America, where that mainland is traversed by the branches of the Orinoco, shares in a great measure its character. It is covered with magnificent forests, and presents scenery peculiarly grand and picturesque. The island is unhealthy, but fruitful, and being the largest next to Jamaica, forms an acquisition of great value. It was Spanish till 1797, when it was captured, and confirmed to Britain by the treaty of Amiens. One remarkable object in this island is a lake of asphaltum, three miles in circumference. This substance, being rendered ductile by heat, and mingled with grease or pitch, is employed with advantage in greasing the bottoms of ships. Trinidad contains still about 900 native Indians. Port Spain (Puerto Español) is a considerable town, well fortified, and with an excellent harbour. It is built regularly and handsomely, with a fine shaded walk and spacious market; and the churches, both Protestant and Catholic, are very richly ornamented.

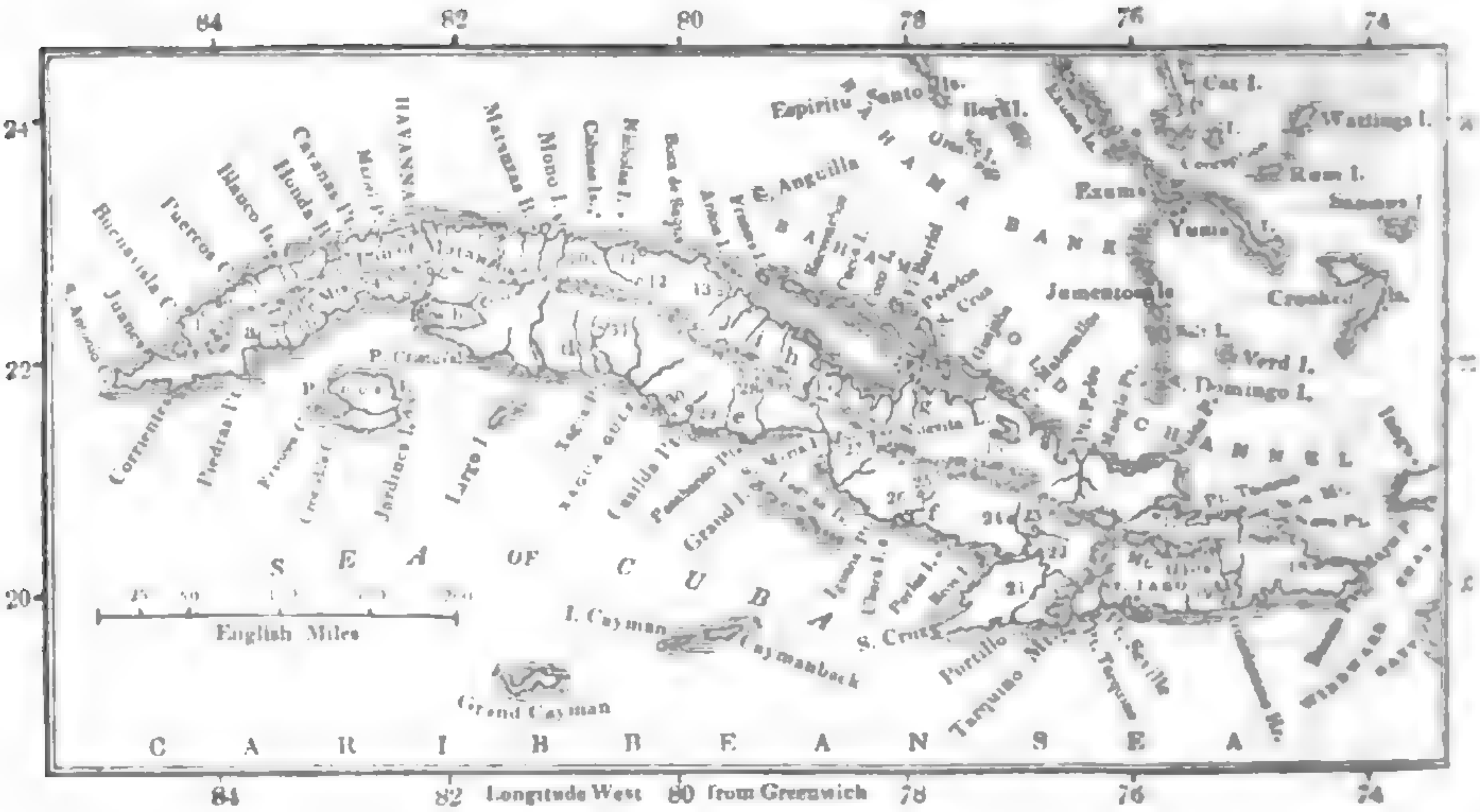
6304. *Demerara, Berbice, and Essequibo* extend along the coast of Guiana; but they participate so largely in the character of West India colonies, that a view of them is necessary to complete that of these important settlements. They are also of recent acquisition, having belonged to the Dutch till the last war, when they yielded to the naval supremacy of Britain, and were confirmed to that power by the treaty of 1814. They extend about 300 miles along the coast, and each colony is situated at the mouth of a broad river, bearing its own name. The territory is low, flat, alluvial, and in many parts swampy; and the greater portion, when it came into the possession of Britain, was covered with dense and almost impenetrable forests. Since that time a prodigious improvement has taken place; British industry has cut down the woods, and, availing itself of the natural fertility of the soil, has rendered this one of the most productive regions in the New World. Demerara, as will appear by the commercial table, ranks as to West India produce second only to Jamaica: its rum is inferior only to hers; and the coffee of Berbice ranks above that of any of the islands. Staebroek, now St. George, is built on the low bank of the river Demerara. The houses are of wood, seldom above two stories high, and, with a view to coolness, are shaded by colonnaded porticoes and balconies, and by projecting roofs; and Venetian blinds, or jalousies, are used instead of glass windows. Canals are conducted on each side of the town, which presents a busy scene, every road being like a wharf strewed with casks and bales. The town contains from 8000 to 10,000 inhabitants, mostly negroes, with a considerable proportion of people of colour, some of whom have attained to considerable wealth. New Amsterdam, the small capital of Berbice, is agreeably situated, intersected by canals, and with a considerable spot of ground attached to each house.

6305. *The Bahama Islands* form a very extended and numerous group, being successively parallel, first to Florida, then to Cuba and part of St. Domingo. Five hundred have been counted; but many of them are mere rocks and islets. The island called the Great Bahama is remarkable as being the first part of the New World that was discovered by Columbus. These islands were very much neglected till about the beginning of the last century, when a British settlement was formed there under Captain Woodes Rogers. The Bahamas, notwithstanding their favourable situation, have never been productive in the West India staples. The soil is in general arid and rocky; and even those islands which might be capable of improvement have been neglected. Cotton is the only article which has been cultivated to any extent, and even this has declined. They produce, however, a considerable variety of fine timber and dye-woods, and some of them supply the neighbouring coasts with salt. Between the western islands and the coast of Florida is the Bahama channel, through which that celebrated current called the Gulf Stream, from the Gulf of Mexico, rushes with such impetuosity that it is perceptible upon the northern coasts of Europe. Its force renders the passage extremely dangerous, and has given occasion to frequent wrecks. The difficulty of navigation in these seas is increased by the great bank of Bahama, interposed between Cuba and these islands. Nassau, in the island of New Providence, from its situation upon this frequented channel, is a place of some importance. It is the general seat of government, and contains a population of about 50 0 persons.

6306. *The Bermudas*, situated in the midst of the Atlantic, about 600 miles east from the coast of North America, may, for want of a more appropriate place, be described here. About 400 are numbered; but most of these are mere rocks, and only eight possess any real importance. These islands, which began to be settled about 1612, drew for some time greater attention than their natural advantages justified. During the internal troubles which soon after took place in Great Britain, they became the asylum of many distinguished personages, and among others of the poet Waller, who, by celebrating the beauty of their aspect and the felicity of the climate, spread around them a poetical lustre. The Bermudas are indeed in these respects peculiarly fortunate; being exempted from the scorching heats of the tropic, enjoying almost a continued spring, and being clothed in perpetual verdure. But though they afford thus an agreeable and healthful residence, they have not proved productive in any of those commodities which can become the staple of an important traffic. Cotton has been tried, but without any great success. They have been used as a place of deportation for criminals, but in this respect are now superseded by the Australian settlements. The rocky nature of the coasts renders them easily defensible, but unfavourable to navigation. St. George, the seat of government, on an island of the same name, is only a large village.

6307. *The western colonies of Spain,* which for some centuries comprised the greater part of the American continent, with all its richest and most splendid regions, are now limited

MAP OF CUBA. Fig. 1044.



References to the Map of the Island of Cuba.

1. S. Isabela
2. Nombre de Dios
3. Honda
4. S. Felice
5. Batavanno
6. Havana
7. Limones Grande
8. S. Carlos
9. Matanzas
10. Elcoyo
11. Carajatas
12. Villa Clara
13. S. Juan de los Remedios
14. Gertrudio
15. Marcelina
16. Neuvita
17. Port Nipe
18. Baracoa
19. Balibonica
20. S. Jago de Cuba
21. Tarquino
22. S. Salvador de Bayama
23. Ochoa
24. Armas
25. Villa del Principe
26. S. Juan
27. Negrillo
28. Espiritu Santo
29. Casilda
30. Trinidad
31. Camarones.

Rivers.

a Calefia
b Bacunagua
c Broa
d Caraneeo
e Talabacoa
f S. Juan
g Juanaga
h Navio
i Palmas
j Manquimar.

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to the two islands of Cuba and Porto Rico. Yet these are so considerable and so fruitful, that, since a more liberal policy has been adopted towards them, they have in no small degree compensated for her immense losses.

6308. *Cuba*, extending upwards of 700 miles in length, though only 117 in its greatest breadth, is more extensive than all the other West India islands put together. Being traversed throughout its whole extent by chains of mountains, whose highest peaks, Patrillo and Cobre, exceed 8000 feet, the plains beneath are most copiously watered, and rendered fit for producing in the highest perfection all the objects of tropical culture. The situation of this island, commanding the entrance of the Gulf of Mexico, and the communication between North and South America, gives it a high commercial importance. Spain long viewed Cuba merely as the key of her greater possessions, and the passage by which she reached them. This great island did not, in the value of its produce, equal some of the smallest Antilles. During the last thirty years, however, and especially since the separation of the continental colonies from the mother country, a more liberal and protecting policy has been adopted: the ports of the island have been thrown open; strangers, and even emigrants, have been encouraged to settle there; and, amid the political agitations of the mother country, the expulsion of the Spanish residents from Hispaniola, and the disasters of those, in the continental states of America, who adhered to old Spain, Cuba has become a general place of refuge. Its progress, from these causes, has been most extraordinary. The inhabitants have applied themselves to the culture of the great West India staples of sugar and coffee, and with surprising success. Between 1760 and 1767, the exports of sugar amounted to only 5,570,000 lbs.; in 1832, they are believed to have exceeded 250,000,000 lbs., or above 110,000 tons. (M'Culloch's *Dictionary*, 2d edit.) In 1800 there were only 80 coffee plantations on the island; in 1827, they amounted to 2067, and the export was 50,037,000 lbs. In 1775, the population was only 170,370; in 1827, a census gave 704,487. Of this the white population amounted to 317,064; the mulatto to 57,514; the free negroes to 48,980; the slaves to 286,942, of whom 183,300 were male, and 103,652 female. This advance has, however, unhappily been in a great measure produced by the active prosecution of the slave trade, which the Spaniards have continued, after it had been renounced by other civilised nations. Within the last few years, it is stated that forty or fifty vessels have regularly cleared out for Africa as for an ordinary trade, but with the well-understood object of practising this nefarious traffic. This mode of supply is accompanied with the distressing circumstance of the great inequality of the sexes; the female slaves on a plantation being seldom more than a third of the whole, and often bearing a much smaller proportion, since the masters find it cheaper to purchase than to rear. Of late, however, many of the slave-dealers have become bankrupt in consequence of the number of cargoes captured by the British vessels employed in the suppression of the trade, and of a fall in the value of the commodity, caused by the number of coffee plantations that have been given up, the slaves employed on which have been thrown upon the market. In 1828 there entered inwards 1889 vessels of 277,000 tons burden; and 1686 vessels, of 229,830 tons, cleared outwards. The imports in that year amounted to 19,534,000 dollars, the exports to 13,114,000.

6309. *Havana*, or the *Havannah*, the capital of Cuba, is one of the greatest and most flourishing cities of the New World. It once carried on the whole, and still retains more than two thirds of the commerce of the island. The harbour is admirable, capable of containing a thousand large vessels, and allowing them to come close to the quay: its narrow entrance has been found disastrous when fleets were seeking shelter from a pursuing enemy. The fortifications, particularly the Morro and Punta castles, are remarkably strong; but in 1762 they yielded to the British fleet, which captured nine sail of the line, and merchandise to the value of about 3,000,000*l.* sterling. Since that time, however, the works have been so carefully strengthened as to make the place nearly impregnable; and during the late war, while the British navy was generally so triumphant, no attempt was made to reduce the Havannah. The arsenal and dock-yard are also on a large scale. The city presents a magnificent appearance from the sea, its numerous spires being intermingled with lofty and luxuriant trees. The churches are handsome and richly ornamented; and several private mansions are reckoned to be worth above 60,000*l.* each. The interior, however, for the most part consists of narrow, ill-paved, and dirty streets, crowded with merchandise and waggons, and presenting entirely the appearance of busy trade. Yet the alameda, or public walk, and the opera, on the appearance of a favourite performer, exhibit a gay and even splendid aspect. The recently constructed suburbs are also built in a superior style. The Havannah has patriotic and literary societies, which are improving. Seven journals are published, one of them in English. The population is estimated by Balbi at 112,000.

6310. *Other towns in Cuba* have risen to importance since the monopoly of the trade absurdly conferred on the Havannah was withdrawn. Matanzas, only about sixty miles east of the capital, has acquired a considerable commerce. In 1827 it contained 15,000 people, and exported 30,000,000 lbs. of sugar; 231 vessels entered, and 251 left its port. Trinidad, since it was permitted, carries on with activity the trade of the southern coast; it exported, in 1827, sugar to the amount of 10,361,000 lbs. Santiago de Cuba, at the eastern extremity of the island, was the original capital, and suffered severely when this distinction was transferred to the Havannah; but since 1788, when its port was opened, it has shared in the general prosperity, and its exports and imports amount each to about 300,000*l.* It contains 27,000 inhabitants, and is somewhat better built than the other towns. Villa del Principe, in the heart of the island, though the seat of the *real audiencia*, or supreme court of appeal, and containing 49,000 inhabitants, is poor, dirty, and ill built; and much inconvenience is felt from the marshy soil on which it stands.

6311. *Porto Rico*, about 140 miles in length, and 36 in breadth, is much smaller than Cuba, but is extremely fertile. Till within the last half century it was equally neglected, and its wealth was derived entirely from woods and pastures; but since 1778 its progress has been equally rapid, the population having increased from 80,640 to 288,473. Of this last number in 1827, 28,468 only are stated to be slaves: there were 101,479 free labourers. This remarkable fact, connected with so great a progress in cultivation, would deserve to be investigated. San Juan de Porto Rico is a strong place, with a spacious and secure harbour, and contains about 30,000 inhabitants.

6312. *The possessions of France* in the West Indies, previous to the revolutionary war, were more valuable than those of any other nation. The exports from St. Domingo alone amounted to 5,000,000*l.* That valuable island is now entirely lost to her. During the late war all her islands were captured, and she ceased to exist as a colonial power. At the peace, Martinico and Guadaloupe were restored, and, with Cayenne, form territories of considerable value and capability. Their progress, however, was of course checked during the period when they were under foreign occupation, and it does not appear to have been rapid even since the restoration. The anti-commercial system introduced by Napoleon, and even the preposterous attempt to raise sugar in France out of the beet-root, have not wholly ceased their operations. In 1827, the imports of France from her colonies amounted to 2,300,000*l.*, the exports to 2,100,000*l.* The ships employed in it were 842, tonnage 274,000. Of this trade much the greater part must have been with the West Indies. It appears that there entered and were despatched from French ports to Martinico, 345 ships, of 90,173 tons and 4983 men; to Guadaloupe, 345 ships, of 85,376 tons and 4812 men.

6313. *Martinico*, as compared with the other Antilles, is a large and fine island, about fifty miles in length and sixteen in breadth. The surface is generally broken into hillocks, and in the centre rise three lofty mountains, the streams descending from which copiously water the island. The progress of Martinique took place between 1700 and 1762, during which period the negro population increased from 14,500 to 72,000. The English, when they took it a second time in 1809, found next year a population of 96,413. The census of 1827 gave 101,905, of which 9937 were whites, 10,786 free coloured, and 81,182 slaves. Port Royal, the capital and the seat of the courts of justice, is a well-built town, with 7000 inhabitants; but the chief trade centres in St Pierre, the largest place in Martinico and in all French America. Its excellent road has rendered it an entrepôt of the trade of the mother country with this quarter of the world.

6314. *Guadaloupe* is a larger island, being from fifty to sixty miles long and twenty-five broad. It may almost be considered as two islands, since a channel, from thirty to eighty yards broad, crosses the narrow isthmus by which its eastern and western portions are united. The western, called Basseterre, notwithstanding the name (which is derived from its position with regard to the trade-wind), contains a chain of lofty and rugged mountains, one of which displays some volcanic phenomena, emitting volumes of smoke, with occasional sparks of fire. However, its plains are copiously watered and fruitful. The eastern division is more flat, and labours under a deficiency of water. The progress of Guadaloupe was contemporaneous with that of Martinico, though slower. In 1755 it contained 50,800 inhabitants; in 1812 these had increased to 114,000. In 1827 the population was found to be 135,516, of which 17,237 were whites, 16,705 free coloured, 101,564 slaves. Basseterre, on the part of the island bearing that name, ranks as the capital; but having a bad harbour, is supported merely by the residence of government, and has not more than 9000 inhabitants. Point-à-Pètre, on the eastern side, or rather at the junction of the two, carries on almost all the trade, and has a population of about 15,000. The islands of Marie-Galante and Deseada are appendages to Guadaloupe, of little importance.

6315. *Cayenne*, or French Guiana, is an extensive tract belonging to the South American continent, but which, for reasons already stated, we shall here consider in connection with the West Indies. Cayenne Proper consists of an alluvial island about eighteen miles long and ten broad, formed by the branches of the river of that name; but the term is applied generally to a coast about 500 miles in length, having Dutch Guiana on the west, and Portuguese or rather Brasilian Guiana on the east; but the limits of the latter are disputed to the extent of 120 miles, in consequence of the ambiguity occasioned in the treaty of Utrecht by the terms Yapock and Oyapock; and the Brazilians, in spite of every remonstrance, continue to occupy the coast as far as the latter river. Cayenne is an alluvial swampy region, covered with majestic forests. The trees astonish Europeans, not only by their prodigious size, but by their great variety; M. Noyer having counted no less than 259 that were fitted for human use. Fine aromatics, unknown to the other regions of the west, have been cultivated there with success. The Cayenne pepper is the most pungent and delicate kind of that spice; and the clove, long supposed exclusively attached to the Moluccas, has succeeded so well, that a part of the consumption of Europe is supplied from Cayenne. The natural advantages of this colony are very great. The cutting down of these noble woods would afford the material of a valuable timber trade, and the ground thus cleared would be fit for sugar and every kind of West India produce. Yet the tract is cultivated in only a few scattered patches, not exceeding in all 10,000 acres. Serious obstacles are indeed presented by the pestilential vapours exhaled from these dark woods and marshes. In a settlement on a great scale, attempted in 1763, no less than 13,000 persons perished, so that the deportation to Cayenne of deputies obnoxious to the ruling party, during the revolution, was inflicted as conveying almost a sentence of death. Yet, if due precautions were used, and the woods cleared, it would probably be as healthy as any other settlement in this quarter. Cayenne is a small town, neatly built of wood, with a spacious and commodious road, and a population of 3000. Kouron, Sinnamaree, La Mana, and Oyapock are small settlements scattered along the coast.

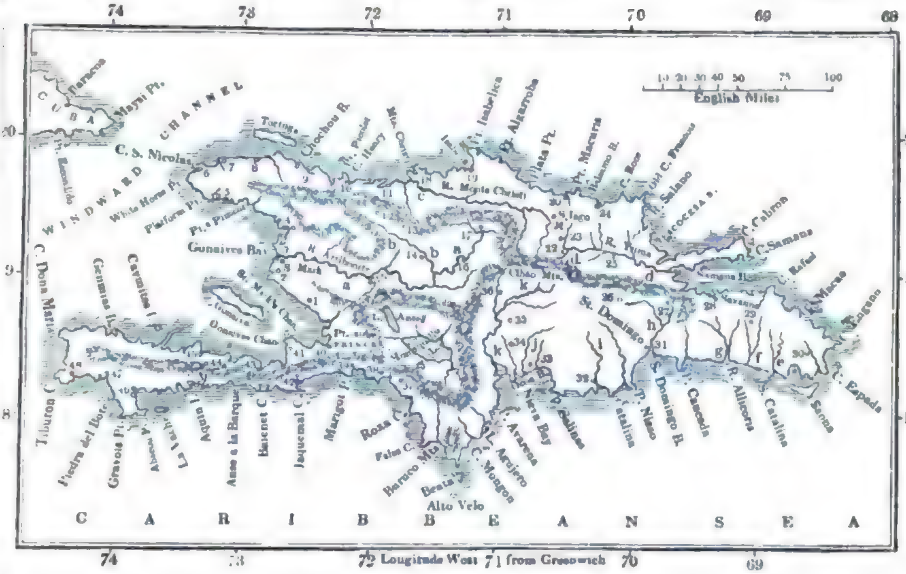
6316. *The possessions of the Dutch* in the West Indies, when compared with their eastern colonial empire, appear exceedingly limited. Their only islands are St. Eustatia, Saba, and Curaçoa. The first two are small isles lying immediately north of St. Christopher's: St. Eustatia consists almost entirely of the sloping sides of one high conical hill, terminating in a rocky summit. It is, however, cultivated with great care, and abounds particularly with tobacco; also in cattle and poultry, of which it affords a surplus to the neighbouring islands. The capital is well fortified, and forms a species of entrepôt both of regular and contraband trade. The population of the island is estimated at 20,000; that of the town at 6000. Saba, only twelve miles in circuit, and destitute of a harbour, is a pleasant island, but of no commercial value. The Dutch participate with France the small island of St. Martin, valuable almost solely for its salt-works. Curaçoa is a larger island, far to the west of the others, and only about seventy miles distant from the Spanish main. It is about thirty miles long, and ten broad; but the greater part of its surface is arid and unfertile, and its importance was chiefly derived from the contraband trade which its situation enabled it to carry on, while the continent was exclusively possessed by Spain, and studiously shut against the vessels of other countries. Since Colombia became independent, and threw open her ports to all nations, Curaçoa has sunk into a secondary station. Williamstadt, its capital, however, with a fine harbour, has still a considerable trade, and a population of 8000.

6317. *Surinam*, on the coast of Guiana, constitutes the most important part of the Dutch western possessions. Dutch Guiana formerly included Demerara, Berbice, and Essequibo; but Britain having in the last war captured these three districts, her capital was employed with such advantage in improving them, that she determined, at the peace, on retaining them, and left to Holland only the larger but less valuable territory of Surinam Proper. This coast, like that of the rest of Guiana, is flat and alluvial, and is traversed by several broad rivers, coming from a considerable distance in the interior. That of Surinam has a channel about four miles wide, but shallow and rocky, navigable only for boats. The Dutch, since they regained possession of it, have made very considerable efforts for its improvement, and it is decidedly rising in importance. Paramaribo, at the mouth of the river, where it affords excellent anchorage for vessels, is a considerable town, well built of wood, and arranged in regular streets, adorned with fine trees. Its commerce, though now surpassed by that carried on in English Guiana, is considerable, and supports a population of 18,000 or 20,000 persons.

6318. *The Danes* have three small islands in the West Indies. St. Croix, the principal one, lies to the south of the Virgin Islands: it has a surface of eighty-one square miles, and a population of about 30,000, all slaves, except 2500 whites and 1200 free coloured. It is productive, in proportion to its extent, in the usual West Indian articles. St. Thomas, one of the Virgin Islands, is of little importance, unless as a favourable station for introducing into the other islands those goods which the great states have declared contraband. St. John's, another of the same group, is very small, and only noted for its excellent harbour.

6319. *The Swedes* have only one small island, St. Bartholomew, situated about fifty miles north of St. Christopher's. It is not quite twenty-five square miles in extent, and is generally described as fertile and well cultivated, though an eye-witness assures us that neither of these characters can apply to it. Gustavia, the capital, acquired considerable wealth during the war, when it continued long to be almost the only neutral port in these seas.

6320. *Hayti*, now an independent negro republic, forms one of the most peculiar and interesting portions of the New World. It is a very fine island, situated between Jamaica and Porto Rico, about 450 miles in length, and 110 in breadth. In the centre rises the lofty range of the mountains of Cibao, of which the peak of La Serrania rises to the height of 9000, and that of La Sella to 7000 feet. These mountains are covered nearly to the summit with vegetation and noble woods, and from them descend numerous streams, which, uniting in four large rivers, bestow extreme fertility on the plains beneath. This was the first large island discovered by Columbus, who landed there on the 5th of December, 1492, and made it, under the name of Hispaniola, the seat of his first colony. That great man, however, soon lost all control over the Spanish adventurers, who gave full scope to their cruelty and rapacity. The gold, which was then found in considerable abundance, formed the chief object of their avidity; and the unhappy natives, forced to labour in the mines, and otherwise inhumanly treated, were in the end completely exterminated. The gold being in some degree exhausted, and its amount completely eclipsed by that of Mexico and Peru, Hispaniola, called now St. Domingo, was in a great degree neglected. About the



References to the Map of the Island of Hayti.

1 Arcahir
2. St. Mark
3. Artibonite
4. Gonaive
5. Platform
6. St. Nicolas
7. Jean Rabel
8. Port Paix
9. Port Margot
10. Cape Henry
11. Port Dauphin
12. Dondon
13. St. Miguel
14. Hincha
15. Mirebalais
16. Barnica
17. St. Thôme
18. Monte Christi
19. Isabella
20. Santiago
21. St. Jago
22. Concepcion de la Vega
23. Santa Sarra
24. S. Juan
25. Angelina
26. Cotuy
27. Polgasin
28. Savanna
29. Sebye
30. Hiquey
31. St. Domingo
32. Bani
33. Azua
34. Baitos
35. Viajamo
36. S. Juan
37. Petarneles
38. Sale Trou
39. Caves
40. Port au Prince
41. Leogane
42. Jacquemal
43. Pesqueno Go
44. St. Louis
45. Miraguana
46. Caves
47. Tres Rios
48. Tiburon.

Rivers.
a Antibonite
b Guayara
c Monte Christi
d Yuma
e Romana
f Souca
g Mucoda
h Ozarna
i Bani
j Tavera
k Nieva.

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middle of the sixteenth century a daring band of French buccaneers established themselves in the western districts. They were owned and supported by the French government, which ultimately became possessed of this part of the island. Its progress was at first checked by the injudicious restraints of an exclusive company; but a more liberal policy being adopted in 1722, it rapidly advanced to a degree of prosperity altogether unprecedented. Though forming little more than a third of the island, it far surpassed in opulence not only the Spanish part, but the whole Spanish West Indies. In 1789 the imports were valued at upwards of 5,000,000*l.* sterling.

6321. *The French revolution* caused an extraordinary change in the state of Hayti. In 1791 the Convention caused to be proclaimed throughout the island their favourite doctrine, that all men were free and equal. This proclamation gave rise, in the first instance, to a contest between the white and the free coloured population. But while these parties were contending for the application of the principle, the slaves felt that it applied also to them. They rose in a body, massacred or drove out the other two classes, and became entire masters of French St. Domingo. This revolution, with the excesses which accompanied it, soon ended, like other revolutions, in a military despotism, which was established in 1806 by Dessalines, who assumed the title of James I. He was succeeded by Christophe, his second in command, who named himself Henry I., hereditary king of Hayti. Meantime, however, the republic of Hayti was established in another part of the island, under the presidency, first of Pétion, and then of Boyer. Henry, harassed by attacks from this and other quarters, ended his life by suicide in 1820. Boyer then, by a series of vigorous operations, not only extended his sway over all the French part of the island, but annexed to it also that belonging to Spain; so that the whole is now comprehended in the republic of Hayti. France in 1803 made strong efforts to regain this valuable island, but without success. At length, on the 17th of April, 1825, a treaty was concluded, by which she acknowledged the independence of Hayti, on condition of receiving the large sum of 150,000,000 francs, to be paid in five annual instalments.

6322. *An independent negro state* was thus established in Hayti; but the people have not derived all the benefits which they sanguinely expected. Released from their former compulsory toil, they have not yet learned to subject themselves to the restraints of regular industry. The first absolute rulers made the most extraordinary efforts to overcome the indolence which soon began to display itself. The *Code Rural* directed that the labourer should fix himself on a certain estate, which he was never afterwards to quit without a passport from the government. His hours of labour and rest were fixed by statute. The whip, at first permitted, was indeed ultimately prohibited; but as every military officer was allowed to chastise with a thick cane, and almost every proprietor held a commission, the labourer was not much relieved. By these means Mr. Mackenzie supposes that the produce of 1806 was raised to about a third of that of 1789. But such violent regulations could not continue to be enforced amid the succeeding agitations, and under a republican *régime*. Almost all traces of laborious culture were soon obliterated: large tracts, which had been one entire sugar-garden, presented now only a few scattered plantations. The export of sugar, which in 1806 had been

47,516,531 lbs., amounted in 1825 to 2020 lbs. Coffee, which continued to be a staple production, was also much diminished. The only indemnification which the people sought was in the easy task of cutting down the forests of mahogany and campeachy wood, which were found of greater value than had been supposed. Mr. Mackenzie, in viewing the extreme fertility of the soil and climate, and the contented indolence of the inhabitants, was struck with extreme despondence as to their ever making any improvement. The slightest labour is sufficient to secure subsistence; the adults wear merely such portions of dress as decency most absolutely requires, while the children of both sexes have no covering whatever. It would rather appear, however, that Hayti had reached its utmost point of depression, and was beginning, after the example of its industrious neighbours, to avail itself of its great natural advantages. The revenue in 1825 is stated at 3,101,000 dollars, and the expenditure at 3,105,000; but Hayti is severely pressed by the enormous sum which she has engaged to pay as the price of her independence. In 1829, the declared value of the imports from Britain was 297,709*l.*, of which 210,000*l.* consisted in cotton goods, and 57,000*l.* in linen. The principal exports were 248,900 lbs. coffee (but this rose in the following year to above 900,000), 149,000 lbs. cotton, 4959 tons mahogany, 125 tons logwood, 24 tons fustic.

6323. *Hayti* has been divided into six departments, named, chiefly after their positions, West, South, Artibonite, North, North-east, South-east. The last two comprehend the part lately possessed by the Spaniards. Port au Prince, in the department of the West, is the capital, and the chief seat of trade. It has a secure and excellent roadstead, but the country around is marshy, and, during the summer, very unhealthy. The city is built mostly of wood, its streets unpaved, and containing no remarkable edifices. The population may be from 12,000 to 15,000. Port Haytien, in the department of the North, the seat of the kingdom established by Christophe, is better built, with well-paved streets, and some handsome squares, and has a population of about 10,000. Near it is the citadel, constructed at vast expense on the top of a mountain, as a place of security for himself and his treasures. Les Cayes, in the department of the South, the seat of an ephemeral government, which sprung up during the disturbances, is a neat town, with a flourishing trade; but it was almost destroyed by a hurricane in August, 1831. St. Domingo, the capital of the Spanish part of the island, presents the remains of a very handsome city; a solid and spacious cathedral, a large arsenal, houses in general commodious and well built; but it has been long in a state of decay, and is not supposed to contain now above 10,000 inhabitants.

BOOK V.

AUSTRALASIA, POLYNESIA, AND THE ISLANDS IN THE POLAR SEAS.

6324. *Islands and groups of islands* form an extensive and important portion of the surface of the globe. Those which are in the close vicinity of the great continents, and situated in gulfs enclosed by them, have been considered as appendages to these continents, and treated of in connection with them. But, in that wide expanse of ocean, which covers more than half the surface of the globe, there occur some very large and numerous small islands, widely separated from any continent, and a survey of which is requisite to complete the description of the world. They present human society under rude, indeed, but striking and picturesque, aspects; and, through the extension of commerce and navigation, colonies have been established, and a frequent intercourse maintained with them by the maritime nations of Europe.

6325. These islands may be divided into three great classes, marked by distinctive characters: — 1. Australasia. 2. Polynesia. 3. The islands in the Polar Seas.

Chap. I.

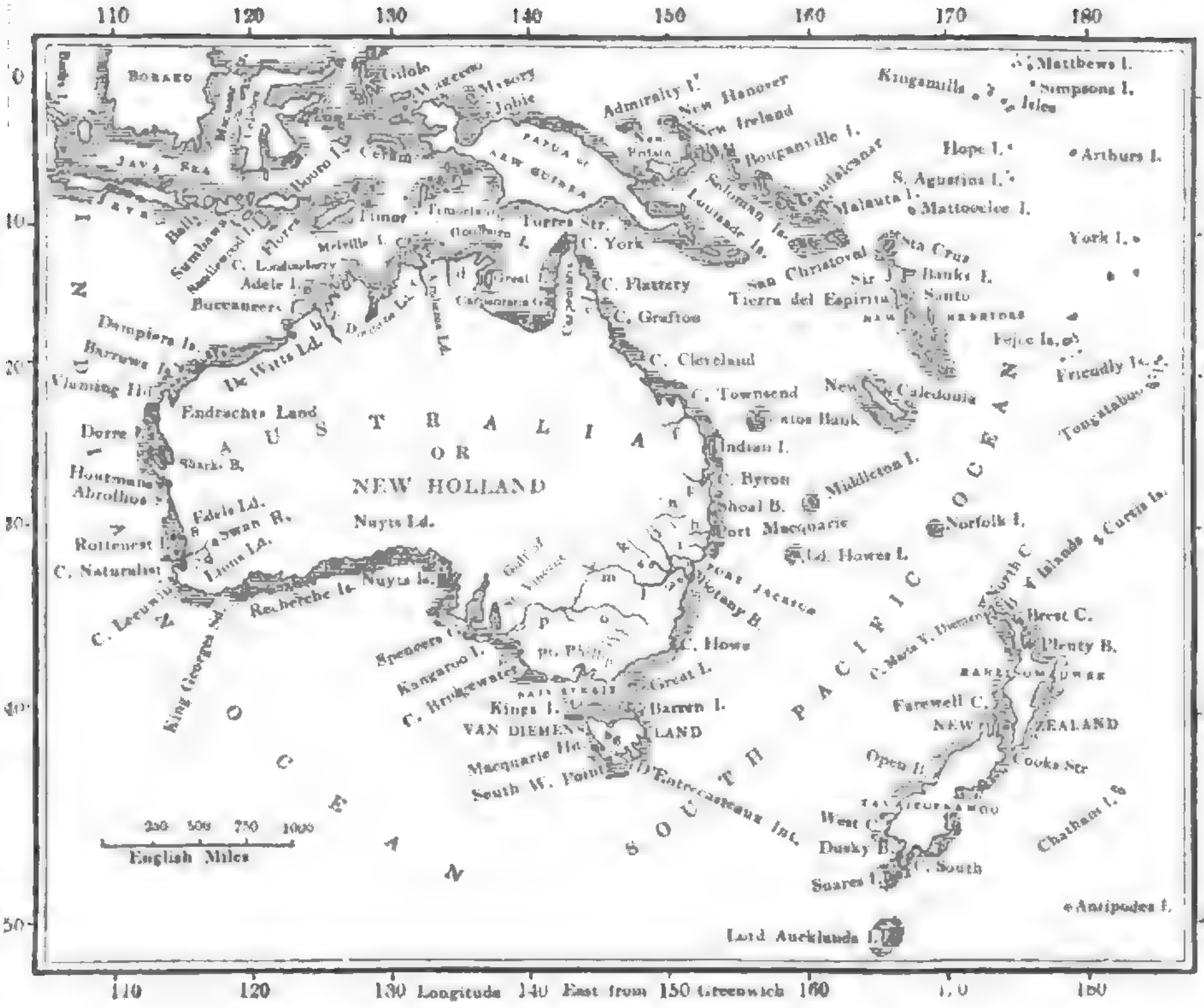
AUSTRALASIA.

6326. *Australasia*, as already observed, is the name given to an assemblage of huge insular masses of land occupying the western parts of the Pacific, and extending southward from eastern Asia. These great oceanic tracts consist, according to Mr. Barrow, of, 1. New Holland, called often *Australia*; 2. Van Diemen's Land; 3. New Zealand; 4. Papua, or New Guinea; 5. New Britain, New Ireland; 6. Solomon Islands; 7. New Hebrides; 8. New Caledonia. Of these, New Holland is by far the most extensive, attaining even the importance of a continent; and since, for well-known reasons, a peculiar interest attaches to it and its close appendage of Van Diemen's Land, these will be chiefly regarded in the general description, while the local head will comprehend the other insular regions by which it is encircled.

1. *New Holland.*

Sect. I. *General Outline and Aspect.*

6327. *New Holland*, or the continental part of Australasia, may be stated as lying between 10° 30′ and 39° S. lat., and between 112° 20′ and 153° 40′ E. long. Hassel assigns to it 2977 miles from east to west, and 2004 from north to south. The superficial content is estimated with difficulty and variously. Zimmermann's Geography makes it 3,300,000 square



References to the Map of Australasia.

1. Sydney
2. Richmond
3. Liverpool
4. Bathurst
5. George Town
6. Hobart Town
7. York
8. Perth

Rivers.

a Swan
b Prince Regent's
c Alligators
d Liverpool
e Endeavour
f Boyne
g Brisbane
h Hastings
i Hunter's
j Castlereagh
k Macquarie
l Nepean
m Lachlan
n Dumaresq
o Morrumbidgee
p Murray.

English miles; Freycinet, more recently and with fuller materials, allows very little more than 3,000,000. The late discoveries of Captain King must somewhat modify any calculation, though they affect more the details than the general mass. The form of the whole is compared by Hassel to that of a horse-shoe.

6328. *The surface* of this continent is too extended, and the explored portion too small, to allow us with safety to hazard any general conclusions. The prevailing feature, so far as yet observed, has been barren and wooded plains, traversed by long ridges of precipitous, but not very lofty mountains; and rivers, which often spread into marshes, and do not preserve any course which may be called long when compared with the size of the continent. There are few deep bays, nor does the sea, so far as yet discovered, receive any river whose magnitude corresponds to that of the land. It is still, notwithstanding the spirited efforts lately made, only a corner of the interior of this huge mass of land that is at all known. A great part of this, through the mixture of broad mountain masses and of heavy inundated plains, is rendered unfit for cultivation, and even for travelling. These obstructions, however, do not prevent the occurrence, on a great scale, of fine meadow tracts, where the richest herbage grows spontaneously, and where industry may raise the most plentiful crops.

6329. *The mountains* of New Holland form a ridge nearly round it, rocky, and in many parts almost inaccessible. The Blue Mountains, in particular, which rise behind the colony, tower up almost like a wall; their cliffs being so steep, and separated by such dreadful abysses, as to have been long considered as presenting a barrier absolutely impassable. It was not till 1813 that a route was discovered through them, which has since been made completely patent. Their highest summits do not appear much to exceed 3000 feet. The western and southern coasts present generally a most dreary, arid, and rocky aspect. Mount Cockburn, a mass of hills at the head of Cambridge Gulf, has a singular appearance, resembling the bastions and ramparts of a fortress. A considerable extent of level and fertile territory has lately been discovered in the vicinity of Swan River. Captain King, however, sailed 600 miles along the northern coast, which he found to present a continuous low and woody tract of shore.

6330. *The rivers* of New Holland have been the subject of anxious enquiry, as being the channels of its future prosperity. The Hawkesbury, with its tributaries the Grose and the Nepean, is most valuable to the colony, but forms only a stream of secondary magnitude. In the interior, beyond the Blue Mountains, have been traced the Lachlan and the Macquarie, running respectively courses of upwards of 200 and 300 miles. On the east coast are, also, the rivers Williams, Hunter, and Paterson, forming Port Hunter; the Hastings, forming the fine port of Macquarie; and the still larger stream of the Brisbane, falling into Moreton Bay. On the north coast, the only important feature consists of three estuaries which fall into Van Diemen's Gulf, and which Mr. Patrick Cunningham vainly believed to be the termination of the Macquarie. More importance seems to belong to Prince Regent's River, on the north-west coast, which, at the distance of fifty miles from the sea, was found to have a full stream of 250 yards broad; but the marshes of the Macquarie have since been found dried up, and those of the Lachlan to carry that river into the Morrumbidgee, which rises to the westward of the dividing range of the colonial mountains, and, taking a western course of 1000 miles, forms by far the longest river yet discovered, under the name of the Murray, and falls into Lake Alexandrina at Encounter Bay, on the south coast.

Sect. II. *Natural Geography.*

Subsect. 1. *Geology.*

6331. *Our information regarding the geognosy of New Holland and Van Diemen's Land is extremely meagre.* In Dr. Fitton's memoir, appended to Captain King's *Voyage to Australia*, are the following notices in regard to the rocks: —

1. *Granite.* Cape Cleveland; Cape Grafton; Endeavour River; Lizard River; round hill near Cape Grindall; Mount Caledon; island near Cape Arnheim; Melville Bay; Bald Head; King George's Sound. — 2. *Mica slate.* Mallison's Island. — 3. *Talc slate.* Endeavour River. — 4. *Hornblende slate.* Pobassoo River; Half-way Bay; Prince Regent's River. — 5. *Granular quartz.* Endeavour River; Montague Sound, north-west coast. — 6. *Quartzy conglomerates and ancient sandstones.* Rodd's Bay; islands of the north and north-west coasts; Cambridge Gulf; York Sound; Prince Regent's River. — 7. *Limestone, resembling in the character of its organic remains the mountain limestone of England.* Interior of New Holland; near the east coast; Van Diemen's Land.

6332. *The coal formation.* East coast of New Holland; Van Diemen's Land. The coal formation on the east coast has been traced from Botany Bay more than one hundred miles to the north; and it extends nearly the same distance into the interior, the position where it has been most particularly examined being on the branches of Hunter's River. The coal is worked at Newcastle. Ironstone is found along with the coal, and ores of this metal, particularly bog iron ore, occur in considerable quantity in different parts of New Holland.

6333. *Fossil wood in coal formation.* In our lectures on organic remains, when discussing the subject of fossil trees, we have strongly recommended to our hearers the importance of characters of distinction for geognostical groups of plants from internal structure, and recommended them to examine all fossil woods and even recent wood in order to obtain such characters. Fortunately, one of our pupils, Mr. Nicol, well known for his extreme accuracy, took up the subject, and, after much labour, succeeded in contriving a very elegant and satisfactory method of obtaining views of the internal structure of fossilised woods. This method is explained in Mr. Witham's work, entitled "*Observations on Fossil Vegetables*," and is followed by him in his mineral dendrological researches, and now by all the investigators in this department of geology on the Continent. We put into the hands of Mr. Nicol specimens of fossil woods sent us by our active and intelligent friend, Colonel Lindsay, and by Mr. Burnet, from the coal formation in New Holland. Thin transverse sections of each were made, which, on being viewed by help of the microscope, or even a common pocket lens, displayed such structures as to show that five of the specimens examined belonged to the family of Coniferæ, and two to the tribe of true Dicotyledons. Four of the Coniferæ are common woodstone; the fifth is wood opal. One of the dicotyledonous specimens is woodstone, and shows the organic structure throughout the whole mass; but the other specimen, which is in the state of opal, shows the organic structure only in certain parts of the mass. Specimens of fossil wood from Van Diemen's Land were also examined, which proved to be Coniferæ.

6334. *Fossil bones.* Through the exertions of Major Mitchell, Mr. Rankin, Dr. Lang, and Colonel Lindsay, many interesting fossil bones have been forwarded to the Edinburgh Museum, which have been determined by our labours, and those of Cuvier, Pentland, Cliff, and Adam. These relics were found in limestone caves in Wellington Valley, New Holland; and in the first collection sent to Edinburgh were bones of the following animals: — 1. Dasyurus, or Devil of the colonists, one species; 2. Hypsiprymnus, or Kangaroo Rat, one species; 3. Macropus, or Kangaroo Proper, three or four species; 4. Hæmaturus, two species; 5. Phascolomys, or Wombat one species; 6. Elephant, one species. Mr. Pentland remarks, in regard to these bones, 1. That of these nine animals, only two species of kangaroo do not differ in their anatomical characters from species inhabiting the same continent; whereas there is reason to suppose that the seven remaining species differ from all those hitherto known to zoologists, and that some of them belong to extinct species. 2. That, with a single exception, all the genera to which these bones are referable are now found inhabiting the Australasian continent; a remarkable coincidence with the fossil animals of the same geological epoch in Europe, where, with few exceptions, the animals which have been found in what have been called Diluvial Deposits belong to genera still inhabiting our countries. 3. That the *elephant* was an inhabitant of New Holland at a very remote period, as it appears to have been not only of every part of the Old World, but of the

American continent. In the *Edinburgh Philosophical Journal* for January, 1833, Mr. Pentland, in a letter to Professor Jameson, says: — "Since I transmitted you the notes on the fossil remains from New South Wales, I have had occasion to examine another collection presented to Cuvier by Major Mitchell, from the same locality as Wellington Valley. In my former communication, I stated that the fossils you submitted to my examination were referable to nine distinct species of Mammalia, belonging, with a single exception, to the order *Marsupialia*. The specimens sent to Baron Cuvier enable me to add five more species to the list: viz. two species of Dasyurus, one of which does not seem to differ from the D. Macrourus of Geoffroy; a small species of Perameles; a species of kangaroo, of the sub-genus Hæmaturus, and certainly very different from every known species of this genus; a small animal of the order *Rodentia*, belonging to a new genus, and of which the bones are scattered in immense abundance in certain portions of the osseous breccia; and a *saurian animal*, nearly allied to the genus *Gecko*, but which the incomplete nature of the fragments I have examined, prevents my determining more accurately. A careful examination of the specimens of Major Mitchell's collection leaves no doubt that the bones of most of the animals collected in these caves were transported thither by *carnivorous* animals, as in the bone-caves of Yorkshire, of Germany, France, &c. I have discovered several fragments evidently ground and worn down under the teeth of small carnivorous animals; and among nearly 100 specimens of long bones, still enveloped in their stalactitic crust, I have not found one to which the epiphysis remains attached, although in adult subjects; an evident proof of their having been gnawed off by the animals which formerly inhabited these recesses. What these animals were, it is easy to guess from the catalogue already given."

6335. Indications of the *new red sandstone* (red marl), afforded by the occurrence of *salt*. Van Diemen's Land.

6336. *Ooolite limestone*. Van Diemen's Land.

6337. Rocks of the trap formation. — 1. *Serpentine*. Port Macquarie; Percy Isles. — 2. *Syenite* (greenstone). Rodd's Bay. — 3. *Porphyry*. Cape Cleveland. — 4. *Porphyritic conglomerate*. Cape Clinton; Percy Island; Good's Island. — 5. *Compact felspar*. Percy Island; Repulse Bay; Sunday Island. — 6. *Greenstone*. Vansittart Bay; Bat Island; Careening Bay; Malus Island. — 7. *Clinkstone*. — Morgan's Island; Pobassoo Island. — 8. *Amygdaloid with calcedony*. Port Warrender; Halfway Bay; Bat Island; Malus Island. — 9. *Wacke*. — Bat Island.

6338. *Alluvial deposits*. Upon the coast in many places there are extensive alluvial deposits, which are often calcareous, abounding in the shells of the neighbouring sea. These occur under the sea, at the sea level, and sometimes considerably above high water, which latter position is to be attributed to the upraising of the land through subterranean agency. Pipe-clay and potter's clay occur abundantly. No volcanoes have been met with. Topaz is the only gem, and agate is the principal ornamental stone mentioned by authors. The ores have been but little noticed.

Subsect. 2. *Botany.*

6339. *In New Holland*, which constitutes an island so vast in extent and so separated from every other continent, as to rank as one of the great divisions of the globe, every thing relating to natural history is wonderful: its quadrupeds, its birds, its insects, and last, but not least in point of singularity, its vegetable productions, — all are, comparatively speaking, new; yet, what is truly remarkable, a very small portion of the latter have been ascertained to be useful in any way, and almost none to produce esculent fruits. "It is New Holland," says Mr. Barron Field, "where it is summer with us when it is winter in Europe, and *vice versâ;* where the barometer rises before bad weather, and falls before good; where the north is the hot wind, and the south the cold; where the humblest house is fitted up with Cedar (*Cedrela Toona*); where the fields are fenced with Mahogany (*Eucalyptus robusta*); and Myrtle trees (*Myrtaceæ*) are burnt for fuel; where the Swans are black, and the Eagles are white; where the Kangaroo, an animal between the squirrel and the deer, has five claws on its fore paws, and three talons on its hind legs like a bird, and yet hops on its tail; where the Mole (*Ornithorhynchus paradoxus*) lays eggs, and has a duck's bill; where there is a bird (*Melliphaga*) with a broom in its mouth, instead of a tongue; where there is a Fish, one half belonging to the genus *Raia* and the other to that of *Squalus;* where the Pears are made of wood (*Xylomelum pyriforme*), with the stalk at the broader end; and where the Cherry (*Exocarpus cupressiformis*) grows with the stone on the outside."

6340. Our green-houses and conservatories have rendered us so familiar with the appearance and names of a great variety of New Holland productions (for however unimportant as food, in the arts, or in domestic economy, they are peculiarly interesting to the botanist), that the general appearance of its vegetation may be understood by observing that the great mass of it belongs to the natural orders *Proteaceæ*, *Epacrideæ*, *Myrtaceæ*, *Leguminosæ*, and *Compositæ;* and that these have such harsh, and narrow, and lurid, though evergreen foliage, that, instead of the majestic forests of the New World, or the delicate gracefulness and elegance of those of Asia, or the fresh and varying charms of those of Europe, they present a sombre and melancholy appearance. "A part of their economy," says Brown, "and which contributes somewhat to the peculiar character of the Australian forests, is, that the leaves both of the *Eucalyptus* and *Acacia*, by far the most common genera in Terra Australis, and if taken together, and considered with respect to the mass of vegetable matter they contain (calculated from the size as well as the number of individuals), nearly equal to all the other plants of that country, are vertical, or present their margin, and not either surface, towards the stem, both surfaces having consequently the same relation to light." And Leschenault assures us, that even the grasses, which in other countries are soft and flexible, here partake of the rigidity of the other plants, as may especially be seen in the *Uniola distichophylla* of La Billardière, and in *Festuca*, whose leaves resemble so many needles. Those who wish, however, to obtain a more full acquaintance with the botany of New Holland, than can be expected from a work of this nature, may consult the writings of La Billardière, Brown, Cunningham, Leschenault, and Freycinet. We must be satisfied with mentioning some of the more interesting plants.

6341. In the extensive genus Eucalyptus, of which considerably above 100 species have been detected, most of the individuals are trees, and some of them remarkable for their great, and others for their enormous, dimensions. *Eucalyptus globulus* of La Billardière, and another species found by Mr. Brown at the south end of Van Diemen's Land, not unfrequently attain the height of 150 feet, with a girth, near their base, of 25 to 40 feet. In the colony of Port Jackson are also several species of great size, but none equal to those of Van Diemen's Land; and no very large trees of this genus are seen, either in the south-west or the equinoctial part of New Holland. The natives distinguish and apply proper names to nearly fifty kinds which grow about Port Jackson: these they recognise by their colour, texture, and the scaling of the bark, by the ramification and general appearance, more readily than botanists have yet been able to do. The beautiful genus Melaleuca, too, of the same natural order, yields very numerous species.

6342. Among the Leguminosæ, Mr. Brown observes, is a most extensive tribe or group of the Mimosas of Linnæus, Acacia (*fig.* 1047.) of Willdenow, described as having simple leaves, but being in reality aphyllous; the dilated foliaceous footstalk performing the functions of the true compound leaf, which is produced only in the seedling plant, or occasionally in the more advanced state, in particular circumstances, or where plants have been injured. The great number of species of Acacia having this remarkable economy in Terra Australis, forms one of the most striking peculiarities of its vegetation. Nearly 100 species have been observed, very generally diffused over the whole country. But while the leafless Acaciæ are thus numerous and general here, they appear to be very rare in other parts of the world, only seven additional species having been found elsewhere. Another considerable group of the same order consists of such as have free (not combined) stamens in their papilionaceous flowers.

6343. Among the Compositæ is a considerable number with dry and everlasting flowers, which Mr Brown names Gnaphalideæ. Goodenoviæ, of the same author, is a distinct natural order, approaching Lobelia. The genus Stylidium, belonging to another allied order, is very curious in the structure of its flowers, possessing the peculiar property of having the column, or the support of anthers and stigma, endowed with an irritability of so active a kind, that we hardly know of any parallel in other plants. The slightest touch of a pin on the outside of it, when curved, is sufficient to make it leap to the opposite side of the flower, and invert the whole of its highly curious apparatus for propagation. It is said that this motion is designed for the protection of those parts from insects; an explanation which, like many others applied to the peculiarities of the vegetable kingdom, is, perhaps, more fanciful than true, and which only serves to show how little we are able to comprehend of the mysteries of the vegetable world.

1047

ACACIA.

6344. *The genus* Epacris, with its allied genera, seems to be almost as numerous, and to hold the same rank in New Holland, as the Heaths do at the Cape.

6345. *No plants of New Holland* are more sought after by our collectors, or more prized for their varied foliage and lovely flowers, than the Proteaceæ; and of these the most beautiful, if we except the Waratah (*Telopea speciosissima*) (*fig.* 1048.) has been consecrated to the earliest investigator of the natural history of the country, the friend and companion of Cook, Sir Joseph Banks. "Upwards of 400 species of this order," says Mr. Brown, in the botany of Flinders's voyage, "are at present known: more than half of these are natives of Terra Australis[*], where they form one of the most striking peculiarities of the vegetation. Nearly four fifths of the Australian Proteaceæ belong to the principal parallel, in which, however, they are very unequally distributed; the number of species at its western extremity being to those of the eastern as two to one; and, what is much more remarkable, the number, even at the eastern extremity, being to that of the middle of the parallel as at least four to one. From the principal parallel the diminution of the order in number of species is nearly equal in both directions; but while no genus has been met with in the tropic, which does not also exist in the principal parallel, unless that section of Grevillea having a woody capsule be considered as such, several genera occur at the south end of Van Diemen's Island, which appear to be peculiar to it. No Australian species of the order Proteaceæ has been observed in any other part of the world; and even all its genera are confined to it, with the exception of Lomatia, of which several species have been found in South America; and of Stenocarpus, the original species of which is a native of New Caledonia."

1048

TELOPEA SPECIOSISSIMA.

6346. *The genus* Casuarina is very remarkable, having branches which appear jointed, like the stem of an Equisetum. Its maximum appears to exist in Terra Australis, where it forms one of the characteristic features of the vegetation. Thirteen Australian species have already been discovered; the greater number of these are found in the principal parallel, in every part of which they are almost equally abundant. In Van Diemen's Island the genus is less frequent, and within the tropic it is comparatively rare; no species, except C. equisetifolia, having been observed on the north coast of New Holland. Beyond Terra Australis only two species have been found, namely, C. equisetifolia, which occurs on most of the intratropical islands of the southern Pacific, as well as in the Moluccas, and exists also on the continent of India; and C. nodiflora, which is a native of New Caledonia.[†]

6347. *Of the Coniferæ*, the Phyllocladus rhomboidalis of Richard (*Podocarpus asplenifolia* of La Billardière) forms a new genus. Callitris is quite peculiar to New Holland; and the famous Araucaria excelsa (*fig.* 1049.), reckoned among the loftiest trees in the world, which was first found in Norfolk Island and New Caledonia, has been ascertained, by Mr. Cunningham, to extend from Mount Warning on the east coast, in lat. 29° S., thence sparingly towards the tropic, within which, however, it is very abundant, forming upon several islands the only timber. This is, probably, the nearest approach of the species to the equinoctial line; and, although it occupies an area of 900 miles, it is very probably limited, in Terra Australis, to its immediate shores, and, as appears to be the case with Pandanus, exists only within the influence of the sea air.

1049

ARAUCARIA EXCELSA.

6348. *The Orchideæ are in great variety*, and highly curious in the extratropical parts of New Holland, and are chiefly terrestrial.

6349. *Notwithstanding that so large a portion of New Holland* is intratropical, and with a climate so well suited to their growth, it is wonderful how deficient the country is in Palms; which can only be accounted for, according to Mr. Cunningham, by the great tendency to drought of at least three fifths of its shores. Only six species of this order are enumerated by Mr. Brown, belonging to three genera, Corypha, Seaforthia, and Livingstonia: to which, according to Mr. Cunningham, Calamus may now be added, one species having been detected, bearing fruit, in the vicinity of Endeavour River. The Corypha australis extends to lat. 34° S., and this is nearly the southern limit of the order in this country. Upon the north-west coast, the genus Livingstonia has alone been met with, in lat. 15°; but along the whole of the west side no other palm appears to grow.

6350 *Among the Asphodeleæ of Terra Australis*, the genus Xanthorrhæa is considered one of the most remarkable in habit, giving a peculiar aspect to the vegetation of the district where it abounds, which extends to the south end of Van Diemen's Island, and is also found within the tropic. All the species yield a gum resin. The X. arborea is the Yellow Gumtree of White's History of New South Wales, and is described as attaining the size of a walnut tree, growing pretty straight for about fourteen or sixteen feet, after which it branches out into long spiral leaves, which hang down on all sides, and resemble those of the larger kinds of grass or sedge. From the centre of these leaves springs a single footstalk, eighteen or twenty feet high, perfectly erect, resembling the sugar cane, and terminating in a spiral spike, not unlike an ear of wheat. This large stem, or footstalk, is used by the natives for making spears and fish-gigs, being pointed with the teeth of fish or other animals. But the most valuable produce of this plant appears to be its resin, the properties of which vie with those of the most fragrant balsams. This resin exudes spontaneously from the bark, and still more readily from incisions; it is of a yellow colour, fluid at first, but being inspissated in the sun it acquires a solid form; burnt on hot coals it emits a smell somewhat like storax. It is perfectly soluble in spirit of wine, but not in water, nor even in essential oil of turpentine, unless digested in a strong heat, and the varnish it affords is of little strength or use. It was found by Mr. White to be a good pectoral medicine, and very balsamic. It is not obtainable in such large quantities as the Red Gum produced by Eucalyptus resinifera.

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[*] Mr. Brown has made an addition to the number, of upwards of 160 species, in the Supplement to his *Prodromus Floræ Novæ Hollandiæ*.

[†] Mr. Allan Cunningham, in King's Voyages.

1050

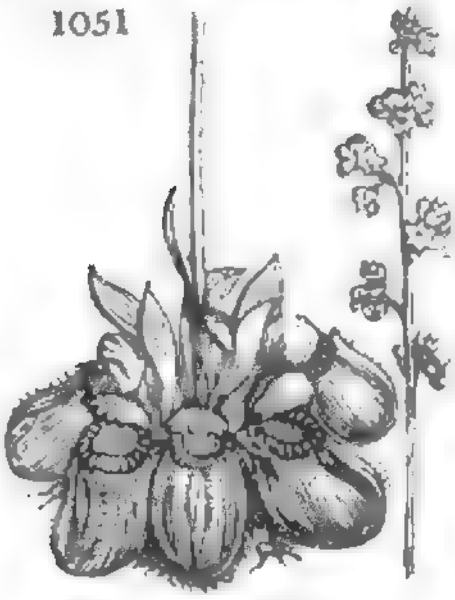
DORYANTHES EXCELSA.

6351. *Doryanthes excelsa* (*fig.* 1050.), or the New Holland Lily, is, without any question, the most stately of the *Nobiles* of the vegetable kingdom, as Linnæus called the order Amaryllideæ. In the green-houses of our country this plant has flowered, and attained a height of twenty-four feet, bearing at its summit a crown of blossoms of the richest crimson, each six inches in diameter. The leaves are very numerous, sword-shaped, and many of them six feet long.

6352. *The Cephalotus follicularis* (*fig.* 1051.) is a most singular plant, belonging, indeed, to the natural order Rosaceæ, but having, among its leaves, Ascidia, or pitcher-shaped bodies, with a lid to them, very similar to the appendages of the well-known Nepenthes, which it resembles, however, in no other particular. These Ascidia, or Pitchers, were observed to be in general nearly half filled with a watery fluid, in which great numbers of a small species of ant were frequently found drowned. This fluid, which has a slightly sweet taste, may perhaps be in part a secretion of the pitcher itself, but more probably consists merely of rain-water received and preserved in it. The lid of the pitcher, in a full-grown state, was found either accurately closing its mouth or having an erect position, and therefore leaving it entirely open; and it is not unlikely that the position of the lid is determined by the state of the atmosphere, or even by other external causes.

6353. We must not entirely omit a singular and interesting plant lately discovered in New Holland, producing fruit larger than a Spanish chestnut, by which name it is known. It is the Castanospermum australe, of which a figure and description are given in *Hooker's Botanical Miscellany*, vol. i. p. 243. t. 51, 52. The pods are large, solitary, and pendent, containing from three to five large seeds; the foliage is beautifully green and pinnated, and the shade afforded by the whole tree excels that of any in New South Wales. By the natives the fruit is eaten on all occasions. It has, when roasted, the flavour of a Spanish chestnut; and Europeans, who have subsisted on it exclusively for two days, experienced no other unpleasant effect than a slight pain in the bowels, and that only when the seeds were eaten raw.

1051

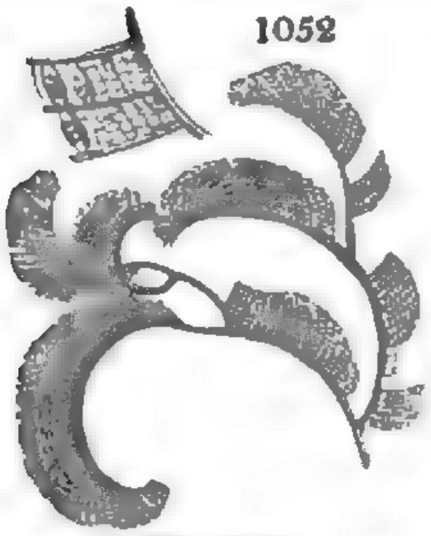


CEPHALOTUS FOLLICULARIS.

6354. *At the time when Mr. Brown estimated the Australian Flora at* 4200 *species* (in 1814, and many more have since been discovered), they were referable to 120 natural orders; but so great is the predominance of certain tribes, that full half of the number just alluded to belong to eleven orders. The Leguminosæ and Compositæ comprehend one fourth of all the Dicotyledonous plants, while the Grasses form an equal part of the Monocotyledonous ones. About one tenth only of these has been observed in other parts of the world. Of the Cryptogamic plants, by far the greater number are natives of Europe. Among those, however, that are peculiar to New Holland, some are very beautiful and curious: we may particularly instance, among the Sea weeds, Claudea elegans (*fig.* 1052.); among the Mosses, Dawsonia polytrichoides (*fig.* 1054.), which has the leaves of a Polytrichum and the inclined capsule of a Buxbaumia, but is terminated by a beautiful tuft of white silvery hairs for a peristome; and among the Lichens, the Cenomyce retispora (*fig.* 1053.), whose frond is perforated like the most delicate lace.

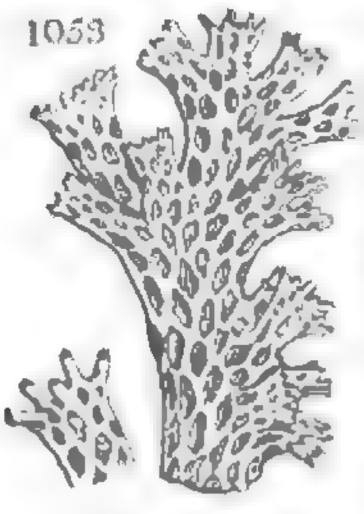
6355. *We mention* New Zealand, for the sake of making some remarks on a most valuable plant, which was originally detected by Sir Joseph Banks, during Cook's first voyage, in 1770, the *Phormium tenax* (*fig.* 1055.) or New Zealand Flax. It serves the inhabitants instead of hemp or flax, and excels all that is applied to the same purposes in other countries. There are two sorts of this plant: in both the leaves resemble Flags, but the flowers are smaller and their clusters more numerous; in one kind they are yellow, and in the other deep red. Of the leaves of the Phormium, with very little preparation, the natives make all their common apparel, as well as their strings, lines, and cordage of every description, which are so much stronger than any thing we can fabricate with hemp, as not to bear a comparison. From the same plant, by another process, they draw long slender fibres, which shine like silk, and are as white as snow: of these, which are also surprisingly strong, the finer cloths are manufactured; and of the leaves, without any other preparation than splitting them into proper breadths, and tying the strips together, they make their fishing-nets, some of which are of enormous size. A plant which might be applied with such advantage to so many useful and important purposes, would certainly be a great acquisition to England, where it would probably thrive with very little trouble, as it seems to be hardy, and affects no particular soils, being equally found in hill and valley, in the driest mould and the deepest bogs: the bog, however, it seems rather to prefer, as near such places it grows larger than elsewhere. Since the discovery of the Phormium tenax in New Zealand, many ex-

1052



CLAUDEA ELEGANS.

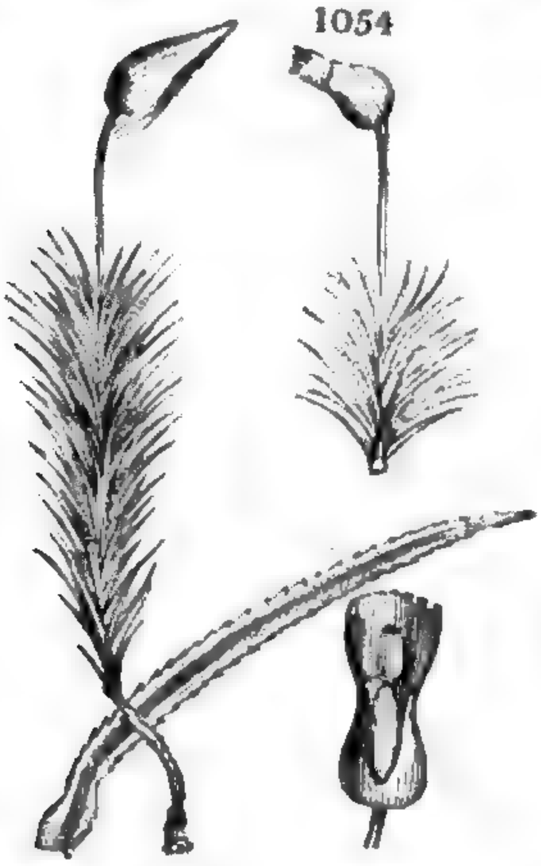
1053



CENOMYCE RETISPORA.

periments have been made, which all prove the great strength and value of its fibre, which is now extensively used in New Holland for cordage, and imported for the same purpose to Europe. In the South of France, in Devonshire, and in other districts possessing a similar climate, it grows perfectly well in the open air, and has even survived the winter on the coast of Inverness-shire. But all the attempts that have been made to separate the fibre from the leaf of the New Zealand Flax, which it is requisite to do in a fresh state, as maceration is found materially to injure the strength of the thread, have proved unsuccessful. The native women perform this apparently simple operation with ease and quickness: holding the end of a newly cut leaf with their toes, they insert a shell between the green substance and the fibre, and readily effect the separation by drawing this shell through the whole length of the leaf. No machinery or other process has been found capable of thus dividing the thread, which undergoes no farther preparation, no hackling or cleaning, previous to being shipped for the English market by the Port Jackson traders, who must apparently still depend on the savage women and their shells for the cargoes they obtain. A representation and full account of this interesting plant are given in the *Botanical Magazine* for December, 1832, to which we must refer our readers.

1054



DAWSONIA POLYTRICHOIDES.

1055

PHORMIUM TENAX.

SUBSECT. 3. *Zoology.*

6356. AUSTRALASIA. — *The Zoology of the Southern Archipelago* is more singular than beautiful, and is much more calculated to arrest attention from the peculiar habits and structure of the subjects themselves, than from the elegance of their forms, or the richness of their colours. Australasia has been termed the land of contrarieties; as if nature, in the creation of such forms as she appropriated to this region, had determined to mark them with some peculiar character inconsistent with those rules she had adopted in the formation of all her other productions. That form, for instance, which in other parts of the world she has confined to the smallest races of quadrupeds — the rats and the dormice — is here bestowed upon the Kangaroos, the largest tribe of four-footed animals yet discovered in this insular continent; but these wonderful creatures, instead of fabricating warm and skilful nests beneath the earth for the protection of their young, in like manner to all other mouse-like quadrupeds, are provided with a natural nest in the folds of their own skin, where the young are sheltered and protected, until they are able to provide for themselves. The Great Kangaroo (*Halmaturus giganteus* Ill.) (*fig.* 1056.) is, in fact, the largest and most typical quadruped of the whole Australasian range: the total absence of such animals as lions, tigers, deer, oxen, horses, bears; in short, of all those races spread over the rest of the world, is the most striking feature in the zoology of this region. It is further remarkable that nearly all the quadrupeds either actually belong or are intimately related to the Glires of Linnæus. Two thirds of the Australasian quadrupeds make their way by springing in the air. All the Kangaroos, when using any degree of speed in their movements, proceed by prodigious leaps, while the Flying Phalangers or Opossums (*G. Petaurista*), of which six species are described, are even more remarkable for this habit than the Flying Squirrels of North America. We might almost be tempted to believe that, if there really exists, in creation, an animal which would at once indisputably connect the two great divisions of the vertebrata, and demonstrate their union, such an animal will be hereafter discovered in the southern hemisphere. The Ornithorhynchus, or Duck-bill, may be justly said to exhibit more decided indications of such a union than any quadruped yet known, and this is also a native of New Holland.

1056

KANGAROO.

6357. *On quitting the zoological province of Asia*, the paucity of large quadrupeds is first apparent in the islands of New Guinea and New Caledonia, where, it may be remembered, in our preliminary observations, we supposed the first indications of the Australasian forms began to be developed. M. Lesson discovered several small animals in those islands (referred by him to the genus Cuscus) which exhibit a manifest affinity to the New Holland phalangers; while of edible domestic animals, the Hog alone (of a peculiar breed, or more probably species) is to be found generally distributed through the Pacific islands. The Dogs are also peculiar: small, and wolf-like, they appear to want all those generous and sagacious qualities which are so conspicuous among the breeds distributed over more civilised countries.

6358. *The ornithological productions* of this hemisphere are equally interesting, and, from being more numerous than the quadrupeds, offer a wider field for geographic comparison. We have already devoted some attention to this part of our subject, when pointing out the natural relations of the Australasian groups with those of the Indian Archipelago and of Southern Africa. It is, therefore, unnecessary again to recapitulate the proofs in favour of such affinities. The rapacious birds are by no means excluded from this region, although it is a matter of doubt whether any genuine species of vulture has yet been discovered. The largest bird of prey we yet know of is the Wedge-tailed Eagle (*fig.* 1057.), equal in size to the Golden, but having the legs feathered to the toes: several of the Hawks are altogether peculiar; among which is one entirely white; and there is reason to believe that the geographic range of the Peregrine Falcon of Europe (the Greatfooted Falcon of the Americans), actually extends to New Holland. The mild temperature of the climate renders the services of Vultures unnecessary; but we are still to learn what agency is substituted for the removal of carrion and dead animal matter. The few nocturnal birds belonging to the families of Owls and Goatsuckers differ not from the European types, except, indeed, the large *Podargi*, or Great-billed Goatsuckers.

1057

WEDGE-TAILED EAGLE.

6359. *Among the perching tribes*, the beautiful parrots, cockatoos, and parrakeets, demand our first attention, as being by far the most attractive and brilliant in their plumage. The genuine parrots, with a perfectly even tail, are very few: indeed, we know not at present of more than one species, the *Psittacus Fieldii* Sw. The Cockatoos, which first appear in Southern India, extend also to New Holland. Some of the species are white; the rest are of a black colour, richly variegated on the tail with red, as exemplified in the Crimson-tailed Cockatoo (*P. Cookii*) (*fig.* 1058.): they are of a large size; but a species lately discovered is no bigger than a small parrakeet: this group has not yet been traced in any of the South Sea islands. The Lories are also numerous, but belong to a different section from those of India: green, and not red, is the predominating colour of their plumage. Besides such as are only to be found in New Holland and Van Diemen's Land, several others of a very small size are locally distributed in the lesser islands. The Ground Parrakeets and those with broad tails (*Pezoporus* Ill., *Platycercus* V. & H.) likewise characterise these islands.

1058

CRIMSON-TAILED COCKATOO.

6360. *The insectivorous birds*, strictly speaking, are comparatively few; but it still remains to be ascertained whether the suctorial tribe, formed by the Honeysuckers (*Melliphagidæ* V.), do not also derive nourishment from small insects, concealed in the flowers, whose juices they suck by their brush-like tongue. This supposition appears highly probable, since we can attest, from personal observations, that such is the habit of nearly all the humming-birds of America. The Scansorial Creepers are of only two species, and no birds have yet been discovered similar or analogous to the genuine woodpeckers. The Toucans find their representative in the New Holland Channel-bill (*Scythrops* Ill.); but the Cuckoos and Orioles are not much unlike those of Africa, Asia, and Europe. The Pigeons and Doves are certainly the most beautiful in the world; the general tint of their plumage is a rich green, variegated with red, purple, or yellow about the head and breast; but others occur of a brown colour, relieved by spots on the wings of the richest and most changeable colours, equal in brilliancy to the finest gems. The Bronze-winged Pigeon (*fig.* 1059.) is a well-known example of this group, which comprehends several other species. The Chatterers of America seem represented by the Thick-heads (*Pachycephala* Sw.); the Grakles of India and Africa, by the Satin-birds (*Ptilonorhynchus* Kuhl.); and there is one species of Crow, which lives solitary: lastly, the Flycatchers and Warblers very nearly resemble those of Africa, and even present us with two species belonging to European genera. There does not appear to be any sparrows, the parrakeets being the universal devastators of grain, and the pests of the farmer. Two or three small finches of Indian genera (*Amadina*, *Estrelda* Sw.) correspond to our goldfinch.

6361. *The paucity of gallinaceous birds* is also evident. The great Emu or New Holland Cassowary, appears to have the same economy as that of America. To this order we refer that singular bird the Lyretail (*Menura superba* L.) already noticed.

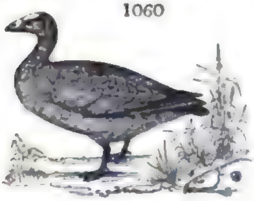
1059

BRONZE-WINGED PIGEON.

6362. *The Aquatic tribes* belong, for the most part, to groups found in other countries; but the genus *Cereopsis* (*fig.* 1060.) occurs only in New Holland: it is of a light grey colour, as big as a goose, and the only example of this form. The *Vaginalis*, or Sheathbill, seems more peculiar to the Pacific islands. There are, no doubt, many waders and swimmers not yet known to naturalists, for wildfowl are frequently mentioned by travellers as by no means scarce. Oceanic birds, particularly Gulls, Petrels, and Pelicans, may naturally be supposed to abound over such a wide extent of ocean.

6363. *The Entomology of New Holland*, in regard to species, has been illustrated by Donovan, and still more ably by Lewin, who studied the Lepidoptera in their different stages, and engraved the subjects on the spot. But from neither of these works can any general views be acquired on this portion of Australasian zoology; and, unfortunately, such can only be taken by those higher naturalists, who direct their attention to the philosophy of the science. Judging from the collections transmitted to England, we deem the number and variety of insects, in comparison to the size of New Holland, much fewer than might have been expected: the Coleopterous tribes have a more insulated character than those of the Lepidoptera; as the latter, both in genera and in species, show a decided approximation to those of Africa and India, without having exhibited, as yet, a single American species. The insects of the smaller Pacific islands may be considered as unknown, it being impossible to understand their true forms or affinities from systems now obsolete. From a young but zealous Entomologist of this country, we may expect much additional information on this subject, in the valuable work he has just commenced.

1060

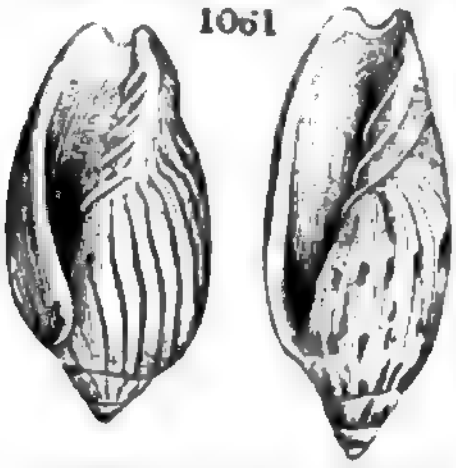


CEREOPSIS.

6364. *The Snakes and Reptiles* offer no subject of popular interest, although some of the New Holland lizards and serpents are very curious. Fish, as may be expected, are plentiful.

6365. *The Shells of the Southern Ocean* are peculiarly attractive, and yield only to those of the Indian seas. It is here that the family of Volutes (*Volutidæ* Sw.), so highly prized by collectors, is chiefly found. An attentive investigation of this charming group has enabled us to detect, in the distribution of the different genera, an exemplification of those laws to which nature is found to have adhered in every portion of her works which have been philosophically scrutinised. The pre-eminent type of this family is the genus Voluta, comprising the melon shells of collectors: and we accordingly find it has an almost general dispersion over the temperate parts of the old world. Voluta olla is found in Spain; V. cymbium, with several others, in Africa; V. æthiopica, tessellata, &c. in India; while V. umbilicata, and probably some others, occur in New Holland: here, however, this typical group ceases; while that of Cymbiola *Sw.*, which comprehends the Music volutes, appears in its full typical character. The C. magnifica *Sw.*, the largest of the genus, is chiefly found in the Australasian seas, and this form extends throughout the South Sea islands. The third type, composed of the Harp volutes (*Harpula* Sw.), and the fifth (*Scaphella* Sw.), under which is included the lovely Volutes, named Junonia, Zebra, maculata (*fig.* 1061.), &c., exclusively belong to the Pacific Ocean. The Cones, so abundant in India, have not been discovered in these seas; and only two or three cowries, of rare species, have yet been sent to Europe. The marine genus Struthiolaria, is also restricted to this ocean. The elegant genus Phasianella, or Pheasant Snail, is another group, principally confined to New Holland, where these beautiful shells occur, in some localities, in great profusion, and in endless variety of markings.

1061



SCAPHELLA ZEBRA. S. MACULATA.

6366. *The Fluviatile species* are limited to a few plain-coloured bivalves and Nerites; while the land shells are still more rare. The conchology of the South Seas, however, offers a rich field for future discoveries.

6367. *The following are the only genera* and subgenera of quadrupeds belonging to this part of the world: —

Didelphis *Auct.*
Dasyurus *Cuv.*
Perameles *Shaw.*
Thylacinus *Tem.*
Phalangista *Cuv.*
Balantia *Ill.*
Petaurista *Cuv.*
Hypsiprymnus *Ill.*
Halmaturus *Ill.*
Phascolarctos *Ill.*
Phascolomys *Geoff.*
Echidna *Cuv.*
Ornithorhynchus *Blum.*

6368. *The peculiar genera of birds*, with the sections or subgenera (*), are all comprised in the following list: —

Podargus *Cuv.*
*Ægotheles *H. & V.*
*Steatornis *H. & V.*
Dacelo *Leach.*
Falcunculus *Vieil.*
Vanga *Buf.*
Malurus *Vieil.*
*Acanthiza *H. & V.*
Pardalotus *Vieil.*
Pachycephala *Sw.*
Grallina *Vieil.*
Sericulus *Sw.*
Petroica *Sw.*
Ptilonorhynchus *Kuhl.*
Scythrops *Latham*
Plyctolopha *Vieil.*
*Calyptorhynchus *H. & V.*
Psittacarus *Briss.*
*Nanodes *H. & V.*
*Leptolophus *Sw.*
*Platycercus *H. & V.*
*Pezoporus *Ill.*
*Palæornis *H. & V.*
Lorius *Briss.*
*Trichoglossus *H. & V.*
Climacteris *Tem.*
Orthonyx *Tem.*
*Sittella *Sw.*
Dicæum *Cuv.*
Philedon *Cuv.*
Meliphaga *Lewin*
Ptiloris *Sw.*
*Ptilonopus *Sw.*
Dromiceius *Vieil.*
Menura *Lath.*
Megapodius *Tem.*
Chionis *Forst.*
Cereopsis *Lath.*

6369. *The following genera and subgenera of birds* occur also in India or Africa, or in both: —

Merops *Lin.*
Chætura *Stev.*
Collaris *Cuv.*
Halcyon *Sw.*
Ocypterus *Cuv.*
Edolius *Cuv.*
Ceblepyris *Cuv.*
Pitta *Vieil.*
Oriolus *Lin.*
Gryllivora *Sw.*
*Campicola *Sw.*
Estrelda *Sw.*
Amadina *Sw.*
Glaucopis *Forst.*
Ptilinopus *Sw.*
Mycteria ? *Lin.*
Porphyrio *Briss.*
Burrhinus *Ill.*
Aptenodytes ? *Forst.*
Phaeton *Lin.*

6370. New Holland. — *The zoological features* already sketched of the Australasian range apply with particular force to New Holland, as being the chief metropolis of this zoological province. It is, therefore, only necessary, in this place, to enumerate a few of the most remarkable animals yet discovered on this insulated continent.

6371. *Of the Marsupial or Pouched Quadrupeds*, the Great Kangaroo (*Halmaturus giganteus* Ill.) is the most conspicuous. Although a native of regions so distant, it is now become the most common animal in our menageries. The remarkable shortness of the anterior feet shows that they cannot properly be used for walking; an imbecility of structure, however, amply compensated by the great developement of the hinder feet: the former are used when the animal is browsing, but when it wishes to proceed with the least activity, and especially to run, the strength of its hind feet and enormous tail gives it the power to take surprising leaps, and thus easily to escape its enemies. The Kangaroos live in small troops, headed by the old males. No less than eight species of this genus have been discovered in New Holland; that named H. elegans is the only one with a variegated fur, the back being marked with transverse stripes.

6372. The Hair-tails (*Dasyurus* Ill.) are a peculiar race of quadrupeds, allied both in habits and appearance to the polecat and marten: they may, in reference to their food, be ranked as beasts of prey, since they sleep during the day, and only steal forth in the night, searching for smaller animals and the bodies of dead seals. They receive their name from their long bushy tail, not unlike that of a fox. The Tapu-tafa (*Dasyurus tafa*) (*fig.* 1062.) is an elegant example of this tribe.

1062

TAPU-TAFA.

6373. The Duckbills (*Ornithorhynchus*) (*fig.* 1063.) long excited the scepticism and the astonishment of naturalists; who beheld in these creatures the perfect bill of a duck, engrafted, as it were, on the body of a mole-like quadruped. It was first made known to the world by our countryman, Dr. Shaw, who clearly demonstrated it was no fictitious deception. The whole animal has some resemblance, in miniature, to an otter, but is only thirteen inches long. It swims well, and, indeed, seldom quits the water, since the extreme shortness of its limbs renders it only able to crawl on land. These animals, of which there appear to be two species (distinguished only by colour), are principally found near Port Jackson. The foot of the male is armed with a spur, through which passes a poisonous liquor, rendering the animal dangerous. It has lately been clearly proved that these duck-moles not only lay eggs, but suckle their young.

1063

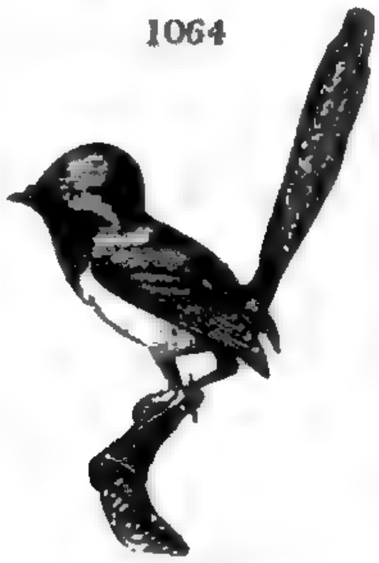
ORNITHORHYNCHUS.

6374. *The most common Birds* belong to the Melliphagous or Honey-sucking family (*Melliphagidæ* Sw.), all of which have the tongue terminated by a brush-like bundle of very slender filaments, with which they either suck or lick the nectar of flowers; the little scarlet Honey-sucker, however, is the only species ornamented by any gaiety of plumage. Many of the Warblers, on the other hand, are uncommonly beautiful; one, called the Superb (*Malurus superbus*) (*fig.* 1064.), has the back of the head and the throat velvet black, divided by bands of the richest blue: it is constantly in motion, carries its tail nearly erect, and sings a short little song as it perches. The Emu bird is still smaller, being scarcely bigger than our wren, and having a long tail, quite transparent, consisting of one bifurcated feather, like those of the Emu, whence its name. But the two most magnificent birds are undoubtedly the Rifle-bird and the King Oriole.

6375. The Rifle-bird (*Ptiloris paradiseus* Sw.) is nearly the size of a jay, but its bill [illegible] long and sickle-shaped. Like the uniform of rifle troops, it seems, at a distance, entirely of a black green; but, on closer inspection, its rich and magnificent tints astonish the spectator. The King Oriole (*Sericulus chrysocephalus* Sw.) (*fig.* 1065.) is of two colours only, golden yellow, and the deepest black, the feathers of the head resembling the softest velvet; so that nothing can exceed the richness of its appearance.

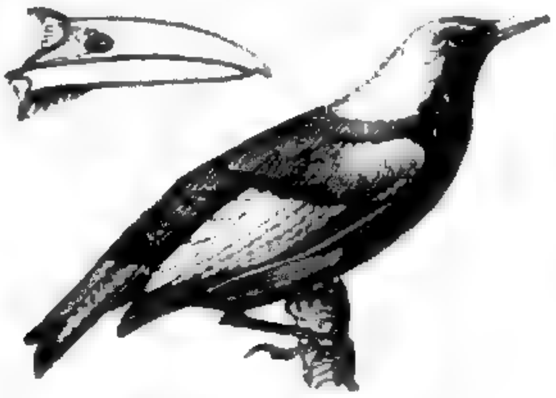
6376. The Spotted Grosbeak (*Amadina Lathami* Sw.) (*fig.* 1066.) is a most elegant bird, not larger than our greenfinch, and might easily be domesticated: it is light slate colour above, with the bill and rump deep crimson, the throat has a black collar, and the sides have snow-white spots on a black ground.

1064



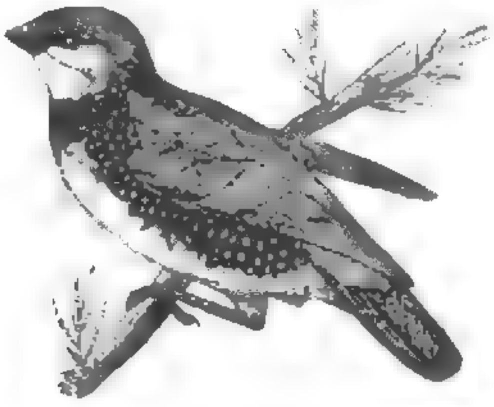
SUPERB WARBLER.

1065



KING ORIOLE.

1066



SPOTTED GROSBEAK.

6377. *The Crested Bronze-winged Pigeon* (*fig.* 1067.) is, perhaps, the rarest bird of New Holland: only one specimen is known in Europe, now preserved in the museum of the Linnæan Society.

1067

BRONZE-WINGED PIGEON.

6378. *Many of the shells* are beautiful, and bear a high price among collectors. The Snow-spot volute, *Cymbiola nivosa* Sw.) (*fig.* 1068.), sells for three or four pounds; the Cymbiola magnifica *Sw.*, the largest of the genus, when darkly coloured, is worth nearly as much. The Lineated Volute (*Scaphella undulata* Sw.) is common in some localities, while the Phasianellæ, or Beauty snails, are particularly elegant.

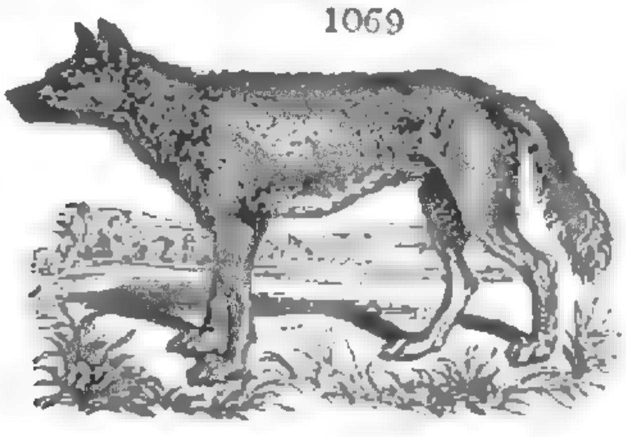
1068

SNOW-SPOT VOLUTE.

6379. *The only native domestic animal* is the Dingo, or New Holland Dog (*fig.* 1069.): it seems to partake of the singular contradictory nature of Australian animals, by never (as it is asserted) being known to bark. It is active, fierce, and voracious, runs with the tail carried horizontally, the head elevated, and the ears erect. One that was brought alive to this country leaped on the back of an ass, and would have destroyed it. All our domestic breeds of cattle, sheep, and horses have been long introduced, and have rapidly multiplied.

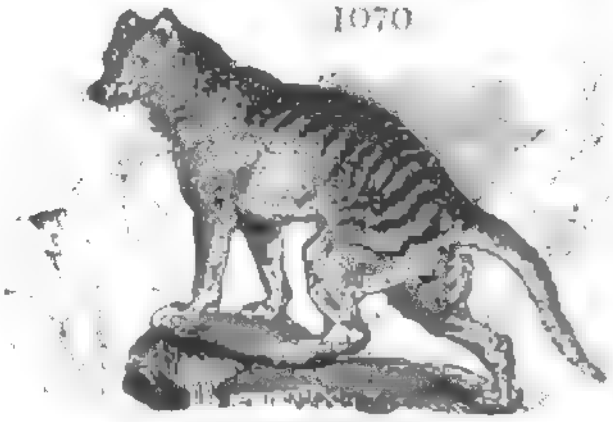
6380. Van Diemen's Land.—*The Zoology* bears a general resemblance to that of New Holland, yet presents us with a few animals peculiar to this southern latitude. The chief quadrupeds of this description are the Dog-faced Opossum, the Ursine Dasyurus, the Brush-tailed Dasyurus, and the Dwarf Dasyurus. There are also two species of Balentia or Phalangus. From our young friend, Mr. Thomas Winter, recently gone to this interesting country, we hope to derive much valuable information on its zoological productions, for a future edition.

1069



NEW HOLLAND DOG.

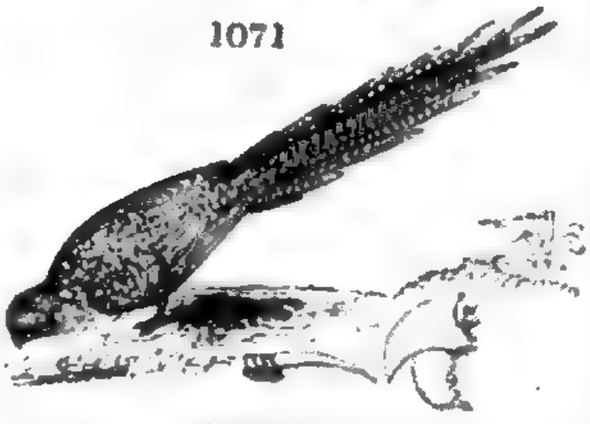
1070



DOG-FACED OPOSSUM.

6381. The Dog-faced Opossum (*Thylacinus cynocephalus* Tem.) (*fig.* 1070.) suggests the idea of a union of the dog and the panther; the fur is short and soft, yellowish brown, the sides of the body being marked by broad transverse stripes, which do not, however, extend to the belly; the tail is compressed, which suggests the supposition that it is used in swimming, particularly as this animal inhabits the rocks on the sea shore, and is known to feed upon fish.

1071



GROUND PARROT.

6382. *Many of the ground parrots* of Van Diemen's Land do not occur in New Holland. The Black-spotted (*Pezoporus formosus* Ill.) (*fig.* 1071.) is the most singular, since it is never seen to perch upon a tree. The Blue-fronted Parrakeet (*Nanodes venustus*) (Sw. *Zool. Illust.* 2.) is also a rare and elegant species; while the Bronze-winged Pigeons of two sorts, are very common in the open country.

6383. *The following glossary of the animals* best known to the settlers of New Holland has been given by Judge Field, in his valuable *Geographical Memoirs on New South Wales*, London, 1825. It will answer the double purpose of informing both the scientific and the general reader:—

Quadrupeds.

Forest Kangaroo. Halmaturus giganteus. *Ill.*
Brush Kangaroo. Halmaturus pencillatus.
Flying Opossum. Petaurus ——? *Shaw.*
Water or Duck Mole. Ornitherynchus fuscus.

Birds.

Jabiru. Mycteria australis.
Emu, or Cassowary. Rhea Novæ Hollandiæ.
Emu Bird, or Catchfly. Malurus malachurus *Vieil.*
Native Companion. Ardea Antigone.
Black Swan. Cygnus atratus.
Goose of New Holland. Anas semipalmata.
Pheasant, or Bird of Paradise. Menura superba.
Swamp Pheasant. Centropus ——?
Spur-winged Plover. Charadrius ——?
Regent Bird, or King's Oriole. Sericulus chrysocephalus *Swains.*
Rifle Bird. Ptiloris paradiseus *Swains.*
Butcher Bird. Vanga destructor *Tem.*
White Hawk. Accipiter Novæ Hollandiæ *Tem.*
Satin Bird. Ptilinorhynchus Macleayii.
Superb Warbler. Malurus superbus *Vieil.*
Laughing Jackass. Dacelo gigantea *Leach.*
Green Pigeon. Ptilonopus magnificus *Sw.*
Wonga-wonga. Columba picata *Lath.*
Green Dove. Ptilonopus purpuratus *Sw.*
King Parrot. Platycercus scapularis *H. & V.*
Blue Mountain Parrot. Platycercus hæmatodus *H. & V.*
Rose Hill, or Nonpareil Parrot. Platycercus eximius *H. & V.*
Macquarie Island Parrot. Platycercus pacificus *H. & V.*
Lory Parrot. Platycercus Pennantii *H. & V.*
Ground Parrot. Pezoporus formosus *Ill.*

Sect. III. *Historical Geography.*

6384. *The name of Australasia*, in the early records of navigation and geography, bears a vague and almost fabulous sense. It was imagined that the great mass of solid land known to exist on the northern side of the equator, must be balanced by a nearly equal extent in the southern hemisphere. To discover this mighty *Terra Australis Incognita* was the great object of ambition to navigators through the Pacific; and hope painted it equally filled, as the New World in the West had been found, with the objects which could gratify the desire of wealth and luxury. Indeed, it is little more than half a century since Mr. Dalrymple, one of the greatest names in geography, pronounced the existence and wealth of this southern continent to be a point not admitting of the smallest doubt. The second voyage of Cook, however, set this question at rest; for, though it has recently been proved that antarctic lands of some extent had escaped his notice, yet his route went across all the tracks in which such a great and fertile continent as modern fancy had supposed, could possibly have existed. From this period, the titles of *Australasia* and *Terra Australis* settled down upon New Holland and the other great islands by which it is surrounded.

6385. *The Portuguese first*, and afterwards the Dutch, were too active navigators to allow a tract of coast so closely contiguous to the rich and early settlements of Java and the Moluccas long to escape their research. In the King's library in the British Museum there is a chart by a French hand, dated 1542, in which is delineated to the south of Borneo and the Eastern Archipelagoes, a very large island, called "Great Java;" on the east side of which, immediately beyond the lat. of 30°, appears "*Coste des Herbaiges*," a singular coincidence with Botany Bay. This can scarcely be more than casual; but that the delineation in that chart of the north-western coast was founded on some actual surveys can scarcely, we think, be doubted. No memorial, however, of the early voyages, in the course of which these lands were laid down, can now be discovered.

6386. *It was by Spanish navigators* that the first distinctly recorded expedition was made, from an opposite quarter, and to an opposite extremity of the great Australasian group. In 1567, Don Alvaro de Mendana was sent by the Viceroy of Peru, with a squadron from Callao. After measuring the breadth of the Pacific, he fell in, near the eastern extremity of New Guinea, with a group of thirty-three islands, to which he gave the name of Solomon. It would be a singular instance of the chimeras which obtained credit in that age, if Mendana really hoped, as it is said he did by giving this name to the islands, to persuade the world that they were the Ophir, whence Solomon drew the treasures with which he adorned the temple of Jerusalem. There is nothing in the description of them to justify so wild an hypothesis. The natives of one of the largest (Santa Ysabel) were of a very dark complexion, with curly hair, wearing scarcely any clothes, feeding on cocoa-nuts and roots, and, it is supposed, on human flesh. Such repasts seem too well indicated by the horrid present made by the chief to Mendana, of "a quarter of a boy with the hand and arm." At San Cristoval, the natives mustered in a large body, armed with spears, clubs, and arrows, to give battle to the Spaniards; but a short discharge of musketry was sufficient to disperse them. Mendana was sent on a second expedition to examine these islands more carefully; but such was then the imperfection of maritime observation, that he sailed for a considerable time about that quarter, without being able again to light on them; so that it was tauntingly observed, that "what Mendana discovered in his first voyage, he lost in his second." He landed, however, at Santa Cruz, which is not very remote from them, though it appears more properly to form part of the New Hebrides. It is somewhat remarkable, that though these islands have been touched at by Bougainville, by Shortland (who gave them the name of New Georgia), and by other navigators, they have never been surveyed with care, nor has any important addition been made to our knowledge respecting them since the time of Mendana.

6387. In the footsteps of Mendana followed *Pedro Fernandez de Quiros*, whose name is great in the history of early naval discovery. On the 21st of December, 1605, he set out with a squadron from Lima in search of the great Austral continent. Quiros held a course considerably to the south of the equator, and for a long time discovered only small detached islands. At length, in April, 1606, he came to the islands called the New Hebrides, one of which is of such extent as to suggest the idea of a continent. Here he found a bay large enough to hold a thousand ships. With that familiar use of sacred names in which the superstitious devotion of the Spaniards delighted, they called the country Australia del Espiritu Santo, two fine rivers the Jordan and the Salvador, and the port Vera Cruz. The banks of these streams were delightful, being clad with a charming verdure, and every where enamelled with flowers. The bay was so well sheltered, that in all winds it continued smooth and calm. The land was covered with trees quite up to the mountains, which, like the plains, were always green, being separated from each other by valleys, watered by fine rivers. In a word, there was no country in America, and very few in Europe, equal to this. The Spaniards made some attempts to conciliate the inhabitants; but their conduct, being imbued with that tyrannical spirit which always distinguished the transmarine proceedings of their nation, soon excited a violent hostility, and they were obliged to make off without holding any other communication than that of a few smart skirmishes. They departed, therefore, with the empty ceremony of taking possession of it in the name of Philip III., and founding a city, which they called the New Jerusalem. Luis Vaes de Torres, at the same time, second in command to Quiros, pushed his discovery to the strait which separates New Holland from New Guinea, and saw both those large continents, but without well knowing what they were. Torres's Strait even dropped into oblivion, and was not rediscovered till 1770. Quiros published a splendid and highly-coloured description of the territory thus discovered by him, and addressed to the Spanish court no fewer than fifty memorials, urging them to send out a colony: but that cabinet, sinking into the supine indolence which has long characterised it, made no further exertions.

6388. *The Dutch* now took up the undertaking from the opposite quarter of Java and the Moluccas. The latter islands almost touched those of New Guinea; and it was natural that expeditions should be sent from them to explore the coast of that very great island. In 1605, the yacht Duyfhen, employed on this mission, and taking on her return a southerly course, touched at that part of New Holland which is now called Cape York, but without knowing what she had discovered. This happened a few months before Torres saw the very same part of New Holland in the discovery of his strait; so that the commander of the Duyfhen was the first European that viewed any portion of that continent. In the course of thirty years, fresh expeditions, intending and believing themselves to be discovering New Guinea, sailed, in fact, along a great part of the opposite,and even to the western coast of New Holland. In Tasman's instructions it is already characterised by the name of the "Great unknown South land," and it is stated, that in the years 1616 to 1622, a range of its western coast from 35° to 22° S. lat., was discovered by the ship Endragt, under the command of Dirk Hartog. The name of that commander was, in fact, given to an island and large bay, called afterwards Shark's Bay by Dampier; and both by him in 1697, and afterwards in 1801, by Baudin, a tin plate was found here, bearing the name of the ship Endragt. In 1627, a vessel called the Goede Zeepaard, pushed its career farther, and turning the south-western point of Cape Leeuwin, explored a considerable extent of the southern coast, to which was given the name of Nuyt's Land. Abel Janez Tasman, however, took a wider range, which rendered him foremost in the career of Australasian discovery. On the 14th of August, 1642, he sailed from Batavia with two ships, the Heemskerk and the Zeehaan. He appears first to have sailed southward through a wide range of open sea, till he passed the latitude of 40°. He then steered west, still in the same latitude, which kept him at a distance from the coast of New Holland, but brought him upon that of the southern appendage to it, now so well known by the name, which Tasman gave to it, of Van Diemen's Land, in honour of the then governor-general of Batavia. Tasman, on this coast, saw neither man nor beast; yet he observed smoke in several quarters, and fancied he heard in one place a sound of people, and in another a noise like that of a trumpet; also footsteps resembling those of a tiger or some other wild beast. He observed too very lofty trees, with steps cut in them with a flint, five feet distant from each other, which gave the idea of a gigantic race, by whom such steps could be commodiously used. Tasman now continued his course eastward, till he came to the coast which he called New Zealand. He soon saw enough of the inhabitants, who were not long in displaying that ferocity, of which they have since given so many proofs. Having surprised a boat, they killed three of his men, and obliged four others to swim for their lives. Tasman does not seem to suspect the dreadful ulterior fate which probably awaited the victims. He gave, however, to this inlet, the name of the Bay of Murderers; and with some difficulty cleared the inhospitable coast to which it belonged. His course then led him to the Friendly islands, whence, after beating a considerable time through little known and dangerous seas, he reached Batavia by the northern coast of New Guinea. Although the Dutch thus showed considerable interest in the exploration of these extensive coasts, there is no record of any intention or attempt to form a settlement upon them. According to one of their navigators, there were every where found "shallow water and barren coasts, islands altogether thinly peopled by divers cruel, poor, and brutal nations."

6389. *English navigators* were now found taking the lead. Dampier, first in the character of a buccaneer, and afterwards in a regular and official career of discovery, observed with characteristic accuracy the north-western coast of New Holland. But it was Cook, whose career enabled him to put together into one regular and consistent system the scattered notices of former navigators. He made a complete survey of the eastern coast of New Holland, which till then had scarcely been at all visited, and ascertained the almost forgotten fact of the complete separation of that continent from New Guinea. He examined, also, Van Diemen's Land, though not with minute attention, and without being aware of the strait which separates it from New Holland, and gives to it an insular character. Cook, also, circumnavigated New Zealand, traced its separation, by the strait which bears his name, into two great islands, and ascertained, by some agreeable and some bitter experience, the striking contrasts in the character of that remarkable people.

6390. *The British government*, in consequence of the discoveries of Cook, and the complete knowledge now obtained of the coast of New Holland, suggested plans, which gave a new character and interest to the Australian world. Although the territory was extensive and the soil fertile, it yielded none of those rare and brilliant products, either vegetable or mineral, which had hitherto tempted to the formation of colonies. But another motive, suggested by the philanthropic temper of the age, proved sufficient to impel to such an undertaking. The vast growth of the wealth and population of Great Britain was accompanied, unhappily, with increased temptations to crime. The many unfortunate persons, thus made amenable to the laws, for offences not of the deepest dye, when continued in prisons, suffered in health and morals, and came out commonly more corrupted than they entered. The transporting them to the opposite extremity of the globe was a punishment less cruel and debasing, and offered a much better chance of amended habits. It afforded, also, the distant prospect of covering these almost boundless deserts with the arts, industry, and civilisation of Europe. Such were the laudable motives which induced our government, in 1788, to establish the colony of Botany Bay. The settlement has ever since gone on increasing, and, notwithstanding some drawbacks, arising from the peculiar materials of which it is composed, it has, in a very tolerable manner, answered its purposes. The original source of supply has, no doubt, been powerfully reinforced and purified by that spirit of emigration which has recently become so strong, and which promises to realise, earlier and better than was ever expected, the hope of filling these vast regions with a civilised population. The progress of settlement, however, continually narrowed the space in which room could be provided for the numerous voluntary and involuntary emigrants. It became the first object of the settlers to discover such a space in the interior, across the hitherto impassable range of the Blue Mountains. This was done in 1813, by Messrs. Blaxland, Wentworth, and Lawson. Governor Macquarie afterwards despatched Mr. Evans, the deputy land-surveyor, by all possible means to find out or make a path down these mountains, to the fine country which these gentlemen had first seen beyond them. For twenty-six miles Mr. Evans passed over a succession of steep, rugged mountains, which seemed repeatedly, at first sight, to deny all passage. At length he reached the highest point, a lofty table plain, afterwards called the King's Table Land, whence stretched a prospect of prodigious extent. On the opposite side appeared a very abrupt descent into a deep and romantic glen, beyond which rose another lofty chain of hills. After making his way for seventeen miles along the ridge, he came to a most tremendous precipice, above 600 feet high, called Mount York, down which, with great labour, a road was afterwards constructed, called Cox's Pass. His toils were now rewarded. He came to fine pastoral plains, well watered by two rivers, the Campbell and Fish, uniting into the Macquarie. As soon as this intelligence had been conveyed to Sydney, and the route reported practicable, in 1815, Governor Macquarie in person crossed the mountains, and examined this new accession to the colony. He founded a township there, to which he gave the name of Bathurst; and this rich and improvable district is now occupied by a thriving population.

6391. *Another expedition, under Mr. Oxley*, the surveyor-general, was, in 1817, undertaken to discover the course of the waters which flowed westward from the Blue Mountains, and to explore the regions through which they rolled. Mr. Oxley first followed the course of the river Lachlan, which was found proceeding directly westward; but nothing appeared along its banks which could afford the promise of a flourishing settlement. The hills were rugged and steep, the plains either sandy, or marshy and inundated, and the river finally dwindled into a narrow channel running through a morass. As Mr. Oxley was returning by another route, disappointed in the object of this expedition, he came upon a noble river, watering a rich and romantic valley, and which proved to be the Macquarie, a broad and considerable stream, flowing in a north-west direction. He returned at this time to Bathurst, but next year set out on a fresh expedition, to find, if possible, the termination of this important river. He traced it to the north-west through a series of rich flats and extensive level plains, till, unfortunately, it too began to spread into marshes; and, at length, appeared to terminate in a vast watery plain covered with reeds, through which it flowed with a channel only five feet deep. He now determined to return, not by re-ascending the river by the same track, but by striking to the east, across a mountain range, which led more directly to the sea. On this track many interesting discoveries were made. The party passed over high mountain ridges, whence they descried to the southward several vast plains covered with the richest herbage. They observed a succession of rivers flowing to the northward, and, at length, came to a considerable one, directing its course to the eastern coast. To this they gave the name of Hastings; and a good harbour, found at its mouth, has, under the name of Port Macquarie, become the seat of a settlement, which promises to flourish. On the whole, this expedition, notwithstanding the disappointments which attended it, enlarged greatly the known extent of lands in the interior fit for cultivation and settlement. It is only to be wondered that, with officers so enterprising, the career of discovery should have been suspended by government after penetrating only to about a tenth part of the breadth of the continent, and that no further efforts should have since been made, except by private individuals, to enquire into the secrets of the great Austral wilderness, until the year 1827. A well-appointed expedition was then placed by the colonial government under the direction of Mr. Allan Cunningham, the King's botanist, who had already traced a route from Bathurst to Liverpool Plains, a fine country discovered by Mr. Oxley in his second expedition, and who now effected a journey from Hunter's River to the River Brisbane, on the banks of the latter of which a penal settlement had already been established for several years; and near to which, with a pass to them through the dividing range of mountains 4000 feet high, he discovered some very spacious pastoral downs, ready for the colonist, whenever the government should be pleased to convert the penal settlement into a free one, as they had successively done Hunter's River and Port Macquarie.

6392. *In the year* 1828, an expedition was despatched, under the direction of *Captain Sturt*, an officer of His Majesty's 39th regiment, to Mount Harris, a detached hill upon the Macquarie River, where Mr. Oxley had left his boats upon proceeding easterly towards the coast. Upon reaching that remarkable eminence, on the 20th of December, Captain Sturt ascended the summit to survey the country below. But how much had evaporation in three years changed the face of those regions! The plains which Mr. Oxley had left entirely under water in 1818, now presented an expanse of dried up surface, which to all appearance extended northerly, without the slightest semblance of rising ground, to a distant "clear unbroken horizon." Encouraged by these appearances, the expedition traced the Macquarie through its last stage to the woodlands below Mount Harris, where its channel ceased "to exist in any shape as a river." In exploring the country beyond this point, the party traversed the bed of that extensive morass, into which the late surveyor-general had, ten years previously, descended in his boat: this they now found "a large and blasted plain, on which the sun's rays fell with intense heat;" the ground itself, parched to an extreme, exhibiting in many places deep and dangerous clefts, which clearly demonstrated the long existence of those droughts, to which every known part of New South Wales was at that period exposed. On these inhospitable levels, Captain Sturt passed a week; and in that period he skirted three distinct patches of marsh, in which were found broken channels of the river, forming so many stagnant lagoons or canals, surrounded by reeds. In whatever direction they advanced to satisfy themselves as to the fate of the Macquarie, whether on the plains or wooded grounds, reeds of gigantic stature (the clearest indication of what such a country is in a regularly wet season) encompassed them, and greatly obstructed their progress. Captain Sturt now directed his expedition to the north-west, with a view to farther discoveries, aware, as he was, from the observations he had previously made during his own short excursion, that a clear open country was before him in that direction. In continuing their journey westerly over this level country, its total want of water, excepting in creeks where the supply was both bad and uncertain, became a source of considerable annoyance to the party; who ultimately were obliged to follow one of the watercourses, which, being traced to the north-west, brought them (on the 2d of February) to the left bank of a large river, the appearance of which "raised their most sanguine expectations." To the utter disappointment of the travellers, however, its waters were found perfectly salt; and this circumstance was the more severely felt, as the horses of the expedition had travelled long in an excessively heated atmosphere, and had been without water a considerable time. After making some arrangement in favour of his exhausted animals, Captain Sturt proceeded to explore this river, to which he gave the name of Darling. They followed it in the direction of its course (south-westerly), about forty miles, and throughout found its waters not only not drinkable, but rather becoming, as they advanced, more considerably impregnated with salt. In one part they observed "brine springs," and the banks throughout were incrusted with "salt," or, probably, with aluminous particles. The breadth of the river was estimated at sixty yards, and its banks from thirty to forty feet high. At length the want of "drinkable water" along its bank, and the appearance of a loose red sandy soil, at the point to which the patience and perseverance of the travellers had induced them to trace the river, at once destroying all hope of meeting with the most scanty supply in the back country, obliged them to give up its further examination. The extreme point to which the Darling was traced, and from which it continued its course through a level country to the south-west, Captain Sturt marks on his map, in lat. 30° 16′ S. and long. 144° 50′ E.

6393. *The Darling* may be justly considered the largest river which has been discovered in New South Wales, since it is formed by a junction of all the streams which were discovered by Mr. Oxley, in 1818 (and these were five in number, each of considerable magnitude), as well as of those met by Mr. Cunningham in his journey of 1827; and thus it constitutes the great drain of a tract of mountainous country lying between the parallels of 27° and 33½°. But what ultimately becomes of this river, beyond the spot where Captain Sturt and his comrade left it flowing through a desert country to the south-west, remains wholly unknown.

6394. To the same indefatigable officer was intrusted, at the close of 1829, the direction of *a second expedition*, destined to trace the course of the Morrumbidgee, another western stream, rising in a range of mountains situated to the southward of the parallel of 35°, and under the meridian of 149°, at a distance of about eighty miles inland from the eastern coast line, and within what is now denominated the county of Murray. Of the character of this river it may be here briefly remarked, that its bed forms a succession of planes, of which some are of great inclination; along these its waters flow with considerable velocity in nearly a west direction. After receiving the Yass River and some other minor streams, all which fall into it at an early stage of its progress, namely, in long. 148½°, the Morrumbidgee pursues a long and tortuous course for upwards of 300 statute miles, without deriving the slightest increase from the country it waters: and thus in this respect it resembles the Lachlan, which maintains a parallel course through the low interior to the northward. Thus far the river had been followed down some years ago, by stock-keepers in pursuit of strayed cattle, who also ascertained, in their long rides along its banks, the extent to which the country westerly, from its elevation above inundation, might be safely occupied by grazing stations. The direction which this river was also, at that period, known to take towards the marshes of the Lachlan, led to the conclusion, that both streams were united in those morasses; and on so low a level (as was ascertained by Mr. Oxley in 1817) as to favour the opinion that their confluent waters were rather dissipated over an extensively flat surface, than carried on in one body to the ocean, distant at least 300 miles. And this opinion, gratuitous as it was, would nevertheless have proved to have been correct, had the Morrumbidgee not pursued its course so far to the westward as to reach the channel of a much larger river; since, as will presently be seen, it has neither magnitude nor velocity sufficient to force its way 260 miles to the sea-coast; but which the principal stream, by its volume and strength, has the power to effect.

6395. *The second expedition* conducted by Captain Sturt proceeded from Sydney to explore the Morrumbidgee, in December, 1829. Tracing it down on its right bank, until he had passed every rapid or fall that might impede its navigation, he established a depôt, launched a boat, which he had conveyed over-land from Sydney, and having, by dint of great exertion, built another on the spot, he lost no time in commencing his examination of the river to the westward. On the 7th of January, the expedition moved forward down the river and on the fourth day, when they had passed extensive alluvial flats, on which were patches of reeds, the navigation became much interrupted by "fallen timber," and as the current was frequently very rapid, particularly in those parts of the river where its channel had become contracted, the boats were frequently in great danger from sunken trees. After advancing on their voyage about ninety miles to the westward, through a country of level, monotonous aspect, the party were relieved from the state of anxiety, which a week's most difficult and dangerous navigation had caused, by their arrival (to use Captain Sturt's words) at "the termination of the Morrumbidgee;" for its channel, much narrowed and partially choked by drift-wood, delivered its waters "into a broad and noble river," the current of which was setting to the westward at the rate of two miles and a half per hour, with a medium width from bank to bank of from 300 to 400 feet. This new river, which was called the Murray, and into which the diminished waters of the Morrumbidgee fall, is evidently formed by a junction of the Hume and Ovens; which streams, taking their rise in the great Warragong Chain, were first made known to us by the travellers Messrs. Hovell and Hume, who crossed them, 250 miles nearer their sources, in their excursion to Port Philip in 1824. Pursuing the course of the Murray, on the 14th of January, the voyagers made rapid progress to the W. N. W., noticing, as they passed on, a low, unbroken, and uninteresting country, of equal sameness of features and vegetation to that observed while descending the intricate Morrumbidgee on quitting their depôt. After nine days' voyage down the Murray, in which period they proceeded about 100 miles westward, without observing the slightest improvement of the country, or the least rise in its surface, the expedition passed the mouth of a stream flowing from the north by east, with a strong current, and in point of magnitude but little inferior to the Murray itself. Ascending it, Captain Sturt found it preserving a breadth of 100 yards; and its banks, on which were many natives, were overhung with trees of finer and larger growth than those on the Murray. Its waters were, moreover, ascertained to be two fathoms in depth, of turbid appearance, but perfectly sweet to the taste. The confluence of these two rivers takes place, as appears by Captain Sturt's reckoning, in exactly long. 141° E., and immediately to the south of the parallel of 34°. It was at this stage of the expedition that the face of the country began to assume (comparatively speaking) an interesting appearance; and the first rise of ground which had been seen in the advance of the party to the westward in a direct line of more than 200 miles, was observed at a moderate distance from the river to the north-west. Previous to his reaching the point of confluence of the two rivers, Captain Sturt, it would appear, had entertained a doubt as to the decline of the vast plain through which the Murray flows, as well as of the probable fall of the waters of the interior to the north of it; but on observing a new stream flowing into the Murray, the circumstance of the meridian in which he had struck it, and the direction from which it came, combined to satisfy him that it could be no other than the Darling. However, the identity of this tributary to the Murray with the Darling remains still to be ascertained.

6396. There is an intermediate *tract of unknown country*, exceeding in extent 400 miles, between the southernmost point of Captain Sturt's examination of the Darling River, and the junction of the stream discovered in the progress of this second expedition flowing from the northward into the Murray; and as these exhibit no one character common to both, we cannot, in the present state of our information, arrive at a satisfactory conclusion, that the tributary to the last-mentioned river, and that great drain of the country to the north of the parallel of 34°, the Darling, are one and the same stream. The river flowing into the Murray is said to be sweet to the taste; the Darling, on the other hand, is described as strongly impregnated with salt.

6397. *To follow the expedition* down the Murray; — that river, after it receives the supposed Darling, continues its course upwards of a degree farther to the westward, and in that space receives a second stream, which falls in on its left bank from the south-east. This tributary stream, which is described as a river of considerable importance, and was named the Lindesay, is most probably the Goulburn of Hovell and Hume, whose journey overland to the south coast, in 1824, we have already adverted to, and who, in fording their river at a part where its channel presented a breadth of eighty yards, left it winding its course to the north-west. From this point, the banks of the Murray assumed a new appearance, and along the northern extended a range of cliffs, which appeared to the party, as they passed beneath them, to be of partial volcanic origin. The navigation at length became rather intricate, for those cliffs being immediately succeeded by others of limestone on each bank, the river was found to force its way through a glen of that rock, in its passage frequently striking the base of precipices of the same formation, which rose to a perpendicular elevation of 200 feet, and in which coral and fossil remains were remarked to be plentifully embedded. At this stage of their passage, those long ranges of forest hills, which extend along the eastern shore of the Gulf of St. Vincent, became discernible, indicating to the exploring party their approach to the coast. On the 3d of February, the river having reached the meridian of 139½°, the disposition of the bounding cliffs gave its course a decided bend to the southward, through a continuation of the glen, which at length opened into a valley. Here the river was observed to have lost the sandy bottom which it had exhibited throughout its long course from the eastward; for, its bed having now dipped to almost the level of the sea, its waters had become deep, still, and turbid. On the 8th of February (the thirty-second day of the voyage from the depôt) the hills wore a bleak appearance, and the few trees, which had at one period fringed their ridges, were for the most part broken off, as if by the prevailing winds. At noon, upon entering the river's last reach, they could discern no land at its extremity; some low hills continued, however, along its left bank, while its right was hid by high reeds. Immediately afterwards, these enterprising voyagers entered an extensive lake, the expanse of which stretched away far to the south-west, in which direction the line of water met the horizon. This lake, which received the name of Alexandrina, was estimated at from fifty to sixty miles in length, and from thirty to forty in breadth. A large bight was observed in it to the south-east, and an extensive bay at the opposite point; still, notwithstanding these dimensions, this very considerable sheet of water appears to be but a mere shoal, since Captain Sturt states its medium depth at only four feet! Upon this vast but shallow lake, he pursued his voyage to the southward, remarking that its waters, which at seven miles from the point of discharge of the Murray into it were brackish, became at twenty-one miles across perfectly salt, and there the force of the tide was perceived. As the party approached the southern shore, the navigation of the boats was interrupted by mud flats, and soon their farther progress was effectually stopped by banks of sand. Captain Sturt, therefore, landed, and, walking over some sandy hummocks, beyond which he had, from his morning's position, seen the sea, almost immediately came upon the coast at Encounter Bay.

6398. We gather, as *the results* of this second tour of discovery of Captain Sturt, the termination of the Morrumbidgee, as well as of the several streams which were crossed by Messrs. Hovell and Hume, in 1824, and the waters of the Lachlan of Oxley, in 1817, all which unite; as also the nature of the unbroken, uninteresting country, lying to the westward of the marshes of the latter. In effecting this service, Captain Sturt has added largely to the geographical knowledge which we previously possessed; since the facts ascertained by him during the progress of his expedition have enabled him to fill up no inconsiderable blank on the map of that part of New South Wales lying to the west and south-west of Port Jackson.

6399. We have now given the *sum of our geographical knowledge* of New South Wales up to the present period; and dividing the map of that vast country into seven equal parts, one division will fully include the tracks of all the journeys which have been undertaken since 1817, with a view to discovery, by Oxley, Sturt, Hovell and Hume, Cunningham, and others; whilst the remaining six portions, which comprehend a great expanse of territory beyond the tropic, and the whole of the equinoctial part of the continent, continue, at this day, entirely unknown. The want of navigable rivers in this Great South Land must necessarily impede the progress of inland discovery.

6400. *The exploration of the vast shores* of the Australian continent was meantime carried on with activity. Captain Flinders and Mr. Bass, a naval surgeon, sailed from Port Jackson, in 1798, and ascertained the complete separation of Van Diemen's Land from New Holland, by the strait bearing the name of the latter gentleman. The French admiral D'Entrecasteaux, on the south-eastern coast of Van Diemen's Land, discovered, in 1792, that magnificent channel which bears his name, and which forms a series of the finest harbours in the world. Captain Flinders, in 1801, was employed by the British government to make a thorough survey of the coast of New Holland, which he completed with regard to the south-east and north-east; but the loss of his vessel prevented him from extending it to the west and north-west coasts. These were surveyed, about the same time, by the French expedition under Captain Baudin, but not in a very complete or careful manner. The British government, therefore, in the course of the last few years, employed Captain King to go again over the ground, and examine strictly all the points yet left in uncertainty, and particularly whether some river, proportioned to the magnitude of the continent, and capable of ministering to its interior commerce, did not there discharge itself into the ocean. Captain King made some valuable discoveries. He examined the northern bay of Van Diemen, which he found to be a gulf; inspected the channels of the Alligator rivers which fall into it; and discovered at the mouth of the bay two large islands, Melville and Bathurst, which had heretofore been supposed to be part of the continent. On the north-west coast he discovered Prince Regent's River, which, as already observed, is larger than any other yet found on this side of New Holland, though still not such as can well afford a channel to any great mass of its interior waters.

Sect. IV. *Political Geography.*

6401. *The government of a colony* like that of New South Wales must necessarily be attended with peculiar difficulties. A body of men who stand regularly opposed to the laws, and the laws to them, can only be maintained in peace and order by processes which must appear severe to those who are placed in more favourable circumstances. The difficulty has, perhaps, not been diminished by the admixture of that small but respectable class, whose emigration has been voluntary. The estrangement and even antipathy which must arise too readily between these bodies, from the contempt with which one is apt to view the other, have sown fertile seeds of dissension, and render it very difficult to maintain a due temper between these inharmonious elements.

6402. *Nothing like a free constitution* has yet been granted to the colony. The executive power resides in the governor, assisted by a small council of the highest officers of the government, while the legislature is shared by him with a council, which includes a few of the principal settlers and merchants, both councils being appointed by the king. The proposal for any new law originates with the executive, which, before submitting it to the legislative council, must propound it to the chief justice, who is to pronounce whether it contains any thing contrary to the law of England. After passing the council, it must be communicated to the government at home within six months afterwards; and till three years have elapsed, the king may interpose his *veto*. It must also, within six months, be laid before the British parliament.

6403. *The judicial power of the colony* is vested in a chief justice and two assistant judges, who try all cases, criminal and civil. In the former, one of the judges is combined with what is called a jury, which consists not of the colonists, but of seven naval or military officers nominated by the governor, and which seems, therefore, to partake more of the character of a court martial. The jurors, however, are liable to challenge, the grounds of which are pronounced upon by the judge. In civil cases, he or one of the assistant judges is combined with two assessors, who must be magistrates of the colony, except where both parties consent to have a jury of twelve men as in England. Not above one instance has occurred, since the operation of this judicial charter in 1824, in which both parties have so consented. In cases where the value exceeds 500*l.*, an appeal lies to the governor, and, in case of reversal of judgment, and in all cases above 2000*l.*, to the king in council. The police seems to be maintained in a very superior manner to that of England, since Mr. P. Cunningham assures us, that in Sydney, where there are so many profligate individuals, person and property are as secure as in an English town of the same size. Such statements, however, must always be understood with some allowances. Van Diemen's Land, at first, had no separate jurisdiction, except for causes under 50*l.*, being a mere dependency on New South Wales; but it recently obtained both a separate lieutenant-governor and councils, and a separate court of justice. This last, except that it has only one judge, is constituted in the same manner as that of Sydney, to the governor of which, assisted by the chief justice, there lies an appeal from it in all cases of property above 500*l.*; and in cases above 2000*l.* a further appeal lies to his majesty in council.

6404. *The military force* stationed in the colony consists of two regiments, from which three companies are detached to Van Diemen's Land. There is no fixed naval force; which is complained of, both in reference to hazards of foreign attack, and to attempts sometimes made by the convicts to carry off colonial craft. A single ship of war is sent down to both colonies from the East India station.

6405. *The revenue of the colony* arises chiefly from custom duties, which are, or were, 10*s.* per gallon on British, and 15*s.* on other spirits; 4*s.* per pound on tobacco, and five per cent. *ad valorem* on all merchandise not British. The excise is 2*s.* 6*d.* per gallon on spirits distilled; and there are small port and wharfage dues, postages, auction duties, licence fees, market and other tolls, crown rents, office fees, and judicial fines. These duties amounted in 1822 to 44,709*l.*, of which 17,809*l.* was applied to purely colonial purposes, schools, roads, &c., 27,879*l.* to what are called British government purposes, the victualling in part of troops and convicts, &c., of which appropriation Mr. Wentworth complains as grossly unjust; but as he admits that a military force is necessary for the welfare of the colonists, and as they are greatly benefited by the cheapness of convict labour, and the markets which the victualling of troops and convicts afford for their produce, it does not appear why they should not contribute to the expense of this penal establishment. The revenue of New South Wales, in the year 1830, had risen to 126,988*l.*, and of Van Diemen's Land to 67,927*l.*

6406. *The entire expense of the colony* from 1788 to 1821 inclusive, amounted to 5,301,000*l.*, for which there had been transported 33,155 persons; and are now subsisted 20,494; the expenditure of 1821 being 425,000*l.* The entire expense per head for the last twelve years, including the voyage, and the whole support of the colony, has been 25*l.*, while Mr. Wentworth finds that of the hulks to vary from 27*l.* to 45*l.*, and that of the penitentiaries to be at least 38*l.* In 1830 the expenditure of New South Wales was 242,891*l.*, of Van Diemen's Land 61,513*l.* Transportation seems, therefore, more economical, if not more effective, than any other mode of penal infliction that has yet been devised. It appears from the Report of the Committee of the House of Commons, in 1832, on Secondary Punishments, that the colonies of New South Wales and Van Diemen's Land have, from relaxation of discipline, and the premature introduction of the free press and other institutions of the mother country, in a great degree failed as penal settlements, both to reform the convict there, and to deter the criminal here. The committee, therefore, recommends that, in future, no persons sentenced to transportation, with the exception of those selected for punishment in the Penitentiary at Millbank, should be allowed to remain permanently in Great Britain or Ireland, and that henceforth the convict establishments in England should be considered an intermediate station between the gaol and the penal colonies; that no male convict, whatever may have been his previous character or station in life, who may commit an offence deserving of actual deportation, should be exempted from the previous punishment of unrewarded hard labour in the dock-yards, or at Dartmoor, attended with solitary imprisonment at night; that all convicts in the service of the government, in the penal colonies, should be strictly confined in their barracks at night, in separate cells, and that the barracks be for that purpose altered upon the plan of the prisons in the United States; that all male convicts, on their arrival from the mother country, be assigned to settlers in the rural districts, and that none be allowed to enter the service of those living in the large towns, until after several years' residence in the colony; that none but persons of respectability be allowed to have convicts in their service; that no convict be assigned to a settler, until he shall have paid, or given security for the payment, by instalments, of the expense incurred in the conveyance of such convict from the mother country; and that the service in the colony necessary to the obtaining tickets of leave, viz. of four years for a transport for seven years, of six years for one for fourteen, and of eight for one for life, be not shortened in consequence of any punishment inflicted previously to transportation.

Sect. V. *Productive Industry.*

6407. *The fertility of the Australian continent* has been a subject of doubt, and it has even been branded with a character of comparative barrenness. The greater part of its coast, indeed, presents an aspect the most arid and dreary. The interior, however, is so exceedingly little known, that any sweeping conclusion respecting it seems yet premature. That part now colonised by the British, including Van Diemen's Land, though not quite uniform, is, on the whole, in point of fertility, above the average of other continents. The ground, indeed, in consequence of all the trees being evergreens, has acquired none of that excessive luxuriance which in America is derived from the deciduous leaves continuing for ages to mix with the soil. The grass, though good, is rather thin, and Mr. Patrick Cunningham says that it has been injured by excessive and injudicious pasturing; so that it has been necessary, on small farms, to introduce artificial grasses even for sheep. But when judiciously subjected to the plough, it is manifestly equal to the best European soils, since it is made to produce two crops in the year, one of wheat and the other of maize.

6408. *The deportation of convicts for crimes* is well known to be the mode by which the settlement of Australia has been effected. The sentence has usually been for seven or fourteen years, but, from the difficulty of finding a passage home, it has almost always been, fortunately perhaps for the convict, for life, both to himself and his posterity. At the end of his period, or even sooner, in case of good conduct, the convict becomes an *emancipist*, as he calls himself, obtaining his liberty, and sometimes a piece of ground to cultivate, or, as it has often happened, to make away with. Many of them have proved very industrious, and prospered exceedingly, insomuch that Mr. Wentworth calculates that the emancipists are now possessed of property worth 1,000,000*l.* sterling, but he does not pretend that this estimate is derived from any better authority than that of a census, as he calls it, though it was perfectly extra-official, taken by some of the leading men among themselves, as petitioners to parliament, in 1820, by which it appears that the emancipists possessed 241,364 acres of land, and the free emigrants 209,106 acres. Now, in the very same year, Commissioner Bigge, in his official report to the secretary of state, says that he requested the magistrates, at the regular public *census* or muster of that year, to take an account of the land held by emancipists, and that those returns gave only 83,502 acres to them, leaving 305,786 for the free emigrants. It should seem, therefore, that Mr. Wentworth's estimates are entitled to no more credit than the petition of the emancipists to the parliament of 1828, for a legislative assembly and trial by jury, which stated that the population of the two colonies was 60,000 persons, of whom 40,000 were free settlers, assertions which Mr. Secretary Huskisson put down by simply saying that the total population of both colonies was only 49,000, of whom 18,000 only were free settlers, including in that number the emancipists, the expirees, and all others who were restored to their civil rights. Besides convicts, however, government have liberally and successfully exerted themselves in inducing another and better class to people, and to improve, the wilds of Australia.

6409. *Emigration*, in consequence of the excess of population, and the stagnation of manufactures in Great Britain and Ireland, has, for some time, been looked to as an important resource by small capitalists and persons somewhat above the lower ranks. This surplus population has been largely poured into Upper Canada and the back settlements of the United States. Mr. P. Cunnningham, who has visited both, undertakes to prove, that the Southern Continent affords a more eligible sphere for the emigrant. The passage to America is, indeed, very light when compared with that to New Holland, which, occupying, on an average, eighteen weeks, costs, in the cabin, from 70*l.* to 100*l.* The American emigrant, however, has, besides, seldom less than 1000 miles of land journey to perform into the interior; he finds dense and deep forests, in which long and hard labour are necessary to clear a few acres; he pays a price for his land which, however comparatively moderate, drains his little capital; he can obtain service or assistance with difficulty, and only at a very high rate. All these things are on a more favourable footing in the southern settlements. The emigrant, on proving himself possessed of 500*l.*, has bestowed upon him a grant of 640 acres of land; and the gift rises always in proportion to the capital manifested, till it reaches its maximum of 2560 acres, corresponding to a sum of 2000*l.* As the bank of a river is usually taken as the base line of a grant, and the river frontage allowed is in every case the same, the small and the large grants are in the first instance almost of equal value. At the end of seven years, a redeemable quit-rent is imposed, amounting to 5*l.* per cent. upon the estimated value of the grant; but as this estimate has never exceeded 5*s.* per acre, the quit-rent will not, in ordinary cases, exceed 8*l.* per annum. It is levied less as a tax than as a security that the land thus granted shall be actually cultivated, and not taken as a mere speculation. The planter then, on his urgent petition, has assigned to him a proportionate number of thieves, to assist in the culture of his new domain. Such helpmates do not sound very tempting; yet it is averred that, if well managed, they may, in most cases, be broken in to be very tolerable farm servants. Some, indeed, fly off at once from a place where "they have not even a chance;" and, as a severe flogging would await them at the police office, they form or swell those bands of bushrangers which have been so disastrous to the colony. Others endeavour to render themselves as unserviceable as possible, that their masters may be glad to return them whence they came. But after they have been fairly inured to a quiet life and regular industry, and estranged from the corrupting society of their comrades, the majority become nearly as good farm labourers as the bulk of those at home. The convict servants are quartered in little huts roofed with bark, and receive a weekly allowance of victuals, consisting of a peck of wheat, seven pounds of beef, or four pounds of pork, two ounces of tea or of tobacco, and a pound of sugar. They must have also two suits of clothes in the year, a few utensils, and a little soap; but it is optional with the master to give them wages and other indulgences. That they are really found efficient, seems proved by the consternation which, according to Mr. P. Cunningham, pervades the colony, when any ill-founded rumours are spread of an increasing morality at home, which will prevent the arrival of fresh detachments.

6410. *The first establishment of the emigrant in a new settlement* requires much consideration, and is attended with serious hardships. He must renounce all luxurious and European habits; he is deprived of accommodations which he has been accustomed to consider as most essential; he is shut out, as it were, from all society. There are said to be few who, in the first year or two, do not rue the choice they have made. They have no alternative, however, but to persevere: and if they proceed with any vigour and steadiness, prosperity soon begins to dawn upon them. They find themselves possessed of extensive and constantly improving property; and their family, instead of being a subject of anxiety and embarrassment, will be sure to add to their wealth. Great judgment is required in the choice of a situation. For those who wish to follow agricultural pursuits, Mr. Wentworth recommends one upon the coast, or the rivers connected with it; Hunter's River, Hastings River, or Moreton Bay. But for such as have the breeding of cattle or sheep in view, the vast and fertile plains beyond the Blue Mountains afford a much more ample scope; and the animals can convey themselves, or their wool, cheese, or butter, can be carried to the coast, at a very cheap rate. Van Diemen's Land, also, is suited to the pastoral farmer; and its cool climate, more resembling our own, with the greater beauty of its scenery, have rendered it rather a more favourite resort than the original settlement; though the latter affords the greater scope to speculation and enterprise. Australia is not so closely timbered as America; it has many wide open plains; and even in the most wooded tracts, the trees are at such a distance from each other that the plough can pass between them. Mr. Wentworth warmly recommends that, disregarding the deformity thence arising, the stumps, in the first intance, should be left standing, under which system an acre may be cleared for 1*l.* 8*s.*, whereas by rooting and burning them out, the cost will be doubled. A rude wooden habitation may be got up for 50*l.*; which, unless the emigrant's money be more abundant than usual, it will be much wiser to build, than to waste his capital in a finished mansion, which would cost 1000*l.*

6411. *The mode and objects of culture* do not differ materially from those of Britain. The hoe prevailed at the outset of Australian cultivation; but, unless in lands entangled with brushwood, or where there is a want of cattle, the plough is now universally substituted. Wheat, maize, and potatoes are the chief crops in New Holland. The wheat is sown in April, and reaped in October or November; after which, maize is sown immediately, and reaped in March or April. Two crops of potatoes are also raised, one between February and July, the other between August and January. Maize requires much manual labour, and is exhausting to the soil; but the crop is so abundant, and so useful for cattle, that it cannot be dispensed with. It does not suit the climate of Van Diemen's Land, where, however, barley and oats are raised better and more largely.

In the year 1830 the number of acres held was as follows: —

Total held	2,786,933
Of which were cleared	225,812
cultivated	70,695
The number of horses	10,352
horned cattle	248,440
sheep	504,775

6412. *Animals.*—The pig is easily fed on wild herbs and roots, and, if a little maize be added, makes excellent pork. The horses are generally very hardy, but ill-broken, and are found restive and unsteady at draught, for which purpose bullocks are preferred. They are chiefly used for the saddle or gig, and for racing, which has become a favourite Australian sport. Horses of high blood bring from 150*l.* to 200*l.*, and a good one cannot be bought under 40*l.* Poultry are plentiful and excellent. The chase, in distant settlements, produces the flesh of the kangaroo, the emu, and the wild turkey, together with the eggs of the emu, which are all very good food; but these animals diminish with the progress of cultivation.

6413. *Manufactures* are not naturally suited to so young a colony, yet they have made much greater progress than might be expected; a circumstance against which Mr. Wentworth inveighs too bitterly, not considering the great distance of the markets, both for importing manufactured goods, and exporting their raw produce. It is not likely that the colonists should be so very blind, as he represents them, to the most profitable modes of employing their money. The articles made in the colony are chiefly coarse and bulky, such as could not have borne the expense of a long transport; agricultural implements, common pottery, woollen cloths, undyed and twilled, in resemblance of Scotch blanketing; leather from the skin of the kangaroo; hats, beavered with the fur of the flying squirrel; straw hats, and soap. The articles are in general dearer than those made in Britain, but fully as durable, especially the cloth.

6414. *Fish* are plentifully supplied to the markets of the colony, chiefly by the natives, among whom this is the only branch of industry pursued with any vigour. The coast absolutely teems with oysters, crabs, and other shell-fish. In the rivers the perch, the eel, and the cray-fish abound, and are of superior quality. The seal is generally found along the coast to the southward, and is killed for its skin, which finds a ready market in England. Whales of a large and valuable kind resort at a certain season to all the coasts of Australia; and since the absurd restrictions on the trade in oil were removed, this has begun to be an important branch of colonial fishery, and likely to increase rapidly. The chief seat of this trade is Sydney. Four vessels are stated to be constantly employed in whaling, and six in sealing.

6415. *The commerce of Australia* may be considered very great, when compared with its slender population and recent existence. Nothing, indeed, can more wonderfully illustrate the progress of maritime intercourse than that which Britain now holds with this continent. The circumnavigation of the globe, once to accomplish which was, a hundred years ago, an almost matchless exploit of the most daring navigator, is now a common trading voyage. The ordinary shipmasters who take goods to Sydney go out usually by the Cape of Good Hope, and return by New Zealand, Cape Horn, and Rio de Janeiro. Australia, however, which has only bulky raw produce to dispose of, has difficulty in finding exports that will bear the heavy freight that is necessary in these vast distances, which separate it from the civilised quarters of the globe. The fine wool of the colony affords in this respect the fairest promise, the export already amounting to about 2,000,000 lbs., worth nearly 100,000*l.* In 1830, the value of the imports was 420,480*l.*, of which 258,985*l.* were from Britain. They consisted chiefly of British manufactures, colonial produce, wine, tea, gunpowder, &c. The exports are 146,000*l.* The imports into Van Diemen's Land, in 1830, were 255,000*l.*, the exports were only 141,461*l.* of which 120,559*l.* were from Britain. Of the latter, the principal heads were, wool, 48,000*l.*; wheat, 40,000*l.*; oil, 17,000*l.*; whalebone, 6000*l.* In 1831, the vessels entered inwards in New South Wales were 157, tonnage 31,225; outwards 147, tonnage 28,822: in Van Diemen's Land, vessels inwards 101, tonnage 26,582; outwards 92, tonnage 25,045. There is also a traffic with New Zealand and some of the South Sea Islands, for spars, sandal-wood, arrowroot, salt pork, &c.

6416. *The mineral kingdom* in Australia has not yet yielded any very excellent products, though, as usual in untried cases, sanguine hopes have been sometimes cherished. There is, however, a very extensive coal formation, reaching from Botany Bay to Port Stephens, and particularly abounding at Hunter's River. A thousand tons are there dug out annually, and sold on the spot, at 5*s.* per ton; but raised, by a seemingly exorbitant freight, to 20*s.* at Sydney. The coal burns well, but does not cake; so that it is chiefly used in manufactures, and wood is preferred for domestic purposes. Cannel coal has lately been discovered between Reid's Mistake and King Town. There is plenty of fine freestone, but lime and gypsum are found only in the interior beyond the mountains; a great loss to the agriculture of the coast territory. Magnetic ironstone exists in large masses near Port Macquarie. The pipe and potter's clay are very fine. The same minerals are found plentifully in Van Diemen's Land.

Sect. VI. *Civil and Social State.*

6417. *The population* of this vast territory is European and native. The former has been in a state of rapid increase. The first cargo of 700 convicts was landed in January, 1788. In 1810, they still mustered only 8293; but in 1821 the census gives 29,783 for New Holland, and 7185 for Van Diemen's Land. Since that time the transmission both of convicts and emigrants has been so very active, that, by the census taken at the end of the year 1828, the numbers of the old colony amounted to 36,598; and in the year 1829, there were 3664, and in 1830, 3225, convicts transported thither.

6418. The following is the *detail* of the *population* of New South Wales in 1828: —

Free emigrants - - -	Male - -	2846	4673	13,400
	Female -	1827		
Born in the colony - - -	Male - -	4473	8727	
	Female -	4254		
Convicts become free by servitude -	Male - -	5302	6644	7,530
	Female -	1342		
Convicts pardoned - - -	Male - -	835	886	
	Female -	51		
Convicts - - - -	Male - -	14,155	-	15,668
	Female -	1513		
Total - - - - - -				36,598

6419. *The population* of Van Diemen's Land amounted, in 1830, to 23,169.—Hassel has guessed the *natives* at 100,000; but the conjecture is evidently very rude, since not above one tenth part of the interior of the Australian wilderness has been visited, and not above a twentieth part of its coasts has been landed upon. Though more numerous upon the sea-shores, by reason of the resource of fish for food, it is certain that they are scattered over the interior in numbers excessively small. Social order is here of a very singular and ill-harmonising kind, being composed of three distinct elements: the native tribes, so low in the scale of humanity that not even the convicts will unite with them; the convicts transported; and the voluntary emigrants, between which two latter classes there is almost as entire a separation.

6420. *The native population* belongs to the class of Papuas, or Oriental negroes, who occupy also New Guinea and the interior of the Indian Archipelago. They have the thick prominent lips, white teeth, and, in Van Diemen's Land, the woolly hair, of the African negro; but their nose is less flat, and their limbs much leaner. Here, "human nature wears its rudest form." The theories of those philosophers who have represented man in the savage state as in the perfection of his being, and his evils as arising from the artificial arrangements of society, find here their most ample refutation. All idea respecting the fabled innocence of the state of nature must vanish on viewing the New Hollander. The state of nature is, indeed, complete. There is no society, no government, no laws; each man acts according to his own fancy and caprice. The arts of life exist in their first and rudest elements. Fishing is their main occupation; yet their canoes are rude beyond all comparison, consisting of a sheet of tree-bark folded and tied up at each end. The native of Dampier's Archipelago has merely a log, on which he sits astride, guiding it with a paddle (*fig.* 1072.), certainly the rudest existing attempt at navigation. In other quarters, canoes are hollowed out from a piece of wood merely sufficient to hold a single person, who, in various attitudes, sits and steers them (*fig.* 1073.). The people were found wholly unacquainted either with planting, or the breeding of tame animals, and deriving their support solely from hunting and fishing, chiefly the latter, in which they display a certain skill. Some erect weirs at the mouth of the rivers and small bays; others show tolerable dexterity in striking the fish with spears (*fig.* 1074.). Those in the interior subsist with still greater difficulty by collecting the roots and berries which grow spontaneously, pursuing and laying snares for the squirrel and opossum, and even devouring worms and grubs that are found in the trunks of trees. Their huts are of the rudest possible description, resembling the dens of wild beasts. They consist often of the bark of a single tree, bent in the middle, and placed on its two ends in the ground, affording shelter to only one miserable tenant. At other times, two or three pieces of bark, put together in the form of an oven, afford hovels, into which six or eight persons may creep. But they often content themselves with cavities in or under the shelter of rocks, which in well-chosen situations form their most comfortable abodes. They roam about entirely naked, except a girdle round the middle, and occasionally a skin thrown over their shoulders. They are not, however, insensible to ornament, for which purpose the skin is thickly coated with fish-oil, regardless of the horrible stench which it emits; to which embellishments are added the teeth of the kangaroo, the jaw-bones of large fishes, and the tails of dogs. On high occasions, they smear

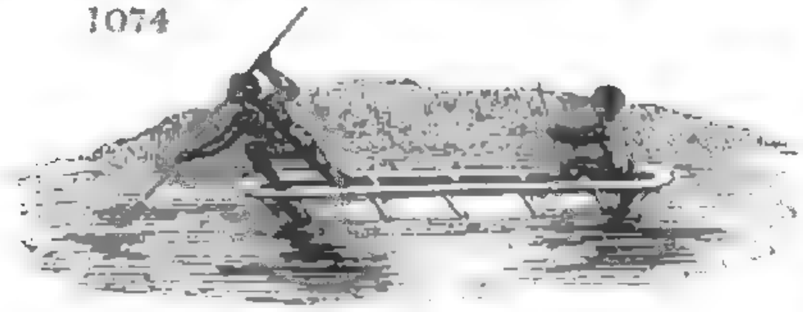
1072

NATIVE ON HIS LOG.

1073

CANOES WITH ONE MAN.

1074



SPEARING FISH.

their faces with a species of red and white earth, which renders them perfectly hideous; to say nothing of the scars, sometimes tracing the forms of birds and beasts, which they cut into their bodies. Meantime they are well provided with arms, shields of bark or hard wood, and spears of various forms and lengths, either pointed, jagged, or barbed. These they throw with such skill, as usually to strike even at the distance of seventy yards. They have nothing that can be called war; yet their whole life is one continuous fight. The procuring of food, according to Collins, appeared to be quite a secondary object; the management of the spear and shield, agility in attacking and defending, and a display of constancy in enduring pain, seemed to be their first object in life. The only respectable mode of fighting is by single combat, the challenge to which is given and accepted with equal alacrity. The laws of honour, as they are called, are as strictly observed as among the most punctilious European duellists; they even throw back their adversary's weapon, when it has flown harmless by them. Yet they do not hesitate, under the impulse of revenge, to commit midnight assassination; though this is not sanctioned by public opinion, and always leads to bloody revenge. Their treatment of the female sex is of all other particulars the most atrocious. Their courtship consists in the most brutal violence. The intending husband, having contrived to find alone the unhappy victim of his inclination, begins by beating her to the ground with a club, then accumulates blows upon blows, till she becomes altogether senseless, when he drags her to his hovel, regardless of her striking against shrubs and stones, till, under such promising auspices, she is fixed in his domestic establishment. All their subsequent life is of a piece with this outset. Several of the colonists in vain attempted to count the scars with which the heads of these unfortunate females were variegated. These people seem to have nothing which can be called religion, but they have superstitions, such as a belief in spirits, and in some uncouth forms of witchcraft. The grandest ceremony of their life consists in a sort of initiation of the youth, by which they are entitled to assume spear and shield, and to fight. There is a general assemblage of the tribe and neighbourhood, and, after a variety of strange ceremonies or dances, consisting chiefly in imitating the gestures and movements of the kangaroo, the youth has a tooth struck out, and is thereby invested with all the prerogatives of manhood. All attempts to wean them from this mode of life have been abortive. Bennillong, one of them, was induced to go to England, was there dressed after the English fashion, behaved with tolerable propriety, and appeared to enjoy himself; but immediately on his return, he found himself deserted and despised by his countrymen for these foreign attainments, and lost no time in resuming his nakedness, his wildness, his spear and his club. As is usual among savages, and in this case but too natural, they have done no more than add the vices of the newly arrived colonists to their own. They have learned drinking, thieving, and importunate begging. Endowed with great talents for mimicry, they readily acquire the language, and become complete adepts in the slang of St. Giles's; and in the war of words with the convicts they fearlessly encounter the most able veteran, and generally come off victorious.

6421. *The convict English population* form, at present, the most prominent branch of society, being those, with a view to which the colony was actually formed, both that England might be rid of them, and the southern world be benefited by them. The classic adage, "*Cælum non animum mutant qui trans mare currunt*," cannot be expected to fail altogether in the present instance. These unhappy persons have here, however, means of retrieving their character and place in social existence, which they could never have attained at home. The very community of penal infliction renders their situation less deeply humiliating. The term *convict* has, by tacit convention, been erased from the English language as spoken in New South Wales. On first landing, they are called *canaries*, in reference to the colour of the habiliments in which they are invested; but after due probation, they are exalted to the name of *government-men*, which continues to be the received appellation. They are first employed in the public works, under strict surveillance; but as their conduct appears to admit of indulgence, they are distributed as farm-servants among the new settlers. Of course, the experiment must, in many instances, fail. The numerous runaways form a dangerous and destructive body, called the *bush-rangers*, who, in both colonies, but particularly in Van Diemen's Land, have often disturbed the peace of the interior districts, and rendered property, and even life, precarious. They conduct their plunder on a great scale, and even with forms of honour and courtesy which seem very foreign to its nature. The vigorous measures of government have now put down the system; first, in the old colony, and now in the new. Of these misguided fugitives some, under the most woful ignorance, imagine that, by wandering through the deserts of New Holland, they will come at length to some civilised country, Timor, China, and even Ireland; and one of them, after long wanderings, imagined he had found such a country, till it appeared that his devious course had brought him again within the fatal precincts of the colony. However, it is a most important circumstance, as already stated, that the majority make very tolerable servants; nay, that many, on arriving at the character of *emancipists*, set up trades which they carry on in a very prosperous manner. They are even said to maintain a more punctilious honesty than the same class of tradesmen at home; conscious, from the delicate footing on which their character stands, that the smallest slip would be sufficient to overthrow it, and make them be considered as having thoroughly relapsed into all their old habits. It is an observation important beyond all others, that the young men born in the colony, of convict parents, acquire generally a character the reverse of that of which the example is set to them by their progenitors. This example seems rather to act upon them as a warning of the misery and degradation which irregular conduct produces. The fair sex, we are sorry to find, are the most turbulent part of society, both in coming out, and after their arrival. They are said to place trust in many circumstances which may prevent the arm of the law from pressing on them with extreme severity, and the great disproportion of their number to that of the other sex, being as one to ten, gives to each an importance which they are apt too highly to value. So many are the candidates for any fair hand which may happen to fall vacant, that a state of widowhood is scarcely tenable for the shortest period; and the lady has hardly time to array herself in weeds, when arrangements are made for fresh nuptials. The young females being thus too much an object of courtship, and irregularity of conduct being no bar to the matrimonial state, they do not always confine themselves within the strict limits of propriety. It seems impossible to contravene the position of Mr. Wentworth, that the most patriotic and valuable consignment which could be made to the southern continent would be that of a cargo of females. Accordingly, arrangements have been recently made by which those of respectable character, under the age of thirty, on payment of the sum of *5l.*, are conveyed to Australia, where they are immediately provided with employment, in the expectation of their being soon united to a suitable partner.

6422. *The voluntary emigrants* form a third class, not distinguished by such marked features. They come out with the view of finding or making a country and society as like as possible to what they had left at home. In the towns, especially, the habits of fashionable society in England are almost punctiliously copied, though of course on a reduced scale. The pride of station is said to be carried to an extravagant height, as is usual among those who have the least pretensions to it. But the most deep-rooted and unhappy distinction is that which the emigrants can scarcely fail to make between themselves and the freed convicts, or, as they are termed, *emancipists*. The emigrants *pure* refuse to hold any social intercourse with this class, and brand as *confusionists* those who admit them at all to their houses or society. This treatment is borne most indignantly by the emancipist, who has been admitted to a complete footing of political equality, with the exception of not being summoned upon juries at quarter sessions. He himself, however, has established a similar distinction between the emancipist *pure*, who, since his landing, has maintained an irreproachable character, and the emancipist *impure*, who, having come out as an offender, has been committed and punished for fresh offences within the colony. These distinctions have been the sources of deep and lasting feuds. Governor Macquarie made great efforts to equalise and unite the classes; but, endeavouring to carry his point rather by power and authority than by time and conciliation, he only widened the breach. Meantime the emigrants have constituted another classification among themselves, expressed by the fanciful title of *sterling*, or natives of the mother country, and *currency*, or those born in the colony. The currency are said to be fine-spirited youths, yet, from some cause of climate or country, they have the same tall form and pallid aspect which present themselves in the children of the back settlements of America. In return for the unjust ridicule with which they are treated as *currency*, they adhere closely to each other, and have an exclusive attachment to the land of their birth, with a contempt for the mother country, which is generally by no means lessened by a visit to it.

6423. *Religious instruction, and the elements of education*, were obviously of the first importance, with a view to the reformation which it was proposed to effect by such a colony. It was, therefore, a most lamentable omission, which appears from the narrative of Colonel Collins, that for several years there was not a church in the colony, nor a school, except such miserable ones as a few of the convicts set up for their fellow offenders. Much is now done to repair this gross failure. There are, at least, fifteen clergymen of the church of England, and an archdeacon, under the diocese of India, and two Presbyterian and one Catholic clergymen, all paid by government. In 1830 there were 37 churches, the maintenance of which cost 10,941*l.* Besides the male and female orphan schools, day-schools are supported in every part of the colony, the whole number in 1830 amounting to 308, costing 13,292*l.*; and the means of elementary education are thus placed within the reach of the whole colony. One seventh part of the land in each county is now reserved for church and school purposes, nine tenths of which are devoted to the church, and the remaining tenth to national schools under the management of certain incorporated trustees. The Wesleyans have also sent out several missionaries, whose exertions, both in preaching and in teaching Sunday schools, appear to have been highly useful. Literature, amid the pressure of so many more vulgar wants, cannot be expected to have taken deep root; yet, under the auspices of Sir Thomas Brisbane, there was formed a Philosophical Society, and some valuable papers were contributed to it. According to Mr. Field, in his preface to a collection of those papers, that infant society soon expired in the baneful atmosphere of distracted politics, but he fondly hopes it may prove to be only a case of suspended animation.

Sect. VII. *Local Geography.*

6424. *In considering the local divisions of Australasia,* the prominent place must, of course, be given to its great central mass of continent, chiefly with reference to the British settlement formed there. It has been now divided into counties, certain districts being called respectively Cumberland, Camden and St. Vincent, on this side of the Blue Mountains; Westmoreland, Georgiana, King, Argyle, and Murray, to the south; and Roxburgh, Cook, and Bathurst, to the west, of that great barrier. To the north of Sydney, divided by Hunter's River, and the county of Hunter, are placed the counties of Northumberland, Durham, and Gloucester on the east, and Phillip, Wellington, Brisbane, and Bligh on the west of the dividing mountains. The remainder of these vast regions has not yet been brought under any political nomenclature.

6425. *Cumberland* forms the original, and still the only fully settled portion. It has about fifty-six miles of coast, comprehending the noble harbours of Broken Bay, Port Jackson, and Botany Bay. Behind, the Hawkesbury, with its head, or tributary stream, the Nepean, makes an entire circuit round it; beyond which the broad and steep mountain ridge shuts in the county, leaving to it a breadth of only forty miles. The soil on the coast, as is the case generally throughout this continent, is light, barren, and sandy. In advancing into the interior, it improves, is covered with fine though not thick woods; and, though of a somewhat poor clay ironstone, yields tolerable crops. Along the inundated banks of the rivers there is found a great luxuriance of natural pasture; but the inundation renders precarious the crops which are raised in these highly fertilised valleys. This province has already four towns of some importance, Sydney, Paramatta, Windsor, and Liverpool.

6426. *Sydney* (*fig.* 1075.), the capital of the New Southern World, is situated upon the cove bearing its name, which opens from the spacious basin of Port Jackson. This vast inlet passed unnoticed by Captain Cook, whose attention was engrossed by the neighbouring harbour of Botany Bay, also excellent and attractive by its rich and varied vegetation. When Governor Phillip, therefore, was sent out, in 1788, to occupy New South Wales as a penal settlement, his destination was for Botany Bay, a name which long continued to be given to the whole establishment. But when he came to examine the coast, he soon discovered this new harbour, which was so superior to the first, and to almost any other ever yet seen, that he hesitated not a moment in fixing his colony upon it. From an entrance not more than two miles across, Port Jackson gradually expands into a noble and capacious basin, having depth of water sufficient for the largest vessels, and space in which a thousand sail of the line might manœuvre with the greatest ease. It stretches about thirteen miles into the country, and branches into not less than a hundred small coves, formed by narrow, rocky, yet wooded necks of land, which afford excellent shelter from every wind. From amongst this ample choice was selected Sydney Cove. It is more than half a mile long and about a quarter broad at its mouth, whence it gradually narrows to a point. For about two thirds of the length it has soundings of from about four to seven fathoms, and is perfectly secure from all winds; for a considerable way on both sides, ships can lie almost close to the shore, nor is the navigation in any part rendered dangerous by hidden rocks or shallows. The scenery, composed of rocks and hills covered with wood, and the shore diversified by numerous cliffs, is highly striking and picturesque. "The first occupation of this new world, the appearance of land entirely untouched by cultivation, the close and perplexed growth of trees, interrupted here and there by barren spots, bare rocks, or places overgrown with weeds, flowering shrubs, or underwood intermingled in the most promiscuous manner; then the landing, the irregular pitching of the first tents, where there appeared an open spot, or one easily cleared, the bustle of various hands employed in the most incongruous works, — all these gave a striking character to the first settlement." The town of Sydney is built at the head of the cove, on a rivulet which falls into it, and in a valley between two opposite ridges. That on the right, called the Rocks, was built first, and in the most irregular manner, each man studying his own convenience, without the least reference to any general plan. Governor Macquarie, however, determined to enforce a principle of *alignement,* and, under his direction, the principal street, called George Street, was carried in a straight and broad line of a mile, along the left ridge. Similar regularity was required in the smaller streets branching from it, and even the Rocks were brought into some sort of shape. That quarter continues, however, to be occupied by an inferior class, while all the fashionable houses are on the left side. The best houses are of white freestone, or brick plastered, and have a light and airy appearance. Many of them

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being surrounded with gardens, they occupy a great extent of ground; and Sydney, which contains only 7000 souls, fills up the space of a town of 20,000. Yet Mr. Wentworth assures us, that ground and houses have in some quarters risen to a very high value; the former to 1000*l.* an acre, the latter to 300*l.* and 500*l.* per house: but surely, where land is so plentiful and so bad, and the place so little overgrown, the ground valued at such rates must lie within very narrow limits. Mr. P. Cunningham mentions that the best lodgings, for a single person, may be had for a guinea a week. The hard material of the streets renders paving unnecessary, but lighting has been lately introduced. A British air is studiously given to every thing; yet the parrots and other birds of strange note and plumage, and the show of oranges, melons, and lemons, in the market, bespeak a foreign country; while a sadder tale is told by the gangs of convicts in the employ of government, marching backwards and forwards in military file, with white woollen frocks, and grey jackets besmeared with sundry numerals in black, white, and red; and sometimes, by way of punishment, with the chains jingling on their legs. But the police is so good, that even in this strange society property and person are said to be in security. "Elbowed by some daring highwayman on your left hand, and rubbed shoulders with by even a more desperate burglar on your right, while a footpad stops your way in front, and a pickpocket pushes you behind, — you may jostle through the crowd with the most perfect safety." The principal public buildings are the governor's house, built at various times and by successive governors from Phillip to Darling, and having in front a very fine plantation of English oaks and Cape pines, the walk round the outside of which forms the favourite recreation of the citizens; the barracks, occupying one entire side of the principal square; the convict hospital, a large tripartite stone building with verandas all round to both stories, a smaller military hospital, a handsome convict barrack, a court and school house, &c. The gaol is bad and old, but a new one is building. Sydney has two English churches, St. Philip's and St. James's; also a handsome Gothic Roman Catholic, a plain Presbyterian, and a large Wesleyan methodist chapel. A monthly magazine was once published by the Wesleyans, chiefly with a view to religious objects, and two well-established newspapers appear, the *Sydney Gazette* three times, and the *Australian* twice a week.

6427. *The other towns of Cumberland* are in a rising state, but have not yet attained much importance. Paramatta, called formerly Rose Hill, is situated at the head of Port Jackson, and separated from Sydney by a flat and uninteresting country. Its harbour being unfit to receive vessels of burden, and the surrounding territory unproductive, it has not made the same rapid progress, and its population is variously estimated, at 1200 when Mr. Wentworth wrote, and at 3000, lately, by Mr. Cunningham. Its importance consists chiefly in carrying on the communication between the capital and the interior. It is merely a large assemblage of detached houses with gardens, without much arrangement; but there is a good government-house, a beautiful garden, and extensive natural pleasure-grounds; and here, the late governor, Sir Thomas Brisbane, constantly resided, and attached to his house an observatory. Windsor is about forty miles in the interior, at the head of the Hawkesbury navigation. It is finely placed at the base of the Blue Mountains, whose forest ridges are seen towering successively above each other. It has 800 inhabitants, who are chiefly cultivators, and the ground in the neighbourhood is rising in value, especially those parts which are out of the reach of inundation. It is well laid out, has a small government cottage, a church, a gaol, a handsome court-house, and the other usual appendages of a country town. Richmond and Wilberforce are, as yet, only hamlets. Liverpool was founded, somewhat prematurely, about fifteen years ago, by Governor Macquarie, and for some time its existence was only indicated by a post, saying, "This is Liverpool;" but it has now a good church, and is beginning to speak for itself; and though not lying in a very fertile country, yet, affording a route to the fine agricultural and pastoral districts of Camden and Argyle, it is a place of considerable bustle, and daily increasing in importance. Campbell Town, in the fine district of Airds, is yet only in its infancy; but it has a church and a court-house.

6428. *Camden county* is situated partly in the interior behind Cumberland, and partly along the coast southward from it. The Morrison and other ranges render it a hilly and even mountainous country, the hills rising steep, like the roof of a house, leaving between them only narrow gorges, through which flow rivulets which unite in forming the Nepean. Hence this county, though generally affording fine pasture, is fit for the plough only in particular parts, which, however, are exceedingly rich. It is peculiarly so in the district of Illawarra, or the Five Islands, on the coast. Here the most luxuriant vegetation prevails, and the trees, shrubs, and even birds, are entirely different from those of the rest of the colony. The cedar, the cabbage tree, the pine, the tree-fern, the black cockatoo and the green pigeon, make the spectator think himself in a new quarter of the world. The land is too closely timbered to be easily brought under cultivation; though much of that timber, being of cedar, is valuable; yet the soil is so very rich, that a great part of it has already been occupied. This district is separated from Sydney on the land-side by a range of precipices, down which a waggon can scarcely be driven. It, therefore, depends upon water communication, which is greatly facilitated by the Shoalhaven River, navigable twenty miles up for vessels of eighty or ninety tons.

6429. *The counties of Argyle and Westmoreland* form a large extent of country, situated to the south-west of the territories now described, lying partly upon the Blue Mountains, partly to the east, and partly to the west of that ridge. On the highest track are two considerable lakes, called Bathurst and George. It is only since 1819, that the enterprise of the colonists has opened it to our knowledge, and the descriptions have somewhat varied, and have even, according to Mr. Wentworth, been tinctured with party spirit. It appears that the territory is crossed by large tracts, called *brushes*, that are altogether unproductive. The greater part, however, yields at least tolerable pasturage, and some appears fit for any species of culture. The most distant and best are the plains, or rather downs, of Monaroo, beyond Lake George, which are of great extent, clear of timber, and fitted, seemingly, either for agriculture or pasturage. These were first visited and surveyed by Captain Currie, in 1823. Grants have here been taken, at the distance of 160 miles direct from Sydney, and 30 miles from the sea, with which last there promises to be an easy communication, either by Jervis Bay, or by the newly discovered river Clyde, falling into Bateman's Bay. There seems some reason to think that these fine plains may extend the whole way to Western Port.

6430. *Western Port* is situated on the southern coast of New Holland, within Bass's Straits, ninety miles from their western extremity. The river Murray falls into it, forming an estuary thirty miles broad, with a large island in the centre, called Phillip Island. The harbour and anchorage are excellent; but the river cannot be approached even by boats at low water, owing to the extensive mud banks which surround its entrance. It is extremely winding in its course, and salt for five or six miles up, where it is met by a fresh-water rivulet, taking its rise from an adjoining swamp. The country for sixty or seventy miles along the coast, and for fifty miles inland to the mountains, is described as the finest ever beheld, resembling an English ornamented park, with trees only thinly scattered in picturesque groups. The climate is cool and salubrious; and the position is also somewhat nearer to England. From Twofold Bay, near the southern extremity of the eastern coast, Messrs. Hovell and Hume travelled thither in a line parallel with the sea, but within the mountains, a distance of nearly 400 miles, and always through beautiful, well watered, and thinly timbered lands. The opening for settlement and prosperity on this side of the continent seems, therefore, to be immense.

6431. *The region to the west of the Blue Mountains*, discovered by Messrs. Blaxland, Wentworth, and Lawson, and surveyed by Messrs. Oxley and Evans, has been a most important acquisition to the colony, and has given a new character to its condition and prospects. It was found, as already observed, to be traversed by two large rivers flowing into the interior, the Lachlan and the Macquarie. The former presented the most dreary and hopeless aspect. All the flat country bordering it was subject to its sudden and destructive inundations, which swept all before them without producing any fertility. It constantly diffused and extended its waters over low and barren deserts, creating only low flats and uninhabitable morasses. Nothing could be more melancholy than the appearance of the level and desolate regions through which this river winds its sluggish course. The Macquarie, on the contrary, is a noble river, the inundations of which are so confined by primary, or at least by secondary banks, that they never produce any destructive effect. The shores present many highly picturesque scenes, and they consist generally of rich flats, or open valleys lightly timbered, and thus offer every advantage to the settler, alloyed, indeed, by the evil of being separated from the coast by the steep ridge of the Blue Mountains; but even this has been recently lightened by the discovery of a more level and direct route.

6432. *The banks of the Macquarie* have been made to divide two counties, Roxburgh on the right, and Bathurst on the left bank. Extensive locations have now been made on Bathurst Plains, in the former county, which might more properly be called downs, as they form a succession of gently swelling hills, 50,000 acres in extent, clear of timber, and covered with luxuriant herbage. But the south side of the river is still reserved by government. At the fine valley of Wellington, seventy miles down the river, a government depôt for convicts has been formed; but these, it is expected, will soon be made to give way to more eligible settlers. The heavy carriage discourages the raising of grain in these districts; but the stock farms are already very extensive, and Sydney is, in a great measure, supplied with cattle from them. Cheese is also made, of good quality, and wool is a rapidly increasing and improving article of export. Bathurst is now assuming the aspect of an English country neighbourhood. It has a literary society, composed of twenty members, and there is the "Bathurst Hunt," whose chase is the native dog, an animal as destructive to lambs as the fox. Being 1800 feet above the sea, it enjoys a climate remarkably cool and healthy.

6433. *On the north side of the colony* there extends a succession of fine rivers, the banks of which are in the course of being rapidly settled and cultivated.

6434. *Hunter's River*, the banks of which are now dignified with the titles of Northumberland and Durham, is situated fifty-five miles to the north of the Hawkesbury; but the road by land is nearly ninety miles. It rises from the continuation of the Blue Mountain range, which is here more distant from the sea than in the first settlement, and follows a course of 140 miles, during which it receives from the north William's and Paterson's rivers. On these, and for 100 miles up Hunter's River, settlements were formed when Mr. Cunningham left the colony, and the whole, we understand, has now been located. The soil is various, but contains many fine tracts, among which that of Wallis's Plains has only the disadvantage of being very closely timbered; but when cleared, the soil is most luxuriant. A hundred and twenty miles in the interior begins that vast extent of fine pastoral country, called Liverpool Plains, discovered by Mr. Oxley, at the end of his last journey, and into which the tide of settlement is beginning to pour, through a pass which Mr. Allan Cunningham, the botanist, has discovered from Bathurst, and routes which he and Mr Dangar, the deputy-surveyor, have severally effected from Paterson's River. This river has also the advantage of very extensive mines of coal at its mouth, from which Sydney is supplied, and which has procured for the capital of the settlement the popular name of Newcastle, but its original name is King Town. This was opened as a mere convict station; but as soon as it was discovered to be so eligible, the convicts were removed to the Hastings River at Port Macquarie, and Hunter's River was given up to settlers. Newcastle, however, is yet only a cluster of brick and wood cottages, but its importance is rising with that of the settlement, and wharfs and stores are beginning to be erected.

6435. *The river Hastings with the country round it* has since, in its turn, been made a free settlement. The Hastings was discovered, as already observed, by Mr. Oxley, on his return from his second journey. It is not very important, in a navigable view, since it cannot be ascended more than ten miles by vessels of any size; but it flows through a great valley, extending for fifty miles inland, till it reaches the Blue Mountains, and with a breadth nearly uniform. This tract is various, but generally broken into a pleasing undulation of hill and dale, and consisting mostly of what is called open forest, by which is meant grass-land, lightly covered with good timber, and free from the peril of inundation. Captain King remarks, that there are here 12,000,000 acres, in which it is difficult to discover a bad tract. It is in general finely watered with clear small streams; an advantage not enjoyed by the more southern districts of the colony. The climate is nearly tropical, and rather too hot for wheat, which is apt to be burnt up or to run into straw; but maize and rice would, of course, flourish; and sugar and tobacco have been tried with success. The inland dividing Blue Mountains are very rugged and lofty, rising to 6500 feet; but to the south-west of these mountains is the extensive range of pastoral districts called Liverpool Plains. Port Macquarie is a bar-harbour, into which vessels drawing more than nine feet of water cannot safely enter; and they must be on their guard against a sunken rock on the south side; but there is good anchorage without, and the shore is not dangerous. A convict establishment was formed here in 1820; but since the quantity of good land became unequal to the demand for *it*, the convicts were removed to the still more remote station of Moreton Bay, and Hastings River is laid out for settlers. Not far from hence there was recently discovered another river, navigable for vessels of 300 tons to fifty-seven miles from its mouth, and which falls into Trial Bay. The banks consisted of open pastoral forest, hills with alluvial untimbered plains, holding out the most flattering prospects to the settler; and from a high hill upon this river, another large river was seen forty miles to the northward, discharging itself into the sea from the north-east. Southward, again, between Hastings and Hunter's rivers, Port Stephens receives another stream, called the Karuer, whose banks, notwithstanding the first unfavourable reports, Mr. Dawson, the late agent of the Australian Agricultural Company, found to contain 1,000,000 acres of good land.

6436. *The Brisbane* is the latest discovered and the largest fully surveyed river which is found on the eastern shores of Australia. Moreton Bay, into which it falls, had been observed by Captain Flinders, who discovered one small river falling into it, but took only a slight view of the western shore. Here, however, in December, 1823, Mr. Oxley discovered a channel, bearing all the marks of a large river. He accordingly sailed up fifty miles, during all which space it continued navigable, as he thought, for vessels not drawing more than sixteen feet of water. A ledge of rocks then ran across, not affording more than twelve feet of water. It was traced, however, for more than twenty, and seen for forty or fifty miles farther, still without any apparent diminution of magnitude. The country was generally of the finest description, alternately hilly and level, but nowhere inundated; the soil equally adapted for cultivation and pasturage, covered with abundant and very large timber, particularly a magnificent species of pine, which seemed sufficient for the topmasts of the largest ships. From the slowness of the current, the depth of water, and the level aspect of the country, so far as it could be traced, there appeared reason to think that it was now very distant from any mountain source; and, on considering its position, a conjecture arose in some minds that it might be the ultimate termination of the Macquarie, after that river had issued from the reedy lake in which it appeared to be lost. Mr. Oxley himself thought that it would be found to flow, not from the Macquarie marshes, but from some lake, the receptacle of those interior streams to the south-west, crossed by him in his land expedition of discovery in 1818, namely, Parry's Rivulet, Bowen and York River, Field's River, and Peel's River. And Mr. Field has shown, in his Geographical Memoirs, that it is not probable that it can be the outlet of that inland lake in which the river Macquarie was found to terminate, since the whole course of that river for 300 miles is north-west, and it would require an immediate regular diversion to the north-east for nearly 400 miles to reach Moreton Bay, and then the height of its head above the level of the sea would allow the whole river only a fall of about two feet per mile, whereas the Macquarie falls already in one place 437 feet in little more than 50 miles, and in another 750, in about the same number of miles. These speculations have been since set at rest. "In the year 1825," says Major Lockyer, in his official report to the governor, "I traced the river Brisbane, as far as it was practicable to do with boats, and then by land, to where I consider it to take its rise, on a large mountain to the north-west of the settlement, after making a very circuitous course of 200 miles. On leaving the boats, I proceeded along the banks for two days, when I came to a bed of shingle with a very small stream, not three feet wide and six inches deep, which in the summer months I have no doubt is quite dry. At this time the river, where the boats were left, had risen from six to eight feet from the late rains; and as this place, not fourteen miles above, had not the least appearance of a rise, it convinces me that the Brisbane River has its chief supply from the Brisbane Mountains." And Mr. A. Cunningham is of opinion that Parry's, York's, Field's, and Peel's Rivers fall into the Darling. Major Lockyer also found that vessels of a large size can go into Moreton Bay by the passage at Amity Point; and that in a good channel all the way to a good anchorage inside Peel's Island, there is not less than 4½ fathoms water. Major Lockyer took the very same cutter, drawing ten feet water, which Mr. Oxley had on his expedition prudently anchored in the bay, easily got over the bar at the mouth of the river, and is confident that such a vessel could go nearly thirty miles higher up. The entrance of Moreton Bay is tolerably safe, and Red Cliff Point, ten miles from the mouth of the Brisbane, or the western shore of the river itself, affords commodious harbours. The settlement is quite in its infancy, and is yet only penal; nor were there in 1826 more than eighty-five acres brought under cultivation; but the period cannot be very distant when it will become one of the most flourishing portions of the colony.

6437. *The remainder of the east coast of New Holland*, though viewed by Captain Flinders, has not been examined in any complete or satisfactory manner. Its general aspect is low and sandy, diversified with sand hills, covered however with a rich vegetation, becoming more and more tropical in its character. The coast is rich in fish, particularly turtle. Islets, single or in groups, are scattered along the whole of its extent. No attempt having been made to penetrate the country to any depth, or even to explore the coast minutely, it is highly probable that many fertile tracts of land may yet be found, as well as large rivers. Four, indeed, have been lately discovered: viz. the Clyde, in Bateman Bay, and the Boyne, in Port Curtis, which did not afford much promise; the Darling, under Mount Warning, and the Tweed, close to Point Danger; which have not yet been satisfactorily explored.

6438. *The northern coast begins at Cape York*, the most northerly point, opposite to which is the coast of New Guinea. The interval is called Torres' Strait, and is filled with various islands and groups of islands, among which last those of Prince of Wales and Clarence are the most numerous. Immediately afterwards opens the vast Gulf of Carpentaria, stretching about 650 miles inland, and 400 miles across. It was successively visited by the commander of the Duyfhen, Torres, Carstens, and Tasman, who all, however, viewed it under the impression of its being part of the opposite coast of New Guinea. Cook, in 1770, by sailing through Torres' Straits, dispelled this error; but it was still supposed that the vast opening might be an oceanic channel, dividing into two parts the east and west of New Holland. The coast was in general low, sandy, barren, beset with shallows, and sometimes with coral rocks; but woods and rich grass were seen in the interior. Numerous torrents descended from the mountains, and afforded a good supply of fresh water; but no river of any magnitude could be discovered; and Captain King considered this observation of Captain Flinders so satisfactory, that he did not repeat the search.

6439. *Arnheim's Land*, beginning at Cape Arnheim, which terminates the Gulf of Carpentaria, extends for upwards of 300 miles to the entrance of the Bay or Gulf of Van Diemen. It was almost unknown till the late careful survey made by Captain King. He found the woods sometimes luxuriant, and the vegetation rich. At other times, the trees were low and stunted, and the country had an almost desert aspect. Water was, in general, either found, or there was reason to believe that it existed. A river, the Liverpool, was discovered, which, at the mouth, was four miles broad; but after ascending by a winding course of forty miles, it dwindled to a trifling magnitude. There were a considerable number of tolerably large islands, Wessel's Islands, Goulburn Islands, &c. At its western extremity was found Port Essington, one of the finest of the many fine harbours on this continent, and which, from its situation in the direct line towards Port Jackson, from India, must become of great future importance.

6440. *Van Diemen's Bay and Land* form a portion of the continent on which Captain King landed. This gulf, named like the island of the same name from a Dutch governor-general of India, had been explored to a certain extent; but its real magnitude was by no means suspected. Captain King sailed completely round it, and discovered two large estuaries, which he named Alligator rivers, and the largest of which, after being traced upwards of 36 miles, was still 150 yards broad, and two or three fathoms deep. The western coasts had been hitherto supposed to be those of a large peninsula projecting so far as to leave only a narrow entrance into the bay; but they were now found to consist of two large islands, Bathurst and Melville, the former of which was 200 miles in circumference, and the latter 120.

6441. *The soil and climate* being fitted for growing all the vegetable productions of the East, particularly spices, and the situation being also commodious for the refreshment of vessels proceeding between our India possessions and Port Jackson, and adapted for the purposes of British trade with the Malays, it was determined, in the year 1824, to form a settlement upon Melville Island. Captain Bremer was accordingly sent from England in the ship Tamar, and sailed thither from Port Jackson, with a party of troops and convicts, and on the 21st of October, of that year, laid the foundation of Fort Dundas, in Port Cockburn, which appears to have not answered its intentions, and has therefore since been abandoned. The Dutch, we may observe, send annually to this coast, from Macassar, a fleet of perhaps 200 proas, for the purpose of catching the *tripang*, or sea slug, a gelatinous marine animal, for which there is a constant demand, as an article of food, in China. It is taken by diving, and is preserved by being split, boiled, and dried.

6442. *De Witt's Land* consists of a large extent of coast, about 600 or 700 miles long, facing the north-west. De Witt, however, had not the honour of its first discovery, which was made by the ship Vianen in 1628. Tasman and Dampier have given some hasty notices of it, and Baudin touched at some of its exterior points; but the only detailed survey, and that not complete, was made by Captain King. The low, flat, woody shore, which has continued for 600 miles, here ceases, and the general character of the coast is rocky, rugged, and even arid; fresh water being to be procured only at a few points. The coast is deep, indented by bays and gulfs, and bordered by numerous clusters of small islands. Cambridge Gulf is a long, narrow inlet, presenting, at first, the appearance of its being the mouth of a river; but none was found. Port Warrender is a noble harbour, but does not afford fresh water. York Sound is a very spacious bay, receiving two small rivers; but Brunswick Bay, which quickly follows, receives Prince Regent's River, the largest yet known to fall into the north-western coast. It was traced 60 miles up, when it had still a breadth of 250 yards. On this river there is a waterfall of a very striking and singular aspect (*fig.* 1076.); the stratified form of the rock causing the stream to appear as if falling down a range of steps. At length, Captain King came to a broad opening, called Cygnet Bay, which by an intricate channel he traced upwards for fifty miles, when he was obliged to return; but from the tides and other circumstances he is inclined to believe that it communicates with Collier's Bay to the southward, and forms this part of New Holland into a large island.

6443. *The western coast*, consisting of Endracht's Land, discovered in 1616 by Dirk Hartog, in the ship Endracht; of Edel's Land, discovered in 1619 by a Dutch navigator of that name; and of Leeuwin's Land, discovered in 1622 by the ship Leeuwin, is all of the most desolate and dreary description. It was examined by Dampier and Vlaming, and afterwards by Flinders, Baudin, Péron, and Freycinet; but by all without any cheering or promising discovery. Almost every where it consists of a ridge of low steep rocks, bordering on a sandy shore, accessible to boats only in a very few points. There are occasional openings, or rather rifts in these rocks, through which torrents sometimes pour, but without any enlivening or fertilising influence. Vegetation is either wholly absent, or its products include nothing that is fit for the use of man.

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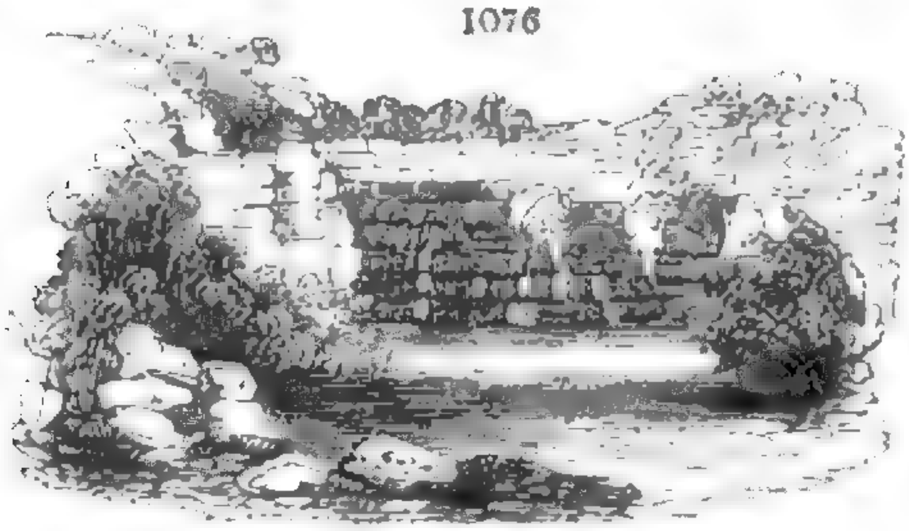


WATERFALL, PRINCE REGENT'S RIVER.

6444. *In this dreary shore*, extending for 800 miles, there are only two important openings, one made by the *Swan River*, to which a little naval expedition under Captain Stirling was sent in 1826, when the brackish stream was explored for 50 miles, and the report which was made of the country on its banks was so highly favourable, that a western settlement, which had always been a desideratum, by reason of its much shorter distance from England, was formed there in the year 1829, under the government of Captain Stirling; but we are afraid that the emigrants to Swan River have met with at least as many disappointments and privations as usually attend upon new colonies. This settlement, being yet beyond the reach of New South Wales by land, was, by a temporary act of parliament, erected into an independent colony, by the name of *Western Australia*, and regular grants of its lands have been made to capitalists, who have taken with them free labourers; but the fertility of the soil had evidently been exaggerated, and however objectionable, in a moral and political view, may be a convict colony, the rapid progress of New South Wales and Van Diemen's Land has been proved to have been in a very great degree owing to the cheap and compulsory labour afforded by transported prisoners. The latest accounts from Lieutenant-governor Stirling, of Western Australia, are to be found in the following extract from the second volume of the *Journal of the Royal Geographical Society*: —

"The only products of the country of any value at present are its timber, which is inexhaustible and of excellent quality, and its grasses, which afford feed of superior quality for sheep, horses, and cattle. There is a good species of tobacco and perennial flax, similar to the kind usually cultivated in Europe; but these are as yet only valuable as indicative of the capabilities of the soil.

"For some time back, registers of the weather have been kept at King George's Sound and at Perth, the capital of Swan River; and hereafter it will be possible to ascertain with precision the ranges of the temperature, the barometrical pressure, and the degree of moisture in these districts, compared with other countries. At present, after three years' experience of the climate of the Swan River district, it may be said to be exceptionable only in the months of January, February, and March, when the heat and drought are as disagreeable as they can be without affecting health. The district of King George's Sound being exposed to southerly winds in summer, and frequently visited by showers, is the most equable, perhaps, in the world, and the most temperate. The heat on the west coast is certainly intense, and the mosquitoes, which abound there in summer, are serious evils in their way, and have caused some dislike to this part of the country as a place of residence. But notwithstanding these and other local and trivial objections, the climate, the ports, the position, and extent of the country, are such as fit it to be the seat of a wealthy and populous possession of the crown; and I feel justified in saying, in this stage of its occupation, that it will not fail to become such, from any natural disqualification of the soil."

6445. *The other is Shark's Bay*, in Endracht's Land, which penetrates deep into the coast, with many windings, and would form an excellent harbour, but for the total absence of fresh water. To the south are some mountains, called Moresby Range by Captain King, and another, called, by the French, Mont Naturaliste; and the coast was here somewhat wooded. Notwithstanding its general sterility, the natives appeared as numerous as in any other quarter; and as its rocky barrier has been penetrated at so few points, it remains still uncertain whether there may not be within it something better than its gloomy aspect would indicate.

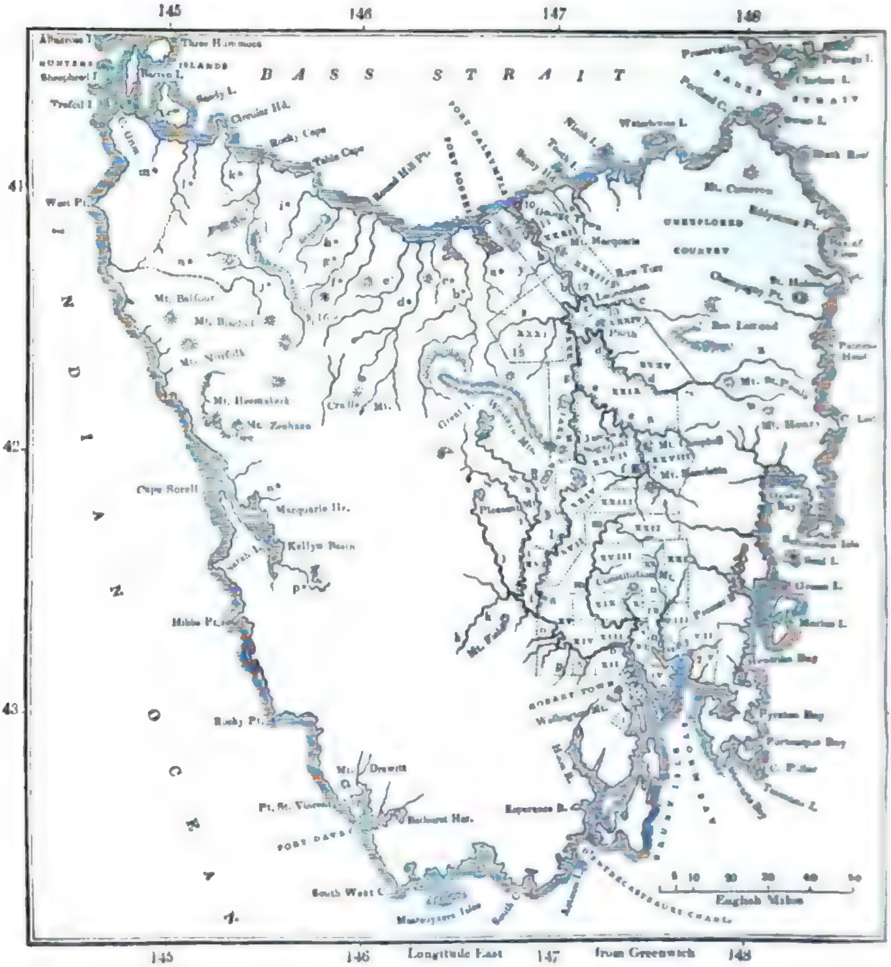
6446. *Nuyt's Land*, discovered in 1627, by Peter Nuyts, in the ship Zeepaard, extends along nearly half of the southern coast of New Holland, and has been since surveyed in parts by Vancouver, D'Entrecasteaux, Flinders, Baudin, and King. The coast continues low and sandy, but with mountain ranges in the back ground, similar to those which border the eastern coast. These mountains are altogether naked, composed sometimes of smooth and glittering rock. The soil consists generally of loose white sand, or of a crust of earth, which sinks under the feet, and is altogether unproductive. Yet even these arid deserts, like those of the Cape of Good Hope territory, are covered with brilliant plants and flowers, producing often the most enchanting scenes; as if nature, according to Péron, had sought to throw this veil of beauty over her deep sterility. King George's Sound, in its eastern quarter, was found by Vancouver and King to contain two harbours, receiving several small rivers, and abounding with timber. The natives are numerous, and carry on with activity their fishing by means of stone weirs, which they set up at the mouths of the creeks and rivers. A small settlement of troops and convicts was made here, by the government of New South Wales, at the close of the year 1826, under the command of Major Lockyer, the first good effect of which was to reclaim several of the runaway convicts, both from New South Wales and Van Diemen's Land, who have long led a roving life, collecting the skins of seals and other animals for ships, on Kangaroo, King's, and other islands, in Bass's Strait. King George's Sound is now within the jurisdiction of the lieutenant-governor of Western Australia.

6447. *Flinders' Land* extends in a south-east direction from the boundary of Nuyt's Land for 400 or 500 miles. Baudin surveyed it also; and having, in consequence of the unjust detention by the French of Captain Flinders at the Mauritius, been the first to reach Europe, he called it Napoleon's Land; but an impartial public has now restored the name to the first discoverer. This coast has open, high, rocky banks, which do not, however, send down any thing but small rivulets. It is broken by two deep bays, called Spencer and St. Vincent; on the former of which is Port Norfolk, described by Péron as one of the finest on the face of the earth. The soil is like the bottom of the sea, covered with deep sand, and sandy hills full of the incrustations of marine animals and plants; even the water in the pools is brackish. There is an extent of thirty-five miles, at the extremity of this coast, which, having been actually first surveyed by Baudin, may, it is alleged, retain the name of Napoleon. It does not contain a haven, or a point at which it is possible to land; and facing nearly the west, is lashed by tremendous waves, collected from the whole expanse of the Pacific.

6448. *Grant's Land*, explored in 1800 by Lieutenant Grant, connected Flinders' or Napoleon's Land with Western Port, which Bass had reached from the opposite quarter, and thus completed the circuit of the New Holland coast. Western Port has been reached overland from the colony, in the manner already stated, by Messrs. Hovell and Hume; and towards the close of the year 1826, a settlement was established there by our colonial government, under the maritime direction of Captain Wetherall; but it has been since abandoned in favour of the more western port of Swan River. This tract has numerous and wide bays, among which are Portland Bay, King's Bay, and Port Philip. The coast continues diversified with sand-hills, on which the waves of the ocean break with fury; and behind which, as usual, rises a rocky chain, parallel with the shore. Many parts present the same aspect of dreary nakedness as the more westerly regions. In others, a great improvement is perceptible, the environs of Capes Northumberland and Albany being covered with noble woods, which give them a most romantic appearance. The environs of Port Philip are also most beautiful, and fit for yielding many valuable productions.

2. *Van Diemen's Land.*

6449. *Van Diemen's Land* is an insular appendage to the southern part of New Holland, but of much smaller dimensions. It lies between 40° 42′ and 43° 43′ S. lat., and 145° 31′ and 148° 22′ E. long., and is reckoned by Freycinet to contain an area of 27,192 square miles. It presents neither the same long and sharp mountain ranges, nor the same vast plains as the mainland. In general it is composed of alternate hill and dale, and even the high downs are generally fit either for cultivation or pasturage. The chief lines both of mountain and river run from north to south through the eastern part of the colony. Table Mountain, the most elevated hill in the island, nearly overhangs the southern settlement of Hobart Town, rising to the height of 3936 feet, being covered for nine months in the year with snow, and subject to violent whirlwinds. The northern peaks, called Ben Lomond and Tasman, are also considerable; but the chain of most continuous elevation is that nearly in the centre of the island, called the Western Mountains, which extend north and south for its whole length. They possess a general height of 3500 feet; enclose several large lakes, one said to be sixty miles in circumference; and give rise to most of the principal rivers in the island. These rivers are, the Tamar, which, uniting the waters of the North and South Esk from the east, of the Macquarie and Lake Rivers from the south, and of the Western River from the west, forms at Launceston a navigable stream, which soon opens into the broad estuary of Port Dalrymple, on the north side of the island. The Derwent, flowing in an opposite direction, and swelled by the parallel stream of the Jordan, spreads into a noble harbour on the south-east side of the island, on which Hobart Town is situated. Two rivers on the western side enter Macquarie Harbour, but their course is yet unexplored. The harbours of Van Diemen's Land surpass those of any country in the world, not excepting even the admirable ones of New South Wales. This island was first discovered by Tasman, who surveyed its southern and part of its western shores, but not the northern and eastern, with which almost exclusively we are acquainted. It was afterwards observed in parts by Marion, Furneaux, Cook, and particularly D'Entrecasteaux, who traced the remarkable channel which bears his name. All this time, however, it was believed to be a part of the continent; nor was it till Bass, in 1798, passed through the straits which are called after him, that its insular character was established. In 1803, Captain Bowen founded the first convict establishment at Risdon Cove, on the left bank of the Derwent, which was removed, in 1804, by Colonel Collins, to Hobart Town, on the right bank, in Sullivan Cove, about twelve miles up the river. Since that time the colony has been in a state of rapid increase, particularly during the last ten or twelve years, when it became the favourite resort of voluntary emigration. The climate of Van Diemen's Land belongs decidedly to the temperate zone, and is therefore more cool and more congenial to a British constitution than that of the original colony. It has not the same extremes of barrenness and fertility; there are some rich flats along the rivers, but in general the lands are somewhat high, and of a medium aptitude both for agriculture and pasturage. A greater proportion of it is quite clear of wood, and admits of the plough being applied without any previous preparation. On the road from Hobart Town to Port Dalrymple, there is a plain extending in one direction for twenty miles, and clear land is frequent on the north side of the island. Maize, tobacco, and, much more, sugar, are not compatible



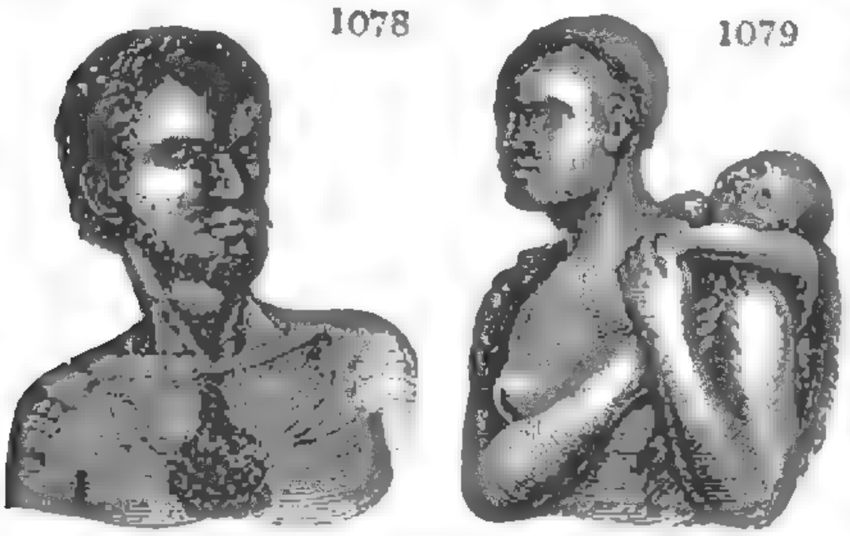
References to the Map of Van Diemen's Land.

Counties.
I. Kingborough
II. Queenborough
III. Argyle
IV. Clarence Plain
V. Sussex
VI. Harrington
VII. Caledster
VIII. Caledon
IX. Ulva
X. Jarvis
XI. Drummond
XII. Glenorchy
XIII. Melville
XIV. New Norfolk
XV. Macquarie
XVI. Sorell
XVII. Murray
XVIII. Green Ponds
XIX. Strangford
XX. Ormaig
XXI. Staffa
XXII. Bath
XXIII. Methven
XXIV. Beaumont
XXV. Amherst
XXVI. Lake River
XXVII. Lennox
XXVIII. Richmond
XXIX. Bathurst
XXX. Norfolk Plain
XXXI. Western River
XXXII. George Town
XXXIII. Launceston
XXXIV. North Esk
XXXV. South Esk.

Towns.
1. Hobart Town
2. Sorell
3. Orielton
4. Brighton
5. Elizabeth Town
6. Macquarie's Town
7. Ross
8. Campbell Town
9. York Town
10. Signal Staff
11. George Town
12. Launceston
13. Corrilin.
14. Perth
15. Westbury
16. Burghley.

Rivers.
a Piper's
b Tamar
c North Esk
d South Esk
e Macquarie
f Blackman's
g Lake
h Shannon
i Ouse
j Dee
k Broad
l Clyde
m Jordan
n Coal
o Derwent
p Plenty
q Mount
w St. Paul's
x Breakaday
y Supply
z Western
a* Avon
b* Mersey
c* Don
e* Leven
f* Blythe
g* Emu
h* Cam
i* Inglis
j* Hellyer
k* Black
m* Montague
n* Arthur
o* King
p* Gordon.

with the climate; but wheat, barley, and oats are produced of superior quality; the potatoes are equal to any on the globe, and will keep through the whole year. The cattle are rather good; the sheep produce fine wool, though not quite equal to that of New South Wales; but this has, perhaps, been from want of care, and great efforts are making for its improvement. This land wants the cedar and rose-wood of the great continent; but the blackwood, the Huon pine, and Adventure Bay pine, are valuable trees peculiar to it. The natives of Van Diemen's Land (*fig.* 1078. and 1079.) are guessed by Hassel at only 1500, and are, if possible, in a lower state than even those of the great continent. They are strangers to fishing, and to the construction of even the rudest canoes, but convey themselves in miserable rafts over any water they are obliged to cross. They are unacquainted with the throwing-stick; their spears are much less formidable, and their disposition more peaceable; but, unfortunately, they have been inflamed with the most deadly hatred against the English. This deplorable circumstance appears to have been solely owing to the rashness of an officer, who, at an early period of the settlement, fired upon a party approaching, as there was afterwards reason to believe, with the most peaceable intentions. Since that time these unhappy creatures have seized every opportunity of attacking and killing the colonists; but the smallness of their numbers and courage has rendered their enmity far from terrible. The British population, in 1821, amounted to 7185, and in 1830, to 23,169. They are considered to form the most completely English colony that exists: yet the state of society is said, on the whole, to be ruder than that at Port Jackson. In particular, the most desperate convicts having been sent thither as a place of ulterior banishment, numbers escaped, and formed a body of bush-rangers, who kept the colony in a state of perpetual alarm, and have only been very recently put down. There are six clergymen of the church of England; also, at Hobart Town, a Catholic priest, a Presbyterian minister, and five Wesleyan methodist ministers, in different parts of the island. Government supports a male and female orphan school, and seven public day-schools. The exports consist of wool, wheat (to the extent, in 1821, of 47,000 bushels), salted beef, mutton hams and tongues (386,000 lbs.); with some hides, tallow, seal skins, whale oil, and spars. Two weekly newspapers are published at Hobart Town, entitled the *Hobart Town Gazette*, and the *Colonial Times*.



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NATIVES OF VAN DIEMEN'S LAND.

6450. *The present division of this settlement* is into two counties, marked by the parallel of latitude of 42°; viz., Buckinghamshire, on the south, comprising the territory on the Derwent and the Jordan, and having Hobart Town for its capital as well as that of the colony; and Cornwall, on the north, comprehending the country on the Tamar and its tributary streams before mentioned, and of which the principal towns are Launceston and George Town.

6451. *Hobart Town* possesses a harbour, perhaps the finest in the world. The Derwent, for three miles above the town, is navigable for the largest vessels. Here the river begins to freshen, and continues hence for the distance of 20 miles, narrowing gradually, but affording a safe passage for vessels of fifty tons as far as New Norfolk, where a ridge of rocks forms a rapid, and abruptly terminates the navigation. The entrance by Storm Bay is somewhat exposed; but D'Entrecasteaux's Channel affords a continued harbour thirty-seven miles long, and sheltered from every wind. The town is delightfully situated upon two hills, between which there runs a fine stream of water from the heights of Table Mountain, which towers above it. The place, having been from the first laid out upon a plan, is much more regularly built than Sydney, has good substantial houses of two stories high, with some handsome public buildings, among which are a brick church with an organ, a good gaol, and a large substantial quay. The town census of 1821 gave 2700, and the number was believed, in 1824, to have increased to nearly 4000. All the other places in the county, namely, Elizabeth Town, at the farm settlement of New Norfolk, Sorell Town, Ross, Macquarie Town, and Brighton, are mere villages of less than a hundred houses.

6452. *Launceston*, the chief seat of the settlements in Cornwall, is situated forty miles up the Tamar, at its confluence with two small streams, called the North and South Esk. It is agreeably situated upon a hill bordering on a fertile country, and is about 120 miles across the island from Hobart Town; but it is yet a mere village, containing, in 1821, only 500 inhabitants, with a few good houses. The Tamar, from Launceston to the sea, forms a species of estuary, which admits vessels of 150 tons; but is so obstructed by banks and shallows as to render the navigation very difficult. With this view, the seat of government was removed, in 1819, to George Town, at the mouth of the river, in the fine harbour of Port Dalrymple. This arrangement has not been sanctioned by the settlers, who find the environs of George Town much less fertile and agreeable, and also more distant from the seat of culture, than Launceston, which, it seems probable, must again become the county capital. Norfolk Plains, consisting of sixty-two houses, Perth, Campbell Town, and other agreeable neighbourhoods, are rising in the interior; but the settlements are, on the whole, much less extensive than in the south, though there remains here a great extent of fine unoccupied land.

6453. *The circuit of the coasts* presents various features, and is not, on the whole, so forbidding as that of the adjoining continent. The eastern coast, for the northern half of its extent, is little indented, and presents generally sand-hills; but in the middle, between St. Patrick's Head and St. Helen's Point, exhibits a range of abrupt unapproachable rocks, with lofty and broken mountains behind. This coast terminates with the long steep Isle of Schouten, separated from the continent by a narrow strait. The south-east coast thence continues to present a series of long islands and winding peninsulas, enclosing deep and commodious havens. It begins with the large inlets, called by the English Great Swan Port, by the French, Fleurieu Bay: south from which, the Island of Maria presents a formidable aspect, surrounded on all sides by perpendicular granite cliffs from 300 to 400 feet high, and filled with many caverns, into which the waves rush and make a roaring like the sound of distant thunder. The mariner passes with trembling, as he views the fury of the tempests which dash against it. Then begins the peninsula of Tasman, of great extent, winding and indented, connected with the continent by a narrow isthmus of a few hundred feet, and branching into several minor peninsulas, as slightly connected with each other. This was supposed to be an island, till Baudin ascertained its precise form. South-west from this is the long and irregular form of Pitt Island, called by the French Bruny: running parallel with the continent, it forms the long channel called, from its discoverer, D'Entrecasteaux, the waters of which are full of fish, and its shores covered with the most beautiful vegetation. Farther on, the Bay de la Recherche forms two good harbours, and the coast soon terminates in South Cape, the extreme point of the island. The western coast, including the north and south-western, is generally high and steep, with considerable mountains rising behind. Here are two important openings; Macquarie Harbour, with a narrow entrance, spreads into a very wide and deep basin, receiving, after eight miles, two rivers, called Gordon's, the course of which has been only partially explored. The country, however, is promising, having coal and fine timber; and a penal settlement has already been formed there — the precursor, probably, of one on a more desirable footing. Port Davey, more to the southward, with a wider entrance, but less interior extent, spreads into two harbours, of which that of Bathurst is good and secure; but the country is rocky and barren, and the timber difficult of access. On the north-west corner is Hunter's group, the chief of which are Barren Island, the three Hummocks, and Low Sandy Island, which answer to their unpromising names. Still farther north-westward from these is King's Island, large, humid, bleak, with great variety of rocks, full of streams, and with a lake in the centre. There are several other islands in Bass's Straits, — Furneaux's, Clark's, Cape Barren, — of tolerable size, but of no beauty or promise.

3. *New Zealand.*

6454. *New Zealand* ranks next to the countries now described, as the most important of the great southern insular masses. It ranges parallel to the south of New Holland, with a broad intervening expanse of ocean. It consists of two islands, but separated only by a strait, and composing properly only one country, lying between 34° and 48° S. lat.; being thus about 1000 miles in length; but the average breadth does not exceed 100 miles. The surface is estimated by Mr. Nicholas at 62,160 English square miles, or 39,782,000 acres. The northern island is known by the name, not very well fitted for English organs, of Eaheinomauwe; the southern by that of T'avai Poenammoo. The first is the smallest, but is distinguished by the finest soil, and by natural features of the boldest and grandest description. Chains of high mountains run through both islands, which, in the former, rise to the height of 12,000 or 14,000 feet, and are buried for two thirds of their height in perpetual snow; presenting on the greatest scale all the alpine phenomena. From these heights numerous streams flow down, watering in their course the most fertile and enchanting valleys. The huge glaciers and plains of snow which cover their higher regions; the mighty torrents which pour down from them, forming stupendous cataracts; the lofty woods which crown their middle regions; the hills which wind along their feet, decked with the brighest vegetation; the bold cliffs and promontories which breast the might of the southern waves; the beautiful bays decked with numberless villages and canoes—all conspire to present a scene, which even the rude eye of the navigator cannot behold without rapture. The soil in the valleys, and in the tracts of land at all level, is more fertile than in New Holland, and, with due cultivation, would yield grain in abundance. It produces, even spontaneously and plentifully, roots fitted for human food, particularly those of a species of fern, which covers almost the whole country. The natives breed pigs, and cultivate some maize, yams, and potatoes; and there is a species of very strong flax, which serves not only for clothing, but fishing-lines, and various other purposes. The mountains are clothed with a profusion of fir trees, of a variety of species unknown in other countries, and rising to a magnificent height, which the tallest pines of Norway cannot rival. The natives (*fig.* 1080.) are of a different race from those of New Holland, belonging rather to that Malay race which predominates in the South Sea Islands. They are tall and well formed, with large black eyes; they are intelligent, have made some progress in the arts of life, and are united into a certain form of political society. These circumstances, however, have only tended to develope in a still more frightful degree those furious passions which agitate the breast of the savage. Each little society is actuated by the deepest enmity against all their neighbours; their daily and nightly thought is to surprise, to attack, to exterminate them; and when they have gained that guilty triumph, it is followed by the dire consummation of devouring their victims. Such was the catastrophe which, in 1809, upon the jealous pride of one of the chiefs, befell the entire crew of the ship Boyd, only two or three children being saved, and afterwards recovered by Mr. Berry. Yet to the members of their own tribe, or those whom they regard as friends, they are not only mild and courteous, but display the fondest attachment and most tender sensibility. Families live together in great harmony, and are seen assembled in pleasing and harmonious groups (*fig.* 1081.). On the death of their relations, they exhibit the most impassioned and affecting symptoms of grief, cutting

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MAN AND WOMAN OF NEW ZEALAND.

their faces with pieces of shell or bone, till the blood flows and mixes with their tears. Several even of the females, who had formed an irregular connection with the sailors, showed them every mark of faithful and tender attachment. They have a great turn for oratory, the chiefs making speeches of two or three hours accompanied with vehement gestures, to which those of the audience correspond; but we have yet no translated specimens of New Zealand eloquence. Their war canoes are very large, adorned with much curious and elaborate carving. Great diligence is also exercised, and great pain endured, in bestowing upon their skins the unnatural ornament of tattooing (*fig.* 1082.); and the visages of the chiefs are often entirely covered over with various regular figures. This, however, is not effected without severe pain, causing even attacks of fever; but to shrink in any degree from the operation is considered as altogether derogatory to a manly spirit. They have also a horrid art, by which the heads of their enemies, being dried in an oven, and exposed to a stream of fresh air, are maintained in a state of perfect preservation. Their houses are by no means spacious; that of Korra-korra, a powerful chief, measured only nine feet long, six feet wide, and four feet high. They are placed in hippahs (*fig.* 1083.), or fortified villages, seated on high and steep hills, ascended by pathways, narrow, winding, and often perpendicular, so as to be most perilous to an European; but the New Zealander leaps up as if it were level ground. Their original arms consisted of clubs of stone and whalebone, of long and pointed spears, and of the pattoo-pattoo, or wooden battle-axe; but since the musket has been introduced to their knowledge, it has absorbed all their warlike regard; and the strength of a chief is counted, not by his men, but by his muskets. The report of fifty being in the possession of Korra-korra spread the terror of his name for 200 miles round. The New Zealander has no idea of the pitched combats in the open field, which give a sort of chivalric character to the New Holland fighting; his baser aim is to steal upon his enemy, and massacre him, unprepared and defenceless. This, however, is common in savage life among such small political associations, where the object is not personal glory, but to gratify the passions and promote the interests of the tribe. There seems also to be something like political alliance among them; and Colonel Cruise understood that upwards of 3000 were once assembled on a single plain for the purposes of deliberation. The entire population is estimated by Mr. Nicholas at upwards of 150,000. Several missionaries, animated by a noble spirit of philanthropy, have ventured to take up their abode among these ferocious hordes. They have not yet made much impression on their habits of barbarism, but they are viewed as friends, treated with kindness, and enter into their houses and fortified villages, without feeling the slightest apprehension. Among the many projects which have been lately floating through the minds of our countrymen, one has been to form a settlement in this country for the purposes of emigration; but surely, till every other sphere is exhausted, no wise man would venture into a situation where the colonists would soon find themselves in a hostile position with regard to the natives, and would be every moment in danger of being attacked, killed, and eaten by these furious savages.

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NEW ZEALAND FAMILY.

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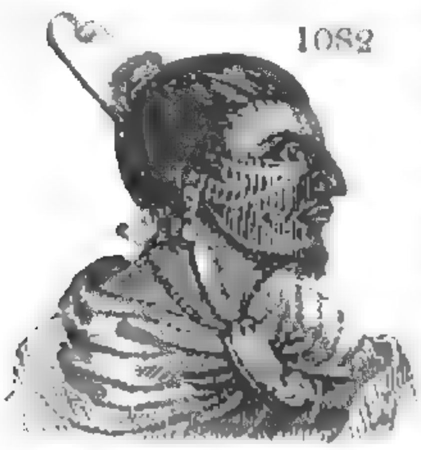

NEW ZEALAND CHIEF.

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FORTIFIED VILLAGE IN NEW ZEALAND.

6435. The following recent information concerning *New Zealand* comes from original documents in the Colonial Office, and is extracted from the 2d vol. of the *Royal Geographical Journal*:—" In New Zealand, flax may be obtained in an unlimited quantity, and there is abundance of fine timber of all sizes and dimensions for ship-building and other purposes. Thousands of tons of shipping may be employed in the flax trade alone; and the timber, which grows occasionally to a great height, and not unfrequently six feet in diameter, may be procured in any quantity. The country is rich in mineral and vegetable productions; the soil fertile and easy of culture. With regard to the whaling establishments in New Zealand, it may be observed, that, as they are of use only for about four months in the year, they are not likely to become permanent, unless combined with some other pursuit for the summer season. And, from the destructive nature of the fishery (the females being killed at the time of calving), the trade cannot last many years; but, like the sealing, will eventually fail from extermination, or from the desertion of the land by the harassed animals. The fishery is confined to the Middle and Stewart's Islands, the whales not being found north of Cook's Straits. In the four church mission stations of Rangiliona, Renken, Paihia, and Waimate, there are, under a regular course of education, about 320 New Zealanders, whose average age is sixteen years. When the hours appointed for instruction in reading, writing, and accounts are expired, the greater number of these natives are employed in the mission, some in building, others as carpenters, and others in general labour. There are three substantial chapels, capable of holding from 200 to 300 each, in which services are held three times every Sunday, and always well attended.

6456. All travellers agree that the New Zealanders are a noble race of savages, although they are clearly proved, by the long residences among them of Colonel Cruise and Mr. Earle, in spite of the scepticism of Mr. Barrow in the *Quarterly Review*, to be still cannibals. "If," says Mr. Gibbon, in speaking of the Attacotti, a Caledonian nation of the fourth century,—"if, in the neighbourhood of the commercial and literary town of Glasgow, a race of cannibals has really existed, we may contemplate in the Scottish history the opposite extremes of savage and civilised life. Such reflections tend to enlarge the circle of our ideas, and to encourage the pleasing hope that New Zealand may produce, in some future age, the Hume of the southern hemisphere." Recent voyagers differ in their opinions as to the benefit which these islands, in common with the rest of those of the South Seas, derive from the various religious missionaries who are stationed upon them. Captains Beechey and Kotzebue, and Mr. Earle, accuse these persons of teaching nothing but asceticism; and the last attributes the progress of the natives of New Zealand in civilisation to the whalers who touch there. When we consider the nature of the education which this class of mariners receives, Mr. Earle's really seems to be a bold opinion. The interesting works of Mr. Nicholas, Colonel Cruise, Messrs. Tyerman and Bennet, and Mr. Stewart, present a different and (we should think) a truer picture of the labours of these isolated and pious men. We think the missionaries right in indulging the passion of the New Zealanders for English clothing, and in not waiting till they can master all the difficulties and subtleties of the English, but in at once translating the Gospels into the great Polynesian languages, and in teaching their children to read those translations. To translate a work into the language of the learner, is to explain it at the same time. To teach the learner the language in which a work is written, often leaves the meaning of the work to be still translated to a foreigner. True it is that, till their European costume shall become complete (and perhaps even then), they will look more noble in their mat-cloaks: but no barbarous country was ever civilised till the people had adopted the costume of their conquerors; and the expensive and complicated dress of refinement and fashion is the taste that will lead the savage to industry and the arts of peace — not the head-dress of plastered hair, and the garment made from the cloth-tree. We are happy to learn, from Mr. Earle's book, that the more general introduction of muskets and gunpowder is found to diminish intestine war. The savage sees that the bullet sets at nought strength and supersedes courage. Their armies, therefore, number muskets before they encounter; and, if they find these to be equally matched, they settle the dispute amicably. This is great ground gained; and the cultivation of the soil, the breeding of cattle, infant education, European clothing, are, under the direction of the missionaries, and their generous subscribers in England and in the United States, fast following. Thus it is that New Zealand will, in time, leave off the practices of war and cannibalism, and become, what we understand Otaheite and Owhyhee actually to be, a civilised and Christianised country

4. *Papua, or New Guinea.*

6457. *New Guinea* is the largest mass of southern continent next to New Holland, being from 1200 to 1400 miles in length, and varying from 150 to 200 miles in breadth. There seems great reason to surmise that it is one of the finest countries in existence. The few navigators who have sailed along its coast observed ranges of mountains swelling behind each other, their summits rising in the most picturesque and varied forms, and clothed with immense pine forests. The Dutch maps represent some of those on the west coast as covered with perpetual snow, which would imply, in this latitude, a height of 15,000 or 16,000 feet. The copious moisture which must flow down from these heights, in a climate so intensely tropical, can scarcely fail to generate a most rich vegetation, while the close contiguity and similar climate of the Spice Islands, afford a presumption, that their valued products may find here a congenial soil. Yet this tempting region has been left almost a terra incognita, having been generally viewed only from a distance by navigators, except Forrest, who landed at several points of its northern coast. Some recent observations have also been made by the French navigators Duperrey and Lesson. The population, like that of New Holland, was found to consist of Papuans, or Oriental negroes, mingled with the still ruder race of the Haraforas, who inhabit the interior mountains. These Papuans appear to be a degree farther advanced in the social scale than the New Hollanders. This is shown in the very singular construction of their huts, raised on elevated planks or stages, resting upon poles that are fixed usually in the water. This scheme is supposed by Forrest to be adopted with a view to security from the attacks of enemies, and particularly of the Haraforas. These houses, which are divided among a number of families, have a door both towards land and sea, so that, according to the quarter whence danger comes, they may betake themselves either to their vessels or to the woods. They construct and ornament their canoes on a large scale, and show considerable skill in fishing. They not only wage deadly war against each other, but manifest a particular jealousy and hostility towards strangers, which may be owing, in a great degree, to what they suffer from the inhabitants of Borneo and Celebes, who make frequent inroads, and carry them off as slaves. These vessels also carry away trepang, edible birds' nests, and tortoise shell. The Dutch, in 1828, formed a settlement in Triton Bay, in lat. 3° 33′.

6458. *The Louisiade* is the name given by Bougainville to a range of broken shores which he passed at the western extremity of New Guinea. He ranked them as an archipelago; but it seems doubtful whether they do not all form part of one large peninsula, and even whether that peninsula be not part of New Guinea. The aspect of both appears to be nearly the same, except that the natives seem to be still ruder.

5. *New Britain and New Ireland.*

6459. *A series of large groups of islands,* beginning near the north-western boundary of New Guinea, ranges in a circuitous line parallel to New Holland, and in the direction of New Zealand, though stopping considerably short of it. Their aspect is various, but in general mountainous and often rugged, as in the other regions of Australasia; like which, also, they contain valleys, and even plains, covered with the most profuse vegetation. The inhabitants are divided between the two great races, the Papuan, or Oriental negro, little, ugly, and black; and the Malay, taller, of a dingy brown, and of more pleasing features. All the islands exhibit only varieties of the most savage form of social existence. They are little known or frequented, as the route of the circumnavigator usually leads him from the Society Islands into the sea between New Holland and New Zealand, avoiding the coral rocks scattered through the Australasian gulfs. The group of New Britain, New Ireland, New Hanover, and other smaller islands, was partially seen by Le Maire, and afterwards examined with some care by Dampier and D'Entrecasteaux. Carteret also viewed a detached and more westerly part, which he called Admiralty Islands, and which appeared better cultivated, and inhabited by a more civilised race, than the others. Some more recent observations have been made by M. Lesson and his companions. The whole group lies between the first and sixth degrees of south latitude; and, were Arrowsmith's map (which is laid down, however, upon the most conjectural data) followed, one should estimate the superficial extent at 16,000 English square miles. New Ireland is very thickly wooded, and among its trees are mentioned the Areca palm, and even the nutmeg. The natives are Papuans, but are considered by the French navigators to be the most civilised in this archipelago. They have temples, and a regular form of idolatrous worship.

6. *Solomon Islands.*

6460. *The Archipelago called Solomon Islands* was, as already noticed, discovered, and that name given to them, by Mendana, in 1567. They were forgotten for two centuries, till Carteret, in 1767, and afterwards Bougainville and Lieutenant Shortland, passed several of the group, to which they gave the name of Egmont, Queen Charlotte's Islands, and New Georgia. Some retain the Spanish names of Isabel, San Christoval, &c.; while to others Bougainville gave his own and that of Choiseul. The prevailing population is Papuan, and as black as the African negro, but with a mixture of the Malays. They appeared to be numerous, subject to the sway of an absolute prince, and warlike. Both Mendana and Bougainville were led to suppose them addicted to feeding upon human flesh.

7. *New Hebrides.*

6461. *The New Hebrides* are a group situated to the south-east of the above, first discovered by Quiros, in 1606, who gave it the name of the Archipelago del Spiritu Santo: Bougainville afterwards touched at these islands, to which he gave the name of the New Cyclades; while Cook, who examined them more diligently than any of his predecessors, bestowed upon them that of New Hebrides, to which we adhere; but the continental geographers maintain that the Spaniards, as the first discoverers, are entitled to have their appellation received in preference to any other. It is, in fact, still given to the principal island; while to other considerable ones Bougainville gave the name of Iles de Lepreux, and Cook those of Tanna and Mallicolo. These islands are generally covered with high mountains, from some of which flame is seen issuing. The territory, as usual in volcanic countries, is extremely fertile, and finely watered by numerous rivulets. The natives belong generally to the Papuan race; but those of Mallicollo are, even beyond its general average, diminutive, mean, and ugly; while those of Tanna (*fig.* 1084.) are, on the contrary, taller and handsomer than almost any other specimen yet seen. They are both extremely active, agile, and intelligent: the Mallicolese, in particular, appeared a most determined and energetic race. They go almost naked, and have few or no arts and manu-

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NATIVES OF TANNA.

factures; but their weapons are constructed with peculiar skill; and the tribes are almost at perpetual war with each other; yet in their social intercourse they are mild and friendly. Forster reckons the population at 200,000, of which he supposes Tanna to contain 20,000, and Mallicollo 50,000.

8. *New Caledonia.*

6462. *New Caledonia*, a large island, 250 miles long, and 60 broad, forms the southern termination of this great chain of archipelagoes. It is traversed by a continuous range of mountains, which rear their conical heads to a considerable height, and throw out branches, which present their rocky faces towards the sea. Though water is somewhat abundant, a great part of the soil is so rocky and sandy as to be by no means fertile. Forster rates the population at 50,000; but D'Entrecasteaux does not think it can exceed half that number, as it is almost wholly confined to the sea coast, where a supply of fish can be obtained. The natives (*fig.* 1084.) afford decided specimens of the rude and diminutive forms of the Papuan or Oriental negro. They have been painted in the most opposite colours by Cook and by D'Entrecasteaux; by the one as mild, friendly, and courteous; by the other as fierce warriors, and devourers of human flesh; but the fact is, that, in savage life, nothing is more common than the presentation of these two extremes, according to the circumstances under which the people are viewed.

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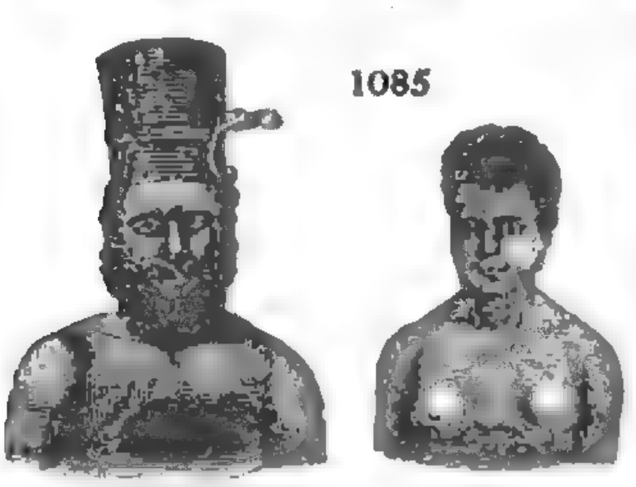


MAN AND WOMAN OF NEW CALEDONIA.

Chap. II.

POLYNESIA.

6463. *Polynesia*, or "the many isles," is the name which geographers have now generally agreed to give to numerous groups with which a great part of the Pacific Ocean is studded. While the islands which compose Australasia are of such magnitude as to approach the character of continents, those of Polynesia are so small that most of them can scarcely aspire above the diminutive appellation of islets. Yet they are so numerous, and follow in such close succession, that they may properly be considered as a region of the globe bearing a peculiar aspect and character.

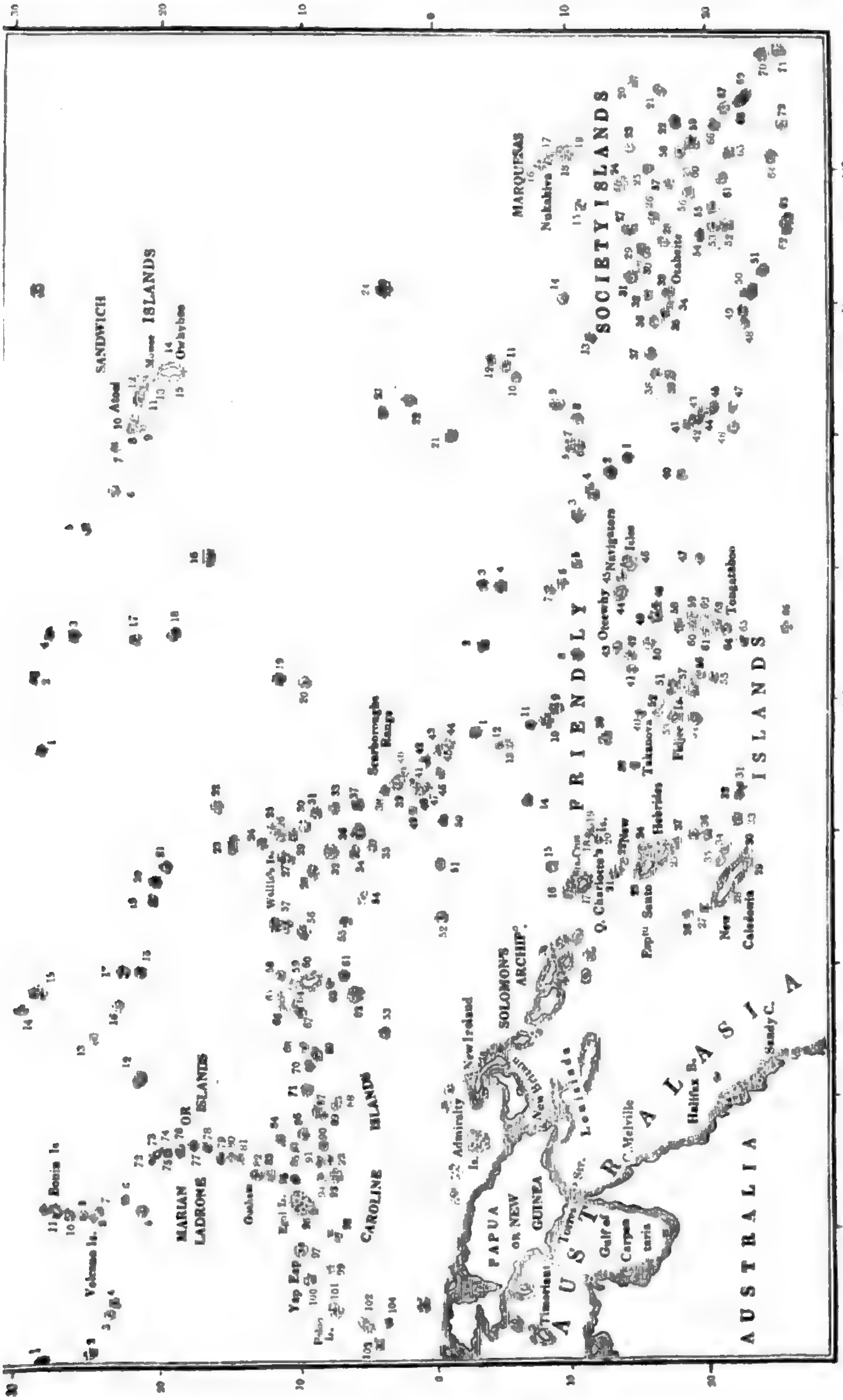
References to the Map of Polynesia.

NORTH-WEST PART.
1. Harbour
2. Amsterdam
3. Kendrick's
4. Dolores
5. Parece Vela
6. Vela
7. South
8. Sulphur
9. Alexandro, or North
10. South Bonin
11. North Bonin
12. Jardine's Islands
13. Sebastian Lobos
14. Rica d'Oro, or Gold
15. Tres Columas
16. Oto Nameless Islands
17. Volcano
18. La Mira
19. La Mina
20. Desierta
21. Wake's
22. Gaspar Rico
23. Smyth's Islands
24. Davison's
25. Bigar
26. Udirick
27. Udai Milai
28. Paterson's Islands
29. Aile Islands
30. Romanzoff's Islands
31. Kawen Islands
32. Odia Islands, or Mosquito Group
33. Pedder's Islands
34. Baring's Islands
35. Nantucket
36. Banham's Islands
37. Mille, or Mulgrave Islands
38. Pitt
39. Matthew's Islands
40. Marshall's Islands
41. Gilbert's
42. Simpson's Islands
43. Bishop's
44. Kingsmill Group
45. Drummond's
46. Blaney's
47. Wood
48. Hall's
49. Cook's
50. Ocean
51. Pleasant
52. Shank's
53. Monteverdeson
54. Hope
55. Teyoa
56. Casbobos
57. Brown's Range
58. Puno
59. Pis
60. Hogolu, or Torres
61. Two Islands
62. Seven Islands
63. Koop
64. Majoor
65. Lamoel
66. Paloloo
67. Ooloot
68. Poolop
69. Tametam
70. Pooloot
71. Setoan
72. Pazaro
73. Uracoos
74. Volcano Grande, or Assumption
75. Grigan
76. Gaguan
77. Farallon
78. Anatacan, or Joachin
79. Saypan
80. Tinian
81. Zerpana, or Rota
82. Guahan, or St. John
83. Santa Rosa
84. Fahoen
85. Farroilip
86. Olimareu
87. Pallao
88. Cota
89. Low
90. Ifelus
91. Ulee
92. Aurapig
93. Thirteen Islands
94. Eurapuc, or Cuntava
95. Tata
96. Egoi Islands
97. Yap, Eap, or Unaub
98. Philip Islands
99. Matelotes
100. Three Islands
101. Bab-el-tha-up
102. St. Andrew's Islands
103. Lord North's
104. Pula Anne.

NORTH-EAST PART.
1. Patrocinio
2. Massachusetts
3. Lydansky's Sand
4. Clerk's Islands
5. Gardener's
6. Necker
7. Bird's
8. Oneehow
9. Tehoora
10. Atooi
11. Woahoo
12. Morotoi
13. Mowee
14. Owhyhee
15. Karakakooa Bay, Capt. Cook killed, 1779
16. Johnson's Islands
17. Krusenstern's Rock
18. Clodius
19. S. Pedro
20. Barbadoes
21. Brown, or Jarvis
22. Christmas
23. Palmyras
24. Low Islands.

SOUTH-WEST PART.
1. Hope, or Hurd
2. Arthur's
3. Byron's
4. Sydney
5. Island of Handsome People
6. Duke of Clarence
7. Duke of York's
8. Solitary
9. Ellice's Group
10. DePeyster's Group
11. Nederlandisch
12. El Grand Cocal
13. Taswell, or St. Augustine
14. Jesus
15. Mattooetee, or Kennedy
16. Duff's Group
17. Santa Cruz, or Egmont
18. Cherry
19. Mitre
20. Jucupia
21. Torres' Islands
22. Banks's
23. Espiritu Santo
24. Aurora
25. Mallicolo
26. Surprise
27. Lobert
28. New Caledonia
29. Botany
30. Island of Pines
31. Hunter's
32. Matthew's
33. Walpole's
34. Loyalty Islands
35. Britannia Island
36. Tanna
37. Erromango
38. Hunter's
39. Rotumah, or Grenville's Islands
40. Farewell
41. Horne
42. Enfant Perdu
43. Wallis's
44. Oteewhy
45. Oyolava
46. Tootooillah
47. Savage
48. Consolation Islands
49. Cocos Islands
50. Oonavoo
51. Middleton Islands
52. Takanova
53. Amboo
54. Meywells
55. Ona
56. Turtle
57. Unga
58. Amargura
59. Mayorga
60. Late
61. Toofoa
62. Hapaee Islands
63. Pallafagees
64. Tongataboo
65. Pylstaarts, or La Sola
66. Vasquez.

SOUTH-EAST PART.
1. Rose
2. Suwaroff's Islands
3. Islands of Danger
4. Otter Islands
5. Oeo
6. Humphrey
7. Reason
8. Peregrine Islands
9. Penrhyn Islands
10. Starbuck
11. Volunteer
12. Malden
13. Flint's
14. Caroline
15. Tiburon
16. Nukahiwa
17. Oheevahoa
18. Oheetahoo
19. Madalena
20. Dog
21. St. Pablo
22. Minerva
23. Hinden Eylandt Islands
24. Disappointment Islands
25. Predpriatige
26. Furneaux Islands
27. Tiokea
28. Rhain
29. Palliser's Islands
30. Dean's
31. Krusenstern's Islands
32. Recreation
33. Otaheite
34. Saunders'
35. Ulietea
36. Tubai
37. Billingshausen
38. Scilly Islands
39. Maperria
40. Palmerston
41. Whylootah
42. Harvey's Islands
43. Otakootai
44. Wateeho
45. Mohoowara
46. Roxburgh
47. Mangeea
48. Rarotaro
49. Ohesteroa
50. Toobouai
51. High
52. St. Elmo
53. Gloucester
54. Preservation of St. Pablo
55. Margaret's Islands
56. Prince Henry's Island
57. Resolution
58. Thrum Cap
59. Whitsunday
60. Gloucester
61. Bligh's Lagoon
62. Opari
63. Four Crowns of Queros
64. S. Juan Baptista
65. Wilson
66. Carysfort
67. Lord Hood's
68. Gambier's
69. Crescent
70. Low
71. Pitcairn's
72. Incarnation.


SANDWICH ISLANDS
Atool
Mowee
Owhyhee
MARQUESAS
Nukahiva
SOCIETY ISLANDS
Otaheite
Navigators Isles
Oceerhy
FRIENDLY ISLANDS
Tongataboo
Feejee Is.
Takanova
New Hebrides
Espu Santo
New Caledonia
Q. Charlotte's Is.
SOLOMONS ARCHIP.
New Ireland
New Britain
Louisiade
Admiralty Is.
PAPUA OR NEW GUINEA
Torres Str.
Gulf of Carpentaria
C. Melville
Halifax B.
Sandy C.
AUSTRALASIA
AUSTRALIA
Timorlaut
Pelew Is.
Yap Eap
CAROLINE ISLANDS
Egoi L.
Guaham
MARIAN OR LADRONE ISLANDS
Bonin Is.
Volcano Is.
Wellis's Is.
Scarborough's Range
Longitude 180 West from Greenwich
30
20
10
0
10
20
30
140
150
160
170
180
170
160
150
140

SECT. I. *General Outline and Aspect.*

6464. *The Pacific Ocean*, over which these numerous islands are scattered, is a vast expanse extending, in its greatest breadth, 150 degrees, or nearly one half of the globe. It is by no means, however, completely filled with the groups of Polynesia. From the shores of Asia and Australasia, indeed, in a west and south-west direction, they closely follow each other to about 130° E. long., or for the space of nearly 100° of longitude. From north to south they range between the tropics of Cancer and Capricorn nearly 50 degrees of latitude. Beyond these limits, northward to the Aleutian Islands, eastward to the continent of America, and southward to the Antarctic Ocean, scarcely a rock rises to interrupt the unbroken waste of the Pacific.

6465. These islands rank with *the most fruitful and smiling regions* on the surface of the globe. Their situation, altogether between the tropics, and beaten by the rays of an equatorial sun, might have given them a parched soil and a burning and pestilential climate. These evils are averted by the moisture and breezes from such an extent of surrounding ocean, and by the interior mountains, which rise, in many instances, to a very lofty height. Several of the Polynesian peaks approach the elevation of those in the great continents. In the Sandwich Islands, Mouna Roa is about 16,000 feet, Mouna Koah about 15,000 feet above the level of the sea. In Otaheite, Oroeno rises to 10,800, and Tobronu to 9500 feet. Most of the other islands have mountains inferior, but considerable. An exception is, indeed, formed by the coral islands, those peculiar structures raised from the bottom of the sea by the incessant labour of myriads of insects. As the formation ceases as soon as it reaches the surface of the ocean, these islands are merely a few feet above its level, and are visible to the navigator only by the trees which rise from their flat surface. The higher islands are indented by deep bays, and finely variegated by streams descending from from the mountains; but their extent does not admit the formation of rivers or lakes of any importance.

SECT. II. *Natural Geography.*

SUBSECT. 1. *Geology.*

6466. *Easter Island.* 2000 miles from the coast of Chili, and 1500 from the nearest inhabited islands, Pitcairn Island excepted, which has been peopled by Europeans, is of igneous origin, and said by navigators to be studded with volcanoes.

6467. *Ducie's Island* is of coral formation; of an oval form, with a lagoon or lake in the centre, which is partly enclosed by trees, and partly by low coral flats scarcely above the water's edge. The height of the soil upon the island is about twelve feet, above which trees rise fourteen feet more, making its greatest elevation about twenty-six feet above the sea level.

6468. *Elizabeth or Henderson Island.* "We found that this island," says Captain King, "differed essentially from all others in its vicinity, and belonged to a peculiar formation, very few instances of which are in existence. Wateoo and Savage Islands, discovered by Captain Cook, are of this number, and perhaps, also, Malden Island, visited by Lord Byron. The island is five miles in length, and one in breadth, and has a flat surface nearly eighty feet above the sea. On all sides except the north it is bounded by perpendicular cliffs, about fifty feet high, composed entirely of *dead coral*, more or less porous, honeycombed at the surface, and hardening into a compact calcareous substance within, possessing the fracture of secondary limestone, and has a species of millepore interspersed through it. The dead coral, of which the higher part of the island is composed, is nearly circumscribed by ledges of living coral, which project beyond each other at different depths; on the northern side of the island the first of these had an easy slope from the beach to a distance of about fifty yards, when it terminated abruptly about three fathoms under water. The next ledge had a greater descent, and extended to two hundred yards from the beach, with twenty-five fathoms over it, and there ended as abruptly as the former, a short distance beyond which no bottom could be gained with two hundred fathoms of line." This island appears to have been raised above the sea through Plutonian agency.

6469. *Gambier's Islands.* This group consists of five large islands and several small ones, all situated in a lagoon formed by a reef of coral. The largest of these is about six miles in length, and rises into two peaks, elevated 1248 feet above the sea. All the islands are steep and rugged, particularly Marsh Island, which at a distance resembles a ship. The external form of these islands at once conveys an impression of their volcanic origin, and on examination they all appeared to be composed of rocks formed through igneous agency. The rocks are vesicular basaltic lava and tufa; in which various zeolites, calcedonies, jaspers, and calcareous spars occur. These rocks are traversed by veins or dikes, ranging from east to west, of a compact volcanic rock abounding in olivine. Forming a striking contrast to those rugged and lofty igneous rocks, is a series of low islands, owing their construction to myriads of minute zoophytes, endowed with a power which enables them to secrete calcareous matter in such quantity as to rear the magnificent structure many leagues in circumference. A great wall of this kind already surrounds the islands, and by the continued labour of these submarine animals is fast approaching the surface of the water in all its parts. On the north-east side it already bears a fertile soil, and beyond the reach of the sea sustains trees, and affords even a habitation to man. In the opposite direction it dips from thirty to forty feet beneath the surface, as if purposely to afford access to shipping to the lagoon within. "All the islands," continues Captain King, "we subsequently visited were similar to these, in having their western or eastern side more advanced than the opposite one. The outer side of the wall springs from unfathomable depths; the inner descends with a slope to about 120 or 150 feet below the surface. This abruptness causes the sea to break and expend its fury upon the reef, without disturbing the waters in the lagoon. The coral animals consequently rear their delicate structure there without apprehension of violence, and form their submarine grottoes in all the varied shapes which fancy can imagine. They have already encircled each of these islands with a barrier, which they are daily extending, and have reared knolls so closely as almost to occupy all the northern part of the lagoon. More independent bodies are in other parts bringing to the surface numerous isolated columns, tending to the same end; and all seems to be going on with such activity, that a speculative imagination might picture to itself, at no very remote period, one vast plain covering the whole of the lagoon, yielding forests of bread fruit, cocoa nuts, and other trees, and ultimately sustenance to a numerous population and a variety of animals subservient to their use."

6470. *Coral Islands.* Lord Hood Island, Clermont-Tonnerre, Serle Island, Whitsunday Island, Queen Charlotte Island, Lagoon Island, Thoum Cap Island, Egmont Island, Barrow Island, Carysfort Island, Osnaburg Island, Byam Martin Island, Gloucester Island, Bow Island, are throughout of coral formation; and Captain King adds, "the islands which were visited between Bow Island and Otaheite were all of the same character of formation as those just enumerated: one of these he named Melville, another Croker Island. The coral islands of this group are thirty-two in number; the largest of them thirty miles in diameter, and the smallest less than one mile."

6471. *Otaheite.* This island appears like one lofty mountain, intersected with deep, green valleys, bounded by dark rocks, and terminating above in a double summit, Oruhenna and Pitohiti, the most elevated of which is said to be 10,000 feet above the level of the sea. The rocks are of an igneous origin, and principally common and amygdalous basalt. The amygdaloidal basalt affords apophylite, needlestone, chabasite, and analcime, and the common basalt embedded augite, hornblende, and large masses of granular olivine. Hoffmann, who accompanied Kotzebue, observed, besides the minerals just mentioned, in some cavities siliceous stalactites in the process of formation; and the same naturalist found rocks of clinkstone, with embedded crystal of glassy felspar, some varieties of which much resembled trachyte. He also met with large masses of syenite in different parts of the island, but did not succeed in detecting this rock *in situ*. The islands of Huaheine, Otaha, Ulietea, Borabora, and Maura, are of the same general nature as the Marquesas: hence they may be considered basaltic islands, with volcanic craters of eruption.

6472. *Marquesas.* The highest of this group, the island of Dominica (Ohiwaua), may, in Von Buch's opinion, prove to be a trachytic principal volcano, with a crater. The other isles appear to belong to the basaltic class. In these islands the sea extends to the base of the mountains, there being no protecting coral reefs, as is the case in most of those in the Pacific.

6473. *The Friendly Islands* are generally low, few of them attaining a height of some hundred feet; but the small volcano, Tofua, rises to a greater height, probably 3000 feet. It appears in a state of constant activity; for every time it has been visited symptoms of agitation have been observed. As stated by Buch, a great stream of lava, flowing from the base of the mountain to the sea, produced frightful ravages; and Captain Edwards, in the Pandora, found the volcano in full activity. From the pumice which covers the coast of Tongataboo and Anamoka, it would seem that the mountain is formed of trachyte. In the northern part of this group, and in the most northern island, Gardner's Island, in 17° 57′ S. lat. 184° 6′ E. long., Captain Edwards, in 1791, observed traces of a recent eruption, and smoke rose every where from the border of the table-land.

6474. *New Hebrides.* The Island of Ahrym, in this group, contains an active volcano; and the same thing is stated by Forster with regard to that of Taxna.

6475. *Sandwich Islands.* The eight islands forming this group are of volcanic origin, and, with the exception of some coral reefs and banks on the coasts, the prevailing rocks are lavas of various descriptions, basalt, with olivine and augite, clinkstone porphyry (probably trachyte), and amygdaloid, with zeolite. Hoffmann mentions several craters in the Island of Oahu (Woahoo); craters were also noticed by the same naturalist in Maui (Mowee). Hawai, the Owhyhee of Captain Cook, is the largest and most elevated island of this volcanic group. Its structure and composition, like that of most of the islands in the South Sea, are but imperfectly known. Besides the great volcano of Kirauea, so graphically described by Ellis in his *Polynesian Researches*, which is in activity, there are several in an extinguished state. One of them, Mouna Roa, is calculated by Captain King at 16,020 feet in height, estimating it according to the tropical line of snow. Another, Mouna Koah, the peaks of which are entirely covered with snow, cannot be less, he thinks, than 18,400 feet. Mr. Ellis reckons the height at between 15,000 and 16,000 feet. The whole island of Hawai, indeed, embracing a space of 4000 square miles, is, according to Ellis, one mass of lava and other volcanic matter, in different stages of decomposition.

6476. *South Shetland and South Orkney Islands.* In these remote and little known islands, judging from the few specimens brought to Europe by that enterprising officer Weddell, and some other navigators, we can only say, generally, that, although primitive rocks, and also those of the secondary class, occur, the volcanic appear to be the most frequent; and that, in some islands, volcanic action is still perceptible. Weddell, in his interesting *Voyage towards the South Pole*, remarks that, on passing within 200 yards of Bridgman's Island, in S. lat. 62°, he observed smoke issuing with great violence through fissures in the rocks. The loftiest land among the South Shetlands, according to Weddell, is in James's Island, which rises to a height of 2500 feet above the sea; and the most southern islands hitherto discovered in the world are those named, by the same nautical discoverer, *Hope Island*, and *Jameson's Island*, situated in S. lat. 65°. The most northern known land is also insular, viz. *Ross's Island*, in N. lat. 80° 45′.

6477. *Juan Fernandez.* This island is about twelve miles in length and four in breadth, consisting of very high land, the loftiest summit of which rises to 3005 feet above the sea. Mr. Caldcleugh, the only geologist who has examined the island, could discover no trace of a modern volcano, said to exist there by former visiters: all the rocks, according to him, consist of basaltic greenstone, or rather basalt embedded with olivine.

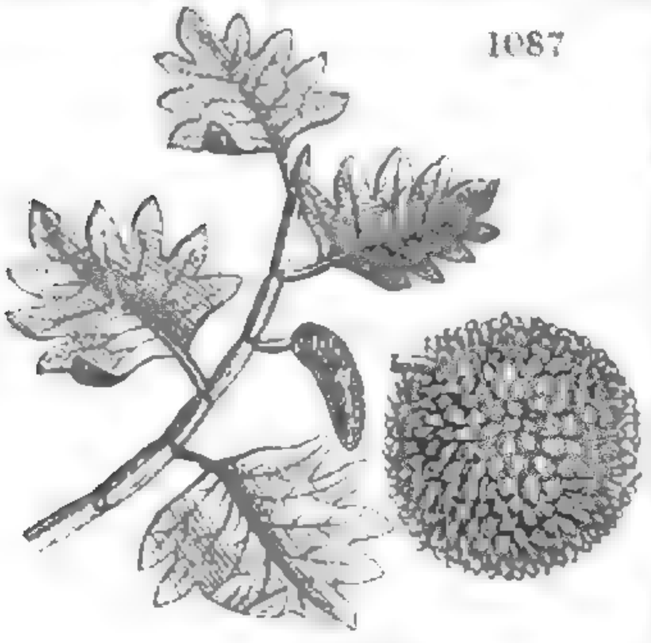
6478. *The Gallapagos* form a very characteristic volcanic group. The principal volcano lies in the most westerly island, viz. Narborough Island, which is said to be the loftiest of them all. Lieutenant Shillibeer, on the 4th August, 1814, observed two volcanoes in this island in a state of activity. Captain Hall describes another of the group, viz. Abington Island, of basaltic formation, traversed by many craters of eruption. Lord Byron, on March 26. 1825, landed on Albemarle Island, which, he remarks, is the largest and loftiest of the Gallapagos group; and that several extinct craters show that fire has, at no remote period, been as active there as it then was in Narborough and some others. "Its length," continues Lord Byron, "from north to south, is about seventy-five miles, and the southern end appears to be well wooded. The heat was very great as we approached the land, the thermometer standing at 84°; and as we shot into the cove we disturbed such a number of aquatic birds and other animals, that we were nearly deafened with their wild and piercing cries. The place is like a new creation: the birds and beasts do not get out of our way; the pelicans and sea-lions look in our faces, as if we had no right to intrude on their solitude; the small birds are so tame that they hop upon our feet; and all this amidst volcanoes which are burning around us on either hand. Altogether, it is as wild and desolate a scene as imagination can picture."

SUBSECT. 2. *Botany.*

6479. *The numerous groups of islands* scattered throughout the vast Pacific afford a very varied vegetation, and, what most concerns both us and the natives of them, a considerable number of highly useful plants. Among the esculent ones will especially rank

> "that tree which in unfailing stores
> The staff of life spontaneous pours,
> And to those southern islands yields
> The produce of our labour'd fields,"

the Bread-fruit (*Artocarpus incisa*) (*fig.* 1087.), which is to the natives of these islands the principal article of diet. They are fond of it, and it evidently suits their constitutions, as a very perceptible improvement is often witnessed in the appearance of the people a few weeks after the bread-fruit season has commenced. For the chiefs it is usually dressed three times a day; but the poorer classes seldom cook it more than once a day, and even rebake it on the next. Various are the modes of preparing this valuable fruit. Sometimes the natives of a district assemble to prepare it in a large and common oven, when it is called *opio*. This is done by digging a large pit, 20 or 30 feet round, and filling it with firewood and large stones, till the heat almost brings the latter to a state of liquefaction, when the covering is removed, and many hundreds of ripe bread-fruit thrown in, with a few leaves laid over them; the remaining hot stones are placed above them, and the whole covered with leaves and earth. It remains in this state a day or two, when the parties to whom the fruit belongs dig a hole and take out what they want, till the whole is consumed. Bread-fruit thus baked will keep good several weeks after the oven is opened. This process is much discontinued since the introduction of Christianity, owing to the debauchery, rioting, feasting, and sleeping, which used to follow the opening of an opio oven.

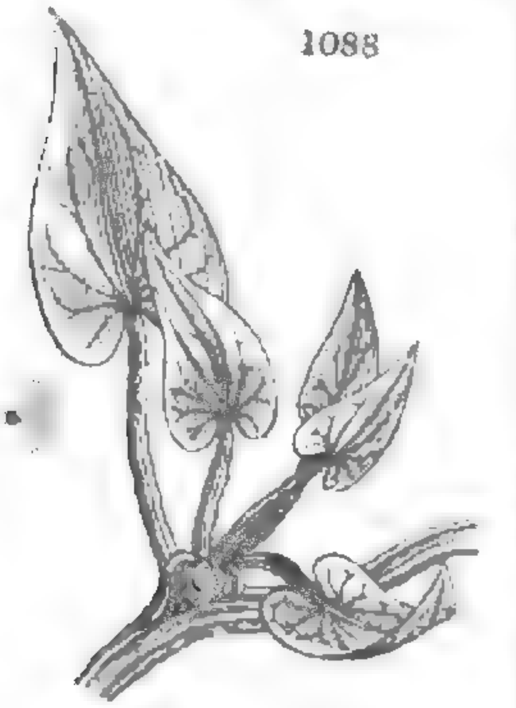

1087

ARTOCARPUS INCISA.

6480. *Sometimes the fruit undergoes fermentation*, by being piled in heaps and beaten to a kind of paste, when it is called *mahi*. It keeps many months, and, though sour and indigestible, is considered good food during the scarce seasons. The tree on which the bread-fruit grows, besides producing three or four regular crops annually, and being seldom quite destitute of ripe fruit, furnishes a valuable resin, that is used for making tight the seams of the canoes. The bark of the young branches affords cloth, and the trunks a valuable timber, of which canoes, houses, and most of the furniture of the people, are manufactured. There are 50 varieties of this tree, the principal being the Paea (*Artocarpus incisa*), and the Ura Maobe (*A. integrifolia*).

6481. *In the Sandwich Islands* the bread-fruit is usually eaten green, when its rind is thin, but hard, like that of a melon, and entirely covered with slightly marked and small pentagonal sections. It is cooked by throwing it immediately on the fire, when the outer coat becomes charred, and the inner parts only roast like a potato, which it resembles in general consistency, though it is rather more spongy, and the whole, when the rind is removed, has the appearance of a beautiful light-coloured smoking loaf. The taste is like the hard-boiled yolk of an egg, slightly astringent; very good as a vegetable, though to English palates forming but a very indifferent substitute for bread.

6482. The low intratropical islands of Polynesia yield Cocoa-nuts in the greatest abundance, which are called Haari, and, after the bread-fruit, may be considered the most serviceable fruits. The tree, too, is useful and highly ornamental, imparting to the landscape all the richness and elegance of equatorial verdure; but so well is it known, by forming a striking feature in all Oriental views, that it is here unnecessary to describe its straight and tapering stem, or the beautiful crown of long green leaves which it bears at the summit, and which, like a graceful plume, waves in the fitful breeze, and nods over the spreading wood or the humble shrubbery. Unlike the bread-fruit, plantain, and almost every tree affording valuable fruit, which require a fertile soil to bring them to perfection, the cocoa-nut, though it will grow in the rich valleys, and beside the streams that flow through them, yet flourishes equally on the barren sea-beach, amid fragments of coral and sand, where its roots are washed by every rising tide, and on the arid sides of sun-burnt mountains, where the soil is shallow, and where no stream is seen to flow. The trunk, whether in its timber or bark, serves the South Sea islanders for almost all purposes of shelter, protection, and defence, the best houses, canoes, spears, &c. being made of it; while the leaves serve for coverings to their heads, and are the emblems of authority used by the chiefs. The fibres that envelope the base of the leaves, woven in the loom of nature, afford a kind of cloth that is sometimes removed in pieces two or three feet wide, and cut into jackets and shirts by the natives, especially by the fishermen, who attach a cotton collar to the garment, and seem little annoyed by its wiry texture. But the fruit is the most precious part of this serviceable, hardy, and beautiful plant. In every stage, from its first formation after the fall of the blossom, to the hard, dry, and ripe nut that has almost begun to germinate, the fruit may be seen at the same time on the same tree; and, in one way or other, its pulp, milk, kernel, husk, or oil, are all rendered subservient to the wants of the South Sea islanders.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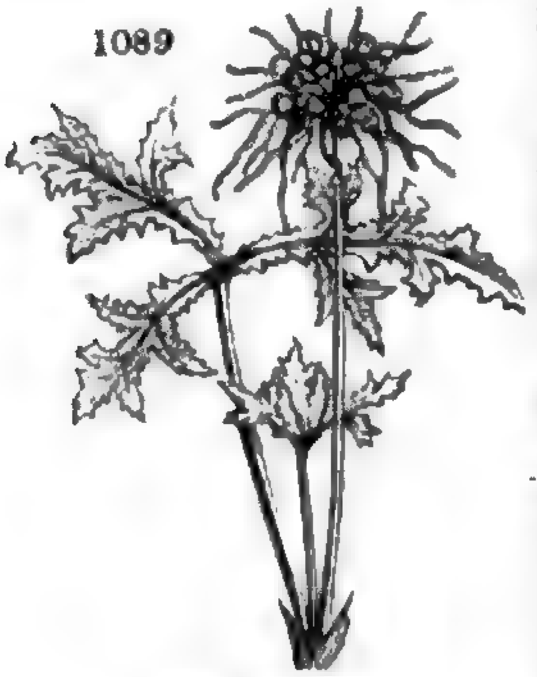
DIOSCOREA ALATA.

6483. *The Yam* is afforded by the roots of *Dioscorea alata* (*fig.* 1088.), which is cultivated with much care, though for that very reason to no great extent. It is requisite to plant it on the slopes of low hills, or the bottoms of valleys, where small terraces are purposely prepared for its reception, covered with rich earth, or decaying leaves. The roots are highly nutritive and well-flavoured, and are prepared for food either by baking or boiling. As they may be preserved longer out of the ground than any other vegetable, and thus form an excellent sea stock, it is to be regretted that yams are not more extensively grown in the South Sea Islands.

6484. *Taro* is the root of *Arum esculentum*, a plant that forms the chief article of cultivation in the Sandwich and other Polynesian islands, answering to these nations the double purpose of vegetables and bread. The root requires to be planted in a hard soil, and kept covered with water from nine to fifteen months, when it is fit to eat, though it increases in size and excellence for two years or more. In the natural state, both the foliage and roots of taro have all the pungent acrid qualities that mark the genus to which the plant belongs; but these are so dissipated by cooking, whether baking or boiling, that they become mild and palatable, with no peculiar flavour more than belongs to good bread. The islanders bake the root in the native ovens, in the same way as the bread-fruit, already described, and then beat the paste into a mass like dough, called Poe. It is eaten by thrusting the fore-finger of the right hand into the mass, and securing as much as will adhere to it, passing it into the mouth with a hasty revolving motion of the hand and finger. The only name of the latter is derived from this use of it, "Karina Poe," the Poe Finger.

1089



TACCA PINNATIFIDA.

6485. *A kind of bread, chiefly used on festive occasions*, is prepared from the root of the Pia (*Cheilea Tacca*, or *Tacca pinnatifida*) (*fig.* 1089.), which, though a spontaneous production of the soil, is also cultivated in the native gardens, by means of which much finer roots are obtained. The root is beaten to pulp and subjected to repeated washings, by which it becomes tasteless and colourless, when it is dried in the sun and fit for use. There is little doubt that, when the natives shall have acquired a better method of preparing it, this may become a valuable article of commerce, and vie with the West Indian arrow-root in appearance, as it already does in quality.

6486. *More rich and sweet to the taste than the cocoa-nut or bread-fruit*, yet far less serviceable as food, is the Maia of the South Sea islanders, by which name they indiscriminately call both the Plantain and Banana (the *Musa sapientum* and *M. paradisiaca*). These are indigenous, though cultivated; their fruit is rich and nutritive, yet too common in the tropics to need a particular description here. There are, perhaps, thirty cultivated varieties, besides nearly twenty wild ones, which are also large and useful. The Orea, or Maiden Plantain, comes to the highest perfection, and is truly delicious. The stalk is seldom more than eight to twelve feet high; its leaves are fine specimens of tropical verdure, being often twelve to sixteen feet long, nearly two feet wide, of a delicate pea-green colour when recent, but rich bright yellow when dry. The fruit is about nine inches long, somewhat like a cucumber, except that it has frequently well-defined angles, which give it the appearance of being triangular or quadrangular, when ripe of a delicate yellow hue. Sixty or seventy fruits are sometimes attached to one stalk. Each plantain produces only one bunch of fruit, and is then removed, its place being supplied by the suckers that rise round the root: if these be four or five feet high when the parent stem is cut down, they will bear in about twelve months. The plantain fruit is always acceptable, and resembles in flavour a soft and sweet, but not very juicy pear: it is good in milk, and also in puddings and pies, and, when fermented, makes excellent vinegar.

6487. *In certain seasons of the year*, when the bread-fruit is scarce, the natives supply the deficiency with the fruit of the Mape, or Rata, a native chestnut (*Inocarpus edulis*). This is a tree of stately growth and splendid foliage, rarely seen in high grounds, but generally flourishing on the margin of streams, the course of which may be frequently traced by the unbroken line of native chestnuts towering above the humbler trees. The singular trunk generally rises ten or twelve feet without a branch, and then has large umbrageous arms; but its chief feature is the supporting stems or buttresses, which it throws out from large projections on the stem, and which, striking root at a distance of three or four feet, appear like so many planks covered with bark, and placed around the original tree. The wood is fine-grained, but perishable: the nuts hang in clusters, covered with a thin husk; they are generally pulled when green, and eaten roasted. The Vi, or Brazilian Plum (*Spondias dulcis*), is an abundant and excellent fruit, oval, and of a bright yellow, not unlike a very large magnum bonum plum. The Ahio (*Eugenia malaccensis*) is perhaps the most juicy among the indigenous productions of the Society Islands. It resembles in its shape a small apple, and is of a beautiful bright red colour, containing a white and juicy, but rather insipid, pulp. Like the Vi, it bears but once a year, and is in season two or three months. Both these trees are propagated by seed.

6488. *Three species of fern* afford food; the Pteris esculenta, Polypodium Medulla (Forster), and P. dichotomum (Thunberg).

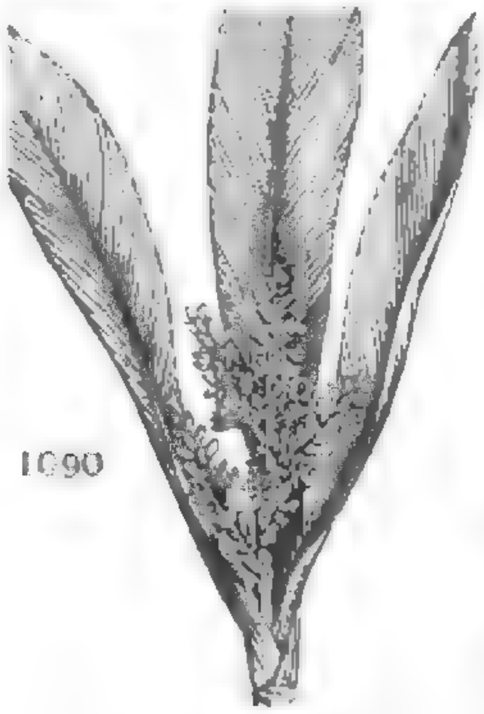
6489. *Besides the valuable esculent plants* now mentioned, is the Sugar-cane, or To (*Saccharum officinarum*), which grows spontaneously in the Sandwich Islands, and perhaps comes to greater perfection there than in any other part of the world. It was formerly cultivated to be eaten raw; the natives on a journey often carry a piece of sugar-cane, which furnishes a sweet and nourishing juice, appeasing at once both hunger and thirst. Within a few years they have been taught to extract the juice, and by boiling it prepare a very good sugar.

6490. *These various indigenous productions* are not only eaten when dressed, as taken from the tree or dug from the ground, but by a diversity of combinations several excellent kinds of food are prepared from them, which may be termed the confectionery or made dishes of the South Sea islanders. With ripe bread-fruit and plantain mixed, they prepare Pepe, which, when baked, is not unlike soft gingerbread. A composition of arrow-root and grated cocoa-kernel is called Taota; and of arrow-root and plantain they make a number of sweet puddings, which are folded in leaves, and baked in the native ovens. A sauce is furnished by the ripe cocoa-nut, sliced, and put into a calabash of salt water, which they shake daily till the nut be dissolved. This is called Mitiaro, and, though most nauseous, is eaten as sauce to fish, bread-fruit, and almost every article of food.

6491. *The native fruits* of the South Sea islands are delicious, and their number has been greatly increased by the addition of many of the most valuable tropical productions. Oranges, shaddocks, and limes were originally introduced by Captains Cook, Bligh, and Vancouver. Vines, which were cultivated successfully by the missionaries, have been nearly destroyed in the native wars. Citrons, tamarinds, pine apples, guavas, Cape mulberries, and figs, with custard apples (*Anona triloba*), and coffee plants, thrive well. Many foreign vegetables have been tried, but they do not answer, any more than Wheat; still pumpkins, melons, water-melons, cucumbers, cabbages, and French beans succeed tolerably.

6492. *To the list of esculent vegetables*, fruits, and roots, given in the preceding pages, many might be added; but these suffice to show the abundance, diversity, nutritiveness, delicacy, and richness of the provisions spontaneously furnished to gratify the palate and supply the necessities of the inhabitants of Polynesia. Here man appears to live only for enjoyment, and to be placed in circumstances where every desire is satisfied, and even the fear of want is unknown. Amid the unrestrained enjoyment of a bounty so diversified and profuse, it is hardly possible to suppose that the Divine Giver of all should be neither recognised nor acknowledged, or that His mercies should foster insensibility and alienate the hearts of the participants of His bounty. Such, however, was the melancholy fact, although

"the soil untill'd
Pour'd forth spontaneous and abundant harvests,
The forests cast their fruits, in husk or rind,
Yielding sweet kernels or delicious pulp,
Smooth oil, cool milk, and unfermented wine,
In rich and exquisite variety;
On these the indolent inhabitants
Fed without care or forethought."


1090

DRACÆNA TERMINALIS.

6493. *The art of preparing a spirituous liquor* from the saccharine Ti root (*Dracæna terminalis*) (*fig.* 1090.) was unhappily soon learned, and communicated from the natives of one group of islands to another, and all the demoralising and debasing effects of drunkenness were proportionably exhibited. The root may certainly be used for many valuable purposes; it is sweet and palatable when baked, and a kind of beer, very suitable for sea-store, is procured from it by fermentation; but much the greater part is employed in making an inebriating liquor that the natives use in great quantities. Whole districts frequently united to erect what might be termed a public still, which, though rude and unsightly, answered the purpose too well. A rude fragment of rock, excavated below to contain fire, and surmounted by the end of a large hollow tree, in which the macerated Ti root was placed, afforded the chief materials; while a bamboo cane, placed in a trough of cold water, condensed the distilled vapour, which flowed into a calabash or other vessel set below to receive it. When all was ready, the men and boys of the district assembled to drink the Ava, as this spirit was called; and they continued so employed for several days together, quaffing the liquor as it issued from the still, and then sinking into a state of the most indescribable wretchedness, or often practising the most ferocious barbarities. Sometimes, in a deserted still-house, may yet be seen the fragments of the rude boiler and its other appendages scattered in confusion on the ground, and among them the dead and mangled bodies of those who had been murdered in the frays that generally ended their dissipation. Even the crews of European vessels have been inhumanly murdered on these occasions. The Ava root might probably be used with great advantage as a medicine; Mr. Collie, the surgeon of Capt. Beechey's voyage, having attested its efficacy in cases of cutaneous diseases, which it removed in a few weeks, and even seemed to produce a renovating effect on the whole constitution. A representation of the Tahitian still, with many particulars respecting the Ava, may be found in Mr. Ellis's interesting work, the *Polynesian Researches.*

6494. *Capt. Beechey* states, that the roots and stalks of a species of Pepper (*Piper methysticum*) have also been distilled in many of the islands; and though the importation of foreign spirits has much superseded the use of Ava, that intoxication, with its attendant demoralisation, is far more prevalent than formerly. The colour of Ava made from the pepper resembles thick dirty water, and its taste is so nauseous, that it was customary to swallow a hearty draught of water after the intoxicating dose, to remove its unpleasant taste and burning effects.

6495. *For clothing*, the Polynesians avail themselves greatly of the bark afforded by the *Morus* (*Broussonetia*) *papyrifera*, or Paper Mulberry (*fig.* 1091.). The manufacture of cloth, which is a tedious process, and the weaving of mats, which sometimes serve for garments as well as for bedding, fall to the department of the women. The inner bark is taken off in a single piece, by a longitudinal incision from end to end of the trunk; it is scraped, spread out, rolled and flattened, and so left to dry; the addition of other pieces being sometimes made, to increase the diameter. The wooden mallets with which the bark is beaten are four-sided; one side being smooth, the second coarsely grooved, the third furrowed more finely, and the fourth closely checked in squares or diamonds; and thus the pattern may be varied, and cloth may be produced, either smooth, striped like dimity, finely corded like muslin, or with a small check like diaper. The thickness of the cloth is various; some being like stout paper, or morocco leather, and others as fine and transparent as Italian crape. The cloth for sleeping, which is the largest and thickest, is made of ten sheets fastened together, and is as large as a common counterpane. This kind of cloth takes a beautiful dye, and much taste is exercised by the natives in blending the hues and figures. The best is little inferior in appearance to fine chintz; but its perishable nature (for it will not bear wetting), and the labour requisite for preparing it, render it a costly article. Occasionally the natives steep the cloth in cocoa-nut oil, in which chips of sandal-wood, or the fragrant berries of the Pandanus, have been infused, thus rendering it impervious to water, and imparting a perfume; but even this kind does not last many weeks. Five pieces, each four yards long, are requisite to make one Pau, as the cloth which the women wear round the waist is called.

1091

MORUS PAPYRIFERA.

6496. *The leaves of the Pandanus odoratissima* afford a very large kind of mat, generally used for laying on floors, sometimes twenty yards square, and beautifully fine, like the braid of a Leghorn bonnet. Sometimes they are quite white, or dyed of different colours, and finished with a rich fringe at the end. Necklaces, composed of the fragrant nut of this kind of Palm, or Screw pine, are worn round the neck on festive occasions.

6497. *The Tutui tree*, the Viriviri, and the Sandal-wood, must close our imperfect account of the vegetable treasures of these highly favoured islands. The first, or Aleurites triloba (*fig.* 1092.), affords a nut, which was the principal substitute for candles among the islanders before the introduction of oil by the whale ships. It is full of a rich oil, and after being slightly baked is formed into torches by stringing thirty or forty nuts together on a rush, and enclosing four or five of these strings in the leaves of the Ti (*Dracæna terminalis*), or Hala (*Pandanus odoratissima*). After being lighted, before one nut is consumed, the flame communicates to the oil of the one below; and as the blaze expires, the shell of the exhausted nut is struck off, till the whole is consumed. The tree also yields a gum used in preparing the native cloth, and the bark affords a permanent dye; still the nuts are the most precious part. Sometimes they are burnt to charcoal and pulverised, for tattooing the skin, painting canoes, &c.

1092

ALEURITES TRILOBA.

6498. *The Viriviri* is the Erythrina Corallodendron, a beautiful tree, covered with splendid flowers, and yielding a delightful shade. The ease with which cuttings of it strike root, and the lightness and fine grain of the wood, render it valuable for fences, and the best canoes and surf boards are made of it.

6499. *The Sandal-wood* of the South Sea islands is considered by Capt. Beechey to be the same as that of the East Indies (*Santalum album*); but the specimens brought home by the naturalists of that expedition prove it to be the Santalum Freycinetianum (*fig.* 1093.) of Gaudichaud, in *Freycinet's Voyage*, p. 442. to 445. It is, according to that navigator, the only commercial production of the Sandwich Islands. It is a tolerably heavy and solid wood; and, after the sap or part next the bark has been taken off, is of a light yellow or brown colour, containing a quantity of aromatic oil. Although a plant of slow growth, it is found in abundance in all the mountainous parts of the Sandwich Islands, and is cut down in great quantities by the natives, as it constitutes their principal article of exportation. It is brought down to the beach in pieces, from a foot to eighteen inches in diameter, and six to eight feet long, to small sticks, not more than an inch thick, and a foot and a half long. It is sold by weight, and the merchants, who exchange for it articles of European or Chinese manufacture, take it to the Canton market, where it is bought by the Chinese, for the purpose of preparing incense to burn in their idol temples.

1093

SANTALUM FREYCINETIANUM.

6500. *The Sandal-wood*, it is known, requires many years to arrive at a fit state for the market, and, its cultivation not having been attended to, the wood is becoming scarce, while the debt of the nation is considerably increased. During Capt. Beechey's visit, in order to avoid the expense attending the collection of this wood, it became necessary to lay a tax upon the people of a pekul (or 133 lbs.) each, which they were required to bring from the mountains under a penalty of four dollars, and to deposit with the authorities of Honoruru. The greater part of the wood brought in was small and crooked, and only fit for the use of the joss-houses in China, where it is burned as incense; but the consumption of it there is diminished, in consequence of an order for its disuse in those places of worship. The odour of the sandal-wood of the Sandwich Islands is very inferior to that of Malabar, Ceylon, and other parts of India.

Subsect. 3. *Zoology.*

6501. *The zoological character* of the South Sea islands has already been indicated in our general observations upon Australasia. There are, however, many local peculiarities; but the limits imposed on this department of the work will no longer permit us to indulge in details.

Sect. III. *Historical Geography.*

6502. *The discovery of the Polynesian Islands* has been one of the leading achievements of modern maritime enterprise. They were entirely unknown till a period subsequent to the discovery of America and of the passage round the Cape of Good Hope. In 1513, however, Magellan passed through the Straits which bear his name, and measured the entire breadth of the Pacific. He sailed southward of most of these islands, touching only at the Ladrones, whence he proceeded to the Philippines. Drake and Cavendish, whose circumnavigation was connected with their attacks upon the Spanish possessions in Peru and Mexico, crossed the ocean too far north to come in contact with the principal groups.

6503. *The Spaniards*, about the end of the century, made considerable efforts to explore the South Sea from Peru. Mendana, in 1575, discovered in its eastern quarter the Solomon Isles; and, twenty years after, in proceeding to found a colony there, he lighted upon a group called from him the Mendana or, from his employer, the Marquesas Islands. Quiros, in the voyage distinguished by the discovery of New Holland, passed a considerable and fine island, which he named Sagittaria, and which there is great reason to suppose was Otaheite.

6504. *The Dutch* succeeded in the career of austral discovery. In 1615-16 Schouten and Le Maire doubled Cape Horn, discovering Staaten Land, and the Straits bearing the name of the latter navigator. About the same time Tasman, from Java, performed the important voyage in which, after discovering Van Diemen's Land and New Zealand, he arrived at the interesting group of the Friendly Islands. Roggewein, also, towards the end of the century, in crossing the Pacific, made several discoveries, and, in particular, that of Easter Island.

6505. It was *England*, however, which, under the reign and auspices of George III., mainly achieved the exploration of this remote and interesting portion of the globe. The series of voyages fitted out by government began with those of Byron, Wallis, and Carteret. Wallis was the first who certainly touched on the beautiful shores of Otaheite; and a number of detached islands were brought to light by these navigators. But the three voyages of Cook, between 1767 and 1779, formed the grandest era of Oceanic discovery. If the Society and Friendly Islands had been already known, he was the first who made careful observations on the character and social state of the remarkable tribes by whom they are inhabited. The important group of the Sandwich Islands was entirely discovered by him, though, from an unhappy misunderstanding, they proved the fatal scene of his untimely death. The operations of the same illustrious navigator in the Australasian islands, on the shores of America, and in the arctic seas north and south of these latitudes, do not belong to the present subject. At the close of the career of Cook, all the leading outlines of the Polynesian region had been explored; and the efforts of Vancouver, his successor, were chiefly employed in completing the survey of the north-west coast of America. Yet ample and curious gleanings were still left for Bougainville, the contemporary of Cook; for Pérouse, Labillardière, and D'Entrecasteaux, afterwards sent out by the French government, who still more recently employed Freycinet, Duperrey, and D'Urville. Something still remained for the Russian navigators Krusenstern and Kotzebue, and for our countryman Captain Beechey, not to mention other names of secondary importance. There probably remain still detached islands, and even small groups, in this great expanse of ocean, to reward the search of future navigators.

6506. *European intercourse*, during the present century, has effected a remarkable change upon these islands. Among the most active agents have been the missionaries; a party of whom, sent out by the London society, were in 1797 landed in Otaheite, by Captain Wilson, from the ship Duff. Their labours were not crowned with almost any success, till after the lapse of nearly twenty years, when, in consequence of events which will be noticed in treating of that island, they succeeded in overthrowing idolatry, with the bloody and superstitious rites connected with it, and in acquiring an almost paramount influence over prince and people. This influence they have, in subservience to their main object, employed in studiously instructing the natives in civilised habits, and in the arts and industry of Europe; efforts which have been attended with a certain though not complete success. A nearly similar change, within the last ten years, has been effected in the Sandwich Islands, chiefly by the agency of American missionaries. Another cause has acted powerfully upon this quarter of the world. Since Britain and other great maritime nations have extended their navigation to the most distant seas, these islands, once considered so remote, have been included within the regular commercial lines by which the ocean is traversed. As the route from Britain to her Australian settlements by Cape Horn is nearly equidistant with that by the Cape of Good Hope, vessels frequently prefer it, and are thus led to touch for refreshment at the Society Islands. The Sandwich Islands are situated in the route to the whale fishery in the Northern Pacific, and in that of the fur trade from north-west America to China. Hence their harbours are sometimes crowded with vessels, and American merchants have even settled in their ports. The mariners and missionaries, two very opposite characters, do not act in unison, or report very favourably of each other; but they have combined in producing a somewhat grotesque mixture of the arts, manners, and civilisation of Europe, with the rude and licentious habits to which the people were previously addicted.

Sect. IV. *Political Geography.*

6507. *The political state* of these islands is simple, though not exactly what might have been expected in such a stage of social life. The people do not enjoy the rude independence of savage life, nor are any of the governments moulded into a republican form. They are ruled by chiefs, in an absolute or at least arbitrary manner, with a power only controlled by the influence of inferior chiefs who hold sway over particular districts. These higher classes, being exempted from labour, and better fed than their inferiors, are so much taller and handsomer, that they appear almost like a different race. Yet, amid this great distinction of ranks, no very strict police is maintained; and the punishment of crimes is in general left to the private resentment of the injured party.

Sect. V. *Productive Industry.*

6508. *The natural advantages* possessed by these islands, as to soil and climate, are not, perhaps, surpassed by those of any other region. Their situation, entirely within the tropics, might have exposed them to be scorched beneath the solar influence; but the vapours exhaled from the vast ocean which washes their shores, and the interior eminences, secure a copious supply of humidity, which, combined with the warmth, produces a most luxuriant vegetation. Some of the mountains are the seat of powerful volcanic action, others are steep and rocky; but many are clothed to the summit with majestic forests, and the plains which they water are adapted to the finest species of tropical produce. Their small extent, however, and remote situation, preclude the expectation that they will ever compete with tropical America or India, in supplying Europe with these valuable commodities.

6509. *Agriculture* is by no means altogether neglected; though its operations are in many places nearly superseded by the spontaneous profusion with which nature furnishes the means of subsistence, and even of luxury. Otaheite and the neighbouring islands are covered, almost without culture, with forests of the cocoa-nut palm and the bread-fruit tree. Nearly their only labour consists in raising, upon small cleared spots, the potato and the yam, as additions to their diet. The only domestic animals are the hog and the dog, both used as food, and forming luxuries which appear only at the tables of the rich. The missionaries have made attempts to introduce the larger and more useful quadrupeds, but without effect, through the carelessness and improvidence of the natives. In the Friendly Islands a more industrious spirit is perceptible; the fields are well cultivated, and laid out with great neatness and order. The Sandwich Islanders, having a soil comparatively arid and barren, have exerted still greater diligence, not only in tillage and enclosure, but in extensive and elaborate processes for irrigation. The absence, Captain Beechey observes, of the green and shady forests of Otaheite, produces, at first view, an unfavourable impression; but, on mounting the hills, every valley is seen covered with plantations of *taro*, the vegetable substance on which these islanders chiefly subsist. According to very recent accounts, European settlers have introduced into Otaheite the cultivation of sugar, of good quality, sufficient for the supply of the surrounding islands.

6510. *Manufactures and arts* are by no means in so forward a state; yet the natives produce some fine fabrics for the accommodation and ornament of the chiefs. From the bark of certain trees are prepared cloths of considerable beauty; while from other substances very fine mats are plaited. Feathers are often framed into splendid and fantastic head-dresses. The progress in the useful arts is the more meritorious, as the natives are destitute of the most important instrument, iron; a want so much felt, that, at their first intercourse with Europeans, the smallest and rudest fragments of that metal were received in exchange for a large value in commodities, and were prized almost like silver and gold in Europe. It is surprising how tolerably the deficiency was supplied by implements of stone, hard wood, or bone, which were rendered fit for all the purposes of agriculture and industry. In particular, they had succeeded with these imperfect means in constructing spacious and commodious canoes, fitted not only for navigating round their coasts, and from one neighbouring island to another, but for performing with safety voyages over a great extent of the Pacific. Some, destined for state or for war, are highly, and, indeed, fantastically ornamented; others are diligently employed in fishing, whence the people derive their chief supply of animal food. The military implements, as usual in such societies, are variously and skilfully framed. The missionaries have shown an enlightened zeal to introduce European arts and industry. A carpenter and a weaver were sent to Otaheite; and even a cotton factory, with the full concurrence of the chiefs, was established at Eimeo. The people, under the first impulse of novelty, worked hard, and produced a cloth somewhat coarse, but solid and durable. They soon, however, began to tire of continued application, and the fabric has not yet made much progress. Captain Beechey dreads that the composure and indifference which they manifest on such subjects will be the bane of their future prosperity. It is very well, they say, for Europeans to work, who need fine clothes and fine ships, but they are satisfied with the abundance in which nature has placed them. It may be hoped, however, that the continuance of the intercourse with Europeans will inspire a taste for their arts and luxuries, and a willingness to make exertions in order to procure them.

6511. *Commerce*, unless of the most limited internal kind, had no existence till very recently. These islands, however fertile, have no commodities which can bear the cost of a distant conveyance, except the sandal wood of the Sandwich Islands, which finds a ready market in China, but is beginning to be exhausted. Their ports are frequented almost solely by ships on their way to the whale-fisheries or across the Pacific. These vessels, arriving after a long and exhausting voyage, stand in need of provisions and supplies, and are often disposed to spend some time in refitting and restoring the health of their crews; they afford thus a considerable market for the timber, fruits, and live stock produced on the islands. According to a late statement in the *Singapore Chronicle*, the number of vessels annually touching at Otaheite amount to 200; and the Sandwich Islands are said to be frequented by more than double that number. From Captain Beechey's report, the time appears to be past when a few beads and bits of broken iron were sufficient to procure a copious supply; nothing but good cloth and hard dollars bear now a value in this market.

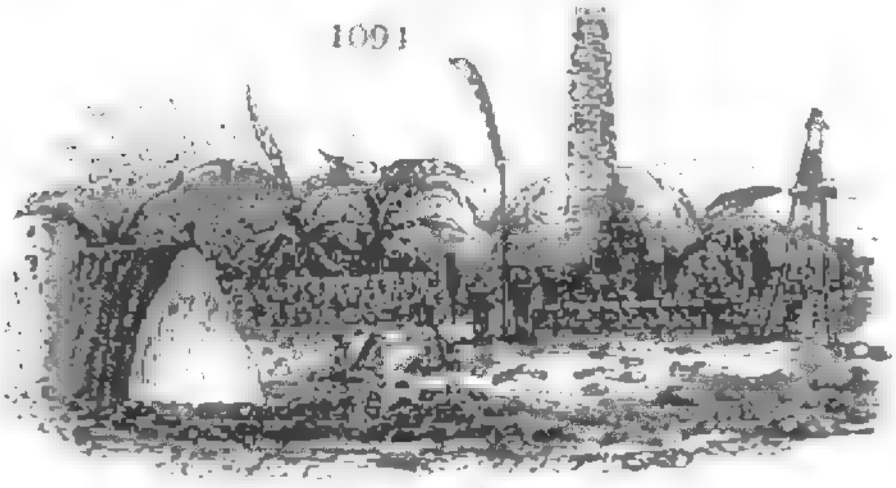
Sect. VI. *Civil and Social State.*

6512. *The population* of this numerous insular range has never been estimated, unless by the most uncertain conjectures. Those formed by Cook and Forster were so large, that Hassel, calculating from them, assigns to the whole no less than 1,400,000. The observations of recent travellers, and particularly of the missionaries, leave no doubt that this number is very grossly exaggerated. We cannot quote any opinion of M. Balbi, who has mixed Polynesia with the Oriental Archipelago. There appear no means of arriving at precision on the subject; but we have little doubt that 500,000 would be rather above than under the entire population of this region.

6513. *Social life*, among these islanders, presents peculiar and picturesque aspects. Instead of those fierce and gloomy propensities which usually sway the breast of savage tribes, their manners are distinguished by a courtesy, gaiety, and amenity, which, combined with the beauty and abundance with which the land is gifted, made it appear to the first voyagers like a terrestrial paradise. These flattering appearances, however, proved in many respects to be very fallacious. Amid the lavish kindness with which Europeans were greeted, they soon discovered an universal propensity to pilfering, while the virtue of the female sex was not proof against nails, buttons, or the most insignificant toys. These faults were, doubtless, aggravated by the attractive nature of these new and tempting objects; but it was, moreover, soon evident, that their dances and other amusements were conducted in a manner the most revolting to decorum, and that there existed in Otaheite a society called *arreoy,* who made it a regular system to have wives in common, and to put their offspring to death. Nor was infanticide the only practice marked by the ferocity of savage life. In many of the islands cannibalism is still practised, and in the most polished there remain traces of its former existence. Even in Otaheite, war is carried on in the most atrocious spirit of vengeance. The victor, after slaying his unresisting enemy, dreadfully mangles his body, exclaiming, "You killed my father! you robbed me of my wife!" &c. The people of the Sandwich and Friendly Islands were at first considered more respectable; but their character, on further acquaintance, was found to be stained with practices equally revolting.

6514. *The native religion* of these islanders may be ranked amongst the darkest forms of superstition. It not only gives no support to virtue, but affords full sanction to the most cruel and dissolute practices. Even the flagitious society of arreoy was supposed to possess a peculiar sanctity. Not only animals were offered in profusion, but human victims were universally sacrificed on the bloody altars of the Polynesian divinities. Their *morais,* or temples (*fig.* 1094.), are long low enclosures, commonly of stone, in the depth of forests, and surrounded with trees. One of the observances which most powerfully influenced their habitual existence was that of *taboo,* a species of prohibition, which a person, in honour of his favourite divinity, may impose upon himself, upon any part of his body, his house, his boat, or whatever belongs to him. The chief has an extensive power to taboo any individual or any part of the island under his jurisdiction. The tabooed object must remain sacred; it must not be used, touched, or trod upon by any human being, and the person who violates this prohibition imagines himself liable to the mysterious wrath of the being in whose honour it has been imposed. He is exposed also to the furious and often bloody vengeance of the author of the taboo, who considers his guardian power thus dishonoured. This observance is sometimes usefully applied to the protection of exposed property and cultivated fields, but, in general, it both imposes severe privation, and gives birth to cruel enmities and bloody outrage.

1094



MORAI OR TEMPLE.

6515. *The missionaries,* as already observed, have attained a predominant influence in the two principal of these groups. Messrs. Tyerman and Bennett, in their parting address, say, seemingly with perfect truth,—"In things both spiritual and temporal, the people, from the highest to the lowest, look to you for counsel, for instruction, for example." The present king of Otaheite, on his accession, took the oath to the missionaries, was anointed and crowned by them. So high is the idea attached to the character, that many natives were found impressed with the belief that King George was a missionary! Spacious churches have been built, which the natives frequent, decently dressed, and with a serious and reverential air. Still the missionaries candidly admit that much is yet wanting, both as to Christian knowledge and conduct. The observance of the Sabbath, which is the most conspicuous part of their religious practice, seems, in a good measure, connected with their ancient veneration for any thing tabooed. Captain Beechey alleges that they venerate their bibles, in some degree, rather as household gods, means of mysterious protection, than as sources of instruction. Even those who admit that birds have no longer the power of prophecy cannot be persuaded that they did not possess it previously to the missionaries' arrival. There appears to be a considerable class, branded with the name *ouri outi* (rusty iron), who observe neither the old nor the new religion, but indulge at once in native excesses, and in those of intoxication, which they have learned from Europeans. Yet, on the whole, it seems undeniable that the grossest superstitions have been demolished, that human victims no longer bleed, that the arreoy society is broken up, infanticide has ceased, and public decorum is generally observed. Captains Beechey and Kotzebue, who maintain that there is no real improvement in the morals of the islanders, judge, probably, from the effect of the arrival of an European vessel, which suspends their ordinary occupations, and attracts, in crowds, the least orderly and respectable classes. On the whole, however, social life, throughout these islands, appears strangely compounded of three elements, which co-exist, not in harmonious combination, but in hostile collision: first, the rude licentiousness, dark superstition, and wild gaiety, which originally characterised the natives; then the strict system of religious and moral observance, which the missionaries have studiously introduced; lastly, the roving and reckless habits of which the example is set by the numerous mariners who now visit these shores. The missionaries have certainly introduced *letters* into these islands, where, previously, nothing of that nature existed; neither hieroglyphics, pictorial representations, nor symbols of any description. As soon as Christianity was established, they set on foot schools; and the natives applied themselves with extraordinary ardour to this new acquisition. Mr. Ellis tells us, that "aged chiefs and priests, and hardy warriors, with their spelling-books in their hands, might be seen sitting, hour after hour, on the benches in the schools, by the side, perhaps, of some smiling boy or girl, by whom they were thankful to be taught the use of letters." Yet, after the first novelty was over, considerable difficulty has been found in obtaining regular attendance, which yet is anxiously desired, not only with a view to instruction, but for forming the youth to regular habits. Still a considerable number have thus attained a competent knowledge of reading, writing, and arithmetic.

6516. *Amusements*, among a people who subsisted almost without labour, and were endowed with so gay a disposition, were varied, and pursued with excessive ardour. The most universal were the dances performed on all occasions of pleasure, worship, state, or ceremonious reception. Those of the first two descriptions were often very exceptionable; the others were generally slow and stately, with graceful, and, sometimes, fantastic movements, resembling the minuet of Europe (*fig.* 1095.). Athletic exercises, particularly wrestling, are also very general. Sailing in canoes, bathing, and swimming, are so universal, that the natives may almost be considered an amphibious race. The missionaries have been blamed for making a too sweeping proscription of all amusements, particularly the dance; but it is stated that most of them were so closely connected with previous superstitious and licentious habits, that, if any latitude had been allowed, the people would soon have relapsed fully into their former disorders.

1095

OTAHEITEAN DANCE.

6517. *The habitations* of these islanders are remarkably simple, consisting merely of one long apartment, raised from the ground on posts, thatched with palm leaves, and left in a great measure open to the air. No partition divides the inmates from each other; the most commodious place is occupied by the master and mistress of the house, while the others are accommodated according to their respective dignities. They have no regular times of sleeping or eating, but indulge in either according to inclination. In the Sandwich Islands, at least, the missionaries mention, that they seldom entered a house during the day without some of the inmates being asleep, or during the night, without some being awake. The natives sleep in their ordinary clothes; the only furniture consists of mats spread on the floor, which, in the case of the chiefs, are often very fine, and piled above each other to the number of twenty or thirty.

6518. *The dress* of the Polynesians consisted originally of the native cloths, already described, wrapped loosely round the body, and leaving a large part of the limbs and bosom uncovered. The head-dress was richly and often fantastically ornamented with feathers and long plaits of human hair. The Sandwich Islanders were fond of thus ornamenting a singular species of masks (*fig.* 1096.), in which they delighted to disguise themselves. European connection has introduced a strange and grotesque mixture of civilised customs and ornaments. Captain Beechey describes a judge who, in imitation of his brethren in England, had got on a white oakum wig, with long curls flowing over his shoulders, while above were bright feathers and variously tinted plaits of human hair, but beneath neither shoes, stockings, nor trousers. Messrs. Tyerman and Bennet saw in the Sandwich Islands an opulent chief, who, seeking to distinguish himself by peculiar finery, had put a white shirt above a black coat, taking care that a large portion of the under garment should remain visible. Similar odd combinations were observed in all the habits of life. The same missionaries observed two queens conveyed with pride in one wheelbarrow, though slowly, as the bearers were often obliged to pause beneath the weight of royalty. The same ladies were observed next day collecting rushes in a neighbouring marsh, which their majesties bore on their naked backs to be strewed on the royal floor. Under the head of ornament, though not of dress, we must not omit tattooing, that singular painting of which the human skin is the canvass. To a great extent it is universal over Polynesia, and extends to several of the principal Australasian islands, particularly New Zealand. There, and in the Marquesas, the body of the chiefs is entirely tattooed over, leaving no trace of the original skin; but in Otaheite and the Sandwich Islands it is confined to particular parts, especially the thighs and part of the legs, being applied sometimes to the palms of the hands, and even to the tongue; but the face is not thus disfigured. The representations are sometimes arbitrary, but more commonly consist of animals rudely delineated, occasionally of stars, circles, and crescents. These are supposed to indicate the rank or tribe of the person tattooed, and also the arrival at years of maturity. They are worked in with sharp instruments of stone, and the wounds variously coloured, either by the mothers, or by professional operators; and even young girls endure with fortitude exquisite torture, in the proud hope of the dignity to which it will raise them.

1096

SANDWICH ISLANDER WITH MASK.

Sect. VII. *Local Geography.*

6519. The numerous islands which stud this part of the Pacific may be *divided into the great groups* of the Society, Sandwich, Marquesas or Mendana, Caroline, and Marianne Islands. The other clusters which have been named by navigators seem all to be branches or appendages of these great archipelagoes. We may add, however, the great coral range, and a few detached islands, that stand alone amid a wide expanse of ocean.

6520. *The Society Islands* have excited a higher interest than any other group in the South Sea. Though not the largest, they are the most beautiful, the most fruitful, and those in which civilisation and polished manners have made the greatest progress. They are also those with which Britain has held the most close and intimate connection.

6521. *Otaheite* (*fig.* 1097.), the largest and finest of these islands, ranks always as the brightest gem of the Pacific. This celebrated island, discovered probably by Quiros, under the name of Sagittaria, rediscovered by Wallis, and fully explored by Cook, consists of two peninsulas, one about ninety, the other thirty miles in circumference. The interior rises into mountains loftier than any others in those seas, except the colossal peaks in the Sandwich Islands. Oroeno and Tobronu are respectively of the height of 10,800 and 9500 feet; but, in this genial climate, trees and verdure clothe their almost inaccessible summits, and the scenery is equally distinguished by grandeur and beauty. These mountains compose as it were the island; only a narrow plain intervenes between them and the sea, while their cliffs in many places breast the waves. The greater part of the surface consists of beautiful hills and slopes, watered by clear streams, which dash in numerous cascades. Otaheite is nearly covered by one entire forest of bread-fruit, cocoa-nut, banana, and other valuable trees, a few spots only being cleared for the culture of the yam. The fruits ripen at different seasons, according as the mountain slopes have a northern or southern exposure. The Otaheiteans presented the most complete example, both of what is engaging in manners and dissolute in conduct, among the South Sea islanders. The profligate association of the arreoy was peculiar to it. In this island, however, the influence of Christianity and civilisation has been earliest and most fully felt. On the 6th of March, 1797, Captain Wilson landed from the ship Duff a party of missionaries, sent out by the generous zeal of the London society. Although, however, they were well treated, and listened to, they could not boast, in 1808, of having made a single genuine convert. In that year they quitted Otaheite, and left only a few of their number in Eimeo. A remarkable change, however, then ensued. Pomarre, attacked by a body of rebellious subjects, was driven out of Otaheite, and forced to take refuge in Eimeo. In this distress, his mind was opened to the instructions of the missionaries, and after being with

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his family among the most zealous votaries of the ancient superstition, he made an open profession of Christianity. The cooking and eating of a turtle, always before held as a tabooed animal, first publicly announced the change. Several distinguished chiefs soon followed the example. The daring experiment, made by one of them named Hetotte, is particularly recorded by Captain Beechey. It had been hitherto an article of undoubted faith that whoever should eat any portion of the flesh of a hog offered in sacrifice would be punished with instant death. Hetotte determined to make the awful trial: he stole a portion of the sacred pork, retired to a corner, ate it, and, in dread suspense, awaited the issue. Finding, however, that, instead of the threatened doom, he experienced from this food the usual nourishment and refreshment, he not only abandoned the superstition himself, but denounced it to all his countrymen. After Eimeo had been thus christianised, Pomarre was invited back to Otaheite by a strong body of adherents. His first attempt was unsuccessful; but in 1815 he completely defeated the rebel and pagan army, and, having subjected the whole island, overthrew the temples and altars, setting up the holy log, supposed to be frequently inspired, as a post in his kitchen. His sister Aimata, who succeeded him in 1827, supports the same system; and the missionaries have acquired an influence in Otaheite, the results of which have been described in the preceding chapter. The population of the island was estimated by Cook at upwards of 120,000, which was probably from the first much exaggerated. Captain Wilson, after a careful enumeration in 1797, found little more than 16,000; and these have since diminished to one half. This depopulation seems sufficiently accounted for by Mr. Ellis from the bloody wars among themselves, with the introduction from Europe of contagious diseases and of the use of ardent spirits.

6522. *The other Society Islands* are generally fine and fruitful, but do not present any very striking distinctive characters. Eimeo, discovered by Wallis, has a peak nearly 3000 feet high, and broad ridges cross it in various directions and form a rocky coast; but wide well-wooded valleys intervene, and the port of Taloo is one of the finest in the South Sea. But Eimeo is chiefly distinguished as still the centre of that European and Christian civilisation which originated there. It contains an academy, a printing-office, and a cotton factory; all, it is to be regretted, on too small a scale, and making too little progress. Ulietea, or Raiatea, is, next to Otaheite, the largest of the group, being nearly sixty miles in circumference, and having closely adjoining to it Otaha, about half that size. Both are encircled by a coral reef, bordered by numerous islets. Ulietea is governed by a separate king; the people are smaller, darker in colour, and somewhat ruder, than those of Otaheite. Borabora, or Bolabola, is a bold, finely wooded, and picturesque island, governed by separate chiefs, and inhabited by a fierce hardy race, who afford a place of refuge to outlawed and desperate characters from other quarters. Of smaller islands, Maitea, on whose coast pearl oysters are found, Maurua or Maupili, and Toobouai, are deserving of mention.

6523. *The Archipelago of Low Islands* is the name given by Hassel and Balbi to an almost numberless range of islets, extending E.S.E. from the Society Islands, and passed in the route thither from Cape Horn. Their origin and structure are extremely remarkable. Coralline plants, growing at the bottom of the ocean, harbour a class of lithophytic insects, which, during their life, form round them a substance which, after their death, becomes hard as stone. The rockwork of one generation affords a basis to that of the succeeding, and layers are thus placed over each other till they reach the suface of the water, and form islands. As soon as the rock is exposed to the air, the insects quit it, leaving it perforated by numerous hollows; but they work for some time laterally, forming, immediately under water, concealed table reefs, which have given occasion to numerous and fatal shipwrecks. Meantime, from amid the interstices of the rocks plants spring up, and, on their decay, are converted into soil, till the new island is covered with luxuriant vegetation. These islands scarcely ever rise more than a few feet above the sea; for the low hills which some navigators have thought they observed, seem to be only the lofty form of the *pandanus*, which usually springs up on such shores. These coasts have usually parallel to them a coral reef, separated by a lagoon, into which it is often difficult to find an entrance. Of thirty-two islands observed by Captain Beechey, twenty-nine had lagoons. When these wonderful ocean-fabrics were first noticed, an impression prevailed that they were proceeding to a vast extent, and that the coralline insects were rearing a continent from beneath the Pacific; but the observations of Gaimard, Beechey, and others, rather suggest the conclusion that they are raised only under local and peculiar circumstances, not yet fully ascertained. The formation, also, seems to go on very slowly. The wreck of the Matilda, left in 1802 on a coral reef, was found by Captain Beechey, in 1825, unaltered in position, and without any coral having grown over it. That navigator also remarks, that these islands are found all in the direction of the trade-wind; that the windward side is the highest, while the other is only a half-drowned reef. The surface displays in general a blooming but little varied vegetation. The leading tree is the pandanus, and next to it the cocoa nut, both valuable, and yielding nutritive fruits. The people are little known, as the slender supplies to be obtained, and the dangerous nature of the coasts, have induced mariners to sail through them as quickly as possible. All of them are thinly peopled, some entirely desert, and some alternately occupied and abandoned. The people are considered by Hassel to be of the Malay race, and to resemble the Society Islanders; but Beechey, who held more intercourse with them than any previous navigator, describes them as more allied to the Oriental negro, and in a very low state of civilisation. The natives of Clermont-Tonnerre, Serle, and other islands, were judged to resemble the New Caledonians. The Chain Islanders were a most brutal race, cruelly oppressing their females, and confessing that they had, lately at least, been guilty of cannibalism. The people of the Gambier Islands were completely astonished at the view of a dog, never having seen any animal larger than a rat. They were most determined thieves; and, when a musket was pointed at them, imagined it was intended as a present, and ran forward to catch it. This group is distinguished as being the only one that is high and volcanic, though surrounded by coral reefs. Where the people are of fairer complexion, their moral character seems also improved. Such is the case in Lagoon Island, where the people were extremely honest, though eager in traffic, exchanging all they had for nails, bits of iron, and beads. Those of Byam Martin had an Otaheitean cast of features; and a party, wafted by a storm from that island, 600 miles distant, had brought with them Testaments, hymn books, &c. It would be impossible to attempt going over the details of these almost innumerable islets. Bow Island, 30 miles long and 5 broad, is well wooded, but the people barbarous. King George's Islands, discovered by Byron in 1765, consist of two small groups, well furnished with water and provisions, and inhabited by a numerous race, resembling the Otaheiteans, and understanding their language. Queen Charlotte's Islands, and Aurora, are of nearly similar character. In the most northerly part of the archipelago, Byron saw one which bore an appearance of brilliant vegetation; but, when he had reached it with difficulty through openings in the coral reef, he found it destitute either of water or provisions, and named it Disappointment. The Russian navigators Kotzebue and Bellinghausen discovered islands to which they gave the name of Romanzoff, Suvaroff, and Krusenstern; but they did not see any inhabitants.

6524. *Pitcairn Island*, a small detached spot, standing almost alone, near the eastern extremity of this range, has attracted a remarkable interest, in consequence of events which made it the abode of a British population. In 1789, Captain Bligh visited Otaheite, with the view of transplanting the bread-fruit tree into the West Indies. After leaving the island, however, a violent mutiny arose among his crew, who, headed by one named Christian, turned him out with a handful of adherents, into a boat, and left them in the midst of the Pacific. Thus abandoned, it seemed almost certain that he must perish; yet, by a train of almost miraculous efforts and events, he succeeded in reaching Britain in safety. The mutineers first returned to Otaheite, and then made an attempt to settle on the small neighbouring island of Toobouai; but, dreading discovery by British vessels touching at these islands, Christian determined to seek some spot more solitary and remote. He fixed upon Pitcairn Island, discovered by Captain Carteret, and arrived there in January, 1790, with eight of his comrades, six native men, and twelve females, whom they had invited on board, and then carried off. In this ill-composed society, however, the most dreadful dissensions soon arose. Conflicts took place, especially between the natives and Europeans, and Christian became an early victim. In ten years, thirteen men had been killed, and there remained alive only one, named Adams, with six women and nineteen children. Adams, after witnessing such scenes of misery and crime, had been led to habits of serious reflection and a careful perusal of the Scriptures. He now determined thoroughly to reform himself, and, if possible, his companions. The Otaheitean females proved tractable, and were easily converted; and the children, trained in strict principles of religion, grew up a race directly opposite to that from which they sprung. Captain Beechey, in 1825, found thirty-six males and thirty females, forming a happy little society, well instructed, orderly, and friendly. They felt, however, a desire to see something more of the world of which they heard occasionally from passing navigators. Adams is since dead.

6525. *Easter Island*, or Vaihou, stands entirely by itself, considerably east of the above, and forming the extremity on that side of the great Polynesian range. It was first discovered, in 1722, by Roggewein, and has since been frequently visited, as it lies in the direct route from Cape Horn to the Society Islands. Though only twenty miles in circuit, it has excited much interest from its physical aspect and social state. The shore is bold and rocky, and the whole island bears the most evident marks of volcanic action. The numerous rocks are composed entirely of lava, and small extinct craters are found on almost all their summits. De Langle, who accompanied La Pérouse, penetrated to a large one in the interior, about five miles in circumference, and at least 800 feet deep; but the grass growing on its sides showed that the subterraneous fire had long ceased to issue. In consequence of this structure, the island is irrigated by no streams, and water is found only in ponds. Although this deficiency deprives it of the cocoa-nut and the bread-fruit tree, yet the industry of the inhabitants has given to its rocky hills a verdant and smiling appearance, and has supplied yams, potatoes, and other vegetables, in considerable plenty. The natives are a handsome race, especially the females, but the gigantic size ascribed to them by Roggewein is not confirmed by later observers, and their frames seem formed more for activity than strength. They exhibit, in the extreme, the gay and polished address, with the propensity to thieving and licentiousness, which distinguish the Society Islands; and Captain Beechey's experience showed that they did not scruple to have recourse to violence in order to compass their ends. There were found among these people some singular traces of an ancient civilisation. There were spacious morais, in the vicinity of which were found colossal statues of stone, about fourteen feet high, representing, though in a rude manner, the upper part of the human form. The present inhabitants, however, are so far from sharing the art by which these were constructed, that they have been continually defacing them till they have almost entirely disappeared, and Captain Beechey found only a few fragments remaining.

6526. On the west, also, the Society Islands have, as an appendage, a small and *scattered group*, which remained without a name, till Krusenstern, followed by Hassel and Balbi, gave to it that of *Cook*, its discoverer; a tribute to his memory which we shall not refuse, though it be scarcely worthy of so great a name. Cook's Islands are small, low, and of coral formation; they are deficient in water, which is found only in ponds and wells, yet they are tolerably peopled and cultivated. The state of society nearly resembles that in Otaheite, and the missionaries have succeeded in converting a considerable number Mangeea, Wateo, Whitoutacké, and Rarotoa, are the principal. The people of this last are very civilised, and their chief has lately embraced Christianity.

6527. *The Sandwich Islands* form as it were a solitary group far north of the general range, and fully 1500 miles distant from both the Mulgrave and the Marquesas. They are thirteen in number; but of the 7000 square miles which Hassel estimates the whole to contain, 5000 are occupied by Owhyhee; and the others are thus comparatively very small. Woahoo, Mowee, and Atooi, are, however, not inconsiderable. The natural aspect of these islands is grand and awful. The mountains of Mouna Roa and Mouna Koa rise completely to an alpine height, and have their summits wrapt in perpetual snow. A party from the Blonde lately reached nearly, but not quite, to the summit of Mouna Koa. The mountain was almost entirely composed of lava, and exhibited numerous traces of extinct volcanoes. They reached, also, on the flank of Mouna Roa, the volcano of Peli, where that phenomenon appears more awful and varied than in any other part of the world. The scene here presented is thus described by Captain Lord Byron: — "Within a mile of the crater, our progress was suddenly arrested by finding ourselves on the edge of a precipitous ledge of seventy feet perpendicular height, clothed with trees and gigantic ferns. A winding but very steep path conducted to the bottom; and, after moving onwards a few hundred yards more, we came to a second ledge, whence we heard the deep roaring of the volcano, like the sounds proceeding from a blast furnace. And now, at every step, we perceived yawning chasms, of unknown depth, from some of which columns of black smoke issuing told of what was going on in the realms of fire below. At length we reached the edge of the crater; but words are totally inadequate to describe the effect produced on us by the first sight of that dark fiery gulf. From its brink, where we stood, we looked down for more than 1300 feet, over rocks of lava and columns of sulphur, between whose antique fissures a few green shrubs and juicy berry-bearing plants had fixed themselves to a rugged plain, where many a cone, raised by the action of the fire below, was throwing up columns of living flame, and whirls of smoke and vapour, while floods of liquid fire were slowly winding through scoriæ and ashes, here yellow with sulphur, and there black, or grey, or red, as the materials which the flames had wrought on varied. Not less than fifty cones, of various height, appeared below, as the funnels of the various operations going on. At least one half of these were in activity, but it appears that the same are by no means constantly so; nay, that often older cones fall in; and new ones are formed elsewhere in the bottom of the pit. Some eject stones and fragments of rock, while from their dark and sulphur-coloured flanks, lava, and sometimes water, issues: many of the cones emit vapours, which, condensed, form beautiful beds of sulphur; others are distinguished by the wreathed columns of white and black, that indicate steam and smoke, curled round each other by the wind, but never mixing."

6528. *Captain King*, in 1779, estimated the *population* of these islands at 400,000; but, though this number is adopted by Hassel, we have no hesitation, with M. Balbi, in preferring that of Ellis, who reckons only 130,000. The distribution made by Captain King through the islands may, however, give an idea of their relative importance. He assigns to Owhyhee 150,000; to Mowee, 65,400; to Woahoo, 60,200; to Atooi, 54,000; to all the others united, 70,000. A third part of these numbers may approach the truth. The natives are tall and robust, especially the chiefs, who here, as in the other islands, appear like a superior race to the lower orders. As compared with the Otaheiteans, they are of a dark brown complexion; and the females do not display the same softened graces. But these islanders are distinguished above all other inhabitants of the South Sea by diligence and skill in the pursuits of industry. While the Otaheitean, in voluptuous ease, subsists chiefly on the spontaneous bounties of nature, the Sandwich Islander has carefully improved almost every spot susceptible of cultivation. The taro root, on which he chiefly subsists, requires a soil not only tilled, but inundated; the fields on which it grows, therefore, are enclosed by stone fences, and watered by irrigating canals. In manufactures, canoe-building, and fishery, these islanders display the same active industry. Their general conduct is open, honourable, and friendly; yet they are easily kindled to fierce resentment, especially by any wrong against their chiefs. Such a cause led to the disastrous conflict which terminated in the death of Cook; and the circumstance of one of their great men being fired at from a West India vessel led afterwards to the murder of Messrs. Hergest and Gooch of the Dædalus. The people have been peculiarly distinguished by their efforts to raise themselves to the level of European arts and civilisation. In this career they were first led by Tamahama I., who, about the year 1794, with the assistance of Vancouver, and of Young and Davis, two English seamen, began to form a small navy, which soon amounted to twenty vessels, some of seventy tons' burden: he had disciplined a small body of troops in the European manner, and erected a fort defended by cannon. His son, Riho-Riho, in 1819 embraced Christianity, and abolished idolatrous worship. Still farther to promote the improvement of the country, he and his queen paid a visit to England, where they were received with the utmost courtesy; but, unfortunately, both were seized with contagious fever, and died. His son being a minor, political influence was shared by several female relations and chiefs; but the same system has been, on the whole, maintained; and though one queen endeavoured to renew the festive and tumultuary rites of the ancient superstition, the chiefs refused to concur. For some time scarcely any religion was substituted for the one abolished; but, since 1825, missionaries from the United States have made great efforts for the instruction of the natives, and have established an extensive influence. Lord Byron and other maritime visiters accuse them of having established too austere a system, of proscribing innocent amusements, and requiring a long daily attendance at church, which interferes with the pursuits of industry; but these complaints, prompted by the opposite character of the two parties, seem exaggerated, and missionary influence undoubtedly tends, on the whole, to advance the progress of civilisation. The commercial activity already noticed prevails chiefly at Honororu, in the island of Woahoo, the only place in these islands deserving the name of a town. It contains about 5000 inhabitants, nearly a hundred of whom are Anglo-Americans and English. Some of the houses are built of stone; and the signs of "the Britannia, the Jolly Tar, the Good Woman, billiards, and an ordinary at one o'clock," strikingly testify the transplantation of European habits into this remote and lately savage region.

6529. The cluster of islands which is now commonly called the *Archipelago of Mendana* consists of two groups, named the *Marquesas* and the *Washington Islands*. The former, long the only part known, was discovered in 1596 by the Spanish navigator, Alvaro Mendana, who gave to them the name of the Marquis of Mendoza, then viceroy of Peru. After being long forgotten, they were rediscovered and examined with considerable attention by Cook. The more northerly group was first visited, in 1791, by an American named Ingraham, and then in 1792 by Marchand; but the American's discovery being prior, his name of "Washington Islands" has been generally recognised. They were examined in 1804 with some attention by Krusenstern, and have since been frequently touched at by British and American ships. These islands are elevated, and the mountains, rising to the height of 4000 or 5000 feet, are extremely broken and craggy, while a sandy belt extends along the sea; but the intermediate valleys are singularly fertile and picturesque, copiously watered by streams which descend in numerous cascades, one of which, in Nukahiwa, being 2000 feet high, is among the most beautiful in the world.

6530. *The population* has been estimated variously, and, indeed, extravagantly, since Forster assigned 100,000 to the mere group of the Marquesas. The more careful observation of Krusenstern and other recent navigators has reduced this number to 18,000: the same is assigned to Nukahiwa; while the other Washington Islands may raise the whole somewhat above 40,000. Nature, in providing the people with the bread fruit, the cocoa nut, and the banana, affords them subsistence almost without labour. They add only a few plantations of yams and taro, and reserve their chief labour for the plant which yields the intoxicating liquor of *kawa*, and for that from which their mats are fabricated. The domestic animals are hogs and poultry, the dog being wanting. The men of these islands are described as tall, robust, and the most finely formed of almost any known race. They would not, it is asserted, lose by a comparison with the most perfect models of ancient sculpture. Their complexion, even, is little darker than that of Europeans; but it is visible only in the youths, for the tattooing, practised over all the South Sea, is carried here to such a pitch, that the skin of the adult becomes the mere canvass of a picture. The operation begins at twelve or thirteen, but it is not till thirty or thirty-five that their person is entirely covered. The women have handsome features, but their gait is slouching and their limbs ill formed: they have an air marked by effrontery, and hold virtue in scarcely any estimation. The character of these islanders displays the usual contrasts of savage life; in their ordinary intercourse they are friendly, open, and engaging; but they carry on war with the most deadly ferocity, piercing the brain of the vanquished enemy, and eagerly drinking his blood. The islands are divided among a number of independent chiefs and tribes. The missionaries have made some attempts to communicate Christianity and civilisation, but hitherto with little success. The different islands have received from their successive visiters rather a perplexing variety of names. Ohivahoa, the largest of the Marquesan group, is called also Santa Dominica; to which may be added the more frequented one of Tabouata or St. Christina, and Tatouiva or Magdalena. The Washington group, besides its principal one, Nukahiwa, contains Ouabouga or Washington, and Ouapon, called also Adams or Trevanion.

6531. *The Friendly Islands*, a name which, notwithstanding the examples of Hassel and Balbi, we are unwilling to exchange for that of the Tonga Archipelago, forms a fine and interesting group, considerably to the west of Otaheite. With a single exception, they present nothing of that lofty aspect, or those symptoms of volcanic origin, which distinguish the large islands hitherto described. They consist of a basis of madrepore, raised apparently from the bottom of the ocean, by the well-known action of insects; and the coasts are encircled by dangerous coral reefs. The ground rises not in general more than 20 or 30 feet above the sea; nor do the highest hills exceed 100 or 150 feet. Hence they are not, like the high islands, irrigated by copious streams; and the people are in many places obliged to procure an inferior water from wells or ponds. Yet the soil is almost throughout exceedingly rich; and the natives carefully improve it, keeping their plantations in excellent order, adding to the spontaneous abundance of the banana and the bread fruit by the careful cultivation of the yam and other roots. These islands thus maintain a population which, though evidently overrated by Forster at 200,000, may probably be estimated in the Tonga group at 50,000, and in the others at 30,000 or 40,000. In the construction of their vessels they are scarcely equalled by any other natives of the South Sea. The double canoes, composed of pieces sewed together, are 60 or 70 feet long, and about 5 broad, and the two parts, [illegible] or 7 feet asunder, being united by a platform, render the vessel spacious and commodious, while it is capable of navigating with safety even distant seas. The natives of the Friendly Islands (*fig.* 1098.) are of a dark brown complexion; the men are muscular, with broad shoulders, and the women are often deficient in delicacy of form and features; but many of both sexes present models of almost perfect beauty, and their expression is generally mild and agreeable. Their character has been drawn in more flattering colours that that of almost any other people of the South Sea. The name given by Captain Cook expresses his opinion of their disposition. They seem to possess the amiable qualities of the Otaheiteans, with a smaller measure of their faults. If neither their honesty nor the virtue of their females could withstand the temptations of European intercourse, among themselves both appear to be exemplary; and their domestic attachments are warm. Yet a more intimate observation has discovered among them all the darkest features of savage life. An European vessel, having fallen into their power, was plundered, and the crew murdered with merciless cruelty. Their wars are carried on with the utmost ferocity. They have a complicated system of superstition, worshipping upwards of 300 *eatooas*, or deities, which preside over the sky, the rain and other elements, and assume often the forms of serpents, lizards, and dolphins. They believe also that the British have a national god, whom they admit to be wiser and more powerful than theirs, from the fine cloth and ships he has taught them to make. A party of missionaries landed from the ship Duff were

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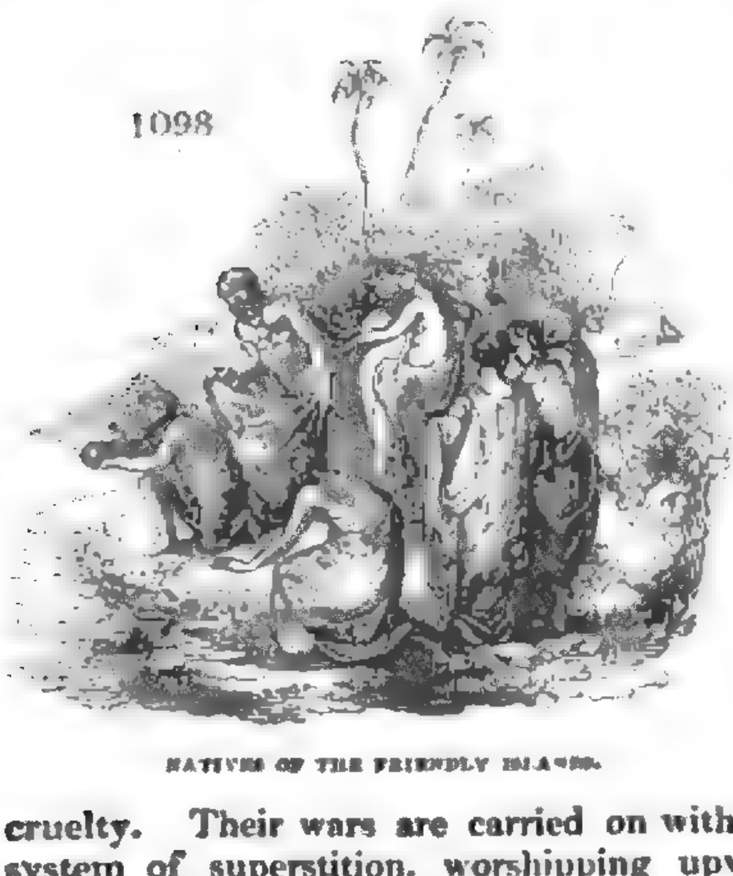


NATIVES OF THE FRIENDLY ISLANDS.

at first well treated, and the chiefs, particularly Finow, showed a great interest in regard to European arts, and, among others, that of writing. The natives, however, having imbibed the superstitious idea that a pestilential disease which desolated the islands owed its origin to these strangers, put several to death; others perished in civil wars; and though a small party still remain, they do not appear to have made any material impression, either in regard to religion or civilisation. The Friendly Islands are very numerous: including those of all sizes, they are supposed not to be fewer than 150. The largest, however, is not above seven miles in length. The principal in the Tonga group are, Tongataboo, Eooa, and Annamooka, called by Tasman, their first discoverer, Amsterdam, Middleburg, and Rotterdam. In another group is Tofoa, the only mountainous island, containing a volcano, which manifests some degree of activity. Lefooga, the principal of the numerous group of the Hapaee Islands, was long the residence of a chief who held sway over the others. Vavaoo, in another cluster, is the second in size of the whole archipelago, and one of the most fruitful.

6532. *The Feejee, Fidschi, or Viti Islands*, situated to the north-west of the Tonga group, are so closely continuous, that they may properly be considered as forming part of the same archipelago. They were partially discovered first by Tasman, afterwards by Cook, and have been more fully observed by Bligh and some American vessels; yet they are still very imperfectly known. To this chiefly it seems owing that they have not excited equal interest with those just described; for they are considerably larger, and equally fertile and populous. Paoo, or Tacanova, is about fifty leagues in circuit: it belongs to the class of high islands, being traversed by mountainous ridges, though several members of the group are low and encircled by coral reefs. They abound in the usual Polynesian products, particularly in sandal-wood, which American ships have begun to carry off in considerable quantities for the market of China. The people, though not negro, are of a darker complexion than those of the Tonga Islands. Yet they do not appear to rank lower in arts and civilisation; their canoes, their cloths and mats, are equal or superior to those of their neighbours. Some whom D'Entrecasteaux saw in Tonga appeared to him to have more character and intelligence than the natives of that island. The deep ferocity with which they are branded may, perhaps, arise mainly from the light under which they have been viewed, and their being known chiefly through the report of their enemies. They are certainly a martial people. On going to battle they paint their faces; and having bored the *septum* of the nose, stick into it two large feathers. Their name is terrible to the Tonga Islanders, with whom they wage frequent war. They were lately subject to Finow, but have made themselves independent; and the power is now shared among several individuals. Besides Paoo, Nawihi, Lewu, and Meywoolla, are of considerable dimensions.

6533. *The Navigators' Islands* may also be considered as belonging to the Friendly Archipelago, of which they compose the north-east portion. They were partially seen by Mendana, then by Schouten, afterwards more fully by Roggewein, who gave them the name of Bauman's Islands, changed since by Bougainville to Navigators', which does not seem more applicable to these islanders than to the other Polynesians; yet the name being now established, M. Balbi will, perhaps, in vain attempt to change it to Hamoa. The interior is elevated, and the rocks seem to exhibit marks of volcanic origin; but the mountains are clothed to the summit with lofty trees, and the wooded valleys beneath, watered by numberless streams and rills, present an enchanting landscape. These trees, bearing the usual nutritious fruits, maintain the natives in plenty, which is augmented by the great number of dogs, poultry, and hogs, of which last Pérouse purchased 500 from two islands. The men are of almost colossal height, and finely formed; their complexion nearly white, though in the adults completely concealed by tattooing. In the construction of their houses and canoes they are at least equal to the other Polynesians; and their cloths are woven with a skill not equalled in Otaheite. Respecting their moral qualities, the reports have been very opposite. Roggewein paints their friendly and courteous disposition in terms as flattering as have been applied to the most engaging of the South Sea islanders; while Pérouse represents them in the darkest colours. He had, indeed, too good reason; since a party, composed of Langlès, captain of the Astrolabe, Lamanon the naturalist, and nine others, who had landed on Maouna, were surprised, massacred, and their bodies treated with the most dreadful indignity. Yet, notwithstanding the excellent character of the French commander, the impulses which rouse vindictive passions in the savage breast are often so mysterious, that it might be rash to draw a sweeping inference from this catastrophe. Since its occurrence, however, these islands have been rarely visited. Pala, Oyalava, and Maouna, are the largest in the group, and may rank with the most considerable in the South Sea.

6534. *The Carolines* form a very extensive and numerous range, the most western of Polynesia, and extending for upwards of 30 degrees, or about 2000 miles. They lie north, while the Society and Friendly Islands are south, of the equator. A few of them are high and peaked, though they do not attain the alpine elevation of those of Eastern Polynesia, being supposed not to rise much above 3000 feet: all the others are low and of coral formation. They have been among the latest and most imperfectly known in the South Sea. They were discovered, first in 1686, by Francisco Lazeano, driven thither by a storm from the Ladrones, who gave the name after Charles of Spain. Since that time there has been a considerable intercourse between the two groups; and the shipwreck of Captain Wilson, in 1783, made us acquainted with the Pelew Islands. The French commanders Freycinet and Duperrey have recently made valuable observations on these islands. In productions they resemble the rest of Polynesia, except that the bread fruit abounds only in the eastern islands; and the hog is unknown unless in the Pelew group, where it has been introduced by Europeans; so that fish forms almost the only animal food. They are situated in a most tempestuous ocean, exposed to violent hurricanes, one of which often sweeps away the entire produce of an island; yet the people are still more at home on the waves than even the rest of the South Sea islanders. Besides drawing from them a copious supply of fish, they equip large barks with sails, and by the aid only of the stars navigate across these stormy seas to the Ladrones. There they obtain iron and some European manufactures, part of which is afterwards exchanged with the more easterly islands for bread fruit. Hogoleu, Yap, Oualan (first visited by Captain Duperrey, and found possessed of a very considerable degree of civilisation), and Pounipet, discovered by the Russians in 1826, are high islands, and the largest in the archipelago. The group containing Ulea, Lamourzek, and Oulimirak, though composed only of low coral islands, is distinguished by the skill of the natives in navigation. Their vessels are superior to those in the rest of the archipelago; and it is by them chiefly that the communication with the Ladrones is maintained, by means of a small annual fleet which rendezvouses at Lamourzek.

6535. *Lord Mulgrave's Islands* form a group so closely adjoining on the east to the Carolines, that they can scarcely be considered otherwise than as a branch of that great archipelago. They were first found out by Captains Marshall and Gilbert, in a circuitous voyage from Port Jackson to Canton; afterwards more fully examined, in 1817, by Kotzebue, who discovered the important isles of Radack and Ralik. They consist of a crowd of low coral islets, raised, like the others, by a peculiar process from the bottom of the ocean. The interior rises into verdant hillocks, but the immediate coast is sandy; water is found only in deep wells, and is wanting in some islands, though others are irrigated by streamlets. Hence no luxuriant variety of vegetation is displayed, and the chief dependence is upon the pandanus, whose hill-formed trees, yielding a juicy aromatic fruit, are seen growing on the most arid shores. The cocoa nut, in scanty supply, is employed only for ropes and sails. The islands are entirely destitute of land animals except rats, which are numerous, and sometimes eaten as food. They are peopled up to the limited resources which nature affords. The natives are described under more amiable colours than almost any other in the South Seas, as friendly, courteous, and amiable; free from the thievish propensities and dissolute conduct which are there so general. The particulars must be counted, not by islands, but by groups; those of Radack and Ralik, discovered by the Russians, being the most important. Those of Gilbert, Simpson, and Bishop, farther to the south and east, have received their names from British discoverers.

6536. *The Pelew Islands* form a western branch of the Caroline Archipelago, not materially differing in character. They are of moderate elevation, well wooded, bordered by dangerous coral reefs. They were mentioned near the beginning of last century by Cantova and the Spanish missionaries; but they became first an object of interest in Britain, by the shipwreck, in 1783, of Captain Wilson in the Antelope, when he was received, and his wants supplied, with the most generous kindness. Abba Thulle, the king, with an enlightened desire to improve his people by a knowledge of the arts and attainments of Europe, sent along with the captain his son the prince Lee Boo, who delighted the society of the metropolis by the amiable and intelligent simplicity of his manners; but, unfortunately, this young prince was seized with small-pox, and died. Keats, from the report of Wilson, drew up a narrative of the voyage, in which the Pelew islanders are represented under the most pleasing colours. It is remarkable, that the British navigators who since that time have frequented these shores, with the view of procuring tripang and other commodities for the Chinese market, have drawn a completely opposite picture, representing these people as displaying all the bad qualities incident to savage life; and this agrees with the early report of Cantova. Man in this social stage appears very variously, according to the point of view in which he is seen. Even Wilson witnessed an inhuman massacre of prisoners taken in battle. Cantova probably heard them described by tribes with whom they waged war; and the modern navigators may not have always acted in a manner calculated to develope a friendly disposition. They have certainly added very little to our knowledge of the group, of which Babel-thu-up, Coror, Emungs, and Pellelew are the principal. The small island of Oroolong was presented by Abba Thulle to the British, but has not been occupied.

6537. *The Ladrone or Marianne Islands* form an early known and celebrated group, almost immediately north of the Carolines. It was discovered by Magellan in the first circumnavigation of the globe in 1512. He gave it the name of *Los Ladrones*, from the thievish propensities of the natives; but the Spaniards, who, finding it in their way from Mexico to the Philippines, formed a settlement there, substituted the name of the Mariannes, in honour of their reigning queen. Most of the early circumnavigators, Cavendish, Dampier, Anson, as they began by proceeding to a high latitude along the American coast, when they came to cross the Pacific, found those islands in their way; while Cook and his successors, seeking discoveries in a different direction, passed direct from the Friendly Islands into Australasia; but several late French and Russian expeditions have taken the route of the Mariannes. By some navigators, and particularly by Anson, they were celebrated as completely a paradise; and though this impression was evidently much heightened by the previous long and exhausting voyages, they seem really to possess all the advantages of the most favoured Polynesian groups. They are moderately elevated; but the mountains in the centre do not rise much above 2000 feet, and from them the surface descends by terraces to the shore, which, like others in these seas, is begirt with dangerous coral reefs. It is covered, for the most part, with the rich vegetation peculiar to these climates; and though Europeans at first found the islands destitute of any useful quadruped, the Spaniards have introduced with success not only those of Europe, but the guanaco from Peru, and the deer from the Philippines. The natives in the three principal islands, estimated, on the discovery, at 40,000, were a remarkable people, who had, in some respects, made greater progress in the arts than the other South Sea islanders. They were, indeed, very inferior to the Otaheiteans in clothing, the men being almost naked, and the women wearing only a small apron; and their household furniture, though neat, was very limited: but their agriculture and canoe-building were fully equal; and they had the remarkable superiority of possessing a rude species of coin, and of having erected spacious structures dedicated seemingly to religious purposes. These were composed of an inner and outer range of pyramidal columns, crowned by a semicircular dome; the whole composed of sand and stone, cemented together and covered with gypsum. Civilisation was also indicated by the high rank held by the female sex, who were exempted not only from oppressive labour, but from the degradation connected with the practice of polygamy. The wife, if slighted, could return to her parents, carrying with her the whole of the household goods; while, if she herself proved unfaithful, the husband might indeed kill her seducer, but was obliged to send her home uninjured. When the Spaniards, in 1678, formed an establishment in these islands as a place of refreshment for the Manilla galleon, they endeavoured as usual, to impose their sway and their religion on the natives, who strenuously resisted both; and in the struggle the greater part of them were exterminated. A few found refuge in the Carolines; others fell victims to pestilential diseases; and the small remnant can scarcely be distinguished from their conquerors. Tinian, so celebrated by Anson, is overgrown with forests, amid which the ruins of its spacious edifices can with difficulty be traced. The population of the three principal islands was found, in 1816, to consist of only 5389 individuals, composed chiefly of Spaniards, Tagalas from Manilla, and Indians from Peru. Agrigan, the capital, in the island of Guam, contained 3115 of this number.

Chap. III.

ISLANDS IN THE POLAR SEAS.

6538. To complete the description of the detached and insular portions of the globe, there remain still a considerable number of *large islands*, situated in the stormy seas by which the two *poles* are encircled. Although these regions be dreary, desolate, and almost uninhabited, they present features which strongly attract the interest and curiosity of mankind, and have induced many daring adventurers to explore and navigate these remote coasts and seas.

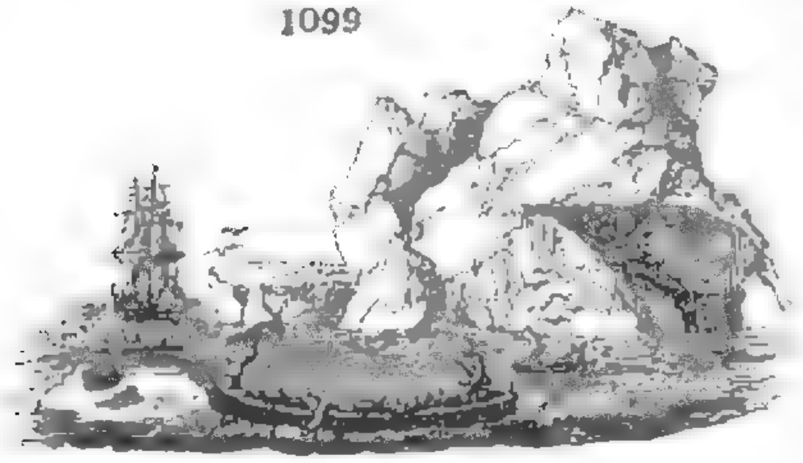
Sect. I. *General Outline and Aspect.*

6539. *The Polar Islands* are situated partly in the seas round the North, partly in those round the South Pole. The former, lying within the Arctic Circle, are by much the most numerous and extensive. Commencing from the eastward, we find Nova Zembla, reaching northward from the boundary of Europe and Asia; Spitzbergen, called sometimes East Greenland, the most northern land yet visited; West Greenland, a mass of territory possessing almost the magnitude of a continent, and long supposed to be part of America, from which, however, it now proves to be entirely disjoined; lastly, the range of the Georgian Islands, discovered by Captain Parry, of which the principal are Cornwallis, Bathurst, Melville, and

Banks's Land, the boundaries of which last are yet unknown. In the Antarctic Ocean, on the contrary, where a new continent was long sought and expected, no extensive body of land has yet been discovered; but there are some considerable islands, or groups, particularly New Georgia, New South Shetland, and the New Orkneys. All these tracts are either insular, or broken by deep bays and sounds, formed, probably, by the violent storms and currents which beat continually against their shores, and which are supposed, in many cases, to penetrate entirely across the most solid masses of land. The aspect of these regions is usually mountainous, presenting long and bold promontories to the stormy seas by which they are surrounded, and often also enclosing spacious and secure harbours.

6540. *The air and elements*, which, in other parts of the world, are only accessaries, form here the leading objects, giving their gloomy stamp to the whole region. Snow falls occasionally in the very heart of summer, and before the end of autumn it begins to descend in a continued succession of showers, till every object is buried beneath it, and nature exhibits only a monotonous surface of dazzling white, which remains, according to the latitude, for six, seven, or eight months. At the same early period ice begins to bind, first the streams and freshwater lakes, then the enclosed bays and arms of the sea, till at length it fixes its chains even upon the broad surface of the ocean. In June and July, indeed, when the sun becomes vertical, and constantly above the horizon, the icy masses dissolve, and burst asunder often with a tremendous crash; but some portions, more firmly consolidated than the rest, remain unmelted, and produce remarkable phenomena. In particular situations on the coast, the ice of successive years is piled into glaciers, which rise often to a great height, till, their foundation being undermined by the waves, they descend into the water, and are carried out by wind and tide into the open sea: there they form to the mariner a bright and fearful spectacle (*fig.* 1099.), reflecting the rays of light in varied and beautiful tints, but threatening by their contact to dash his vessel to pieces. Sometimes they are borne by winds and currents to a great distance, and even into lower latitudes, where they appal the navigator sailing through the temperate seas. In other cases, portions of the frozen surface of the sea, remaining firm while all around them is melted, become fields or *floes*, which float through the deep, and, being often driven by the tempest with terrific violence, cause instant destruction to the stoutest vessel.

1099



ICE ISLAND.

6541. *The privation of light* forms a singular and gloomy circumstance in the arctic abodes. For two, three, or four months, the sun never appears above the horizon; one continued night reigns. Yet there are not wanting objects to cheer this lengthened gloom, and to give a bright and even fairy splendour to the polar sky. The moon and stars shine through the clear frosty air with peculiar brightness; haloes and other luminous meteors are more frequent and more vivid than in lower latitudes; and, above all, the aurora borealis fills the arctic atmosphere with its coruscations of playful light. The long day of summer, during which the sun never sets, can scarcely be named as a compensation for the wintry gloom; yet, during a period of spring and autumn, when it wheels a perpetual circle immediately above the horizon, it paints the skies with hues more brilliant and varied than those which adorn those of any other climate.

Sect. II. *Natural Geography.*

6542. The Polar regions are chiefly distinguished by the almost *entire absence* of those productions which come under the head of *natural history*. The few which are found there are common to them with the continental countries, already described, that are situated in very high latitudes,—Sweden, European Russia, Siberia, the northerly regions of America, and the most southern parts of that continent.

Sect. III. *Historical Geography.*

6543. *These regions* were discovered much later than any other, and were, indeed, till a very recent era, entirely unknown. The only ancient navigator that appears to have turned his efforts in this direction, was Pytheas of Marseilles, who steered his daring sail towards the extreme northern boundaries of the earth. But when he reached Thule, which we conceive to be Shetland, the dreary aspect of nature, the gloomy mists in which he was involved, and the sinister reports of the natives, led him to believe that he had approached as near as mortal could to that formidable limit. Some learned moderns have imagined Thule to be Iceland, but, as we apprehend, without any good foundation.

6544. *During the middle ages*, the Danes and Swedes, under the terrible appellation of Northmen, undertook, on a great scale, distant voyages, and filled with their fleets all the seas of Europe. Their object, however, was not discovery, but first plunder, and then conquest; and their direction was towards the rich and smiling regions of the south, not to shores still more bleak and dreary than their own. In 861, however, Nadodd, a pirate, discovered Iceland, whither a colony, composed of exiled Norwegian chieftains, was soon after sent. These remote settlements became even seats of science, affording a refuge to learned men amid the distracted state of Europe during the feudal ages. Colonies from Iceland settled on the coast of Greenland. Several citizens of Venice, during the flourishing era of that republic, particularly Zeno and Quirini, appear to have penetrated into the north seas, where they encountered severe shipwrecks; but they did not materially extend the range of knowledge in that direction.

6545. *The discovery of the East and West Indies*, which took place in the end of the fifteenth century, was the event which chiefly impelled modern nations into the career of northern discovery. It might at first view have been expected that it would have produced an opposite effect, and that the brilliant field thus opened might have diverted the attention from so forbidding a sphere. It happened, however, that the continents of Africa and America were so interposed, as to render it impossible for Europeans to sail to the East Indies unless by very circuitous southward routes. But if a passage could have been discovered along the north of Asia or America, it would, in a most remarkable degree, have facilitated the intercourse with those remote and opulent regions. The spirit of maritime enterprise was then at its height; the British merchants fitted out successive expeditions, which, under the guidance of illustrious naval commanders, encountered the most formidable dangers in unknown and tempestuous seas, in fruitless efforts to attain this important object. The first attempt, under Sir Hugh Willoughby, to follow a north-easterly route along the coast of Asia, met with the most disastrous issue. Being obliged to winter on the coast of Lapland, the whole crew were frozen to death. This did not deter from subsequent expeditions, under Hudson, Burroughs, and others; and by the Dutch, under Barentz; but none of these were able to reach far beyond Nova Zembla. Contemporaneous with these voyages were others still more frequent, having in view to pass along the northern coast of America, which it was long hoped might terminate at a lower latitude than it actually does. Frobisher first in this direction undertook three voyages, in which, however, he did not penetrate beyond the passages leading into Hudson's Bay. Davis afterwards conducted an equal number, in the course of which he discovered the straits which bear his name, opening into the spacious inland sea which has since been so much frequented. Others followed; and Hudson, in discovering the bay named after him, found a disastrous termination to his career. But the most important of these expeditions, in the present view, was that of Baffin, who, in 1616, performed the circuit of the wide expanse called Baffin's Bay, though he did not discover the passage thence into the Polar Sea. Meantime the daring spirit of British mariners had conceived the design of reaching India by a very different course,—by steering direct for the pole itself, and thence downwards upon the eastern seas; the shortest of all routes, if, as was asserted, it was not closed by barriers of ice and perpetual snow. Hudson, Baffin, and Fotherby distinguished themselves in this bold attempt; but they were not able to reach nearer than ten degrees from the Pole. They made, however, the discovery of Spitzbergen, or East Greenland, of some smaller islands, and of the eastern coast of West Greenland.

6546. *These voyages*, though they failed entirely as to their immediate object, led to an important result, the establishment of the *northern whale fishery*, which has become a considerable branch of modern industry. It was for some time almost monopolised by the Dutch, who had even formed a large establishment on the coast of Spitzbergen; but circumstances have now thrown it almost entirely into the hands of Britain. The observations made during the annual voyages, undertaken for this purpose, ably collected by Mr. Scoresby, have made us acquainted with various striking phenomena which nature presents on the seas and shores of the arctic world.

6547. *On the opposite side of the globe*, the Antarctic Circle encloses a region of precisely similar character, which remained to a still later period entirely unknown. The extended sphere of modern navigation, however, has brought it also at last within the range of discovery. An extraordinary interest was, for a considerable time, excited by the belief that, in this distant region there lay a great southern continent, supposed by some to equal in extent and fruitfulness any of those already known. Captain Cook's second voyage was fitted out amid the most flattering anticipations of such a discovery. But though that great navigator made some very important observations on the large islands composing Australasia, he ascertained the fact that in any temperate or even habitable latitude no such continent existed. The extreme intensity of cold was even found to commence at a much lower latitude than in the northern hemisphere. Several considerable islands have recently been discovered, though almost beyond the range of life or cultivation. In these seas, also, room has been found for the establishment of a whale fishery, which, notwithstanding the great distance, is carried on with considerable advantage.

6548. *The hope of a north-west passage*, after sinking nearly into oblivion, was revived in the present age with undiminished ardour, and prosecuted with signal displays of naval enterprise and talent. The efforts and sufferings of Ross, Parry, and Franklin have not, indeed, fulfilled the hopes with which these navigators were sent out, but proved, rather, that such efforts must be finally given up. They have, however, made important geographical discoveries, delineating the northern outline of America, before most erroneously laid down, and exhibiting large islands lying in the Polar Sea, to the north of that continent.

Sect. IV. *Political Geography.*

6549. The few tribes which occupy these desolate coasts are scarcely united in any form of political society. The little that occurs to be said on this subject will be found in the chapter on their civil and social state.

Sect. V. *Productive Industry.*

6550. *The produce* of the arctic world is of a very peculiar nature. A territory thus buried for the greater part of the year in ice and snow, with only a transient and imperfect vegetation, and where the few animals that appear during the summer gleam take an early flight into milder climes, might at first view seem incapable of yielding any thing that can minister to the use or comfort of civilised man. But while the land is thus dreary and barren, the sea and its shores teem with an inexhaustible profusion of life. The finny tribes, which, feeding on each other, do not require any vegetable support, exist here in greater multitudes, and of larger dimensions, than any other animals, either in the temperate or tropical climates. Provident nature has, in particular, fenced them against the extreme intensity of the cold by a thick coating, of a coarse but rich oleaginous nature, termed *blubber*, the oil extracted from which is subservient to the most important economical purposes. The substance called *whalebone*, being peculiarly strong and elastic, affords a material of several manufactures.

6551. *The seal*, the walrus, and several other amphibious animals, are invested with the peculiar coating above described; but by far the greatest abundance of it is found in *the whale*. The *Balæna mysticetus*, or great Greenland whale, is the most powerful of animals; and to attack and slay him is one of the boldest of human enterprises; yet it is undertaken with alacrity by our hardy tars. For this purpose, fleets of large ships, well equipped with boats, lines, harpoons, and spears, are annually sent into the northern seas. There, each vessel, with all its boats, is constantly on the watch; and when the alarm is given of a whale being descried, all fly to the onset. The first object is to strike into the animal the sharp instrument called the harpoon, which has a long line attached to it. When the whale feels himself struck, he usually plunges deep into the water, and runs on to a great distance under it. The line must then be freely let off, otherwise he will drag the boat and crew under water after him. If it is entangled or exhausted, it must instantly be cut; and then the whale, line, and harpoon are all lost. After a certain interval, the animal is obliged to come to the surface, in order to respire. The boats then crowd around him, and the sailors pierce him with lances, till he is completely exhausted, and, after another short descent, and some violent convulsive movements, he expires. The carcase, being attached to the sides of the ship, is *flensed*, or the blubber cut away, and stowed in casks; when, the whalebone being also extracted, the refuse is allowed to sink to the bottom. Great dangers are encountered in this trade, partly from the whale, one lash of whose tail has been known to throw a boat in the air, and almost cut it in two; and from the fields and mountains of ice, which, when impelled violently by the wind, reduce the stoutest vessel in a few minutes to a complete wreck, when the crew are obliged to seek safety on its frozen surface. Not unfrequently, too, about the close of the season, a ship is completely imprisoned in ice, and the sailors are compelled to abandon her, and seek, in boats, or over the ice, for another ship or the nearest land. The Dutch estimated that, on an average, four vessels in the hundred annually perished. The British loss has been generally still more severe, especially since the fishery was chiefly carried on in Davis Straits. In 1819, there were lost ten ships out of sixty-three; in 1821, eleven out of seventy-nine; and, in 1822, seven out of sixty. In 1829, the loss was only four out of eighty-nine; but the year 1830 was the most disastrous ever known in the annals of British fishery: out of ninety-one ships sent out, nineteen were entirely wrecked, and most of the others severely shattered. One single mass of ice was impelled by the tempest with such violence, that, by its shock, four of the finest vessels, strongly built and completely equipped, were, in a quarter of an hour, converted into floating fragments. Fortunately these dreadful wrecks took place without the loss of a single life.

6552. *The commercial products* of this fishery are considerable. According to tables published by the Dutch, in the course of 107 years, ending with 1778, they sent out 14,167 ships, which took 57,590 whales, the produce of which, in oil and bone, was 18,631,292*l*., or 175,000*l*. annually. The British fishery, during its most prosperous period, very much exceeded this amount. In the five years ending 1818, it yielded an average of 68,940 tuns of oil and 3420 tons of whalebone; which, as the oil was then valued at 36*l*. 10*s*., and the bone at 90*l*., formed an amount of 2,834,110*l*., or 566,822*l*. per annum. In the peculiarly fortunate year of 1814, it exceeded 700,000*l*. Since that time, the use of gas, and the substitution of rape and other oils in the woollen manufacture, has considerably reduced the demand and consequent production. In the year 1829, which may be considered as the latest average one, it was

10,672 tuns of oil, at 25*l*. - -	266,800
807½ tons of whalebone, at 180*l*.	109,350
	£376,150

It may be observed, that the price of whalebone has nearly doubled since 1818, the demand for it continuing the same, while the supply, in consequence of the diminished consumption of oil, has been greatly reduced. Generally speaking, the fishery is, for the proprietors, a very speculative and adventurous trade: according to the skill of the officers, or to mere accident, a ship may return *clean*, or empty; or it may bring home a cargo worth 5000*l*. or 6000*l*.: an instance has occurred in which the value amounted to 11,000*l*. The shipwrecks, which are so frequent, involve at once the failure of a cargo and the entire loss of a vessel worth 6000*l*. or 8000*l*. The loss sustained by the wrecks in 1830 was estimated at upwards of 140,000*l*.

6553. *The southern whale-fishery* has of late risen to a considerable and increasing importance. The object of pursuit here is the species of whale called *cachalot*, which, compared with the mysticetus, yields a much smaller quantity of oil; but this, being mixed with *spermaceti*, is greatly superior in value. This animal, also, under certain circumstances, voids the peculiar substance called ambergris. The following table, from Mr. M'Culloch's Dictionary, shows the extent of this trade in 1830: —

Ports.	Year ending 5th of January, 1828.			Year ending 5th of January, 1829.			Year ending 5th of January, 1830.		
	Ships.	Tons.	Men.	Ships.	Tons.	Men.	Ships.	Tons.	Men.
London - -	31	10,158	874	21	7,000	604	31	10,997	937
Greenock - -	2	216	28		nil.			nil.	

Sect. VI. *Civil and Social State.*

6554. *Human society*, in this bleak extremity of the earth, exists in the rudest form, and on the most limited scale. The ungrateful soil refuses to man any support; but the huge amphibia, particularly the seal and the walrus, with which the shores are crowded, being attacked with a skill and diligence prompted by necessity, yield a precarious yet not scanty subsistence. All the arctic regions are peopled by that peculiar race called Esquimaux, whom we have already described, on the authority of Captain Parry, in our survey of the northerly coasts of America. The greater number of them, not belonging to America, are found on that extensive mass of land called West Greenland. The dominion of this region is claimed by Denmark, which maintains along the shore a few scattered settlements, occupied each by a handful of Danes, who often intermarry with the natives. They employ themselves in capturing the seal, and in exchanging with the people some European goods for skins, blubber, feathers, and the tusks of the narwal. A vessel comes annually from the mother country, bringing provisions and the materials of trade, and receiving the above articles. A few missionaries, chiefly Moravian, have employed their pious labours in the conversion of the natives; but their success has been limited.

Sect. VII. *Local Geography.*

6555. *The local details* of the arctic regions are extensive and scattered, but do not present many peculiarities which will require long to detain our attention. We shall begin with the Georgian Islands, discovered by Captain Parry in the sea to the north of America.

6556. *Melville Island*, the most westerly of these, upwards of 100 miles both in length and breadth, and in latitude 75° N., is memorable as containing the spot where Captain Parry spent two years, and braved with success the extremest rigour of an arctic winter. The sun disappeared on the 4th of November, and was not seen till the 3d of February following. During this interval, land and sea were alike covered with a monotonous surface of snow, and the thermometer averaged about 60° below the freezing point. Yet the English officers, when duly clothed, and when there was no drift, were able to walk in the open air for two or three hours a day; and, by judicious precautions, their health and that of the seamen was perfectly preserved. In May the snow begins to melt, and in June it covers the country with pools; but it is not till August that the sea becomes open; and, before October, winter has again commenced. No inhabitants were found here, or on any of this range of islands. The only animals which appeared during the winter were a pack of hungry wolves, which hovered round the British vessels in hope of plunder; and it was not till the middle of May that the hunters met with some ptarmigans, and saw the footsteps of deer. Vegetable productions were few and short-lived.

6557. *A succession of islands* extend eastward from the one now described; first the small one of Byam Martin, then that of Bathurst, almost equal to Melville; and next Cornwallis, also of considerable size. Only the southern coasts were seen by Captain Parry, as he sailed along; and their aspect appears closely to resemble Melville Island. Cornwallis is separated by Wellington Channel from an extensive coast, which received the name of North Devon, and reaches to the shores of Baffin's Bay; but whether it forms a continuous tract with Greenland, or is composed of one or more islands, remains yet to be discovered. The coasts opposite to those now described, which appeared to Captain Parry to be insular, have been discovered by Captain Ross to form part of the continent of America.

6558. *Greenland*, long supposed to be part of America, till Captain Parry ascertained its complete disjunction, forms the largest known extent of land not belonging to the four continents. From Cape Farewell, in lat. 60°, it stretches northward for the ascertained length of 19 degrees, with an indefinite extent beyond; while the general breadth is about 35 degrees of longitude. It remains uncertain, indeed, whether several of the deep inlets which indent the coast, may not penetrate entirely across; yet they would thus very slightly break the vast continuity of land. But this wide region is, of all others, least valuable to man, producing scarcely anything which can minister to his comfort, or even existence. Its aspect is, throughout, of that dreary character described as belonging to the arctic world. It is claimed by Denmark, which, as already mentioned, has formed along its western coast several small settlements, of which the principal are, in the southern part, Julianshaab, Statenhuk, Godthaab, and New Hernhut, the seat of the missionaries; in the northern, Egedesminde, Umanak, Operniwick. Farther north still, Captain Ross discovered a district which he named the Arctic Highlands. The inhabitants, who had never before seen an European, were seized with the utmost astonishment, especially at the ships, which they at first imagined to be huge birds with wings. They were found to differ from the other Esquimaux in being destitute of boats; for though much of their food is drawn from the sea, they obtain it by merely walking over the frozen surface. They have the advantage, however, of possessing iron, from which they frame instruments much more powerful than those made of bone by others of their race. They differ greatly from them also in having a king, who is beloved, and to whom they pay a tribute of seals, train oil, and fish. The cliffs on their coast present the remarkable phenomenon of red snow, the nature and origin of which has excited much controversy among the learned in Europe.

6559. *The eastern coast*, extending southward from Iceland to Cape Farewell, has excited a remarkable interest in consequence of having been believed to be the seat of early colonies from that island, described as once having been in a flourishing state. But vast fields of ice, it is said, coming down upon this coast, shut it out from the civilised world, and the colony, it is feared, perished from the want of supplies. Several expeditions were sent by the Danish government to discover "lost Greenland," as it is called, but without success. Several Danish writers, indeed, now maintain that these colonies were not on the eastern but on the western coast; but this supposition does not appear to us consistent with the distances and positions, as given by Torfæus and the Icelandic sagas. To the north of Iceland, however, a range of coast, 400 miles in length, between 68° and 75°, was lately surveyed by Mr. Scoresby and Captain Clavering. The most remarkable part was called the Liverpool Coast, along which rises a mountain chain 3000 or 4000 feet high, forming precipitous cliffs, which terminate in numberless peaks, cones, and pyramids. Like other arctic shores, it is penetrated by very deep inlets, particularly one called Scoresby's Sound, a branch from which is supposed to convert the Liverpool Coast into an island. The tract on the opposite side was called Jameson's Land, bounded on the south by Cape Hooker, and beyond which another sound branched off, which appeared likely to render it also insular. This inlet appeared stretching into the interior without any apparent termination; and there is some room to conjecture that it may communicate with Jacob's Bight on the western coast, which Sir Charles Giesecké traced to the height of 150 miles. No natives were seen; but there appeared every where marks of recent inhabitation, and even small villages, composed of subterraneous winter abodes. Captain Clavering afterwards surveyed a part of the coast lying farther to the northward. He found it bold, mountainous, and deeply indented with bays; but its aspect was dreary and desolate in the extreme. Yet, on landing upon an inlet named after Sir Walter Scott, he met a party of natives bearing all the general characters of the Esquimaux race, and who, by their extreme alarm and surprise, showed that they had never before been visited by Europeans. The coast was traced as high as 75°, and was seen extending still northward as far as the eye could reach.

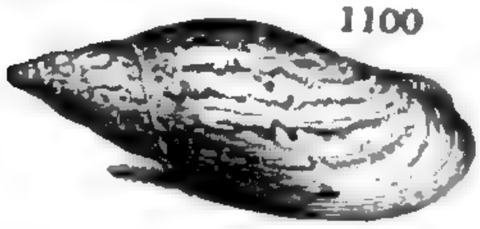
6560. *Spitzbergen*, called often *East Greenland*, is a large island in the Arctic Sea, lying about 600 miles east of that now described. It is about 300 miles from south to north, and 200 from east to west, and reaches beyond 80° N. lat. It is of an irregular form, and broken by deep bays and sounds, which, on the eastern side, convert two large portions into islands, called Edge and Seland. Its cliffs, several thousand feet high, are rocky, and composed in a great measure of loose stones; and though the snow in summer is melted from their summits by the heat of the sun, it continues long to lie in the deep valleys. The country is wholly unproductive, but abounds in the deer, the walrus, and other arctic animals. Spitzbergen, however, has been much frequented by the maritime nations, having been long the chief and almost sole seat of the whale fishery. With this view its western bays were fiercely disputed, till an agreement was made by which the English and Dutch divided between them the principal stations. The latter founded the village of Smeerenberg, where they landed the whales and extracted the oil; and it became so flourishing as to be considered almost a northern Batavia. The whales, however, taught by the destructive war waged against them, deserted all the bays one after another; and it was necessary to carry on the fishery in the open sea. Even then they fled from one quarter to another, till the whole Spitzbergen sea was nearly *fished out;* and it became necessary, notwithstanding the increased danger, to remove the chief scene of operations to Davis Straits. The coasts of Spitzbergen have also formed the route by which Phipps, Buchan, and Parry made their attempts to penetrate to the pole. The latter reached nearly to 83° N. lat., and found the sea in August all covered with ice, but broken, sinking, and interspersed with lanes of water. At this utmost limit every trace of animal life had disappeared. A few Russian hunters take up their abode on the dreary shores of Spitzbergen, where they continue even during the winter, occupied in the pursuit of the seal and the walrus.

6561. *Nova Zembla* is another large mass of insular land, extending north from the boundary of Europe and Asia, between 68° and 74° N. lat., 53° and 70° E. long. Though more southerly than Spitzbergen, it has an aspect, if possible, still more dreary. The southern coasts are low and flat; but those to the north are bordered by mountains wrapped in perpetual snow. It is less penetrated by sounds, though one running east and west reaches entirely across, dividing it into two nearly equal parts. The coasts have been chiefly frequented by navigators, who sought in this direction a passage to India, but commonly found their career arrested on these dreary shores. Barentz and his crew wintered in a haven on the north-eastern coast, where they suffered the most extreme hardships, to which the commander finally fell a victim. The Russian government have recently sent expeditions under Lazareff, Litke, and other navigators, to complete the exploration of the coast, but have not made any attempt to form a settlement upon it.

6562. *The islands of the Southern Polar Sea*, to which M. Balbi has given the somewhat too pompous title of the *Antarctic Archipelago*, extend chiefly south-east from the extremity of the American continent. They present the same general character as the arctic lands, with some variations. Though situated in a comparatively low latitude, which in the northern hemisphere admits of habitation and culture, they are utterly dreary and desolate, buried in ice and snow, and not tenanted by a single human being. Their shores, however, are still more crowded with those huge amphibia, whose rich coating of oil renders them a tempting prize. Hence they have become the object of European avarice, which, during the few years that have elapsed since the islands were known, has made dreadful havoc among these animals, and greatly thinned their numbers. The walrus is here replaced by the sea elephant, a still huger creature, and richer in oil; and the seals have a fine furred skin, for which the Americans have obtained six or seven dollars apiece in the market of China. These shores are equally distinguished for the legions of sea-birds of gigantic size and peculiar form; among which the penguin and the albatross are the most remarkable. The lands, on the whole, are smaller than in the north, more broken into islands, and as deeply indented by bays, forming many excellent harbours.

6563. The *Malouine* or *Falkland Islands*, though situated only a little beyond 50° S., the latitude of England, bear all the characters of an antarctic group; rocky, destitute of inhabitants, but crowded with seals, and containing very fine ports. On one of these the English formed a settlement in 1766; but it was destroyed, in 1770, by a Spanish expedition from Buenos Ayres. Measures have lately been taken for again forming one on a small scale. There are two large islands, Falkland and Soledad, with a great number of islets. The fisheries on these coasts have lately acquired considerable importance. Mr. Weddell states, that in 1821 and 1822, they yielded 940 tons elephant oil; and that there were drawn from them and from New South Shetland together 320,000 fur seal skins. The fine harbours are often touched at by vessels passing round Cape Horn, or to the southern fisheries. The Falkland Islands produce several peculiar shells, among which is the rare Cymbiola magellanica, or Magellanic Volute. (*fig.* 1100.) A gigantic species of Limpet, with a perforation in the middle, and beautifully rayed with brown, is also common: it is the Fissurella picta of Lamarck.

1100



MAGELLANIC VOLUTE.

6564. *South Georgia*, situated to the east of the Falkland Islands, and nearly in the same latitude, is a large island, about 90 miles long by 10 broad, but bearing a character exactly similar. Discovered in 1675 by La Roche, it was carefully surveyed in 1771 by Cook, while searching for an austral continent. It was then almost forgotten till the abundance of its seals and sea elephants attracted the notice of those engaged in the southern fisheries. The pursuit was carried on with such activity, that, according to Captain Weddell, the London market was in a few years supplied hence with 20,000 tuns of oil, while 1,200,000 fur seal skins were also carried off. But the chase of the sea elephant was prosecuted with such reckless avidity, without sparing even the pregnant mothers, that they have been nearly extirpated, and the trade ruined.

6565. *New South Shetland*, with the smaller adjoining group of the *New Orkneys*, being situated in 61° and 63° S. lat., are scarcely nearer the pole than the British islands after which they are named; yet their climate is that of Greenland and Spitzbergen; islands of ice are tossing through the seas, and the land is peopled only by those animal forms peculiar to the antarctic circle. These, however, since the discovery by Captain Smith, of Blyth, in 1818, have attracted numerous adventurers, who have carried off great quantities of oil and seal skins; but by their improvident pursuit have greatly thinned the supply. There are twelve considerable isles, of which the principal are named Barrow, King George, and Livingston, with innumerable rocky islets. The land is moderately high, one peak rising to 2500 feet; while elsewhere there is a volcanic cone, which rises only to 80 feet. Deception Isle contains a very fine harbour. The *New Orkneys* consist of a large island called Pomona, or Mainland, and of many smaller ones. Farther to the east are a number of small islands, which, being at first supposed to form a continuous coast, were named *Sandwich Land*. Again, to the south of New Shetland, in about lat. 64°, a Russian captain, Bellinghausen, lately observed a range of coast, which he named *Trinity Land*, but which may probably be found to consist also of a cluster of islands. Two Russian frigates also, in 1829, penetrated to 69° S. lat., where they found two islets at some distance from each other, which they named Peter I. and Alexander I., and which form the most southerly spots of land yet known to exist.

6566. Among arctarctic islands we must also reckon *Kerguelen's*, or *Desolation*, situated far to the east of those now described, in long. 70° E., and the moderate lat. of 50°. It resembles exactly New Georgia and South Shetland. Captain Cook's party, who carefully examined it, were astonished at its scanty flora, amounting only to sixteen species, mostly mosses and lichens; but they were struck by the multitude of amphibious animals with which its shores were peopled. This has lately attracted the attention of the adventurers in the southern fishery, who, according to Captain Weddell, have recently drawn from it supplies nearly as large as from New Georgia. We may finally mention the solitary islet of *Tristan d'Acunha*, situated to the west of the Cape of Good Hope, in the low latitude of 38°. By the picturesque description of Mr. Earle, who was driven thither by shipwreck, it appears indeed to contain rich pastures, on which European cattle thrive; yet the bleak storms of a long winter, and its shores crowded with the sea elephant, the penguin, and the albatross, mark its affinity to the antarctic regions now described. A settlement formed there by the English has been abandoned; yet a very few individuals are still induced to reside on it by the facility of subsistence.

TABLE OF LATITUDES AND LONGITUDES.

The Latitudes of Places, with their Longitudes from the Meridian of the Royal Observatory at Greenwich.

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Aalborg	Denmark	57 2 32 N	9 56 41 E
Aarhus	Denmark	56 9 35 N	10 14 5 E
Abbeville	France	50 7 4 N	1 49 58 E
Aberdeen, Mar. Coll.	Scotland	57 8 56 N	2 5 42 W
Abo	Finland	60 27 10 N	22 20 15 E
Aboukir Tower	Egypt	31 19 44 N	30 17 16 E
Acapulco	Mexico	16 50 19 N	99 49 18 W
Acheen Head	Sumatra	5 36 0 N	95 19 0 E
Acre	Syria	32 54 35 N	35 6 20 E
Adalia, Pier Head	Turkey in Asia	36 52 16 N	30 45 3 E
Adelsberg	Germany	45 38 10 N	14 23 25 E
Aden Cape	Arabia	12 43 30 N	45 14 0 E
Admiralty Isle	Paci. Ocean	2 11 45 S	146 12 2 E
Adria	Italy	45 2 57 N	12 3 55 E
Africa	Barbary	35 30 0 N	11 6 5 E
African Isles, S. Isle	Indian Ocean	4 55 0 S	54 9 0 E
Agde	France	43 18 40 N	3 28 10 E
Agen	France	44 12 22 N	0 36 35 E
Agimere	India	26 35 0 N	75 20 0 E
Agnes (St.) I.	Scilly Isles	49 54 0 N	6 19 0 W
Agra	India	27 12 30 N	78 17 0 E
Agria	Hungary	47 53 54 N	20 21 45 E
Aigues-Mortes	France	43 33 58 N	4 11 22 E
Aire	France	43 41 52 N	0 15 36 W
Aix	France	43 31 48 N	5 26 47 E
Aix Isle	France	46 1 38 N	1 10 41 W
Ajaccio	Corsica	41 55 1 N	8 44 4 E
Akerman	Russia in Europe	46 12 0 N	30 44 0 E
Albano	Italy	41 43 50 N	12 38 15 E
Albany	United States	42 38 38 N	73 44 50 W
Albi	France	43 55 46 N	2 8 33 E
Alcala de Henares	Spain	40 28 40 N	3 23 22 W
Alcmaer	Netherlands	52 38 2 N	4 44 45 E
Aleppo	Turkey in Asia	36 11 25 N	37 10 15 E
Alexander Port	W. Coast of Africa	15 52 0 S	12 0 0 E
Alexandretta	Turkey in Asia	36 35 27 N	36 15 15 E
Alexandria	Egypt	31 13 5 N	29 55 15 E
Algesiras	Spain	36 8 0 N	5 26 12 W
Algiers Lighthouse	Barbary	36 48 36 N	3 4 55 E
Algoa Bay, Cape Recif	S. Coast of Africa	34 1 0 S	25 40 0 E
Alicante	Spain	38 20 41 N	0 28 35 W
Almaguer	Terra Firma	1 54 29 N	76 56 2 W
Almeria	Spain	36 51 0 N	2 31 0 W
Alost	Belgium	50 56 18 N	4 2 13 E
Altdorf	Germany	47 45 8 N	9 34 15 E
Altengaard	Lapland	69 55 0 N	23 4 15 E
Altona	Germany	53 32 51 N	9 57 30 E
Amastero	Turkey in Asia	41 46 3 N	32 24 24 E
Amboyna Bay, Fort Victoria	Indian Archipelago	3 40 0 S	128 15 0 E
Ambrose (St.) Isle	Pacific Ocean	26 20 0 S	79 51 0 W
Amiens	France	49 53 41 N	2 18 11 E
Amoy Harb., Chapel Isle	Chinese Sea	24 10 0 N	118 10 0 E
Amsterdam	Holland	52 22 17 N	4 53 15 E
Amsterdam Isle	Indian Archipelago	0 19 30 S	132 15 0 E
Amsterdam Island	Ind. Ocean	37 48 0 S	77 25 0 E
Anamour Cape	Turkey in Asia	36 0 50 N	32 51 0 E
Ancona	Italy	43 37 54 N	13 29 7 E
Andaman Isle (Great), NE. Pt.	Bay of Bengal	13 34 0 N	93 9 0 E
Andaman Isle (Little), SE. Pt.	Bay of Bengal	10 26 0 N	92 40 0 E
Anderson's I.	Sea of Kamtschatka	63 4 0 N	167 38 0 W
Andrew's (St.) Cape	Cyprus	35 41 40 N	34 37 25 E
Andrew's (St.) Isles	Pacific Ocean	5 20 0 N	132 16 0 E
Anegada Isle, NW. Point	Caribbee Isles	18 46 0 N	64 26 0 W
Angers	France	47 28 9 N	0 33 0 W
Angoulême	France	45 38 57 N	0 9 16 E
AngraPequina Har.	W. Coast of Africa	26 37 0 S	15 16 0 E
Anguilla Isle, NE. Point	Caribbee Isles	18 16 0 N	63 2 30 W
Anholt Lighthouse	Denmark	56 44 20 N	11 38 51 E
Anjenga	India	8 39 30 N	77 0 0 E
Annan Spire	Scotland	54 59 23 N	3 14 46 W
Annobona I., High Peak	Atlantic Ocean	1 28 24 S	5 50 0 E
Ann's (St.) Shoals, N. End.	W. Coast of Africa	8 10 0 N	13 50 0 W
Anthony's (St.) I., NW. Pt.	Cape Verd Isles	17 11 0 N	25 6 0 W
Antibes	France	43 34 43 N	7 7 50 E
Anticosti Isle, Jupiter's Inlet	Gulf of St. Lawrence	49 26 0 N	63 38 15 W
Antigua Isle, Fort Hamilton	Caribbee Isles	17 4 30 N	61 54 46 W
Antongil Bay	Madagascar	15 27 23 S	50 23 30 E
Antonio (St.) Cape	Cuba	21 54 0 N	84 56 15 W
Antonio (St.) Cape	Spain	38 49 50 N	0 9 30 E
Antonio (St.) Cape, N. Pt.	Paraguay	36 20 0 S	56 45 0 W
Antonio (St.) Port	Patagonia	45 2 30 S	65 48 44 W
Antwerp	Belgium	51 13 16 N	4 24 10 E
Apenrade	Denmark	55 2 57 N	9 26 38 E
Apollonia Cape	W. Coast of Africa	5 5 0 N	2 39 0 W
Apt	France	43 52 29 N	5 23 52 E
Apuré River, the Mouth	Colombia	7 36 23 N	66 47 15 W
Aquileia	Italy	45 45 32 N	13 23 0 E

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Aranda de Duero	Spain	41 40 12 N	3 40 42 W
Aranjuez	Spain	40 1 54 N	3 36 15 W
Arcas (las) Is.	G. of Mexico	20 [illegible] 0 N	91 54 0 W
Archangel	Russia in Europe	64 34 0 N	40 43 0 E
Arcot	India	12 54 14 N	79 21 33 E
Arendal	Norway	58 27 0 N	8 51 20 E
Arensberg	Russia in Europe	58 15 9 N	22 27 45 E
Argental Cape	Italy	42 23 25 N	11 9 39 E
Arica	Peru	18 26 40 S	70 16 5 W
Arles	France	43 40 31 N	4 37 47 E
Arnhem Cape	N. Holland	12 [illegible] 0 S	137 0 0 E
Arona	Italy	45 46 0 N	8 33 0 E
Arras	France	50 17 34 N	2 46 25 E
Ascension Isle	Atlan. Ocean	7 57 0 S	13 58 45 W
Ascension Isle	Carolinas	6 53 0 N	158 53 0 E
Asia's Isles, S. Westernmost Isle	Indian Archipelago	1 0 0 N	131 17 0 E
Asinara Isle	Sardinia	41 6 0 N	8 18 0 E
Aspoe Isle, N. End	Norway	61 15 0 N	4 46 0 E
Assenade	Netherlands	51 13 42 N	3 45 18 E
Assisi	Italy	43 4 22 N	12 35 28 E
Assumption I.	Paci. Ocean	[illegible] 45 0 N	145 35 0 E
Astracan	Russia in Europe	46 21 [illegible] N	48 2 45 E
Ath	Netherlands	50 42 17 N	3 46 32 E
Athens	Greece	37 58 1 N	23 46 14 E
Atoui Isle	Sandwich Is.	21 57 0 N	159 39 0 W
Atures	Colombia	5 38 34 N	67 59 0 W
Auch	France	43 38 39 N	0 35 11 E
Auckland's Is.	Paci. Ocean	50 30 0 S	166 25 0 E
Augsburg	Germany	48 21 46 N	10 54 42 E
Augustine (St.) Bay	Madagascar	23 39 0 S	44 0 0 E
Augustine (St.) Cape	Brazil	8 23 0 S	34 56 0 W
Aurora Isle	N. Hebrides	15 8 0 S	167 58 6 E
Aurora Isle	N. Hebrides	15 8 0 S	168 17 0 E
Autun	France	46 56 48 N	4 17 59 E
Auxerre	France	47 47 57 N	3 34 21 E
Aveiro	Portugal	40 38 24 N	8 37 54 W
Avignon	France	43 57 8 N	4 48 30 E
Avranches	France	48 41 23 N	1 21 22 W
Awatscha Bay	Kamtschatka	52 51 45 N	158 46 45 E
Aylesbury Steeple	England	51 49 3 N	0 48 41 W
Baba Cape	Turkey in Asia	39 30 15 N	25 51 40 E
Bab-el-mandeb Cape	Arabia	12 40 0 N	43 31 0 E
Bagdad	Turkey in Asia	33 19 40 N	44 [illegible] 45 E
Bahama Isle (Grand)	Lucayos	26 43 30 N	78 56 0 W
Balade Harb.	New Caledonia	20 17 0 S	164 26 0 E
Balagonan Point	Mindanao	7 51 0 N	122 24 0 E
Bald Cape	Newfoundland	51 39 45 N	55 27 35 W
Baltimore	U. States	39 21 0 N	77 48 0 W
Banca Isle	Ind. Archip.	1 52 0 N	125 24 0 E
Bancoot River	India	17 57 0 N	73 9 0 E
Banda Isle	Indian Archipelago	4 31 0 S	130 0 0 E
Bangalore	India	12 57 34 N	77 32 45 E
Bantam Point	Java	5 52 0 S	106 2 0 E
Baradello	Italy	45 47 13 N	9 5 44 E
Barbadoes I., Bridgetown	Caribbee Isles	13 5 0 N	59 41 15 W
Barbara (St.)	N. Albion	34 24 0 N	119 7 0 W
Barbary Point	W. Coast of Africa	15 53 0 N	16 31 15 W
Barbas Cape	W. Coast of Africa	22 [illegible] 30 N	16 40 35 W
Barbuda Isle	Caribbee Is.	17 38 0 N	61 50 0 W
Barcelona (New)	Terra Firma	10 0 52 N	64 [illegible] 30 W
Barcelona,	Spain	41 21 44 N	2 9 57 E
Barrow Point	N. Coast of America	71 23 [illegible] N	156 21 30 W
Barfleur	France	49 40 0 N	1 15 0 W
Bartholomew (St., Isle	Caribbee Isles	17 56 45 N	62 50 15 W
Basle	Switzerland	47 33 34 N	7 35 27 E
Bassano	Italy	45 45 34 N	11 44 50 E
Bassas Rocks (Great)	Ceylon	6 11 0 N	81 39 0 E
Bastia	Corsica	42 41 36 N	9 26 45 E
Batavia Observatory	Java	6 9 0 S	106 51 45 E
Bayeux	France	49 16 34 N	0 41 56 W
Bayonne	France	43 29 15 N	1 28 26 W
Bazas	France	44 25 55 N	0 12 32 W
Beachy Head	England	50 44 24 N	0 15 12 E
Bear Isle	James' Bay	54 34 0 N	79 56 0 W
Beauvais	France	49 26 7 N	2 5 0 E
Beechey Point	N. Coast of America	70 24 0 N	149 37 0 W
Behring's Isle	Sea of Kamtschatka	55 36 0 N	167 46 0 E
Belle Isle,	France	47 17 17 N	3 4 45 W
Bencoolen, Fort Marlb.	Sumatra	3 48 0 S	102 0 0 E
Bender	Russia in Europe	46 50 32 N	29 36 15 E
Bengasi	Barbary	32 7 30 N	20 1 35 E
Benguela Bay	W. Coast of Africa	12 33 30 S	13 33 0 E
Bergamo	Italy	45 41 51 N	9 40 26 E
Bergen Castle	Norway	60 24 0 N	5 20 0 E
Bergen-op-Zoom	Netherlands	51 29 44 N	4 17 23 E
Berlin	Germany	52 31 45 N	13 22 15 E
Bermuda Isle, St. George's Town	Atlantic Ocean	32 22 0 N	64 30 0 W
Bermuda Isle, Wreck Hill	Atlantic Ocean	32 15 0 N	64 47 0 W
Berne	Switzerland	46 56 55 N	7 26 15 E
Berwick (N.), Law Staff	Scotland	56 3 8 N	2 42 11 W
Berwick-upon-Tweed, Spire	Scotland	55 46 21 N	1 59 41 W
Besançon	France	47 13 45 N	[illegible] 2 45 E
Beziers	France	43 20 31 N	3 13 0 E
Biorneburg	Russia in Europe	61 29 3 N	21 45 5 E
Bizerta	Barbary	37 17 20 N	9 50 35 E
Blanca Isle, North Point	Caribbee Sea	11 55 13 N	64 52 30 W
Blanco Cape	Patagonia	47 15 30 S	65 57 15 W
Blanco Cape	Peru	4 19 0 S	81 6 15 W
Blanco Cape	West Coast of Africa	20 46 55 N	17 1 45 W
Blas (St.) Port	Mexico	21 32 48 N	105 15 33 W
Blois	France	47 35 20 N	1 20 16 E
Bojador Cape	Luconia	18 42 0 N	121 0 0 E
Bojador Cape	W. Coast of Africa	26 12 30 N	14 26 45 W
Bologna	Italy	44 30 12 N	11 21 30 E
Bomba Isle	Barbary	32 22 28 N	23 16 57 E
Bombay Lighthouse	India	18 53 45 N	72 56 0 E
Bommel	Netherlands	51 48 53 N	4 55 5 E
Bon Cape	Barbary	37 4 45 N	11 4 15 E
Bona	Barbary	36 48 0 N	7 48 45 E
Bonavista Cape	Newfoundland	48 42 5 N	52 56 0 W
Bonavista Isle, Eng. Road	Cape Verd Isles	16 9 0 N	22 57 0 W
Bonifacio	Corsica	41 23 10 N	9 9 16 E
Boodroom	Turkey in Asia	37 1 0 N	27 25 0 E
Bordeaux	France	44 50 14 N	0 33 59 W
Bornholm Isle, Hammarshus	Baltic Sea	55 18 0 N	14 48 30 E
Boscawen and Keppel Isles	Pacif. Ocean	15 53 0 S	175 34 45 W
Boston	United States	42 22 11 N	70 58 45 W
Boulogne	France	50 43 37 N	1 36 59 E
Bourbon Isle, St. Denys	Indian Oc.	20 51 43 S	55 30 15 E
Bourgas	Turkey in Europe	40 14 30 N	26 27 7 E
Bourges	France	47 5 4 N	2 23 57 E
Bouro Isle, Cajeli Bay	Indian Archipelago	3 22 33 S	127 3 0 E
Bouton Isle, the Dome	Straits of Malacca	6 33 0 N	99 20 0 E
Bowen Port	Polar Sea	88 54 48 N	73 13 30 W
Bowling Green Cape	New Holland	19 [illegible] 0 S	147 25 0 E
Brandenburg	Germany	52 27 0 N	12 53 15 E
Braunau	Germany	48 14 0 N	12 56 45 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Brava	E. Coast of Africa	1 8 0 N	44 10 0 E
Breda	Holland	51 35 23 N	4 46 36 E
Bregançon	France	43 5 24 N	6 19 0 E
Bregentz	Germany	47 30 30 N	9 43 55 E
Bremen	Germany	53 4 38 N	8 48 0 E
Brescia	Italy	45 32 30 N	10 14 9 E
Brescou	France	43 15 21 N	3 27 8 E
Breslaw	Germany	51 [illegible] 30 N	17 2 18 E
Brest	France	48 23 14 N	4 28 45 W
Bridgewater Spire	England	51 7 41 N	2 59 39 W
Briel	Holland	51 54 15 N	4 9 51 E
Brieux (St.)	France	48 31 2 N	2 43 55 W
Brighton Chu.	England	50 49 32 N	0 7 40 W
Brill Rock	Ind. Archip.	6 5 0 S	118 51 15 E
Bristol Cathedral	England	51 27 0 N	2 35 29 W
Brixen	Germany	46 40 0 N	11 37 15 E
Brocken Mountain	Germany	51 48 29 N	10 36 35 E
Bruck	Germany	47 24 34 N	15 15 41 E
Bruges	Belgium	51 12 33 N	3 13 33 E
Brunn	Germany	49 11 28 N	16 35 21 E
Brunswick	Germany	52 16 29 N	10 32 0 E
Brunswick House	New Wales	50 14 23 N	82 38 56 W
Brussels	Belgium	50 50 59 N	4 22 15 E
Bucharest	Walachia	44 26 45 N	26 8 15 E
Buckingham Spire	England	51 59 53 N	0 59 5 W
Buda	Hungary	47 29 44 N	19 2 30 E
Buenos Ayres	La Plata	34 36 40 S	58 24 30 W
Burgos	Spain	42 20 59 N	2 40 15 W
Burhanpour	India	21 19 0 N	76 22 0 E
Burning Isle	Ind. Archip.	[illegible] 35 0 S	126 40 0 E
Busheer	Persia	29 [illegible] 0 N	50 56 0 E
Bussora, the Factory	Turkey in Asia	30 29 30 N	47 40 0 E
Button Isle	Hudson's Straits	60 35 0 N	65 19 45 W
Byam-Martin Cape	Greenland	73 32 0 N	77 13 0 W
Byron Cape	N. Holland	28 38 0 S	153 37 0 E
Cabrera Isle, the Middle	Mediterranean	39 7 30 N	3 0 20 E
Cader Idris Mountain	Wales	52 42 2 N	4 28 3 W
Cadiz Observatory	Spain	36 32 0 N	6 17 22 W
Caen	France	49 11 12 N	0 21 38 W
Caffa	Crimea	45 6 30 N	35 12 45 E
Cagliari	Sardinia	39 13 9 N	9 5 45 E
Cahors	France	44 25 59 N	1 27 17 E
Cairo	Egypt	30 2 21 N	31 18 45 E
Calais	France	50 57 32 N	1 51 16 E
Calcutta	India	22 34 15 N	88 26 0 E
Calicut	India	11 15 0 N	76 5 30 E
Callao Port, the Castle	Peru	12 3 38 S	77 4 19 W
Calmar	Sweden	56 40 30 N	16 26 15 E
Calpy	India	26 7 15 N	80 0 0 E
Calvi	Corsica	42 34 7 N	8 45 16 E
Cambray	France	50 10 37 N	3 13 47 E
Cambridge Observatory	England	52 12 43 N	0 0 30 E
Camerino	Italy	43 6 26 N	13 24 18 E
Cameron Cape	Mexico	16 0 0 N	85 12 30 W
Caminha	Portugal	41 52 42 N	8 44 48 W
Campeche	Mexico	19 50 45 N	90 30 30 W
Cananore	India	11 51 11 N	75 43 44 E
Canary Isle (Grand) Pal.	Canaries	28 10 0 N	15 31 0 W
Candia	Candia	35 18 45 N	25 18 15 E
Candlemas Is.	Sandwich Land	57 10 0 S	27 13 0 W
Canea	Candia	35 28 45 N	24 12 45 E
Canterbury Cathedral	England	51 16 48 N	1 4 51 E
Canton	China	23 8 9 N	113 2 45 E
Canton Isle	Chinese Sea	15 23 0 N	109 6 0 E
Cape-Digges I.	Hudson's Bay	62 41 0 N	78 50 0 W
Capones Point	Luconia	14 52 30 N	120 3 0 E
Capraja Isle	Mediter.	43 [illegible] 18 N	[illegible] 48 12 E
Caprera Isle	Mediter.	41 12 46 N	9 28 20 E
Capricorn Cape	N. Holland	23 28 0 S	151 15 0 E
Caracas	Colombia	10 30 50 N	67 4 45 W
Carcassonne	France	43 12 54 N	2 21 0 E
Cardigan Isle, Highest Point	Wales	52 7 53 N	4 40 27 W
Carlota	Spain	37 39 41 N	4 56 35 W
Carlsburg	Hungary	46 4 21 N	23 34 30 E
Carlscrona	Sweden	56 6 57 N	15 33 0 E
Carlshamn	Sweden	56 10 40 N	14 51 0 E
Carmarthen, W. End	England	51 51 10 N	4 [illegible] 48 W
Carmel Cape	Syria	32 51 10 N	34 59 35 E
Carmona	Spain	37 28 1 N	5 39 59 W
Carnicobar Isle	B. of Bengal	9 10 0 N	92 56 0 E
Carolina	Spain	38 17 5 N	3 36 13 W
Carpentras	France	44 3 28 N	5 2 43 E
Carrickfergus	Ireland	54 43 0 N	5 45 30 W
Carthagena	Spain	37 35 50 N	1 0 21 W
Carthagena	Colombia	10 25 18 N	75 29 45 W
Casal. Maggiore	Italy	44 59 12 N	10 25 38 E
Casbin	Persia	36 11 0 N	49 33 15 E
Cassel	Germany	51 19 20 N	9 35 18 E
Castiglione Fort	Italy	42 45 58 N	10 52 15 E
Castres	France	43 37 3 N	2 15 1 E
Castries Bay	Tartary	51 29 0 N	140 56 19 E
Catania Mole	Sicily	37 28 20 N	15 4 30 E
Catherinburg	Russ. in As.	56 50 38 N	60 40 15 E
Catherine's (St.) I. Atomery I.	Brazil	27 21 58 S	48 0 0 W
Cavan	Ireland	53 [illegible] 41 N	7 25 15 W
Caxamarca	Peru	7 8 38 S	78 35 15 W
Cayenne	Guayana	4 56 15 N	52 14 45 W
Cefalonia Isle, C. Viscardo	Mediterranean	38 27 10 N	20 33 25 E
Cefalu Cathedral	Sicily	38 0 10 N	14 3 5 E
Ceram Isle, E. Point	Indian Archipelago	3 55 0 S	130 40 0 E
Cerigo Isle, S. Point	Mediterranean	36 [illegible] 0 N	22 51 38 E
Cette Lighthouse	France	43 23 37 N	3 41 5 E
Ceuta Fort	Barbary	35 54 10 N	5 17 25 W
Chain Isle	Paci. Ocean	17 25 30 S	145 30 0 W
Chalons-sur-Marne	France	48 57 16 N	4 22 1 E
Chalons-sur-Saone	France	46 46 53 N	4 51 8 E
Chamisso Isle	Kotzebue Sound	66 13 11 N	161 46 0 W
Chandernagor	India	22 51 26 N	88 29 30 E
Charkow	Russia in Europe	49 59 43 N	36 26 32 E
Charles Cape	Labrador	62 46 30 N	74 15 0 W
Charles Cape	UnitedStates	37 12 30 N	75 45 30 W
Chartres	France	48 26 54 N	1 29 20 E
Chelidonia Cape	Turkey in Asia	36 12 0 N	30 26 5 E
Chelmsford	England	51 44 6 N	0 28 20 E
Cheltenham Steeple	England	51 54 7 N	2 4 6 W
Cherbourg	France	49 38 31 N	1 37 3 W
Cherson	Russia in Europe	46 37 46 N	32 38 33 E
Chester, Trinity Spire	England	53 11 26 N	2 53 1 W
Chichester Spire	England	50 50 11 N	0 46 36 W
Chiloe Isle, St. Carlos	Chili	41 53 0 S	72 54 45 W
Chin-chew Bay	China	24 54 0 N	118 40 0 E
Christiana Isle	Archipelago	36 15 0 N	25 3 45 E
Christiania	Norway	59 55 0 N	10 48 0 E
Christiansand	Norway	58 8 4 N	8 3 0 E
Christianstad	Sweden	56 1 15 N	14 [illegible] 30 E
Christiansund	Norway	63 7 0 N	7 42 0 E
Christinaestad	Russia in Europe	62 16 9 N	21 18 5 E
Christmas Harbour	Tierra del Fuego	55 21 54 S	69 47 14 W
Christmas Isle	In. Ocean	10 34 0 S	105 33 0 E
Christmas Isle	Pacifi. Ocean	1 57 45 N	157 34 45 W
Christopher (St.)	Caribbee Is.	17 [illegible] 0 N	62 49 0 W
Christoval (St.)	Solomon Is.	10 50 0 S	162 22 0 E
Christoval (Don)	Cuba	22 10 0 N	[illegible] 1 0 W
Chusan Harbour, Chusan	China	30 26 0 N	121 41 0 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Cilley - -	Germany -	46 40 0 N	15 24 45 E
Ciotat (La) -	France -	43 10 29 N	5 37 0 E
Civita Vecchia	Italy - -	42 5 24 N	11 44 45 E
Clagenfurt -	Germany -	46 37 10 N	14 20 0 E
Clausthal -	Germany -	51 48 30 N	10 20 32 E
Clear Cape -	Ireland -	51 25 0 N	9 29 0 W
Clerke's Isle -	Sea of Kamtschatka	63 15 0 N	169 40 0 W
Clermont -	France -	49 22 48 N	2 25 5 E
Clermont-Ferrand	France -	45 46 44 N	3 5 17 E
Cleves - -	Germany -	51 47 40 N	6 7 0 E
Cobourg -	Germany -	50 15 18 N	10 58 0 E
Cochin - -	India -	9 57 30 N	76 29 0 E
Coimbra -	Portugal -	40 12 30 N	8 24 42 W
Colchester, St. Mary's	England -	51 53 18 N	0 53 34 E
Collioure -	France -	42 31 31 N	3 5 17 E
Cologne -	Germany -	50 55 21 N	6 55 15 E
Colombo -	Ceylon -	6 57 0 N	80 0 0 E
Colonia Sacramento	Paraguay -	34 26 0 S	57 58 0 W
Columbia River, Entrance	NW. Coast of Amer.	46 10 0 N	123 54 0 W
Como - -	Italy - -	45 48 22 N	9 5 41 E
Comorin Cape	India - -	8 5 0 N	77 44 0 E
Comoro Isle -	Comoro Isles	11 32 0 S	43 25 0 E
Concepcion -	Chili - -	36 49 10 S	73 4 45 W
Condom - -	France -	43 57 49 N	0 22 22 E
Coudore Isle -	Indian Archipelago	8 40 0 N	106 42 0 E
Congoon -	Persia - -	27 48 45 N	52 6 0 E
Constance -	Germany -	47 36 10 N	9 8 15 E
Constantinople St. Sophia	Turkey in Europe -	41 1 27 N	28 55 15 E
Cope Cape -	Spain -	37 24 40 N	1 31 40 W
Copenhagen -	Denmark -	55 41 4 N	12 35 6 E
Copiapo - -	Chili - -	27 10 0 S	71 5 15 W
Coquimbo -	Chili - -	29 54 40 S	71 19 15 W
Cordova Port -	Patagonia -	46 45 0 S	67 27 15 W
Cordovan Tower	France -	45 35 15 N	1 10 23 W
Corfu I. Vido Isle	Mediterranean	39 38 5 N	19 55 38 E
Coringa Bay -	India -	16 48 0 N	82 24 0 E
Corinth -	Greece -	37 58 22 N	23 28 29 E
Cork, Quay at the Cove	Ireland -	51 51 50 N	8 16 30 W
Coron - -	Greece -	36 47 26 N	21 58 52 E
Corrientes Cape	E. Coast of Africa	24 1 30 S	35 51 0 E
Corrientes Cape	Mexico -	20 25 30 N	105 35 36 W
Corsoer - -	Denmark -	55 20 0 N	11 9 30 E
Corte - -	Corsica -	42 18 2 N	9 8 46 E
Corvo Isle -	Azores -	39 41 0 N	31 3 0 W
Courtray -	Belgium -	50 49 43 N	3 16 6 E
Coutances -	France -	49 2 54 N	1 26 23 W
Coventry -	England -	52 24 25 N	1 30 5 W
Cracow - -	Gallicia -	50 3 38 N	19 57 9 E
Crail Spire -	Scotland -	56 15 58 N	2 36 55 W
Crema - -	Italy - -	45 21 29 N	9 41 57 E
Cremona -	Italy -	45 7 43 N	10 2 12 E
Crillon Cape -	Sachalin -	45 56 0 N	141 58 54 E
Cronstadt -	Russia in Europe	59 59 26 N	29 49 30 E
Crooked Isle -	Lucayos -	22 48 0 N	74 17 0 W
Cross-Fell -	England -	54 42 18 N	2 28 37 W
Cross Isle -	Russia in Europe	66 29 0 N	40 20 0 E
Cross Sound -	NW. Coast of Amer.	58 12 0 N	136 24 0 W
Cruz Cape -	Cuba - -	19 48 0 N	77 35 0 W
Cuddalore -	India -	11 43 23 N	79 48 12 E
Cuença - -	Peru -	2 55 3 S	79 13 22 W
Culver Point -	N. Holland	32 56 0 S	124 39 0 E
Cumana - -	Colombia -	10 27 37 N	64 9 45 W
Cumberland House	New Wales	53 56 40 N	102 5 58 W
Curaçao Isle -	Caribbee Sea	12 8 0 N	69 [illegible] 0 W
Cuxhaven Lighthouse	Germany -	53 52 21 N	8 43 1 E
Cyrene -	N. Africa -	21 40 5 N	32 49 5 E
Dalrymple Port	V. Diemen's Land	41 4 0 S	146 48 0 E
Dame Marie Cape	St. Domingo	18 37 20 N	74 33 32 W
Damietta -	Egypt -	31 25 43 N	31 49 30 E
Dantzic -	Prussia -	54 20 48 N	18 38 5 E
Darby Cape -	NW. Coast of Amer.	64 21 0 N	163 0 0 W
Dardanelles -	Turkey in Asia	40 9 0 N	26 19 0 E
Darmstadt -	Germany -	49 56 24 N	8 34 49 E
Dauphin Fort	Madagascar	25 5 0 S	46 35 0 E
Daventry Spire	England -	52 15 59 N	1 9 3 W
Deal Castle -	England -	51 13 5 N	1 23 39 E
Deception Cape	Solomon Is.	8 20 30 S	157 2 29 E
Delagoa Bay -	E. Coast of Africa	25 58 0 S	33 15 0 E
Delft - -	Netherlands	52 0 49 N	4 21 45 E
Delgado Cape (North)	E. Coast of Africa	10 0 0 N	51 17 0 E
Delgado Cape (South)	E. Coast of Africa	10 6 0 S	40 50 0 E
Delhi - -	India - -	28 37 0 N	77 40 0 E
Deliverance Cape	Louisiade -	10 59 20 S	154 26 30 E
Delmenhorst -	Germany -	53 3 29 N	8 39 28 E
Dendera -	Egypt - -	26 10 20 N	32 40 27 E
Derby Steeple	England -	52 55 32 N	1 28 16 W
Deseada Isle, NE. Point	Caribbee Is.	16 20 0 N	61 1 30 W
Desvelos (los) Cape	Patagonia -	48 [illegible] 30 S	66 8 15 W
Devil's Isles	Guayana -	5 27 0 N	52 34 0 W
Dhalac Isle, South End	Red Sea -	15 32 30 N	40 16 0 E
Diamond Isle	B. of Bengal	15 52 0 N	94 19 0 E
Diamond Point	Sumatra -	5 18 0 N	97 48 0 E
Diarbekir -	Turkey in Asia -	37 54 0 N	39 53 45 E
Die - -	France -	44 45 31 N	5 22 33 E
Diego (St.) -	New Albion	32 39 30 N	117 16 48 W
Diego Garcia Isle	Ind. Ocean	7 21 0 S	72 22 0 E
Diego Ramirez Isles	Tierra del Fuego	56 27 0 N	68 39 0 W
Dieppe - -	France -	49 55 34 N	1 4 44 E
Digne - -	France -	44 5 18 N	6 14 19 E
Dijon - -	France -	47 19 25 N	5 2 5 E
Dillingen -	Germany -	48 34 17 N	10 39 29 E
Disco Isle -	Baffin's Bay	69 10 0 N	54 40 0 W
Discovery Port	NW. Coast of Amer.	48 2 30 N	122 57 41 W
Diu Head -	India - -	20 42 0 N	71 6 0 E
Dixmude -	Netherlands	51 2 12 N	2 52 3 E
Dobrzyn -	Russia in Europe	52 38 5 N	19 35 15 E
Dofar - -	Arabia -	17 3 0 N	54 10 0 E
Dol - -	France -	44 33 8 N	1 45 3 W
Domburg -	Netherlands	51 33 51 N	3 29 52 E
Domingo (St.)	St. Domingo	18 30 0 N	69 49 0 W
Dominica Isle	Caribbee Islands	15 [illegible] 0 N	61 32 0 W
Dondre Head	Ceylon	5 55 30 N	80 43 0 E
Donnawert -	Germany	48 43 15 N	10 47 3 E
Dorchester Church	England	50 42 58 N	2 25 40 W
Dordrecht -	Holland -	51 48 54 N	4 39 42 E
Dorpat -	Russia in Europe	58 22 47 N	26 42 0 E
Dortmund -	Germany	51 31 24 N	7 28 41 E
Douglas Cape	NW. Coast of Amer.	58 56 0 N	153 50 0 W
Dover Castle -	England	51 7 47 N	1 19 7 E
Dresden -	Germany	51 2 50 N	13 43 1 E
Dromedary Mount	N. Holland	36 18 0 S	150 11 0 E
Drontheim	Norway	63 25 50 N	10 23 25 E
Dublin Observatory	Ireland	53 23 13 N	6 20 30 W
Duke of York's Isle	Pacifi. Ocean	8 41 0 S	173 24 45 W
Dulau Signal Staff	England	55 55 54 N	2 [illegible] 12 W
Dundee - -	Scotland	56 28 0 N	2 58 0 W
Dunkirk -	France	51 2 9 N	2 22 37 E
Durazzo -	Turkey in Europe	41 19 30 N	19 27 25 E
Durham Cathedral	England	54 46 31 N	1 34 6 W
Dusseldorf -	Germany	51 13 42 N	6 46 25 E
Duyfhen Cape	N. Holland	12 36 0 S	141 42 0 E
East Cape -	Madagascar	15 14 0 S	50 30 0 E
East Cape -	N. Zealand	37 34 25 S	178 58 0 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
East Cape	Russia in Asia	66 5 30 N	169 44 0 W
Easter Isle, Centre	Pacifi. Ocean	27 9 33 S	109 25 20 W
East-Main House	Labrador	52 15 0 N	78 44 30 W
Ebersdorf	Germany	50 29 33 N	11 40 23 E
Edam	Holland	52 30 49 N	5 2 56 E
Eddystone Isle	Solomon Is.	8 18 0 S	156 30 53 E
Eddystone Lighthouse	England	50 10 55 N	4 15 3 W
Edgecumbe Cape	N.W. Coast of Amer.	57 2 0 N	135 46 15 W
Edinburgh Observatory	Scotland	55 57 19 N	3 10 56 W
Egg Isle	Lucayos	[illegible] 31 5 N	76 52 45 W
Egmont Port	Falkland Islands	51 22 0 N	60 1 0 W
Eichstadt	Germany	48 53 30 N	11 10 30 E
Eisenach	Germany	[illegible] 58 55 N	10 20 15 E
El-Arisch Fort	Egypt	[illegible] 5 30 N	33 48 25 E
Elba Isle, Porto-Ferrajo	Mediterranean	[illegible] 49 [illegible] N	10 19 35 E
Elbing	Prussia	54 8 20 N	19 22 0 E
Elias (St.) Mount	N.W. Coast of Amer.	60 17 35 N	140 50 6 W
Elizabeth (St.)	Russia in Europe	48 30 17 N	32 27 45 E
Elizabeth Bay	W. Coast of Africa	27 [illegible] 0 S	15 17 0 E
Elizabeth Cape	Sachalin	54 24 30 N	142 46 30 E
El-Mellah Cape	Barbary	31 57 5 N	25 4 45 E
Elseneur	Denmark	56 2 17 N	12 38 2 E
Ely Minster	England	52 24 49 N	0 16 35 E
Embrun	France	44 34 7 N	6 26 9 E
Emden	Germany	53 22 3 N	7 11 1 E
Emeralda	Terra Firma	3 11 0 N	66 3 0 W
Emmerick	Germany	51 49 52 N	6 14 51 E
Endeavour River	N. Holland	15 25 0 S	145 26 0 E
Engano Cape	Luconia	18 39 0 N	122 21 0 E
Engano Cape	St. Domingo	[illegible] 34 42 N	68 24 37 W
Engano Isle	Ind. Ocean	5 27 0 S	102 17 0 E
Engelholm	Sweden	56 14 20 N	12 52 15 E
Enkhuysen	Netherlands	52 42 22 N	5 17 41 E
Erfurth	Germany	50 58 45 N	11 2 26 E
Erlangen	Germany	49 35 36 N	11 4 0 E
Erzerum	Turkey in Asia	39 56 35 N	48 35 45 E
Escurial	Spain	40 35 50 N	4 7 50 W
Eustatia (St.) Isle	Caribbee Isles	17 29 0 N	63 5 0 W
Evreux	France	48 55 30 N	1 9 19 E
Exeter Cathedral	England	50 43 25 N	3 31 0 W
Ezija	Spain	37 31 51 N	5 4 34 W
Fairweather Cape	N.W. Coast of Amer.	58 50 40 N	138 5 50 W
Falkenberg	Sweden	56 53 54 N	12 30 15 E
Falsterbo	Sweden	55 23 4 N	12 49 45 E
Fano	Italy	43 51 0 N	12 59 53 E
Fano Isle	Mediter.	39 50 0 N	19 20 0 E
Farewell Cape	Greenland	59 42 0 N	45 16 0 W
Farewell Cape	N. Zealand	40 37 0 S	172 49 38 E
Faro	Portugal	36 59 0 N	7 51 0 W
Fartash Cape	Arabia	15 34 0 N	51 56 0 E
Fayal Isle, Horta	Azores	38 32 30 N	28 43 0 W
Fecamp	France	49 45 24 N	0 [illegible] 3 E
Feldkirch	Germany	47 14 20 N	9 35 15 E
Feltri	Italy	46 0 43 N	11 55 24 E
Fermo	Italy	43 10 18 N	13 41 41 E
Fernando-Noronha Isle	Atlantic Ocean	3 56 0 S	32 35 0 W
Fernando-Po Isle	Atlantic Ocean	3 28 0 N	8 40 15 E
Ferrara	Italy	44 49 56 N	11 36 25 E
Ferrol	Spain	43 29 0 N	[illegible] 15 0 W
Fez	Morocco	34 6 3 N	5 1 19 W
Figueras	Spain	42 16 1 N	2 57 39 E
Finisterre Cape	Spain	42 54 0 N	9 16 0 W
Fiorenzo (St.)	Corsica	42 41 2 N	9 17 43 E
Fish Bay	W. Coast of Africa	16 31 0 S	11 54 0 E
Fiume	Illyria	45 20 10 N	14 26 22 E
Flereckoe Isle	Norway	58 5 0 N	8 2 0 E
Flensborg	Denmark	54 47 18 N	9 27 40 E
Florence	Italy	43 46 41 N	11 15 45 E
Flores Isle	Azores	39 33 59 N	31 8 15 W
Flores Isle, N.E. Point	Indian Archipelago	8 5 0 S	123 2 0 E
Flour (St.)	France	45 1 53 N	3 5 39 E
Flushing	Holland	51 26 42 N	3 34 57 E
Foggy Isle	N.W. Coast of Amer.	56 12 0 N	157 19 30 W
Fogo Isle	Cape Verd Is.	14 56 0 N	24 20 0 W
Folkstone Church	England	51 4 47 N	1 10 52 E
Fontarabia	Spain	43 21 36 N	1 47 15 W
Foreland (N.) Lighthouse	England	51 22 30 N	1 26 50 E
Foreland (S.) Lighthouse	England	51 8 26 N	1 22 6 E
Formosa Cape	W. Coast of Africa	4 25 0 N	5 59 0 E
Formosa Isle	Chinese Sea	25 11 0 N	121 56 0 E
Formosa Mount	India	1 49 0 N	102 56 0 E
Fortaventura Isle	Canaries	28 4 0 N	14 31 0 W
Foul Point	Madagascar	17 40 14 S	49 53 15 E
Fowler Point	New Holland	32 1 0 S	132 27 0 E
Français Cape (Old)	St. Domingo	19 40 30 N	70 1 15 W
Français Cape, the Town	St. Domingo	19 46 20 N	72 17 55 W
Francisco (St.)	New Albion	37 49 0 N	122 8 0 W
Francisco Solano (St.)	Colombia	6 50 0 N	77 47 15 W
Franckfort on the Maine	Germany	50 7 29 N	8 36 0 E
Frankfort on the Oder	Germany	52 22 8 N	14 33 15 E
Frauenberg	Prussia	54 21 34 N	19 40 30 E
Freisingen	Germany	48 23 58 N	11 45 30 E
Freistadt	Germany	48 29 0 N	14 22 15 E
Frejus	France	43 25 52 N	6 44 9 E
Frio Cape	Brazil	23 0 30 S	42 7 30 W
Frio Cape	Brazil	22 54 0 S	41 36 15 W
Frio Cape	W. Coast of Africa	18 37 30 S	12 25 0 E
Fuentes Fort	Italy	46 8 29 N	9 24 59 E
Fuerte Isle	Terra Firma	9 23 0 N	76 14 0 W
Fulda	Germany	50 33 57 N	[illegible] 44 [illegible] E
Furneaux Isle	Pacif. Ocean	17 11 0 S	143 6 40 W
Furnes	Netherlands	51 4 23 N	2 39 51 E
Fury and Hecla Strait (mid.)	N. America	69 48 10 N	83 29 27 W
Galega Isle	Ind. Ocean	10 25 0 S	56 38 0 E
Gall (St.) Observatory	Switzerland	47 25 40 N	9 22 15 E
Galle Point	Ceylon	6 1 0 N	80 20 0 E
Gallipoli	Turkey in Europe	40 25 33 N	26 37 30 E
Gallo Cape	Sicily	38 13 40 N	13 19 30 E
Gambier Isle	Pacif. Ocean	23 12 0 S	134 59 0 W
Ganjam	India	19 22 0 N	85 10 0 E
Gap	France	44 33 46 N	6 4 28 E
Gardafui Cape	E. Coast of Africa	11 50 0 N	51 32 0 E
Gaspee Bay	Canada	48 47 30 N	64 27 15 W
Gata Cape	Cyprus	34 31 30 N	33 3 20 E
Gata Cape	Spain	36 44 0 N	2 12 50 W
Gebel-Tor Isle	Red Sea	15 32 0 N	42 0 0 E
Geer Cape	N.W. Coast of Africa	30 38 0 N	9 51 45 W
Gefle	Sweden	60 39 45 N	17 8 30 E
Geneva	Switzerland	46 12 0 N	6 [illegible] 30 E
Genoa	Italy	44 25 0 N	8 58 0 E
George (St.) Cape	Newfoundland	48 30 5 N	59 20 33 W
George (St.) I.	Azores	38 31 0 N	27 51 0 W
Georgetown	United States	38 55 0 N	77 [illegible] 48 W
Georgia (S.) I.	Atlan. Ocean	54 58 0 S	36 15 0 W
Gertrudenburg	Holland	51 42 5 N	4 51 54 E
Ghent	Belgium	51 3 21 N	3 43 50 E
Gibraltar, Europa Point	Spain	36 6 40 N	5 21 45 W
Gijon	Spain	43 35 0 N	5 36 0 W
Gillolo Isle	Indian Arpelago	0 45 0 N	128 22 0 E
Girge	Egypt	26 22 20 N	31 55 0 E
Girgenti Lighthouse	Sicily	37 15 50 N	13 31 20 E
Glasgow	Scotland	55 51 32 N	4 16 0 W
Glastonbury Tor	England	51 8 43 N	2 41 19 W

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Gloucester Cape	N. Holland	19 59 0 S	148 26 0 E
Gloucester Cathedral	England	51 52 3 N	2 [illegible] 15 W
Gloucester House	New Wales	51 24 20 N	87 2 59 W
Gloucester Mount	New Britain	5 31 0 S	148 23 0 E
Gluckow	Russia in Europe	51 40 30 N	34 20 15 E
Gluckstadt	Germany	53 47 42 N	[illegible] 27 2 E
Goa	India	15 30 0 N	73 53 0 E
Goat Isle	Philippine Isles	13 52 0 N	120 6 0 E
Godthaab	Greenland	64 10 0 N	51 48 0 W
Goes	Holland	51 30 18 N	3 53 31 E
Gomera Isle	Canaries	28 6 0 N	17 8 0 W
Gonave Isle	St. Domingo	18 49 0 N	73 1 0 W
Good Hope Cape	New Guinea	0 20 0 S	132 31 0 E
Good Hope Cape	S. Coast of Africa	34 29 0 S	18 23 15 E
Gore Isle	Sea of Kamtschatka	60 17 0 N	172 30 45 W
Goree Isle	W. Coast of Africa	14 40 0 N	17 26 0 W
Gorgona Isle	Mediter.	43 25 46 N	9 53 10 E
Gorgona Isle	Pacif. Ocean	2 53 0 N	78 6 15 W
Gortz	Germany	45 57 30 N	13 28 45 E
Gotha, Observ. of Seeberg	Germany	50 56 8 N	10 44 0 E
Gottenburg	Sweden	57 42 4 N	11 57 45 E
Gottingen	Germany	51 31 50 N	9 56 30 E
Gouda	Holland	51 59 51 N	4 42 44 E
Graciosa Isle, Santa Cruz	Azores	39 5 0 N	28 0 0 W
Gradisca	Italy	45 53 30 N	13 25 0 E
Grafton Cape	N. Holland	16 53 0 S	146 10 0 E
Grange Point	St. Domingo	19 54 35 N	71 48 51 W
Granville	France	48 50 16 N	1 35 57 W
Gratz	Germany	47 4 9 N	15 27 15 E
Gravelines	France	50 59 10 N	2 7 50 E
Gravesande	Netherlands	52 0 20 N	4 9 45 E
Greenwich Observatory	England	51 28 40 N	0 0 0
Greifswalde	Germany	54 4 35 N	[illegible] 33 15 E
Grenaae	Denmark	56 24 57 N	[illegible] 53 59 E
Grenada Isle	Caribbee Is.	12 3 0 N	61 48 0 W
Grenoble	France	45 11 42 N	5 43 49 E
Grim Cape	Van Diem. Land	40 41 0 S	144 46 0 E
Grodno	Russia in Europe	53 40 30 N	[illegible] 49 45 E
Guadalcanal Isle	Solomon Isles	9 32 0 S	159 41 0 E
Guadaloupe I.	Pacif. Ocean	28 53 0 N	118 15 48 W
Guadaloupe I., Basseterre	Caribbee Isles	15 59 30 N	[illegible] 45 0 W
Guaira	Colombia	10 36 19 N	67 6 45 W
Guam Isle	Pacif. Ocean	13 21 0 N	144 20 0 E
Guanaxuato	Mexico	21 0 15 N	100 54 45 W
Guastalla	Italy	44 54 58 N	10 39 46 E
Guayaquil	Peru	2 11 30 S	79 41 15 W
Gueldres	Germany	51 30 43 N	6 19 9 E
Gunterburg	Germany	49 9 37 N	[illegible] [illegible] 30 E
Guntzburg	Germany	48 27 15 N	[illegible] 16 30 E
Gurief	Russia in Asia	47 7 0 N	51 59 30 E
Hadersleben	Denmark	55 15 15 N	9 30 49 E
Hague	Holland	52 4 50 N	4 18 47 E
Halberstadt	Germany	51 53 55 N	11 3 33 E
Halifax	Nova Scotia	44 44 0 N	63 35 45 W
Halle	Germany	51 29 5 N	11 58 2 E
Halmstadt	Sweden	56 39 45 N	12 52 0 E
Hamburg	Germany	53 32 51 N	9 58 37 E
Hameln	Germany	52 5 29 N	[illegible] 20 10 E
Hammerfest	Norway	70 38 22 N	23 43 30 E
Hanover	Germany	52 22 25 N	9 42 55 E
Hanover (New) Isle	Pacif. Ocean	2 31 0 S	149 50 0 E
Harlem	Holland	52 22 56 N	4 38 19 E
Harlem's Bay	China	22 31 0 N	114 51 0 E
Harlingen	Holland	53 10 32 N	5 24 47 E
Hartlepool Steeple	England	54 41 49 N	1 10 31 W
Hastings Isle	Ind. Archip.	[illegible] 59 0 S	116 26 0 E
Hatteras Cape	UnitedStates	35 14 30 N	75 34 27 W
Havannah, the Morro	Cuba	23 9 27 N	[illegible] 22 53 W

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
HavredeGrace	France	49 29 14 N	[illegible] 6 38 E
Heligoland I., Lighthouse	Germ. Ocean	54 11 34 N	7 53 13 E
Helena (St.) I.	Atlan. Ocean	15 55 0 S	5 43 0 W
Helena (St.) Point	Patagonia	44 30 0 S	65 29 15 W
Helena (St.) Point	Peru	2 10 0 S	80 47 15 W
Helsingborg	Sweden	56 2 55 N	12 43 15 E
Helsingfors	Russia in Europe	60 10 0 N	25 0 15 E
Helvellin Mountain	England	54 31 43 N	3 0 21 W
Helvoet Sluys	Holland	51 40 29 N	3 27 53 E
Heraclea	Turkey in Europe	41 1 3 N	27 54 34 E
Herenthals	Netherlands	51 10 45 N	4 50 29 E
Hernosand I.	Sweden	62 38 0 N	17 53 15 E
Hesseloe Isle	Denmark	56 11 46 N	11 40 1 E
Hinchinbrook Cape	N.W. Coast of America	60 12 30 N	146 39 20 W
HinlopenCape, Lighthouse	UnitedStates	38 47 16 N	75 6 15 W
Hioring	Denmark	57 27 44 N	10 0 28 E
Hoberg Cape	Sweden	56 56 0 N	[illegible] 11 0 E
Hogsties Islets	Lucayos	21 39 0 N	73 56 4 W
Hogstraeten	Holland	51 24 5 N	4 45 48 E
Hola	Iceland	65 44 0 N	19 [illegible] 45 W
Holy Isle, Castle	England	55 40 20 N	1 46 38 W
Holyhead Mountain	England	[illegible] 18 51 N	4 39 27 W
Honda	Colombia	5 11 42 N	74 53 30 W
Hondschotte	Netherlands	50 58 56 N	2 35 14 E
Honfleur	France	49 25 13 N	0 14 14 W
Hood Point	N. Holland	34 23 0 S	119 33 0 E
Horn Cape	Tierra del Fuego	55 58 30 S	67 21 14 W
Horsham Church	England	51 3 36 N	0 [illegible] 43 W
Howe Cape	N. Holland	37 30 0 S	150 7 0 E
Huahine Isle	Pacifi. Ocean	16 43 0 S	151 9 0 W
Hudson's House	New Wales	53 0 32 N	106 27 20 W
Hulst	Netherlands	51 16 53 N	4 3 27 E
Hunter Port	N. Holland	32 56 0 S	151 43 0 E
Huntingdon Steeple	England	52 20 27 N	0 11 3 W
Husum	Denmark	54 28 59 N	9 4 42 E
Hydrabad	India	17 12 0 N	78 51 0 E
Hyeres	France	43 7 2 N	[illegible] 7 55 E
Ibague	Colombia	4 27 45 N	75 20 0 W
Ibarra	Peru	0 21 0 N	78 18 34 W
Icy Cape	N.W. Coast of Amer.	70 29 0 N	161 42 30 W
Iena	Germany	50 56 28 N	11 37 15 E
Iglau	Germany	49 23 29 N	15 36 15 E
Ilchester Steeple	England	51 0 23 N	2 40 14 W
Ingleborough Hill	England	54 10 4 N	2 23 18 W
Ingolstadt	Germany	48 45 47 N	11 25 51 E
Inhamban Bay	E. Coast of Africa	23 51 0 S	35 42 0 E
Inspruck	Germany	47 16 8 N	11 23 45 E
Ipsara Isle	Archipelago	38 30 0 N	25 36 0 E
Irkutsk	Russia in Asia	52 16 41 N	104 11 30 E
Isaac Rock (Great)	Lucayos	26 2 15 N	79 8 45 W
Isaac Rock (Little)	Lucayos	25 57 0 N	78 50 50 E
Isabella Point	St. Domingo	[illegible] 58 43 N	71 16 55 W
Islamabad	India	22 20 0 N	91 45 15 E
Ismail	Turkey in Europe	45 [illegible] 0 N	28 50 15 E
Isola-Bella	Italy	45 53 11 N	8 32 3 E
Ispahan	Persia	32 24 34 N	51 50 15 E
Ivica Isle, the Castle	Mediterranean	38 53 16 N	1 29 12 E
Jackson (Port) Castle Point	N. Holland	33 [illegible] 30 S	151 16 30 E
Jaffa	Syria	32 5 25 N	34 46 8 E
Jaffa Cape	N. Holland	36 57 0 S	139 41 0 E
Jago (St.) Isle	CapeVerdIs.	14 53 0 N	23 32 0 W
Jakutsk	Russia in Asia	62 1 50 N	129 43 30 E
James (St.) Cape	CochinChina	10 15 0 N	107 10 0 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Jaroslawl -	Russia in Europe	57 37 30 N	40 10 15 E
Jarra Isle -	Straits of Malacca	4 0 0 N	100 14 0 E
Jask Cape -	Persia -	25 38 0 N	58 10 0 E
Jassy - -	Moldavia -	47 8 30 N	27 30 15 E
Java Head -	Java - -	6 48 0 S	105 11 0 E
Jean-Leton Reef	CapeVerdIs.	15 48 0 N	22 56 0 W
Jeniseisk -	Russ. in A.	58 27 17 N	91 58 45 E
Jeremie Point	St. Domingo	18 39 57 N	74 13 22 W
Jersey Isle, St. Aubin	British Channel	49 12 59 N	2 10 44 W
Jerusalem -	Turkey in Asia	31 47 47 N	35 20 15 E
Jervis Bay, Cape George	N. Holland	35 9 0 S	150 56 0 E
Jiddah - -	Arabia -	21 29 0 N	39 15 0 E
Johanna Isle	Comoro Isles	12 [illegible] 0 S	44 30 0 E
Johannisberg	Prussia -	53 37 48 N	21 49 15 E
John's (St.) Cape	W. Coast of Africa	1 15 0 N	9 15 0 E
John's (St.) Fort	Newfoundland	47 33 45 N	52 39 45 W
John's (St.) Isle	Caribbee Is.	[illegible] 20 0 N	64 47 0 W
Joseph (St.) -	California -	23 3 13 N	109 40 53 W
Juan (St.) -	Porto Rico	18 29 10 N	66 13 15 W
Juan-Fernandez Isle	Pacifi. Ocean	33 40 0 S	78 58 15 W
Judenburg -	Germany -	47 43 20 N	14 42 45 E
Julian (St.) Port	Patagonia -	49 5 30 S	67 44 15 W
Kaisersheim	Germany -	48 45 52 N	10 47 58 E
Kakava Isle -	Turkey in Asia	36 11 0 N	29 57 0 E
Kalatoa Isle -	Ind. Archip.	7 20 0 S	121 40 0 E
Kallandborg	Denmark -	55 40 54 N	11 6 33 E
Kalpeny Isle	Laccadives	10 5 0 N	74 1 0 E
Kaminieck -	Russia in Europe	48 40 50 N	27 1 30 E
Kamtschatkoi Ness	Kamtschatka	56 1 0 N	163 22 30 E
Karak Isle -	G. of Persia	29 16 0 N	50 27 0 E
Kasan - -	Russia in Europe	55 47 51 N	49 21 9 E
Kaskon -	Russia in Europe	62 22 10 N	21 10 35 E
Katif Bay, N. Point	Arabia -	26 36 30 N	50 12 0 E
Kaufbeuren -	Germany -	47 53 30 N	10 36 45 E
Kerguelen's Land, Christ. Harb.	Ind. Ocean	48 41 15 S	69 2 15 E
Kertch	Crimea -	45 21 19 N	36 21 21 E
Kiam Cheu -	China -	35 37 0 N	111 29 30 E
Kidwelly Spire	Wales -	51 44 15 N	4 17 22 W
Kiel - -	Germany -	54 19 43 N	10 8 18 E
Kilduin Isle -	Russia in Europe	69 10 0 N	33 50 0 E
King's Isle -	Bass'sStraits	39 37 0 S	143 54 0 E
Kinsale -	Ireland -	51 41 30 N	8 28 15 W
Kiow - -	Russia in Europe	50 27 0 N	30 27 45 E
Kiringskoi-Ostrog	Russia in Asia	57 47 0 N	108 3 0 E
Kittery Point	UnitedStates	43 4 27 N	70 44 30 W
Kittis - -	Lapland -	66 48 20 N	24 3 15 E
Klagenfurth -	Germany -	46 37 10 N	14 20 0 E
Klin - -	Russia in Europe	56 20 18 N	36 48 6 E
Koenigsburg	Prussia -	54 42 12 N	20 29 15 E
Kola - -	Russia in Europe	68 52 30 N	33 0 45 E
Koluga -	Russia in Europe	54 30 0 N	36 5 15 E
Kongsbacka -	Sweden -	57 27 0 N	12 7 0 E
Kongswinger	Norway -	60 12 11 N	11 58 0 E
Koraka Cape	Turkey in Asia	38 5 52 N	26 34 45 E
Korn-Neuburg	Germany -	48 21 22 N	16 19 0 E
Koseir - -	Egypt -	26 8 0 N	34 15 0 E
Koslof - -	Russia in Europe	45 11 54 N	33 22 48 E
Kostroma -	Russia in Europe	57 45 40 N	41 12 51 E
Kovima (Lower)	Russia in Asia	68 [illegible] 0 N	163 [illegible] 15 E
Kovima (Upper)	Russia in Asia	65 28 0 N	153 35 15 E
Krageroe -	Norway -	58 51 30 N	9 30 30 E
Krannichfeld	Germany -	50 51 55 N	11 11 45 E
Krasnoyan -	Russia in Asia	56 1 2 N	92 20 52 E
Krementzouk	Russia in Europe	49 3 28 N	33 29 0 E
Krems - -	Germany -	48 21 30 N	15 36 0 E
Krio Cape -	Turkey in Asia	36 41 0 N	27 21 0 E
Kurachee Port	India -	24 52 0 N	67 17 0 E
Kursk - -	Russia in Europe	51 43 30 N	36 27 45 E
Ladrone Isle (Great)	Chinese Sea	21 57 0 N	113 43 0 E
Lagoon Isle -	Pacifi. Ocean	21 38 0 S	140 37 0 W
Lagos - -	Portugal -	37 6 0 N	8 38 3 W
Lagos - -	Turkey in Europe	40 58 42 N	25 3 36 E
Lampedosa I.	Mediterranean	35 31 15 N	12 30 5 E
Lampsaco -	Turkey in Asia	40 20 52 N	26 36 55 E
Lancaster -	UnitedStates	40 2 39 N	76 19 30 W
Lancaster Steeple	England -	54 3 8 N	2 47 41 W
Lancerota Isle	Canaries -	29 14 0 N	13 26 0 W
Landsberg -	Germany -	48 2 58 N	10 53 31 E
Landscroon -	Sweden -	55 52 27 N	12 51 1 E
Langle Bay -	Sachalin -	48 59 0 N	142 33 4 E
Langle Peak	Jesso - -	45 11 0 N	141 13 13 E
Langres -	France -	47 51 59 N	5 20 5 E
Laon - -	France -	49 33 54 N	3 37 27 E
Larneca Castle	Cyprus -	34 54 30 N	33 40 45 E
Latikia - -	Syria - -	35 30 30 N	35 47 55 E
Laubach -	Germany -	46 1 48 N	14 46 40 E
Launceston Steeple	England -	50 38 18 N	4 20 42 W
Lausanne -	Switzerland	46 31 5 N	[illegible] 45 30 E
Lawrence (St.) Isle	Sea of Kamtschatka	63 47 0 N	171 45 0 E
Leasowes Lighthouse	England -	53 24 50 N	3 6 49 W
Leeuwin Cape	N. Holland	34 19 0 S	115 0 0 E
Leeuwin Cape	N. Holland	34 25 50 S	115 35 15 E
Leghorn -	Italy -	43 33 5 N	10 16 45 E
Legnago -	Italy - -	45 11 18 N	11 19 13 E
Leipsic - -	Germany -	51 20 16 N	12 21 45 E
Leiva - -	Colombia -	5 30 0 N	73 53 52 W
Le Mans -	France -	48 0 30 N	0 11 35 E
Lemma Isle (Great)	Chinese Sea	22 2 0 N	114 16 0 E
Leon - -	Mexico -	12 21 0 N	86 45 0 W
Leon Isle -	Spain -	36 27 45 N	6 12 0 W
Leopold South Island	N. America	73 56 0 N	90 0 0 W
Le Puy -	France -	45 2 51 N	3 53 36 E
Lew-chew I. (Gt.) Napakiang	Chinese Sea	26 14 0 N	127 38 0 E
Lewis-Town	UnitedStates	38 47 27 N	75 15 48 W
Leyden -	Holland -	52 9 30 N	4 29 13 E
Libau - -	Courland -	56 31 36 N	20 55 20 E
Lichtenau -	Germany -	51 37 24 N	8 54 7 E
Liege - -	Belgium -	50 39 22 N	5 31 42 E
Lilienthal -	Germany -	53 8 30 N	8 54 15 E
Lima - -	Peru - -	12 3 0 S	76 56 45 W
Limoges -	France -	45 49 53 N	1 15 23 E
Lincoln Isle -	Chinese Sea	16 41 0 N	112 42 0 E
Lincoln Minster	England -	53 14 7 N	0 32 1 W
Lindesnæs Lighthouse	Norway -	57 58 0 N	7 3 0 E
Lintz - -	Germany -	48 18 54 N	14 16 45 E
Lipari Isle, the Castle	Mediterranean	38 28 35 N	14 55 40 E
Lisbon Observatory	Portugal -	38 42 24 N	9 8 30 W
Lisburne Cape	N.W. Coast of Amer.	69 5 0 N	165 22 30 W
Litchfield Spire	England -	52 41 12 N	1 49 21 W
Liverpool, St. Paul's	England -	53 24 40 N	2 58 55 W
Lizard W. Lighthouse	England -	49 57 44 N	5 11 5 W
Lizier (St.) -	France -	43 0 3 N	1 8 20 E
Lisieux -	France -	49 8 50 N	0 13 47 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Lobos Quay	Lucayos -	22 24 50 N	77 36 30 W
Lodi -	Italy - -	45 18 31 N	9 30 52 E
Loheia -	Arabia -	15 44 0 N	42 44 0 E
Loheia -	Arabia -	15 42 8 N	42 8 45 E
Lombez -	France -	43 28 30 N	0 54 24 E
Lombock Isle	Ind. Archip.	8 21 0 S	116 26 0 E
Lomond Mountain, W.	Scotland -	56 14 57 N	3 17 4 W
London (New) Lighthouse	UnitedStates	41 21 8 N	72 [illegible] 30 W
London, St. Paul's	England -	51 30 49 N	0 5 47 W
Londonderry	Ireland -	54 59 28 N	7 14 49 W
Long Island, E. Hampton	UnitedStates	41 0 0 N	72 18 35 W
Lopez Cape -	W. Coast of Africa	0 59 0 S	9 17 0 E
Loretto -	Italy - -	43 27 0 N	13 35 5 E
L'Orient -	France -	47 45 11 N	3 21 2 W
Loughborough Steeple	England -	52 46 31 N	1 11 54 W
Louisburgh -	Cape Breton Isle	45 53 40 N	59 54 45 W
LouisiadeCape	New Guinea	11 20 42 S	128 20 55 E
Louvain -	Belgium -	50 53 26 N	4 41 46 E
Lowestoff -	England -	52 29 0 N	1 46 0 E
Lubeck -	Germany -	53 51 18 N	10 40 52 E
Lubeck Isle -	Ind. Archip.	5 45 0 S	112 48 0 E
Lucas (St.) Cape - -	California	22 52 28 N	109 50 23 W
Luçon -	France -	46 27 15 N	1 9 45 W
Lugano -	Italy - -	45 59 56 N	8 57 35 E
Luiz-Maranham (St.)	Brazil -	2 30 0 S	44 5 0 W
Lunde -	Norway -	58 27 10 N	6 36 6 E
Lunden Tower	Sweden -	55 42 46 N	13 12 42 E
Lundy Isle -	England -	51 9 47 N	4 38 28 W
Lutterworth Steeple	England -	52 27 20 N	1 12 1 W
Luxemburg -	Germany -	49 37 38 N	6 9 41 E
Lynn, Old Tower	England .	52 46 52 N	0 25 4 E
Lyons -	France -	45 45 58 N	4 49 24 E
Macao - -	China -	22 11 30 N	113 31 30 E
Macassar - -	Celebes -	5 9 0 S	119 29 0 E
Macerata -	Italy -	43 18 36 N	13 26 15 E
Machichaco Point	Spain -	43 28 0 N	2 49 0 W
Macon -	France -	46 18 27 N	4 50 0 E
Madeira Isle, Funchal	Atlan.Ocean	32 37 0 N	16 54 46 W
Madona Isle	Archipelago	36 31 0 N	26 52 0 E
Madras -	India -	13 4 0 N	80 22 0 E
Madrid (New)	UnitedStates	36 34 30 N	89 27 15 W
Madrid, Grand Square	Spain -	40 24 57 N	3 42 15 W
Maestricht -	Holland -	50 51 7 N	5 41 1 E
Magadoxa -	E. Coast of Africa	2 5 0 N	45 49 0 E
Magdalen Isles	Gulf of St. Lawrence	47 11 0 N	61 43 0 W
Magdeburg -	Germany -	52 8 4 N	11 38 59 E
Mahe Isles, St. Anne's Isle	Ind. Ocean	4 35 0 S	55 35 0 E
Mahon, Cape Mola	Minorca -	39 51 10 N	4 18 17 E
Mahouna Isle	Pacifi.Ocean	14 20 45 S	170 16 35 W
Majambo Bay, Entrance	Madagascar	15 10 0 S	47 6 0 E
Maker Tower	England -	50 20 52 N	4 10 16 W
Makry, the Theatre	Turkey in Asia	36 36 28 N	29 7 15 E
Malacca Fort	India -	2 12 0 N	102 15 0 E
Malaga -	Spain -	36 43 30 N	4 25 2 W
Mala-Pasqua Cape	Porto Rico	18 0 0 N	65 42 [illegible] W
Malespina Cape	Jesso -	43 42 15 N	141 19 0 E
Malines -	Belgium -	51 1 52 N	4 28 59 E
Mallicollo Isle	N. Hebrides	16 25 0 S	167 32 0 E
Mallicollo Isle	N. Hebrides	16 25 20 S	167 53 0 E
Malmo -	Sweden -	55 36 37 N	13 1 19 E
Malo (St.) -	France -	48 39 3 N	2 1 11 W
Malouines Isle, Port Egmont	Falkland Is.	51 25 0 S	59 59 15 W
Malta Isle, Valetta Observatory	Mediterranean	35 53 0 N	14 30 35 E
Manapar Point	India -	8 22 0 N	78 16 0 E
Manchester, S. Mary's Spire	England -	53 29 0 N	2 15 22 W
Mandarin's Cap Isle	Chinese Sea	21 28 0 N	112 21 30 E
Mangalore	India -	12 50 30 N	75 7 0 E
Mangea Isle	Pacifi.Ocean	21 56 45 S	158 3 0 W
Mangles Point	Peru -	1 36 30 N	78 50 30 W
Manheim Observatory	Germany -	49 29 18 N	8 28 0 E
Manilla -	Luconia -	14 36 0 N	120 58 0 E
Mansfelt Isle	Hudson's B.	62 38 0 N	80 33 0 W
Mantua -	Italy - -	45 9 18 N	10 [illegible] 12 E
Marburg -	Germany -	46 34 42 N	15 43 0 E
Margarita Isle, Cape Isla	Caribbee Sea	11 10 0 N	63 58 12 W
Marienburg -	Prussia -	54 1 31 N	19 1 56 E
Marigalante Isle	Caribbee Is.	15 51 0 N	61 [illegible] 0 W
Markoe Isle, Lighthouse	Norway -	57 59 0 N	6 59 0 E
Marmara Isle	Turkey in Asia -	40 37 4 N	27 30 50 E
Marseilles Observatory	France -	43 17 49 N	5 22 15 E
Martha (St.)	Terra Firma	11 19 34 N	74 8 30 W
Martin (St.) Isle	Scilly Isles	49 58 0 N	6 15 0 W
Martin (St.) Isle	Caribbee Is.	18 4 0 N	63 14 0 W
Martin de Rhé (St.)	France -	46 12 18 N	1 21 52 W
Martinico Isle, Fort Royal	Caribbee Is.	14 35 49 N	61 5 45 W
Mary (St.) Cape	Italy -	39 47 30 N	18 [illegible] 20 E
Mary (St.) Isle	Azores -	36 57 0 N	25 [illegible] 0 W
Masafuero Isle	Pacifi.Ocean	33 45 30 S	80 37 15 W
Massowa Bay	Abyssinia -	15 34 0 N	39 37 0 E
Matanza Peak	Cuba -	23 1 39 N	81 45 2 W
Matapan Cape	Turkey in Europe	36 23 20 N	22 29 30 E
Mataro -	Spain -	41 32 [illegible] N	2 26 48 E
Matsumay -	Jesso -	41 32 0 N	140 4 0 E
Matthew's (St.) Lighthouse	France -	48 [illegible] 34 N	4 45 39 W
Mauritius Isle, Port Louis	Ind. Ocean	20 9 45 S	57 28 30 E
May Cape -	UnitedStates	38 56 46 N	74 53 6 W
May I., Lighthouse	Scotland -	56 11 22 N	2 32 47 W
Mayo Isle, S. Point	Cape Verd Isles	15 4 50 N	23 8 30 W
Mayotta Isle, the Peak	Comoro Isles	[illegible] 54 0 S	45 14 0 E
Mazzarra Citadel	Sicily -	37 39 50 N	12 33 30 E
Meaux - -	France -	48 57 40 N	2 52 45 E
Meiningen -	Germany -	50 35 26 N	10 24 15 E
Melille -	Barbary -	35 18 15 N	2 56 10 W
Memel - -	Prussia -	55 42 15 N	21 8 3 E
Mende - -	France -	44 30 42 N	3 29 34 E
MendocinCape	N.W. Coast of Amer.	40 29 0 N	124 29 15 W
Messina Lighthouse	Sicily -	38 11 30 N	15 35 30 E
MesuradoCape	W. Coast of Africa	6 15 0 N	10 36 30 W
Mesurat Cape	Barbary -	32 25 25 N	15 9 36 E
Metz - -	France -	49 7 10 N	6 10 26 E
Mexico - -	Mexico -	19 25 45 N	99 5 15 W
Michael's (St.) Isle	Azores -	37 48 0 N	25 13 0 W
Michael's (St.) Mount	England -	50 7 2 N	5 27 33 W
Michael's (St.) Mount	France -	48 38 14 N	1 30 26 W
Middleburg	Holland -	51 30 6 N	3 37 30 E
Milan Observatory	Italy -	45 28 2 N	9 11 51 E
Milazzo Lighthouse	Sicily -	38 15 58 N	15 13 30 E
Milo Isle, the Port	Archipelago	36 42 30 N	24 13 38 E
Mimbres Isle	Lucayos -	25 16 0 N	79 11 0 W
Mindoro Isle	Philippine Isles	13 27 0 N	120 20 0 E
Minehead Steeple	England -	51 12 42 N	3 28 4 W
Minicoy Isle	Laccadives	8 17 0 N	73 18 0 E

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Mirepoix Observatory	France -	43 5 7 N	1 52 26 E
Mirik Cape	W. Coast of Africa	19 3 48 N	16 12 5 W
Mississippi River, S.E. Entrance	UnitedStates	28 57 0 N	89 13 0 W
Mittau -	Russia in Europe	56 39 6 N	23 43 27 E
Mocha - -	Arabia -	13 20 0 N	43 20 0 E
Mohilew -	Russia in Europe	53 54 0 N	30 24 45 E
Mobilla Isle	Mozambique Chan.	12 20 0 S	43 50 0 E
Mombas Harbour, Entr.	E. Coast of Africa	4 4 0 S	40 2 0 E
Mondego Cape	Portugal -	40 11 54 N	8 54 6 W
Montauban Observatory	France -	44 0 55 N	1 20 45 E
Montego Bay	Jamaica -	18 30 0 N	77 54 0 W
Montery -	New Albion	36 35 45 N	121 51 6 W
Montevideo Lighthouse	La Plata -	34 53 0 S	56 13 0 W
MontpelierObservatory	France -	43 36 16 N	3 52 40 E
Montrose -	Switzerland	45 55 56 N	7 52 32 E
Montserrat I., NE. Point	Caribbee Is.	16 47 35 N	62 13 25 W
Monza -	Italy -	45 34 41 N	9 17 11 E
Moose Fort -	New Wales	51 15 54 N	80 56 24 W
Morales -	Terra Firma	8 15 30 N	74 1 0 W
Morant Point	Jamaica -	17 58 0 N	76 8 0 W
Morant Quays	Caribbee Sea	17 26 0 N	75 54 0 W
Morebat Cape	Arabia -	17 0 0 N	54 32 0 E
Morillos (los Cape	Porto Rico	17 58 30 N	67 11 0 W
Mornington I.	NewHolland	16 32 0 S	139 50 0 E
Mornington Port	Nubia -	18 16 0 N	38 32 0 E
Moscow -	Russia in Europe	55 45 45 N	37 33 0 E
Mosdok -	Russia in Europe	43 43 40 N	43 50 15 E
Mossel Bay, CapeSt. Blaize	S. Coast of Africa	34 10 0 S	22 7 0 E
Mount Cape	W. Coast of Africa	6 44 0 N	11 20 0 W
Mowee Isle -	Sandwich Is.	20 50 0 N	156 2 0 W
Mozambique Harbour	E. Coast of Africa	15 1 0 S	40 47 0 E
Mulgrave Port	NW. Coast of Amer.	59 34 17 N	139 42 6 W
Mulhacen -	Germany -	51 12 59 N	10 28 45 E
Mulheim -	Germany -	47 48 40 N	7 37 38 E
Mumbles Lighthouse	England -	51 34 0 N	3 57 20 W
Munich -	Germany -	48 8 20 N	11 34 30 E
Munster -	Germany -	51 58 10 N	7 36 21 E
Muscat Cove	Arabia -	23 38 0 N	58 41 0 E
Mussendom Cape	Arabia -	26 21 0 N	56 38 0 E
Naerden -	Holland -	52 17 49 N	5 9 50 E
Namo Harbr.	China -	21 35 0 N	112 33 0 E
Namur -	Netherlands	50 28 30 N	4 51 7 E
Nancy - -	France -	48 41 55 N	[illegible] 10 31 E
Nangasaki -	Japan -	32 43 40 N	129 52 7 E
Nankin -	China -	32 4 40 N	118 47 15 E
Nantes -	France -	47 13 6 N	1 32 44 W
Naples -	Italy -	40 50 15 N	14 15 45 E
Narbonne -	France -	43 11 22 N	3 0 22 E
Narva -	Russia in Europe	59 22 53 N	28 14 30 E
Natal Port -	East Coast of Africa	29 55 0 S	31 28 0 E
Needles Lighthouse	England -	50 39 53 N	1 33 56 W
Negapatam Port	India -	10 45 30 N	79 55 0 E
Negrais Cape	India -	16 2 0 N	94 13 0 E
Neustadt -	Germany -	47 48 27 N	16 13 32 E
Nevers -	France -	46 59 17 N	3 9 31 E
Nevis Isle, S. Point	Caribbee Is.	17 5 12 N	62 33 21 W
Newark Steeple	England -	53 4 30 N	0 49 18 W
Newbiggin Spire	England -	55 11 14 N	1 29 42 W
Newbury Steeple	England -	51 24 5 N	1 19 9 W
Newenham Cape	N.W. Coast of Amer.	58 41 30 N	162 19 30 W
Newhaven -	United St.	41 17 7 N	72 59 10 W
Nice - -	Italy -	43 41 16 N	7 16 37 E
Nicolas (St.) Mole	St. Domingo	19 49 20 N	73 29 33 W
Nicobar Isle (Great)	B. of Bengal	6 45 0 N	94 0 0 E
Nieuport -	Belgium -	51 7 54 N	2 45 15 E
Nimeguen -	Holland -	51 51 20 N	5 50 41 E
Ningpo -	China -	29 57 45 N	120 18 15 E
Nismes -	France -	43 50 8 N	4 21 45 E
Nizhnei-Novogorod	Russia in Europe	56 19 43 N	44 28 30 E
Nizhnei-Oudinsk	Russia in Europe	54 55 22 N	99 1 45 E
Nocera -	Italy	43 6 40 N	12 46 17 E
Noirmoutier Isle	France -	47 [illegible] 5 N	2 14 7 W
Nooahevah I.	Marquesas	8 54 0 S	140 5 0 W
Nootka Sound	N.W. Coast of Amer.	49 35 15 N	126 36 46 W
Nordlingen -	Germany -	48 51 0 N	10 28 30 E
Norfolk Isle -	Pacifi. Ocean	29 1 45 S	168 10 15 E
Norkoping -	Sweden -	58 35 0 N	16 11 0 E
North Cape -	Lapland -	71 10 0 N	26 0 45 E
North Cape -	N. Zealand	34 26 0 S	173 1 0 E
North Cape -	Russia in Asia	68 56 0 N	179 11 30 W
N. West Cape	N. Holland	21 50 30 S	114 28 0 E
Noto Cape -	Japan -	37 39 12 N	137 35 0 E
Nottingham Steeple	England -	52 57 8 N	1 8 14 W
Novara -	Italy -	45 26 38 N	8 37 46 E
Novogorod	Russia in Europe	58 31 32 N	31 16 24 E
Noyon - -	France -	49 34 42 N	3 0 50 E
Nuremberg -	Germany -	49 26 55 N	11 4 15 E
Oby Isle -	Indian Arch.	8 25 0 N	104 54 0 E
Ocanna -	Spain -	39 56 33 N	3 30 51 W
Oczakow -	Russia in Europe	46 37 29 N	31 26 15 E
Odessa -	Russia in Europe	46 30 22 N	30 45 22 E
Oerebro -	Sweden -	59 17 12 N	15 13 20 E
Oheteroa Isle	Pacifi. Ocean	22 26 36 S	150 48 45 W
Ohitahoo Isle	Marquesas	[illegible] 55 0 S	139 8 0 W
Okhotsk -	Russia in Asia	59 20 10 N	143 13 45 E
Oldenburg -	Germany -	53 8 40 N	8 14 35 E
Oleron - -	France -	43 11 1 N	0 36 15 E
Omer (St.) -	France -	50 44 52 N	2 15 12 E
Oonalashka I.	N.W. Coast of Amer.	53 54 0 N	166 22 0 W
Oonemak Cape	N.W. Coast of Amer.	54 30 30 N	165 31 0 W
Oporto, the Bar	Portugal -	41 8 54 N	8 37 18 W
Oran, St. Croix Castle	Barbary -	35 44 27 N	0 39 24 W
Orange -	France -	44 8 10 N	4 48 23 E
Orchilla Isle	Caribbee Sea	11 52 0 N	66 5 46 W
Orel - -	Russia in Europe	52 56 40 N	35 57 15 E
Orenburg -	Russia in Asia	51 46 5 N	55 4 45 E
Orford Cape	N.W. Coast of Amer.	42 52 0 N	124 25 0 W
Orford Lighthouse	England -	52 5 0 N	1 34 14 E
Orizava Peak	Mexico -	19 2 17 N	97 15 0 W
Orleans -	France -	47 54 12 N	1 54 41 E
Orleans (New)	United St.	29 57 45 N	90 11 0 W
Ormus Isle, N. End	Gulf of Persia	27 7 0 N	56 37 0 E
Oropesa Cape	Spain -	40 5 33 N	0 8 25 E
Ortegal Cape	Spain -	43 46 40 N	7 49 0 W
Osnaburg -	Germany -	52 16 35 N	8 1 11 E
Ostend -	Belgium -	51 13 57 N	2 55 8 E
Osterode -	Germany -	51 44 15 N	10 16 54 E
Otaheite Isle, Venus Point	Pacifi. Ocean	17 29 15 S	149 30 22 W
Otranto -	Italy -	40 9 20 N	18 29 15 E
Otway Cape	N. Holland	38 51 0 S	143 30 0 E
Owhyhee Isle, N. Point	Sandwich Isles	20 17 0 N	155 58 45 W
Oxford Observatory	England -	51 45 39 N	1 15 22 W
Padang Head	Sumatra -	0 56 0 S	99 58 0 E
Paderborn -	Germany -	51 43 37 N	8 43 51 E

Names of Places.	Country, &c.	Latitude. ° ′ ″	Longitude. ° ′ ″
Padua Observatory	Italy -	45 24 2 N	11 51 52 E
Paix Port -	St. Domingo	19 55 0 N	72 53 30 W
Palawan Isle	Philippine I.	9 38 0 N	118 22 0 E
Palermo Observatory	Sicily -	38 6 44 N	13 22 0 E
Palliser Cape	N. Zealand	41 38 0 S	175 23 12 E
Palma - -	Majorca -	39 34 4 N	2 39 15 E
Palma Isle -	Canaries -	28 54 0 N	17 53 0 E
Palmas Cape	West Coast of Africa	4 23 0 N	7 38 0 W
Palmyra Point	Ceylon -	9 49 0 N	80 26 0 E
Palos Cape -	Spain -	37 37 15 N	0 41 0 W
Pamplona -	Spain -	42 49 57 N	1 41 15 W
Panama -	Terra Firma	8 58 50 N	79 27 15 W
Para - -	Brazil -	1 28 0 S	48 39 45 W
Paramatta Observatory	N. Holland	33 48 45 S	151 1 15 W
Paris, Royal Observatory	France -	48 50 14 N	2 20 23 E
Parma - -	Italy -	44 48 1 N	10 26 45 E
Paros Isle -	Archipelago	37 3 46 N	25 11 0 E
Pasto - -	Terra Firma	1 13 [illegible] N	77 21 25 W
Patchew Isles, Easternmost I.	Pacifi. Ocean	24 42 0 N	125 36 0 E
Patrick's (St.) Head	Van Diemen's Land	41 42 0 S	148 24 0 E
Patta - -	East Coast of Africa	2 10 0 S	41 10 0 E
Paul (St.) -	Brazil -	23 33 10 S	46 39 10 W
Paul's (St.) Cape	West Coast of Africa	5 44 0 N	1 7 0 E
Paul-de-Leon (St.)	France -	48 41 24 N	3 58 22 W
Paul-de-Loando (St.)	West Coast of Africa	8 47 30 S	13 [illegible] 0 E
Paul-trois-Chateaux (St.)	France -	44 21 3 N	4 45 54 E
Pavia -	Italy -	45 10 47 N	9 9 48 E
Payta Point -	Peru -	5 3 30 S	81 2 0 W
Pedro Branco Isle	Chinese Sea	22 19 30 N	115 8 0 E
Pedro Branco Isle	Indian Archipel.	1 20 0 N	104 25 0 E
Pekin, Imper. Observatory	China -	39 54 13 N	116 27 45 E
Pelew Isles, Kyangle Isle	Pacifi. Ocean	8 8 30 N	134 50 0 E
Peniscola -	Spain -	40 22 40 N	0 29 30 E
Penrith Beac.	England -	54 40 37 N	2 43 59 W
Pensacola -	United St.	30 24 0 N	87 11 30 W
Perceval Cape	Falkland Is.	51 46 30 S	61 11 0 W
Perekop -	Crimea -	46 8 57 N	33 42 9 E
Perigueux -	France -	45 11 8 N	0 43 34 E
Perm -	Russia in Europe	58 1 13 N	56 26 30 E
Pernambuco	Brazil -	8 3 0 S	34 54 0 W
Peros Banhos Isles	Indian Ocean	5 23 0 S	71 57 0 E
Perotte -	Mexico -	19 32 54 N	97 13 24 W
Perouse -	Italy -	43 6 46 N	12 22 13 E
Perpignan -	France -	42 42 3 N	2 54 9 E
Pesaro -	Italy -	43 55 1 N	12 53 36 E
Peterborough Cathedral	England -	52 35 40 N	0 14 45 W
Petersburg -	Russia in Europe	59 56 23 N	30 18 45 E
Petropaulowskoi-Ostrog	Kamtschatka	53 0 15 N	158 49 0 E
Philadelphia	United St.	39 56 55 N	75 11 30 W
Philip Isles -	Pacifi. Ocean	8 6 0 N	140 3 0 E
Philippeville	France -	50 11 19 N	4 32 34 E
Philipsburg -	Germany -	49 14 1 N	8 26 49 E
Piacenza -	Italy -	45 2 44 N	9 42 32 E
Pico Isle, the Peak	Azores -	38 28 30 N	28 33 0 W
Pierre (St.) Isle	Newfoundl.	46 48 0 N	56 12 0 W
Pillar Cape -	Patagonia -	52 46 0 S	74 54 14 W
Pillar Cape -	Van Diemen's Land	43 12 0 S	148 5 0 E
Pillau -	Prussia -	54 33 30 N	19 52 30 E
Pilsen -	Germany -	49 45 10 N	13 23 16 E
Piombino -	Italy -	42 56 27 N	10 31 2 E
Pisa Observatory	Italy	43 43 11 N	10 24 0 E
Piscadores Is. largest Isle	Chinese Sea	23 32 0 N	119 46 0 E
Pitcairn's Isle	Pacifi. Ocean	25 4 0 S	130 25 0 W
Pittsburgh -	United St.	40 26 15 N	79 58 15 W
Plata -	Peru -	2 25 0 S	75 51 35 W
Plettenberg Bay	South Coast of Africa	34 6 0 S	23 22 0 E
Plymouth New Church	England -	50 22 20 N	4 7 16 W
Plynlimmon Mountain	Wales -	52 28 3 N	3 46 4 W
Poictiers -	France -	46 35 0 N	0 20 42 E
Pola - -	Istria -	44 52 16 N	13 50 4 E
Polotsk -	Russia in Europe	55 28 56 N	28 48 0 E
Pondicherry	India -	11 56 0 N	79 54 0 E
Poole Church	England -	50 42 50 N	1 58 55 W
Popayan -	Terra Firma	2 26 18 N	76 39 54 W
Port-au-Prince	St. Domingo	18 34 0 N	72 27 0 W
Portland Isles, Easternmost Isle	Pacifi. Ocean	2 36 0 S	149 39 0 E
Portland Lighthouse	England -	50 31 22 N	2 26 50 W
Porto - -	Italy - -	41 46 44 N	12 14 25 E
Porto-Bello -	Colombia -	9 34 30 N	79 43 0 W
Porto-Cabello	Colombia -	10 28 22 N	68 16 45 W
Porto-Galete	Spain - -	43 20 10 N	3 5 20 W
Porto-Vecchio	Corsica -	41 35 29 N	9 16 37 E
Port Royal	Jamaica -	17 58 0 N	76 52 30 W
Portsmouth -	United St.	43 4 15 N	70 43 0 W
Portsmouth Observatory	England -	50 48 3 N	1 5 59 W
Prague -	Germany -	50 5 19 N	14 25 15 E
Praslin Port -	New Ireland	4 49 27 S	153 6 46 E
Presburg -	Hungary -	48 8 7 N	17 10 45 E
Prince's Isle	Straits of Sunda	6 35 0 S	105 15 0 E
Prince's Isle	Atlan. Ocean	1 41 0 N	7 26 0 E
Pr. Edward's Isle	Gulf of St. Lawrence	46 14 0 N	62 56 0 W
Pr. Edward's Isles, largest	Ind. Ocean	46 53 0 S	37 46 0 E
Pr. of Wales' Cape	N.W. Coast of Amer.	65 45 30 N	168 17 30 W
Pr. of Wales' Fort	New Wales	58 47 32 N	94 13 55 W
Pr. of Wales' Isle	Straits of Malacca	5 25 0 N	100 21 0 E
Pr. W. Henry's Isle	Pacifi. Ocean	[illegible] 0 0 S	141 22 0 W
Prior Cape -	Spain -	43 34 15 N	8 22 0 W
Providence -	United St.	41 50 40 N	71 19 45 W
Providence Isle (Little)	Pacifi. Ocean	0 11 0 S	135 12 0 E
Providence Isle	Lucayos -	25 5 0 N	77 19 0 W
Pylstaart Isle	Friendly Is.	22 23 30 S	175 49 30 W
Quebec -	Canada -	46 47 30 N	71 [illegible] 45 W
Quedlinburg	Germany -	51 47 58 N	11 7 30 E
Queen Charlotte's Cape	N. Caledonia	22 15 0 S	167 13 0 E
Queen Charlotte's Sound	N. Zealand	41 5 57 S	174 20 50 E
Quelpaert Isle	Corea -	33 7 49 N	126 18 57 E
Quemada Point	Patagonia -	50 15 30 S	68 30 15 W
Quentin (St.)	France -	49 50 51 N	3 17 40 E
Queretaro -	Mexico -	20 36 39 N	100 10 15 W
Quilimane River	East Coast of Africa	18 10 0 S	37 30 0 E
Quilon Point	India -	8 52 0 N	76 48 30 E
Quimper -	France -	47 58 29 N	4 5 45 W
Quito - -	Peru - -	0 13 17 S	78 45 15 W
Race Cape -	Newfoundl.	46 40 0 N	53 3 15 W
Radstock Cape	N. Holland	33 [illegible] 0 S	134 15 0 E
Ragusa -	Dalmatia -	42 39 0 N	18 6 15 E
Ramsey Isle	Wales -	51 51 43 N	5 19 36 W
Rasalgat Cape	Arabia -	22 22 0 N	59 58 0 E
Ras-el-Ans Cape	Egypt - -	23 56 0 N	35 48 0 E
Ras-Mahomed Cape	Arabia -	27 43 0 N	34 15 0 E
Ratisbon -	Germany -	49 0 53 N	12 4 30 E
Ravenna -	Italy - -	44 25 5 N	12 10 51 E
Reculver (South)	England -	51 22 47 N	1 11 50 E
Redondo Cape	Patagonia -	50 51 0 S	69 8 15 W
Redondo Isle	Caribbee Is.	17 1 0 N	62 19 0 W
Reikianess Cape	Iceland -	63 55 0 N	22 47 30 W
Remedios Cape	Mexico -	13 30 0 N	89 40 0 W

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Remedios Port	N.W. Coast of Amer.	57 24 15 N	135 53 50 W
Rendsburg -	Denmark -	54 18 40 N	9 39 53 E
Rennes -	France -	48 6 50 N	1 40 47 W
Resolution I.	Pacifi. Ocean	17 23 30 S	141 45 0 W
Resolution I.	Hudson's Straits	61 29 0 N	65 16 0 W
Resolution F. Slave Lake	N. America	61 10 26 N	113 45 0 W
Retford (East) Spire	England -	53 [illegible] 58 N	[illegible] 54 3 W
Revel -	Russia in Europe	59 26 33 N	[illegible] 35 9 E
Rhé Is. Light.	France -	46 14 49 N	1 33 25 W
Rheims -	France -	49 14 41 N	4 2 47 E
Rhodes Harb.	Rhodes Isle	36 26 0 N	28 15 0 E
Rhodez -	France -	44 21 8 N	2 34 29 E
Riesenkuppe	Germany -	50 43 18 N	15 40 0 E
Riga - -	Russia in Europe	56 57 1 N	24 7 45 E
Rimini - -	Italy - -	44 3 43 N	12 32 51 E
Riobamba Nuevo	Peru - -	1 41 46 S	78 48 46 W
Rio Janeiro Bay	Brazil -	[illegible] 53 0 S	43 18 0 W
Ripon Church	England -	54 8 11 N	1 30 47 W
Roca Partida Point	Mexico -	18 44 0 N	94 58 0 W
Rochefort -	France -	45 56 10 N	0 57 34 W
Rochelle -	France -	46 [illegible] 21 N	1 9 40 W
Rodosto -	Turkey in Europe	40 58 34 N	27 25 31 E
Rodrigue Isle	Ind. Ocean	19 40 40 S	63 11 45 E
Romanzoff Cape	Jesso -	45 25 50 N	141 34 30 E
Romberg -	Tartary -	53 26 30 N	141 44 45 E
Rome -	Italy - -	41 53 54 N	12 29 47 E
Rondoe Isle -	Norway -	62 24 30 N	5 35 30 E
Rosetta -	Egypt - -	31 25 0 N	30 28 20 E
Rossal Point	England -	53 55 0 N	3 2 0 W
Rothenburg	Germany -	48 29 36 N	8 56 54 E
Rotterdam -	Holland -	51 55 22 N	4 29 11 E
Rotuma Isle -	Pacifi. Ocean	12 30 0 S	177 50 0 E
Rouen -	France -	49 26 27 N	1 5 59 E
Round Isle -	N.W. Coast of Amer.	58 56 30 N	159 53 30 W
Roveredo -	Germany -	45 55 36 N	11 0 35 E
Ruremonde -	Germany -	51 11 48 N	5 59 14 E
Ruttunpour -	India -	22 16 0 N	82 36 0 E
Ryacotta -	India - -	[illegible] 31 16 N	78 3 36 E
Rypen -	Denmark -	55 19 57 N	8 47 20 E
Saba Isle -	Caribbee Is.	17 39 0 N	[illegible] [illegible] 0 W
Sabionetta -	Italy -	44 59 47 N	10 30 5 E
Sable Cape -	Nova Scotia	43 23 45 N	65 29 45 W
Sahib Isle -	Archipelago	38 40 0 N	26 28 15 E
Saintes -	France -	45 44 42 N	0 38 2 W
Saintes Is. N.W. Pt. of W. I.	Caribbee Is.	15 51 25 N	61 41 25 W
Sal Isle -	Cape Verd Is.	16 41 0 N	23 3 0 W
Salamanca -	Mexico -	20 40 0 N	100 55 45 W
Salayer Strait	Ind. Archip.	5 40 0 S	120 28 0 E
Salee -	Morocco -	34 5 0 N	6 42 45 E
Salehhieh -	Egypt -	30 48 28 N	31 59 45 E
Salisbury Isle	Hudson's B.	63 29 0 N	76 47 0 W
Salisbury Spire	England -	51 3 56 N	1 47 24 W
Salonica -	Turkey in Europe	48 38 7 N	22 56 0 E
Saltzburg -	Germany -	47 48 10 N	13 1 24 E
Salvador (St.)	Brazil -	13 5 0 S	38 28 0 W
Salvages Isles	Atlantic Oc.	30 9 0 N	16 3 0 W
Salvages Isles	St. Domingo	19 16 26 N	69 13 23 W
Samana Isle	Lucayos -	23 12 0 N	73 40 0 W
Samar Isle -	Philipp. Isles	12 40 0 N	125 30 0 E
Samara -	Russ. in Eu.	48 29 35 N	35 20 15 E
Samarang Bay	Java -	6 53 0 S	110 34 0 E
Samboangan	Mindanao	[illegible] 43 0 N	122 14 0 E
Sandwich Cape	N. Holland	18 19 0 S	146 29 0 E
Sandy Cape -	N. Holland	24 42 0 S	153 16 0 E
Sandy Hook Lighthouse	Unit. States	40 25 0 N	74 13 0 W
Sangaar Cape	Japan -	41 16 30 N	140 14 0 E
San-ho Cape	Coch. China	13 44 0 N	109 14 0 E
Santa -	Peru -	8 59 3 S	78 52 45 W
Santa-Cruz Isle	Pacific Oc.	10 41 0 S	166 5 0 E
Santa-Cruz Isle	Caribbee Is.	17 44 8 N	[illegible] 48 29 W
Santa-Fe -	Mexico -	36 [illegible] 0 N	104 52 45 W
S.-Fe de Bogota	Colombia -	4 35 48 N	74 13 53 W
Santander Bar	Mexico -	[illegible] 45 0 N	98 6 0 W
Santander Port	Spain -	43 28 20 N	3 40 50 W

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Santona -	Spain -	43 26 50 N	3 19 35 W
Saratof -	Russia in Eu.	51 31 28 N	46 0 15 E
Sark Isle -	Eng Channel	49 23 32 N	2 24 30 W
Savage Isle -	Pacific Oc.	19 2 15 S	169 30 30 W
Savanna Lighthouse	Unit. States	32 0 45 N	80 55 45 W
Savu Isle -	Ind. Archip.	10 30 0 S	121 43 0 E
Scala Nuova I.	Archipelago	37 51 0 N	27 15 0 E
Scarbgh. Shoal	Chinese Sea	15 8 0 N	117 48 0 E
Schiedam -	Holland -	51 55 9 N	4 24 0 E
Schlukenau	Germany -	51 0 30 N	14 26 30 E
Schmalkalden	Germany -	50 44 36 N	10 26 15 E
Schnittken -	Germany -	53 48 10 N	21 27 42 E
Schweidnitz	Germany -	50 50 37 N	16 27 15 E
Sebastian (St.)	Spain -	43 19 30 N	1 58 30 W
Selinginskoi-Ostrog	Russia in Asia	51 [illegible] 6 N	106 38 45 E
Selivria -	Turkey in Europe	41 4 35 N	28 11 3 E
Senlis -	France -	49 12 28 N	2 35 13 E
Sens -	France -	48 11 55 N	3 16 59 E
Serdze-Kamen Cape	Russia in Asia	67 3 0 N	171 54 30 W
Seringapatam	India -	12 25 29 N	76 41 52 E
Setuval -	Portugal -	38 28 54 N	8 53 32 W
Seven Capes, N. Cape	Turkey in Asia	36 22 50 N	29 8 10 E
Shan-tung Pro.	China -	37 25 0 N	122 27 0 E
Sheerness Staff	England -	51 11 22 N	0 44 26 E
Sherbro Isle	W. Coast of Africa	7 29 0 N	12 45 0 W
Shet. Is. (New)	Atlantic Oc.	62 52 30 S	63 42 0 W
Shipunsk. Noss	Kamtschat.	52 55 0 N	159 43 0 E
Shrewsbury, S. Chad's Steeple	England -	52 42 28 N	2 44 53 W
Siam -	India -	14 20 40 N	100 50 15 E
Sienna -	Italy -	43 22 0 N	11 10 15 E
Sierra Leone Cape	W. Coast of Africa	8 31 0 N	13 18 0 W
Silinity, the Mausoleum	Turkey in Asia	36 15 29 N	32 19 15 E
Silver Quay Bank, SE. end	Lucayos	20 18 0 N	69 30 0 W
Sincapore -	E. Indies -	1 [illegible] 0 N	103 30 0 E
Singanfu -	China -	34 16 45 N	108 57 0 E
Sinigaglia -	Italy -	43 43 16 N	13 11 45 E
Sinope -	Turkey in Asia	42 2 16 N	34 41 15 E
Siout -	Egypt -	27 13 14 N	31 13 32 E
Sisteron -	France -	44 11 51 N	5 56 2 E
Skagen Cape Lighthouse	Denmark -	57 43 44 N	10 37 50 E
Skiddaw Mountain	England -	54 39 12 N	3 8 9 W
Skudesnæs Lighthouse	Norway -	59 8 40 N	5 19 0 E
Sleswick -	Denmark	54 31 27 N	[illegible] 33 57 E
Sluys - -	Netherlands	51 18 35 N	3 23 [illegible] E
Smith's Isles	Pacifi. Ocean	14 30 30 N	168 42 15 E
Smyrna -	Turk. in Asia	38 25 0 N	27 6 0 E
Snowdon M.	Wales -	53 4 9 N	4 3 38 W
Socorro Isle -	Pacifi. Ocean	18 40 0 N	110 17 0 W
Socotra Isle -	Arabian Sea	12 30 [illegible] N	54 10 0 E
Soderhamn -	Sweden -	61 17 47 N	17 5 30 E
Soissons -	France -	49 22 52 N	3 19 37 E
Solidad Port	Falkland Is.	51 31 30 S	58 5 15 W
Soliman Port	Barbary -	31 46 15 N	25 7 30 E
Solomon Cape	Candia -	35 9 15 N	26 19 25 E
Sombrero Isle	Caribbee Is.	18 38 0 N	63 25 0 W
Sonderburg -	Denmark	54 54 59 N	9 47 13 E
Sonderhausen	Germany	51 22 33 N	10 50 21 E
Sooloo Isle -	Ind. Archip.	6 1 0 N	121 12 0 E
Sorsogan Port	Luconia -	12 52 0 N	123 50 0 E
Sourabaya -	Java -	7 14 23 S	112 41 30 E
South Cape -	New Zeal.	47 16 50 S	167 20 9 E
South Cape -	Van Die. L.	43 37 0 S	146 49 0 E
South Isle -	Pacifi. Ocean	31 30 0 N	140 0 0 E
Southampton Isle	Hudson's Bay	62 57 0 N	82 0 0 W
Southampton Spire	England -	50 54 0 N	1 23 56 W
Southerness Point	Scotland -	54 52 30 N	3 34 53 W
Spartel Cape	Barbary -	35 48 30 N	5 55 0 W
Spartivento Cape	Italy -	37 55 50 N	[illegible] 3 36 E
Specia -	Italy - -	44 4 0 N	9 51 0 E
Spencer's Bay	W. Coast of Africa	25 48 0 S	15 8 0 E

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Spencer Cape	N. Holland	35 18 0 S	136 53 0 E
Spire	Germany	49 18 51 N	8 26 16 E
Spoletta	Italy	42 44 50 N	12 35 46 E
Stade	Germany	53 36 32 N	9 28 34 E
Staples (East) Lighthouse	England	55 38 [illegible] N	1 37 5 W
Start Point, Flagstaff	England	50 13 26 N	3 38 21 W
Stavanger	Norway	58 58 30 N	5 45 0 E
Stephen's Cape	N.W. Coast of Amer.	63 33 30 N	168 17 0 W
Stickhausen	Germany	53 13 10 N	7 37 8 E
Stockholm	Sweden	59 20 31 N	18 3 30 E
Stolberg	Germany	51 35 0 N	10 56 53 E
Strabane	Ireland	54 49 29 N	7 23 5 W
Stralsund	Germany	54 19 0 N	13 32 15 E
Strasburg	France	48 34 56 N	7 44 51 E
Stromboli I. St. Bartolo	Mediterranean	38 48 20 N	15 [illegible] 30 E
Stromness	Orkneys	58 56 0 N	3 31 5 W
Stromstadt	Sweden	58 55 30 N	11 12 0 E
Stutgard	Germany	48 46 15 N	9 11 0 E
Suakin	Nubia	19 5 0 N	37 33 0 E
Success Cape	Tierra del Fuego	55 0 0 S	65 19 0 W
Suez	Egypt	30 0 30 N	32 28 0 E
Sulphur Isle	Chinese Sea	27 52 [illegible] N	128 22 0 E
Sunderland Lighthouse	England	54 55 12 N	1 21 16 W
Sundswall	Sweden	62 22 30 N	17 [illegible] 30 E
Surat River	India	21 4 0 N	72 51 0 E
Swan River (Perth)	N. Holland	31 50 0 S	115 50 [illegible] E
Swansea Castle	Wales	51 37 13 N	3 55 32 W
Sweetnose Cape	Russia in Europe	68 12 [illegible] N	39 46 0 E
Syene	Egypt	24 5 23 N	32 54 34 E
Syra Isle, Port	Archipelago	37 26 0 N	24 55 [illegible] E
Syracuse Lighthouse	Sicily	37 2 58 N	15 [illegible] 10 E
Tacuba	Mexico	19 31 0 N	99 7 45 W
Taganrock	Russia in Europe	47 12 40 N	38 39 0 E
Tambow	Russia in Europe	52 43 44 N	41 45 15 E
Tangier Port Flagstaff	United States	37 47 0 N	75 52 30 W
Tanna Isle, Port Resolution	New Hebrides	19 32 25 S	169 20 11 E
Tanna Isle, Port Resolution	N. Hebrides	19 32 25 S	169 41 5 E
Taormina Telegraph	Sicily	37 48 15 N	15 17 40 E
Tara	Russia in Asia	56 54 31 N	74 5 18 E
Tarbes	France	43 13 52 N	0 4 14 E
Tariffa Isle	Spain	36 [illegible] 30 N	5 35 15 W
Tarragona	Spain	41 8 50 N	1 15 30 E
Tarsus	Turkey in Asia	37 1 0 N	34 52 [illegible] E
Taunton, St. Mary's Steeple	England	51 0 59 N	3 5 22 W
Tavastehus	Russia in Europe	61 3 0 N	24 26 30 E
Tchin-san Isles	China	30 20 0 N	122 36 [illegible] E
Tedeles Cape	Barbary	36 57 0 N	4 14 3 E
Teklenburg	Germany	52 13 28 N	7 47 25 E
Tellicherry	India	11 44 0 N	75 49 30 E
Tenby Spire	Wales	51 40 20 N	4 40 52 W
Ten-choo-foo	China	37 46 0 N	120 53 0 E
Tenedos Isle	Archipelago	39 51 0 N	25 53 0 E
Teneriffe Isle, the Peak	Canary Isles	28 17 0 N	16 39 45 W
Tercera Isle, Angra	Azores	38 30 0 N	27 14 0 W
Ternate Isle	Ind. Archip.	[illegible] 50 0 N	127 38 [illegible] E
Ternay Bay	Tartary	45 10 32 N	137 1 15 E
Terracina	Italy	41 18 14 N	13 13 22 E
Terra-Nova Column	Sicily	37 2 36 N	14 15 40 E
Tescuco	Mexico	19 30 40 N	98 51 0 W
Thadæus (St.) Noss	Russia in Asia	62 50 0 N	179 5 0 E
Thebes Ruins	Egypt	25 43 0 N	32 39 21 E
Thomas (St.) I.	Caribbee Is.	18 20 0 N	65 3 0 W
Three Points Cape	Patagonia	49 46 0 S	75 46 15 W
Three Points Cape	W. Coast of Africa	4 55 0 N	2 2 0 W
Thule (South) Cape	Sandwich Land	59 34 0 S	27 45 0 W
Tiburon Cape	St. Domingo	18 19 25 N	74 34 0 W
Tierra del Esp. Sto, C. Quiros	New Hebrides	14 56 0 S	167 20 0 E
Timor Isle, Coupang	Indian Archipelago	10 10 0 S	123 36 0 E
Timor Isle, Delhi	Indian Archipelago	8 35 0 S	125 40 0 E
Timor Laut I. S. Point	Indian Archipelago	8 15 0 S	131 50 0 E
Tinian Isle	Ladrones	14 58 0 N	145 51 15 E
Tobago Isle	Caribbee I.	11 10 0 N	60 27 0 W
Tobolsk	Russia in Asia	58 11 42 N	68 6 15 E
Toluca	Mexico	19 16 19 N	99 21 30 W
Tomsk	Russia in Asia	56 29 38 N	85 9 51 E
Tongataboo I.	Friendly Is.	21 8 0 S	175 13 0 W
Tongres	Germany	50 47 7 N	5 27 38 E
Tonningen	Denmark	54 19 25 N	8 58 45 E
Toobouai Isle	Pacifi. Ocean	23 25 0 S	149 20 30 W
Tor Harbour	Arabia	28 19 0 N	33 28 0 E
Tornea	Sweden	65 50 50 N	24 12 15 E
Tortona	Italy	44 53 26 N	8 56 32 E
Tortosa	Spain	40 48 46 N	[illegible] 33 0 E
Tortuga Isle	Caribbee Sea	10 59 0 N	65 34 0 W
Toul	France	48 40 32 N	5 53 16 E
Toulon	France	43 7 9 N	5 55 41 E
Toulouse	France	43 35 46 N	1 26 30 E
Tournay	Belgium	50 36 20 N	3 23 17 E
Tours	France	47 23 46 N	[illegible] 41 38 E
Trafalgar Cape	Spain	36 10 15 N	6 [illegible] 0 W
Tranquebar	India	11 1 30 N	79 55 0 E
Trapani	Sicily	38 3 0 N	12 30 0 E
Travemunde	Germany	53 57 46 N	10 51 40 E
Trebisonde	Turkey in Asia	41 2 41 N	39 28 0 E
Trent	Germany	46 6 26 N	11 3 45 E
Treves	Germany	49 46 37 N	6 38 20 E
Trieste	Illyria	45 38 8 N	13 47 8 E
Trincomale Bay	Ceylon	8 33 0 N	81 22 0 E
Trinidad	Cuba	21 48 20 N	80 0 52 W
Trinidad Isle	Atlan. Ocean	20 32 30 N	29 11 0 W
Trinidad Isle, P. d'Espagne	Caribbee Isles	10 38 42 N	61 38 0 W
Tripoli	Barbary	32 53 40 N	13 11 33 E
Tripoli	Syria	34 26 25 N	35 51 28 E
Tristan d'Acunha I.	Atlantic Ocean	37 5 36 S	12 7 0 W
Triton Isle	Chinese Sea	15 46 [illegible] N	111 11 0 E
Troyes	France	48 18 5 N	4 4 49 E
Truxillo	Mexico	15 51 [illegible] N	86 7 0 W
Truxillo	Peru	8 6 9 S	79 3 22 W
Tscherkask	Russia in Europe	47 13 34 N	39 23 15 E
Tschirikoff Cape	Japan	32 14 15 N	131 41 30 E
Tschitschagoff Cape	Japan	30 56 45 N	130 36 30 E
Tschukotskoi Noss	Russia in Asia	64 14 30 N	173 31 0 E
Tso-Choui	Corea	35 30 0 N	129 16 7 E
Tsus-Sima Isle	Japan	34 40 0 N	129 27 0 E
Tubingen	Germany	48 31 10 N	9 3 35 E
Tula	Russia in Europe	54 11 40 N	37 1 6 E
Tunbridge	England	51 11 52 N	[illegible] 17 2 E
Tunis, Fondouc	Barbary	36 47 59 N	10 11 15 E
Turin, Piazza Castello	Italy	45 4 0 N	7 40 15 E
Turnagain Cape	N. Coast of America	68 18 5 N	109 25 0 W
Turon Cape	Coch. China	16 8 30 N	108 17 0 E
Twer	Russia in Europe	56 51 44 N	35 57 23 E
Tynemouth Lighthouse	England	55 1 21 N	1 24 31 W
Uddevalla	Sweden	58 21 15 N	11 56 30 E
Udine	Italy	46 3 14 N	13 15 2 E
Uffa	Russia in Asia	54 42 45 N	55 53 45 E
Ulm	Germany	48 23 20 N	9 59 6 E
Umbas	Russia in Europe	66 44 30 N	34 13 0 E

Names of Places.	Country, &c.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Umea	Sweden	66 4 0 N	20 22 30 E
Unst Isle	Shetland	60 44 0 N	0 45 45 W
Untiefen Cape	Sachalin	52 32 30 N	143 14 30 E
Upsal	Sweden	59 51 50 N	17 39 0 E
Urals	Russia in Asia	51 11 0 N	51 35 30 E
Uraniburg	Denmark	55 54 38 N	12 42 59 E
Urbino	Italy	43 43 36 N	12 37 5 E
Ushant Isles	France	48 28 8 N	5 3 6 W
Turk's Peak	Mediterranean	38 45 0 N	13 11 0 E
Utrecht	Holland	52 5 31 N	5 7 16 E
Uzes	France	44 0 45 N	4 25 17 E
Vabres	France	43 56 27 N	2 50 31 E
Vaison	France	44 14 28 N	5 4 9 E
Valdivia	Chili	39 50 0 S	73 34 0 W
Valence	France	44 55 59 N	4 53 25 E
Valencia	Spain	39 28 45 N	0 23 3 W
Valery-sur-Somme (St.)	France	50 11 21 N	1 37 51 E
Valladolid	Mexico	19 42 0 N	100 52 0 W
Valona	Turkey in Europe	40 28 20 N	19 25 45 E
Valparaiso	Chili	33 0 30 S	71 38 15 W
Vanderlin C.	N. Holland	15 35 0 S	137 9 0 E
Vannes	France	47 39 26 N	2 45 4 W
Vavao Isle	Pacifi. Ocean	18 33 54 S	173 59 45 W
Venice, St. Mark's	Italy	45 25 32 N	12 20 59 E
Venloo	Germany	51 22 17 N	6 10 31 E
Vera-Crus	Mexico	19 11 52 N	96 8 45 W
Verd Cape	W. Coast of Africa	14 43 45 N	17 30 30 W
Verden	Germany	52 55 37 N	9 12 47 E
Verdun	France	49 9 31 N	5 22 17 E
Verona Observatory	Italy	45 26 7 N	11 1 15 E
Versailles	France	48 48 21 N	2 7 22 E
Vianna	Portugal	41 42 36 N	8 43 30 W
Vicenza	Italy	45 31 40 N	11 33 24 E
Vienna	Germany	48 12 40 N	16 22 45 E
Vienne	France	45 32 57 N	4 53 39 E
Vigevano	Italy	45 18 54 N	8 52 1 E
Vigo	Spain	42 13 20 N	8 33 30 W
Villach	Germany	46 35 0 N	13 52 15 E
Villa de Condé	Portugal	41 21 18 N	8 35 54 W
Villa del Pao	Colombia	8 38 1 N	64 48 0 W
Villa-Franca	Italy	43 40 20 N	7 19 30 E
Villalpando	Spain	41 51 10 N	5 24 16 W
Vincent (St.) Cape	Portugal	37 2 54 N	8 59 36 W
Vincent (St.) I.	Caribbee Is.	13 11 0 N	61 16 [illegible] W
Virgin-Gorda Isle, E. Cape	Caribbee Isles	18 31 7 N	64 25 24 W
Virgins Cape	Patagonia	52 21 0 S	68 17 25 W
Vito (St.) Cape	Sicily	38 11 50 N	12 46 15 E
Viviers Observatory	France	44 29 14 N	4 41 0 E
Vizagapatam	India	17 42 30 N	83 26 0 E
Voghera	Italy	44 59 21 N	9 1 25 E
Volcano Bay	Jesso	42 19 0 N	141 8 0 E
Volcano Isle	Japan	30 43 0 N	130 16 40 E
Volcano Isle	New Britain	5 32 20 S	148 4 15 E
Volcano Isle	Pacifi. Ocean	10 25 12 S	165 48 21 E
Vologda	Russia in Europe	59 13 30 N	40 11 15 E
Voltboen's Isle	Indian Archipelago	5 58 0 S	124 48 0 E
Voronets	Russia in Europe	51 40 30 N	39 21 30 E
Wakefield Spire	England	53 41 2 N	1 29 24 W
Waldeck	Prussia	51 12 43 N	9 1 32 E
Walden I.	Polar Sea	80 35 38 N	19 51 16 W
Wallis's Isle	Pacifi. Ocean	13 18 0 S	177 21 45 W
Walsingham Cape	Cumberland Isle	66 4 0 N	60 51 0 W
Wangeroog I., Lighthouse	Germany	53 48 26 N	7 52 35 E
Warasdin	Germany	46 18 18 N	16 26 6 E
Wardhuus	Lapland	70 22 36 N	31 7 0 E
Warmensdorf	Germany	51 17 13 N	12 56 7 E
Warrington Steeple	England	53 23 30 N	2 33 11 W
Warsaw	Russia in Europe	52 14 28 N	21 2 45 E
Washington	Unit. States	38 55 0 N	76 58 45 W
Wateeoo Isle	Pacifi. Ocean	20 1 30 S	158 14 30 W
Weimar	Germany	50 59 12 N	11 21 0 E
Werningerode	Germany	51 50 34 N	10 47 28 E
Wesel	Germany	51 39 17 N	6 37 8 E
Weymouth Cape	N. Holland	12 39 0 S	143 18 0 E
Whitehaven Windmill	England	54 32 50 N	3 34 56 W
Whyda, British Factory	W. Coast of Africa	6 18 0 N	2 34 0 E
Wiborg	Denmark	56 27 11 N	[illegible] 26 20 E
Wiborg	Russia in Europe	60 42 40 N	28 46 5 E
Wicklow High Lighthouse	Ireland	52 58 22 N	6 0 21 W
Williamsburg	United States	37 15 50 N	76 54 15 W
Wilna	Russia in Europe	54 41 2 N	25 18 0 E
Winchelsea Steeple	England	50 55 28 N	0 42 31 E
Winchester Cathedral	England	51 3 40 N	1 18 26 W
Windsor Castle	England	51 29 0 N	0 35 28 W
Winga Beacon	Sweden	57 38 12 N	11 38 0 E
Winter Island	Hudson's Bay	66 11 24 N	83 9 49 W
Winter Harbr.	Melville I. Polar Sea	74 47 18 N	110 31 35 W
Wisby	Sweden	57 39 15 N	18 26 30 E
Wittenberg	Germany	51 52 39 N	12 45 44 E
Woahoo Isle	Sandwich Isles	21 40 30 N	158 1 5 W
Wolfenbuttle	Germany	52 8 44 N	10 31 54 E
Woody Point	W. Coast of America	50 [illegible] 3 N	127 57 [illegible] W
Woolverhampton Sp.	England	52 34 54 N	2 7 10 W
Workington Chapel	England	54 38 34 N	3 33 30 W
Worms	Germany	40 37 49 N	8 21 12 E
Worm's Head	Wales	51 33 56 N	4 18 56 W
Wrekin Mountain	England	52 40 11 N	2 31 30 W
Wurtsburg	Germany	49 46 6 N	[illegible] 55 30 E
Wushnei-Wolotschok	Russia in Europe	57 35 12 N	34 41 0 E
Xam-hay	China	31 16 0 N	121 32 0 E
Yap Isle	Pacifi. Ocean	9 35 0 N	138 8 0 E
York (New) Battery	United States	40 42 6 N	73 59 0 W
York Cape	Greenland	75 56 0 N	66 39 0 W
York, Fort	New Wales	57 1 48 N	92 34 45 W
York, Minster	England	53 57 48 N	1 4 34 W
Ypres	Belgium	50 51 10 N	2 53 4 E
Ysselburg	Germany	51 50 29 N	[illegible] 26 22 E
Ystad	Sweden	55 25 31 N	13 48 30 E
Zacheo Isle	Porto Rico	18 23 48 N	67 34 1 W
Zalappa	Mexico	19 30 8 N	96 54 39 W
Zante Isle, the Town	Mediterranean	37 47 17 N	20 54 42 E
Zanzibar Road	E. Coast of Africa	6 6 0 S	39 33 0 E
Zarizin	Russia in Europe	48 42 20 N	44 27 45 E
Zirbi Isle, the Town	Barbary	33 54 10 N	10 53 25 E
Znaim	Germany	48 51 15 N	16 1 57 E
Zumpango	Mexico	19 46 52 N	99 3 45 W
Zurich	Switzerland	47 22 33 N	8 31 30 E
Zurikzee	Holland	51 39 4 N	3 54 59 E
Zutphen	Holland	52 8 26 N	6 11 52 E

TABLE

OF

THE HEIGHT OF THE PRINCIPAL MOUNTAINS

ON THE GLOBE.

EUROPE.

		English Feet.
1.	Mont Blanc, Alps	15,668
2.	Monte Rosa, Alps	15,527
3.	Finster Aarhorn, Alps	14,825
4.	Jungfrau, Alps	13,730
5.	Schreckhorn, Alps	13,310
6.	Oertler Spitze, Alps	13,065
7.	Gross Glockner, Alps	12,980
8.	Simplon, Alps	11,730
9.	Mulhacen, Sierra Nevada	11,678
10.	Maladetta, Pyrenees	11,436
11.	Mont Perdu, Pyrenees	11,275
12.	Penaranda, Asturias	11,200
13.	Etna, Sicily	10,870
14.	St. Gothard, Alps	10,605
15.	Ruska, Carpathians	9,912
16.	Mount Cénis, Alps	9,650
17.	Little St. Bernard, Alps	9,600
18.	Monte Corno, Apennines	9,523
19.	Kanigou, Pyrenees	8,800
20.	Skagtlos Find, Dofrines	8,400
21.	Sneehätta, Dofrines	8,122
22.	Lomnitz, Carpathians	7,962
23.	Taygetus, Greece	7,950
24.	Olympus, Turkey	6,650
25.	Mont d'Or, Auvergne	6,470
26.	Cantal, Auvergne	6,350
27.	Mezène, Cevennes	5,920
28.	Parnassus, Greece	5,850
29.	Ossa, Turkey	5,840
30.	Kiesen Koppe, Sudetes	5,350
31.	Pelion, Greece	5,200
32.	Hecla, Iceland	5,010
33.	Lozère, Cevennes	4,930
34.	Puy de Dôme, Auvergne	4,890
35.	Feldberg, Black Forest	4,750
36.	Haydelberg, Bohemian Forest	4,690
37.	Helicon, Greece	4,550
38.	Ben Nevis, Grampians	4,379
39.	Ben Lawers, Grampians	4,051
40.	Cairngorm, Grampians	4,050
41.	Vesuvius, Italy	3,932
42.	Keilberg, Erzgebirge	3,910
43.	Schneeberg, Fichtelgebirge	3,600
44.	Brocken, Hartz	3,730
45.	Snowdon, Wales	3,568
46.	Scheballien, Grampians	3,564
47.	Cader Idris, Wales	3,550
48.	Macgillicuddy's Reeks, Ireland	3,404
49.	Ben Lomond, Grampians	3,262
50.	Schneekopp, Thuringian Forest	3,220
51.	Skiddaw, England	3,022
52.	Ingleborough, England	2,361
53.	North Cape, Lapland	1,300

ASIA

		English Feet.
1.	Chumularee, Himalayah	29,000
2.	Dhawalagiri, Himalayah	28,500
3.	Javaher, Himalayah	25,800
4.	Rudra, Himalayah	23,000
5.	Jamautri, Himalayah	22,500
6.	Highest Peak of Hindoo Coosh	20,000
7.	Elburz, Caucasus	18,350
8.	Ararat, Great, Armenia	17,700
9.	Kasbek, Caucasus	15,800
10.	Gounong Pasumbra, Sumatra	15,270
11.	Gounong Pasaman, or Ophir Sumatra	14,160
12.	Ararat, Little, Armenia	13,500
13.	Alas Tag, Altaï	11,520
14.	Highest Peak of Lebanon	11,050
15.	Italitzkoi, Altaï	10,900
16.	Awatcha, Kamtschatka	9,750
17.	Olympus, Asia Minor	9,100
18.	Highest Peak of Nilgherries	8,835
19.	Sinai, Arabia	7,952
20.	Takhtalou, Taurus	7,715
21.	Adam's Peak, Ceylon	6,650
22.	Sabramani, Ghauts	5,750
23.	Ida, Asia Minor	5,435
24.	Chaizgour, Vindhya	2,700
25.	Carmel, Palestine	2,250
26.	Tabor, Palestine	2,053

AFRICA.

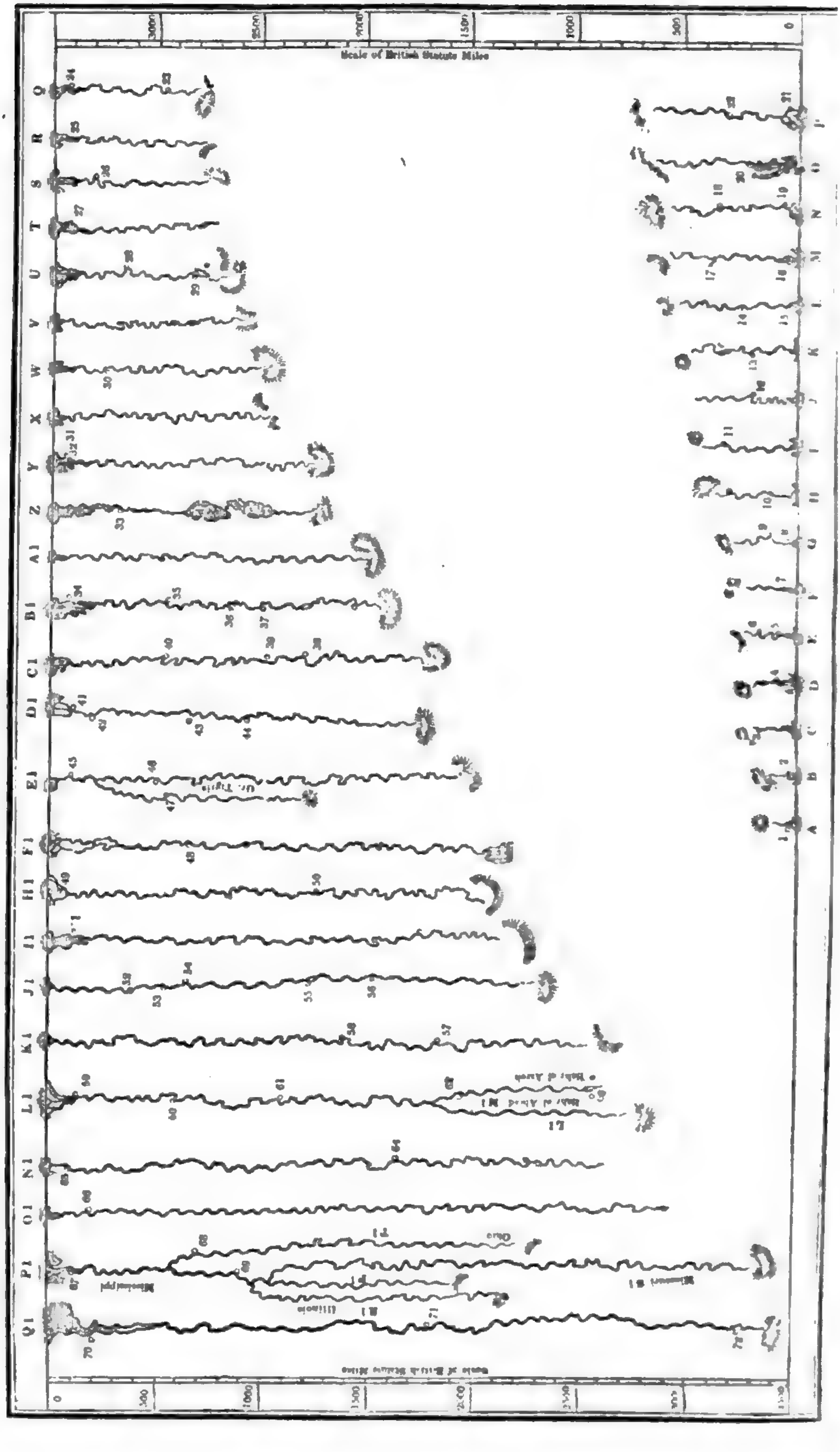
		English Feet.
1.	Highest Peak of Cameroons	13,000
2.	Peak of Teneriffe	12,176
3.	Bernard, Bourbon Isles	12,100
4.	Highest Peak of Atlas	11,900
5.	Lamalmon, Abyssinia	11,300
6.	Compass, Sneuwberg, Africa	10,250
7.	Komberg, S. Africa	8,350
8.	Fogo, Cape de Verd Isles	8,100
9.	Taranta, Abyssinia	7,980
10.	Pico Ruivo, Madeira	6,233
11.	Table Mountain, Africa	3,582
12.	Piter Boot, Mauritius	2,790
13.	Diana's Peak, St. Helena	2,710

AMERICA.

		English Feet.
1.	Sorata, Andes	25,400
2.	Illimani, Andes	24,300
3.	Gualatieri, Andes	22,000
4.	Chimborazo, Andes	21,000
5.	Cayambe, Andes	19,633
6.	Antisana, Andes	19,136
7.	Cotopaxi, Andes	18,867
8.	Tolima, Andes	18,436
9.	Mount St. Elias, North America	18,000
10.	Popocatepetl, Mexican Cordillera	17,780
11.	Pinchincha, Andes	15,931
12.	Iztaccihuatl, Mexican Cordillera	15,705
13.	Mount Fairweather, North America	14,736
14.	Cofre de Perote, Mexican Cordillera	13,275
15.	James's Peak, Rocky Mountains	11,500
16.	Sierra de Cobre, Cuba	9,000
17.	Grand Serrania, Hayti	9,000
18.	Duida, Parime	8,250
19.	Highest Peak of Blue Mountains, Jamaica	7,278
20.	Mount Washington, Alleghanies	6,650
21.	Mount Sarmiento, Straits of Magellan	6,000
22.	Mount Otter, Alleghanies	4,250
23.	Kaatskill, Alleghanies	3,150
24.	Cape Horn, South America	1,860

SOUTH SEA.

		English Feet.
1.	Mouna Roa, Sandwich Isles	15,980
2.	Mouna Koa, Sandwich Isles	13,860
3.	Oroeno, Otaheite	8,350
4.	Egmont Peak, New Zealand	8,150
5.	Sea View Hill, Blue Mountains, New South Wales	6,700
6.	Highest Peak of Barren Mountains, Van Diemen's Land	5,000


Scale of British Statute Miles
0
500
1000
1500
2000
2500
3000
A
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J1
K1
L1
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P1
Q1
Ur. Tigris
Bahr el Abiad
Bahr el Azrek
Mississippi
Missouri
Illinois
Ohio

COMPARATIVE LENGTH OF THE PRINCIPAL RIVERS.

References.	Names.	Mouth.	Course.	Source.	Length in Miles.
A.	Forth - -	North Sea - -	Scotland - -	Ben Lomond Mountain	115
B.	Tay - -	North Sea - -	Scotland - -	Grampian Hills -	120
C.	Trent - -	North Sea - -	England - -	Staffordshire - -	125
D.	Shannon - -	Atlantic Ocean -	Ireland - -	Mountains of Leitrim -	200
E.	Thames - -	North Sea - -	England - -	Cotswold Hills -	215
F.	Severn - -	Bristol Channel -	England and Wales -	Plinlimmon Mountain	220
G.	Hudson - -	Atlantic Ocean -	North America -	State of New York -	270
H.	Ebro - -	Mediterranean Sea	Spain - -	Mountains of Asturias	380
I.	Po - -	Adriatic Sea -	Italy - - -	Monte Viso - -	410
J.	Seine - -	English Channel -	France - -	Côte d'Or Mountains -	425
K.	Rhone - -	Mediterranean Sea	Switzerland and France	Mount Furca - -	460
L.	Loire - -	Bay of Biscay -	France - -	Mont Gerbier - -	545
M.	Tagus - -	Atlantic Ocean -	Spain and Portugal -	Sierra Morena - -	550
N.	Oder - -	Baltic Sea - -	Austria and Prussia -	Carpathian Mountains -	580
O.	Susquehanna -	Atlantic Ocean -	United States - -	Alleghany Mountains -	620
P.	Vistula - -	Baltic Sea - -	Austria and Prussia -	Carpathian Mountains	640
Q.	Elbe - -	North Sea - -	Austria, Germany, and Prussia	Sudetic or Giant Mounts.	670
R.	Gambia - -	Atlantic Ocean -	Africa - - -	Heights of Foota Jallo	700
S.	Dniester -	Black Sea - -	Austria and Turkey -	Carpathian Mountains -	710
T.	Dwina - -	White Sea - -	Russia - -	Heights of Vologda -	750
U.	Rhine - -	North Sea - -	France, Germany, and Holland	Mount St. Gothard -	810
V.	Colombia -	Pacific Ocean -	North America -	Stony Mountains -	910
W.	Senegal - -	Atlantic Ocean -	Africa - -	Heights of Foota Jallo	950
X.	Don - -	Sea of Azof -	Russia - -	Toula - -	1020
Y.	Dnieper - -	Black Sea - -	Russia - -	Heights of Smolensk -	1140
Z.	St. Lawrence -	Atlantic Ocean -	North America -	Upper Canada - -	1320
A. 1	Orinoco - -	Atlantic Ocean -	South America - -	Sierra de Parime - -	1480
B. 1	Ganges - -	Bengal Bay -	Hindoostan - -	Himalayah Mountains -	1550
C. 1	Danube - -	Black Sea - -	Germany, Austria, and Turkey	Black Forest - -	1700
D. 1	Indus - -	Indian Ocean -	Hindostan - -	Himalayah Mountains -	1770
E. 1	Euphrates -	Persian Gulf -	Turkey in Asia -	Mountains of Armenia	1900
F. 1	Tigris - -	Euphrates - -	Turkey in Asia -	Mountains of Armenia	950
G. 1	Mackenzie -	Arctic Ocean -	North America -	Rocky Mountains -	1920
H. 1	Volga - -	Caspian Sea -	Russia - - -	Heights of Valdai -	2040
I. 1	La Plata -	Atlantic Ocean -	South America -	Heights of Itambe -	2130
J. 1	Niger - -	Gulf of Guinea -	Africa - -	Mountains of Loma -	2300
K. 1	Obi - -	Arctic Ocean -	Chinese Tartary and Russia	Altaï Mountains -	2550
L. 1	Nile - -	Mediterranean Sea	Nubia and Egypt -	Donga Mountains -	2610
M. 1	Bahr el Azrek	Nile - -	Abyssinia and Nubia -	Lake Dembea - -	800
N. 1	Hoang-ho -	Pacific Ocean -	Thibet and China -	Desert of Cobi - -	2630
O. 1	Yang-tse-kiang	Pacific Ocean -	Thibet and China -	Desert of Cobi - -	2900
P. 1	Mississippi -	Gulf of Mexico -	North America -	Leech Lake - -	1930
Q. 1	Marañon - -	Atlantic Ocean -	South America -	Heights of Cicacica -	3380
R. 1	Illinois - -	Mississippi R. -	North America - -	State of Illinois -	500
S. 1	Missouri -	Mississippi R. -	North America -	Rocky Mountains -	2310
T. 1	Ohio - -	Mississippi R. -	North America -	Alleghany Mountains -	1190

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1. Edinburgh.
2. Dundee.
3. Nottingham.
4. Limerick.
5. London.
6. Oxford.
7. Gloucester.
8. New York.
9. Hudson.
10. Saragossa.
11. Turin.
12. Paris.
13. Lyons.
14. Orleans.
15. Nantes.
16. Lisbon.
17. Madrid.
18. Breslau.
19. Stettin.
20. Washington.
21. Dantzig.
22. Warsaw.
23. Dresden.
24. Hamburgh.
25. Jillifrey.
26. Bender.
27. Archangel.
28. Frankfort.
29. Constance.
30. Faribe.
31. Azof.
32. Cherson.
33. Quebec.
34. Calcutta.
35. Bahar.
36. Benares.
37. Allahabad.
38. Vienna.
39. Buda.
40. Widin.
41. Tatta.
42. Hyderabad.
43. Moultan.
44. Attock.
45. Bassora.
46. Babylon.
47. Bagdad.
48. Fort Good Hope.
49. Astrachan.
50. Novogorod.
51. Buenos Ayres.
52. Rabba.
53. Eboe.
54. Boussa.
55. Timbuctoo.
56. Sego.
57. Kholyvan.
58. Narim.
59. Cairo.
60. Thebes.
61. Dongola.
62. Sennaar.
63. Gondar.
64. Lantcheou.
65. Hoain-gaufou.
66. Nankin.
67. New Orleans.
68. Louisville.
69. New Madrid.
70. Macapa.
71. Olivença.
72. La Paz.

REFERENCE TO THE LAKES.

a. Dembea.
b. Great Slave Lake.
c. Erie.
d. Ontario.
e. Constance.
f. Lake Leman or Geneva.

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